Investigation into mental health of international students in the United Kingdom

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Declaration

I, Amna Alshammary, conform that the work in this thesis is conducted by me. Any information that was taken from outside sources, it has been disclosed in the thesis.

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Abstract

This thesis aimed to understand common mental health disorders (CMDs), loneliness, help seeking and executive function (EF) among international students in the United Kingdom (UK). I conducted cross-sectional research to examine this through four studies. This thesis includes secondary data analysis on university student mental health (Chapter 3: n=2,027), data collection and analysis on CMDs and wider factors in Saudi Arabian (SA) international students (Chapter 4-5: n=137), and a qualitative investigation with a sub-sample of this group (Chapter 6: n=18).

In chapter 3, I found no statistical evidence that overseas domicile was associated with CMDs. Although statistical tests were non-significant, adjustment for loneliness scores reflected higher CMDs in overseas groups. Overseas students were less likely to seek help from a mental health professional. In chapter 4, in my survey of SA students in the UK, I found SA international students reporting loneliness had higher CMDs scores and were less likely to seek help from a mental health professional. However, the odds of seeking help from a mental health professional between those with different levels of CMDs were similar. In chapter 5, SA international students with higher levels of CMDs had poorer inhibitory and attentional task accuracy scores. In chapter 6, qualitative evidence explored links between CMDs and wider factors in SA international students, describing CMDs symptoms, how they link to aspects of international student life, their impact on difficulties with executive function. I also provide evidence of common barriers to accessing support, and ways to improve university support services.

These findings suggest that wider factors related to CMDs in SA international students, which may be important to improving international student experience, relating to possible links between CMDs and the following factors, which include loneliness, help-seeking behaviour and areas of executive function. Links between CMD symptoms and deficits to areas of executive function may have implications for both educational and mental health outcomes. Further research is needed to ensure that future support services are equipped to address the unmet needs identified by my findings.

Key words: *common mental health disorders (CMDs), international student mental health, loneliness, help seeking, executive functions (EF).*

Impact statement

There has been increasing focus on higher education student mental health and increasing enrolment of international students and SA international students in recent years. However, little is known about the mental health of these groups in UK higher education, and how other factors related to studying abroad and university (such as loneliness, accessing help and support for mental health and wellbeing, and cognitive skills for academic study) shape mental health.

Common mental disorders (CMDs), loneliness and accessing available support has increased in focus since the COVID-19 pandemic. Large numbers of people from international domiciles view the UK as a prestigious higher education destination, but we know little about whether the risks to poor mental health in a university environment apply to these groups, and whether available support is sufficient. These gaps in understanding may have important implications for the higher education sector in the UK.

My thesis aimed to address some of these gaps with a series of studies to understand levels of CMDs and the factors which might be associated with CMDs symptoms in international and SA international students more specifically. While my findings were mixed and may not be fully used to make definitive conclusions about the relative importance of different factors related to CMDs in home versus international students, my research has implications for support. My findings point to a need to consider executive function (EF) in the picture between mental health and wellbeing, as academic and educational outcomes are likely impacted by CMDs, as well as loneliness. My findings also point to the positive impacts of improving available support around mental health for this group given potential unmet needs around mental health. Some were reluctant to access or unable to access effective support due to cultural and informational barriers. The positive impact of improving access to support is also implicated given that rates of help seeking from a mental health professional were lower in the broader international student sample than for home students.

As international students form a large proportion of university campus populations, there is a need to consider whether support for mental health is sufficiently tailored and targeted to people such as SA international students. My research found evidence to suggest unmet social, academic, financial and stress-related needs, all of which are likely to impact and be impacted by levels of CMDs. With public services in the UK under stress, pressure and resource problems, universities may need to recognise an increased duty of care to groups such as international students, who may struggle to access and navigate public services in an unfamiliar country. With this comes a necessary commitment to improve the accessibility and design of university support services tailored to international students.

This is a novel area for further research in which drawing on both quantitative and qualitative method as part of large-scale multi-university research studies may be necessary to describe the scale and importance of these unmet needs in wider non-Saudi students from international domiciles. My findings also have high importance to those working at the interface of university support services and organisations such as the Saudi Arabian Cultural Bureau, indicating the need for greater collaboration between higher education institutions which play a visible role in the lives and adjustment of international students during their UK higher education journey. I had a discussion with members of the Saudi Arabian Cultural Bureau in the UK as well as the ministry of higher education in Saudi Arabia regarding the impact of studying abroad of Saudi Arabian students on mental health in which they indicated increased interest in my research. Additionally, after presenting a speech on mental health for international students within an organised event held by Saudi Arabian student society at UCL, I have interacted with Saudi Arabian students and was interviewed by the organisers of the event in which they showed an emphasis on the need for more understanding of international student's mental health which my research is all about.

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Abbreviations/ glossary

CMDs: Common Mental Disorder

SACB: Saudi Arabian Cultural Bureau

AOR: Adjusted Odds Ratio

OR: Odds Ratio

MHP: Mental Health Professional

GP: General Practitioner

MD: Mean difference

SD: Standard deviation

SA: Saudi Arabian

UK: United Kingdom

EU: European Union

UG: Undergraduate

PGT: Post-graduate taught

PGR: Post-graduate research

PHQ: Patient Health Questionnaire

GAD: Generalised anxiety disorder

Chapter 1: Thesis remit, objectives and hypotheses

1.1 Thesis remit

This section outlines the remit and rationale for my thesis overall. Chapter 1.1.1. outlines this in more details by explaining the adaptation of elements of mixed-methods exploratory sequential and sequential exploratory designs (Creswell & Creswell, 2017). This approach shaped the collection of data, analysis, exploration and synthesis of information about the broad overarching topics of my thesis as a whole.

With greater numbers of people attending university, in recent years there has been increasing attention to understanding how university study is associated with mental health, loneliness and social isolation, and help-seeking tendencies. This is amidst a backdrop of evidence highlighting poorer mental health, greater loneliness, and reduced tendency to seek help for mental and emotional problems among university students compared to the general population.

Tuition-fees in the UK have been increasing, and yet many people continue to enrol in higher education, finding it to be a valuable and rewarding experience. The UK continues to represent a desirable HE destination for people from outside of the UK. With growing enrolment in recent years, as well as reports in the UK press concerning increased focus on international student enrolment in coming years.

For many, the opportunity of higher education also represents considerable changes in circumstances, the nature of daily stressors and daily life. It can mean isolation, removal or increased separation from preexisting social, cultural, financial, dwelling and support structures. These changes and separation from support and familiarity are greater for those who undertake HE in another country. But limited evidence comparing home domicile to international domicile student groups prevents further understanding.

Chapter 2 of my thesis explores this evidence base to develop a frame to understand some of the key areas related to CMDs and limitations of evidence CMDs for home and international students, as well as for a sub-group of international students.

Mixed evidence points to international students as a group who may be at a higher risk of adverse outcomes in terms of poorer mental health, greater loneliness, reluctance to

access and poor access to support. The available quantitative evidence on international student mental health and study abroad comes largely from small studies conducted in several western countries, focusing predominantly on medical or nursing students. There is a notable lack of UK studies which examine associations between CMDs, loneliness, help-seeking and factors related to academic study. These gaps in knowledge concerning CMDs in international students in the UK limit the ability to anticipate and provide the right level of support. Based on this, Chapter 3 of my thesis seeks to address these gaps by comparing CMDs between these groups to understand the risk of poor mental health. Conducting secondary analysis of SENSE study data, creating a frame for conducting further research with a specific sub-group of international students, and follow-up qualitative interviews to gain a more broad and rich perspective.

There are far fewer studies which examine these factors in Saudi Arabian international students. Available studies in this area are largely qualitative, examining the experience of SA international students in relation to adjustment to unfamiliar culture, and other aspects of social and cultural adjustment to higher education study. With almost no UK studies on this topic. Available research on SA students pursuing HE in Saudi indicates a high prevalence of CMDs and a reluctance to access support for mental health and wellbeing. While not directly comparable, these appear higher than prevalence rates for broader groups of home and international students. Across these areas, no study examines CMDs, loneliness, help-seeking and aspects related to academic study in SA international students in the UK. Based on this, Chapter 4 of my thesis seeks to explore CMDs loneliness and help-seeking in this group. With Chapter 5 extending this frame to understand associations between levels of CMDs and domains of executive function. Which to my knowledge has not been studied in this group before.

Chapter 6 of my thesis seeks to extend and deepen understanding of these issues using a qualitative frame. This is important because while qualitative research suggests unique adjustment challenges face international students (e.g. in the form of language barriers), we know little about the experiences of Saudi Arabian international students in the UK. Providing a deeper and more broad qualitative exploration of the issues examined in previous phases of my research in terms of mental health, loneliness, help-

seeking and barriers to support, and aspects of executive function. Chapter 7 relates to discussion of my entire thesis, or interpretation of my entire mixed-methods analysis. I use this chapter to integrate my findings to address a key limitation of the existing evidence in this area. I describe the nature and purpose of this mixed-methods approach below in Chapter 1.1.1.

1.1.1 Mixed methods approach or structure to research

The thesis is formatted in a constructivist worldview approach, which is grounded in the belief that reality is socially and experientially constructed. As a whole my thesis represents an exploratory sequential mixed methods design (Creswell & Creswell, 2017), in which earlier phases of data collection inform or shape the activities and frame for data collection and analysis in a sub-group of international students. As most previous studies in this area use either qualitative or quantitative methods, this approach was taken to broaden the representations and knowledge we have of international student mental health. Which in current evidence is fragmented across the topics I discuss in my rapid review in a later thesis section (Chapter 2). I adapted aspects of a sequential exploratory mixed-methods designs stated in Creswell and Creswell (2017) to address these limitations and generate more integrated understanding of the nature of mental health conditions in university students.

This is an important contribution to the literature for two key reasons. Firstly, available research has focused largely on either representing qualitative or quantitative perspectives, which may be one of the reasons why knowledge of this issue is so limited. Secondly, we need both kinds of information to generate the deeper understanding of mental health in this group necessary to improve student experience. We need to have some objective or quantifiable idea of levels of mental health, loneliness and other factors in this group to understand the scale of these issues and their intersections. Embedding a deep and broad qualitative approach to examine the core concepts of my thesis will enable me to better integrate previous knowledge with insights from my research. Providing some basis to plan and understand how to address CMDs and related issues in this group in the future.

Figures 1. and 2. describes the timing or sequence, weight and integration ('mixing') of quantitative and qualitative methods in my thesis. This adapts elements of two sequential exploratory mixed method designs described by Cresswell & Cresswell (2017).

Figure 1. Phases of my research with notation describing the weight placed on qualitative versus quantitative methods.

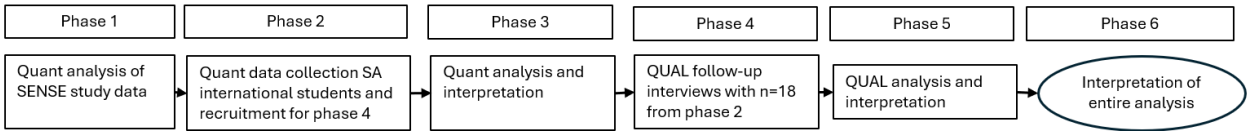
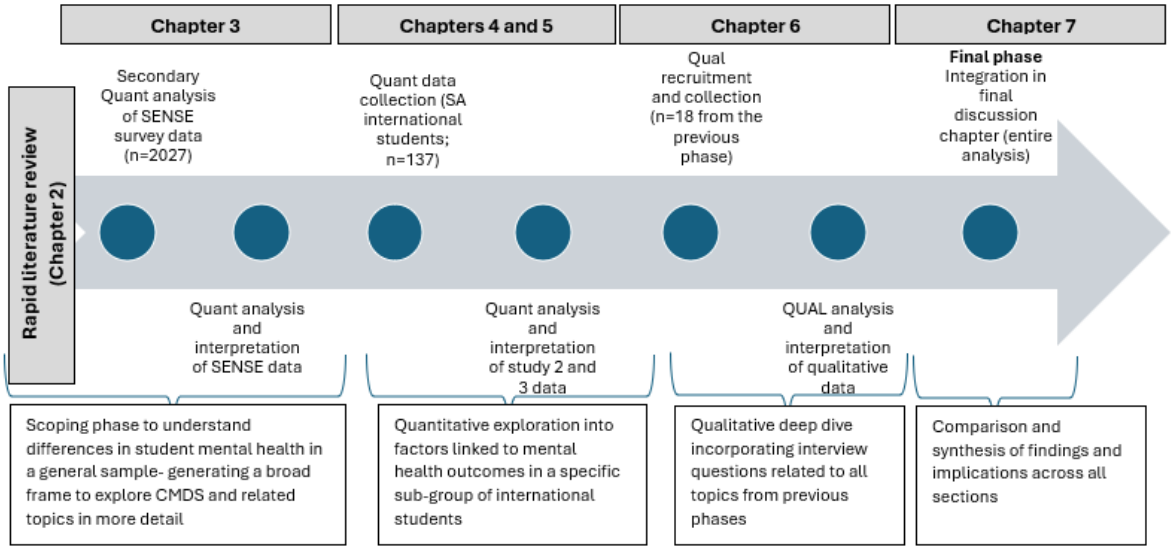


Figure 2. Detailed account of the phases of data collection, analysis and interpretation of findings as they correspond to the chapters of my thesis.



Having explained the remit of each chapter of my thesis, it is important to state the structure and sequence of phases of my research to convey how they inform each other in relation to the sequential exploratory mixed methods design I adapted from Creswell and Creswell (2017). I provide more detail of the sequencing, weight and mixing of quantitative and qualitative elements of my thesis below.

I began by undertaking a scoping phase consisting of a rapid literature review (chapter 2), also conducting secondary analysis of SENSE data and conducting a literature review (chapter 3). I sought to build on and consolidate existing (fragmented) knowledge on the topics of my thesis, as well as create a quantitative analytical frame to explore mental health differences in mental health and related factors between domicile groups. This informed the measures and analytical approach taken in the next sequence of my research, to understand CMDs and related factors in a more detailed way in a sub-group of international students. By designing an online survey using similar measures, I was able to conduct a descriptive comparison of levels of CMDs across the groups of individuals in my thesis.

Greater weight was given to the qualitative aspect of my research with SA international students, this enabled greater integration as part of my mixed-methods design. This is reflected in the broad exploratory questions I designed to capture each of the individual topics of my thesis, utilising a semi-structured interview approach. This enabled me to generate descriptive information about lived experience of CMDs, loneliness, help-seeking and academic and social life, while also mapping patterns of meaning between CMDs-related experiences and the role of these factors in the lives of SA international students studying in the UK. This provided a structural frame to integrate findings across my thesis descriptively, with the exploratory aspect of my thesis leading to the generation of recommendations to improve SA international student experience. This approach led to insight into the quantitative picture of mental health, loneliness, CMDs and executive function in this group. Linking to a more detailed description and analysis of experiences for a sub-group of SA international students at university.

The overall methodological approach in this study was qualitative research, within which thematic analysis was conducted. Specifically, I combined codebook and reflexive thematic analysis approaches. Existing concepts such as mental health, executive function, help-seeking, and loneliness informed the coding framework, while also allowing space for emergent themes to arise from the data and interactions between myself and participants. This approach aimed to both map patterns around these predefined concepts and understand participants' experiences and interpretations in depth. Within this combined approach, the specific techniques used during coding

included both deductive and inductive coding. Deductive coding, informed by theory and quantitative findings, deepened the exploration of key themes and ensured alignment with the research objectives (Braun & Clarke, 2006). Inductive coding allowed new, unanticipated themes to emerge, enriching the analysis. Reflexivity was central throughout to ensure transparency about how my experiences, knowledge of Saudi culture and experience as an international student, as well as my biases and assumptions will have influenced both interpretation and integration (Creswell & Plano Clark, 2018; Berger, 2015). Using a codebook approach enhanced comparability with quantitative chapters and ease of contextualising the analysis, which was particularly important for integrating qualitative and quantitative findings (Braun, Clarke, & Weate, 2016). In line with the worldview, the hybrid approach supported flexible use of these methods to best address the research questions, bridging subjective and objective perspectives (Creswell & Poth, 2018). Together, these strategies ensured that the qualitative analysis was rigorous, theory-informed, and well-integrated within the overall mixed methods design.

1.2 Objectives and hypotheses

Study 1 (Chapter 3): Quantitative associations between higher education student domicile, mental health, loneliness and help-seeking

Objective 1: Understand whether international university students have greater CMD symptoms compared to UK students. Describe the impact of adjusting for loneliness impact on the association between university student domicile and CMDs.

Hypothesis 1: There will be evidence for an association between international (overseas and EU) student status, and symptoms of CMDs with those with international student domicile having higher CMDs symptoms compared to UK students. Adjusting for loneliness levels will reduce the magnitude and strength of the association between international (overseas and EU) student domicile and symptoms of CMDs.

Objective 2: Understand whether help-seeking behaviours for mental health problems differ between UK students and international (EU and overseas) students.

Hypothesis 2: International students (EU and overseas) will have lower levels of help-seeking behaviours for mental health problems than UK students.

Study 2 (Chapter 4): Quantitative associations between levels of CMDs, loneliness and help-seeking behaviour in Saudi Arabian UK international students

Objective 3: To investigate whether higher levels of CMDs (outcome) are associated with higher levels of loneliness (exposure) within SA international students in the UK.

Hypothesis 3: Higher CMDs scores will be associated with higher levels of loneliness.

Objective 4a: To investigate whether higher levels of CMDs (exposure) are associated with increased odds of having sought help from a professional mental health provider source (outcome).

Hypothesis 4a: Higher levels of CMDs will be associated with increased likelihood of seeking help from a mental health professional in the UK.

Objective 4b: To describe the frequency of help-seeking sources, perceived usefulness of sources and barriers to university support services.

Study 3 (Chapter 5): Quantitative associations between levels of CMDs and executive functioning in Saudi Arabian UK international students

Objective 5: To investigate whether higher levels of common mental disorders (exposure) are associated with poorer inhibition accuracy scores (Flanker task) in SA international students enrolled in UK higher education.

Hypothesis 5: Higher CMDs scores will be associated with poorer inhibition task accuracy.

Objective 6: To investigate whether higher levels of CMDs (exposure) are associated with poorer attention task accuracy scores (Stroop task) in SA international students enrolled in UK higher education.

Hypothesis 6: Higher CMDs scores will be associated with poorer attention task accuracy.

Objective 7: To investigate whether higher levels of common mental disorders (exposure) are associated with poorer working memory task accuracy scores (forward digit span task) in SA international students enrolled in UK higher education.

Hypothesis 7: Higher CMDs scores will be associated with poorer working memory task accuracy.

Study 4 (Chapter 6): Exploring aspects of the study abroad experience for Saudi Arabian students in the UK: CMDs, subjective executive functioning

Objective 1:

To explore how Saudi Arabian international students experience symptoms of common mental disorders (CMDs) and to examine the perceived impact of these symptoms on their lives.

Research question 1: How do Saudi Arabian international students experience the symptoms of CMDs and the impact of these symptoms?

Objective 2:

To investigate how social, educational, and financial aspects of the Saudi Arabian international student experience influence the development and manifestation of CMDs.

Research question 2: How do social, educational and financial aspects of the SA international student lived experience shape experiences of CMDs?

Objective 3:

To understand the experiences of loneliness and social isolation among Saudi Arabian international students and examine how these experiences relate to CMDs.

Research question 3: How do SA international students experience loneliness and social isolation and how do these experiences relate to CMDs?

Objective 4:

To examine the role of CMDs in shaping Saudi Arabian international students' narratives and perceptions of their academic lives.

Research question 4: What role do CMDs play in international student narratives around academic life?

Objective 5:

To explore how Saudi Arabian international students experience CMD symptoms in relation to cognitive difficulties such as attention, memory, and response inhibition in academic settings.

Research question 5: How do SA international students experience CMD symptoms in relation to difficulties with paying attention, inhibiting responses or remembering things in an academic context?

Objective 6:

To identify common barriers Saudi Arabian international students face when seeking mental health support and to assess which sources of help are perceived as acceptable and accessible.

Research question 6: What common barriers to seeking help and support for mental health and well-being do SA international students experience and what sources of help do they perceive as acceptable?

Chapter 2: Introduction and literature review

2.1 Summary

This chapter outlines published research evidence which underlies the chosen areas of study for my thesis. Setting out current evidence on student mental health, this rapid review (Moons et al., 2021) examines evidence for the factors which shape international student mental health. International students are at a greater risk of poor mental health outcomes (Forbes-Mewett & Sawyer, 2016). but limited empirical and theoretical research exists to inform further action and understand how wider factors such as loneliness, help-seeking are associated with mental health outcomes (Callender et al., 2021). Help-seeking and loneliness are known to be associated with and influence mental health symptoms and recovery, yet we do not know about the nature of associations between CMDs, help-seeking and loneliness in international student groups, who could be at greater risk of poorer outcomes (Callender et al., 2021; Rotenstein et al., 2015; Thorley, 2017). A key limitation of existing research is the fragmented or separate way mental health has been examined in relation to other factors in international students such as academic stress, cultural adjustment, language proficiency, social support, financial hardship, and help-seeking behaviours among international students (Forbes-Mewett & Sawyer, 2016).

Acknowledging the role that executive function skills play in engaging with academic and social experiences at university, I review existing evidence on known associations between greater levels of CMDs and executive function deficits in university students, international students, and Saudi Arabian international students, who may exhibit greater risk of CMDs. This is to understand whether associations between poor mental health and poorer executive functioning task-performance reported in the wider literature may apply to student groups whose mental health risk may be anticipated to be high.

The findings from my rapid review form the rationale for why understanding student mental health (particularly for international student groups such as Saudi Arabian international students) has importance and value. I will give an overview of the following topics: the prevalence, trajectory, risk factors and impact of CMDs in higher education

students (including international students), the role of linked processes related to loneliness, and reluctance to seek help, and cognitive skills or domains related to executive function. This is an important first step to understanding the extent to which loneliness, reluctance to seek help, high levels CMDs (and executive function deficits in the presence of high symptoms) represent unique and yet unaddressed challenges for Saudi Arabian international students.

2.2 Epidemiology, time trends and importance of CMDs

Common mental disorders (CMDs) such as depression and anxiety affect many people- with representative household surveys showing a prevalence rate of around 17% in England (Bebbington & McManus, 2020; McManus et al., 2016). In addition to being highly prevalent, CMDs make up more of the global burden of disability than cancer or cardiovascular disease (Annual Report of the Chief Medical Officer, 2013). Beyond quantifiable impacts on disability burden, CMDs influence the very experience of life, often with detriment to physical health, relationships, education; as well as representing a more existential threat to personal meaning, motivation, purpose and a life without suffering. There are several justifications for the use of this term which relate to the high degree of overlap between anxiety and depression in terms of high rates of co-occurrence, overlap between symptoms of each condition, and that a proportion of those who do not meet the threshold for diagnosis tend to experience symptoms of both (Pennix et al., 2011; 2017).

Young adulthood (18-25) represents a pivotal time in the formation and realisation of risk for mental health conditions. With anxiety disorders and depression being noted to arise most in these stages of life- with research showing a mean age of 21.3 years for the onset of anxiety, and around 25 for depression (de Lijster et al., 2017; Mahli & Mann, 2018). Though, there can be considerable variation in this- some experience onset later in life, whereas some experience it earlier. For example, of those who may experience a depressive condition in their lifetime, a quarter of individuals experience this prior to age 20 (Mahli & Mann, 2018). Concerningly, time trends show that CMDs may be becoming more prevalent, particularly among young adults. With consecutive household surveys showing increasing prevalence from 15% in 1993 to 19% in 2014 for

this group. The Office for National Statistics (2020) reflect a more concerning increase in the prevalence of anxiety and depression generally, with around one-third of young adults reporting some symptoms of anxiety or depression.

It should be noted that we do not know definitively whether this rise is more attributable to increasing incidence or better surveillance and awareness of CMDs. What is clear is that these are concerning trends which show that the transition from youth to adulthood is a crucial period for understanding and intervening in CMDs. This means understanding the factors at play in this period represents a challenge of considerable scale and importance to public health, and increasingly, to higher education.

2.3 CMDs symptom trajectory, aetiology and risks

While in most cases of CMDs symptoms may fall under clinical thresholds in the long run, for some this disorder persists as mild or severe over a long period- marked by an acute and intermittent pattern of symptoms (Pennix et al., 2011; 2017). For those with CMDs who experience comorbid depression and anxiety, clinical longitudinal (Merikangas et al., 2003; Penninx et al., 2011) and general population studies conducted cross-sectionally (Das-Munshi et al., 2008; Hardeveld et al., 2010; Kroenke et al., 2007) have also shown poorer outcomes in context to a similar pattern of illness over time, marked by distress and reduced quality of life. This underscores the importance of earlier identification of individuals at the age of onset for CMDs with such risk, to enable the prevention of more severe illness. While stressful life events in this age range represent contributory factors in the development of CMDs, individual responses or how a person adapts to these events is potentially modifiable. Further understanding these experiences may also help in targeting specific groups at risk of developing CMDs. Studying at university is one of the most common major life transitions for many young people (Department of Education, 2019), this transition brings exposure to an array of potential stressors and environmental risk factors for CMDs (Korkeila et al., 2010; Purić & Vukčević Marković, 2019), and while for many this transition is a positive experience, some groups may face increased stresses or challenges.

There is also evidence that social experiences shape experiences of CMDs, with loneliness and help-seeking for mental health problems being two commonly mentioned factors (Lin et al., 2023). Loneliness is an important exposure to consider in relation to the development of CMDs and major life events such as studying abroad, as loneliness and social support are connected to CMDs symptoms; CMDs symptoms may also increase social isolation and loneliness (Kleinberg, Aluoja & Vasar, 2013; Lin et al., 2023; Wang et al., 2018). While links between loneliness and mental health and wellbeing are well-documented, they are not necessarily well understood, particularly in international student populations (Holt-Lunstad, 2021). In recent years, this public health issue has received more attention in the UK, such as through Campaign to End Loneliness (2020) which focuses on the link between mental health, loneliness and older age. More recent work by the Mental Health Foundation (2022) highlights the scale and possible impacts of loneliness in the UK: loneliness is highly prevalent, inextricably linked to mental health, and certain groups are seen as having greater risk of adverse impacts of mental health. There is less focus on younger age groups such as students and more focus on loneliness in older adulthood in policy, this suggests an important gap in understanding. Given how closely linked CMDs and social processes are, as well as the nature of life changes such as studying at university (which may bring exposures to social and wider stressors), there is a need to explore this in groups of students who may be at greater risk, or for whom little is currently known.

Help-seeking tendencies are also relevant to the aetiology or trajectory of symptom development and coping with CMDs. There is also evidence on what affects or shapes the tendency to seek help for mental health and wellbeing problems in different groups. I outline evidence on help-seeking tendencies and CMDs in detail section 2.6.

2.4 Prevalence of CMDs in higher education settings

I summarise the evidence on CMDs and international students in a section 2.5 in more detail, but it is important to highlight some brief evidence on CMDs in the wider student population to illustrate why more research is needed using contemporary UK data. Namely, we know that those who attend higher education at age 18-19 have higher rates of CMDs than those who do not (Callender et al., 2019; McCloud, Kamenov,

Callender, Lewis & Lewis, 2023). We also know that they may be at risk of adverse outcomes due to lower rates of help-seeking and greater loneliness in university students. But a lack of recent UK studies examining these topics together means that we have limited information to understand the levels of CMDs in higher education settings. This illustrates the need for my research, along with the fact that the paucity of research CMDs and relate factors is greater for students from international domiciles studying in the UK.

University students appear to be at high risk for CMDs compared to the general population. The Institute for Public Policy (Thorley, 2017) finds that 15,395 UK first year students reported having a mental health condition, said to equate to 2% of all first-year undergraduates in 2015/16 (769,750) and having reportedly increased from 0.4% in 2006. As these prevalence figures are considerably lower than those indicated in survey methods, this suggests only a small proportion of students with these difficulties seek help. This converges with wider research showing that a very low proportion of individuals with CMDs seek help from professional sources (Mitchell, McMillan & Hagan, 2017; Salaheddin & Mason, 2016).

Cross-sectional research has shown that fewer students access support or seek help for mental health difficulties compared to the general population (Callendar et al., 2011; Macaskill, 2013). Loneliness and financial difficulties have also been linked to the emergence of CMDs and may be associated with patterns of help-seeking for these difficulties at university. With this in mind, and with mental health conditions potentially rising in UK students, this highlights the importance of further understanding CMDs and help-seeking behaviour in university student populations. Perhaps more so for international students, as research suggests a higher rate of CMDs and susceptibility to loneliness and lower help-seeking behaviours than for home students- as the next section will discuss.

2.5 CMDs and international students in the UK

The UK is a popular destination for university students globally. The Organisation for Economic Cooperation and Development (OECD, 2020) figures show around 17.1% of the UK higher education population is composed by non-UK nationals. It also appears

that in 2018/19 international student enrolment had grown by 11.23% since 2014/15 (HESA, 2017). From 2018/19 to 2021/22, international student enrolment grew by 37.06%, with international enrolments making up 23.75% of all UK higher education students (HESA, 2024).

Cross-sectional evidence suggests that international students may be more likely to experience CMDs (above and below clinical thresholds on screening measures) than home students. High prevalence of CMDs in international students has been found across multiple studies, converging on a point prevalence estimate of around 43% (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Skromanis et al., 2018), and up to 70%(Lian & Wallace, 2018). Higher levels of CMDs among international students have also been replicated in other settings, such as Japanese studies (Nguyen, Serik et al., 2019). A limitation of these studies is that few accounted for the role of potential confounding factors, such as financial difficulties, loneliness and help-seeking, which could explain these observed differences between groups. Therefore, further cross-sectional research has value in understanding levels of CMDs in international versus home students. While the potential confounding variables mentioned may be on the causal pathway between domicile status and CMDs, it is still important to investigate the influence of these factors, particularly given that few studies incorporate this.

The finding that international students have worse mental health than home students appear to contrast with the commonly observed healthy migrant selection effect hypothesis (Razum, 2006), where migrants in a university context may have better health outcomes compared to UK home students. For instance, moving countries to study abroad requires access to financial and other resources which are generally associated with better health outcomes and reduced mortality (Kennedy, McDonald & Biddle, 2006). Despite this, studies have highlighted higher rates of CMDs in international students which could suggest that something may happen in the context of university or adjusting to university life in another country which could be associated with increased risk of CMDs or deterioration of mental health.

2.6 Loneliness, help-seeking and other factors related to CMDs in international students

Loneliness

Cross-sectional US and Australian research across the last two decades have highlighted negative associations between loneliness, willingness access support services, and international student mental health outcomes (Russell, Rosenthal, & Thomson, 2010; Sawir, Marginson, Deumert, Nyland, & Ramia, 2007; Smith & Khawaja, 2011). Several cross-sectional studies have shown that increased social or peer support is associated with lower depressive symptoms. Nguyen, Le and Meirmanov (2019) found that English language proficiency and social connectedness were negatively associated with depression (Crockett et al., 2007; Jackson et al., 2013; Shadowen et al., 2019). This points to the importance of loneliness and low social support as risk factors in context to CMDs and international student status.

Help-seeking

International students have also been found to be less likely than home students to seek support for emotional and mental health difficulties (Clough et al., 2019; Nguyen, Serik, et al., 2019). Specifically, Clough et al. (2019) demonstrated that international students had lower mean scores on psychological openness, propensity for help-seeking and indifference to stigma with average help-seeking scores being around ten points lower in this group compared to home students. While this is not a standardised comparison, qualitative studies also find that international students are less likely, or less able, to seek help for mental health difficulties because of several barriers including perceived discrimination, anticipated stigma, and language barriers (Boafo-Arthur & Boafo-Arthur, 2016; Forbes-Mewett & Sawyer, 2016).

Only two studies on international students in the UK and potential risk factors for CMDs were identified by my review. One qualitative ethnographic study highlighted language difficulties and struggles with social relationships as prominent and interconnected themes across five interviews, noting the role of loneliness and lack of social support in relation to depression (Taylor & Ali, 2017). One mixed-methods study found a negative association between greater loneliness and lower use of support services by

international students; qualitative interviews highlighted reasons for this reluctance, including language barriers (Wawera & McCamley, 2019). While this suggests loneliness and help-seeking are inter-related in the context of CMDs, no recent UK studies explore CMDs in relation to these variables. This justifies further quantitative study to explore the relationship between CMD levels and help-seeking between these student groups. Further study exploring this may be valuable in informing ways to enhance student mental health and wellbeing support.

Several caveats are relevant to interpreting potential risk factors associated with CMDs in this population- many of which are also common to the evidence base around prevalence discussed previously. Sampling or selection bias may be an issue as all studies used convenience sampling and were not randomly sampled from the student population. Selection bias in these studies might have occurred if mental health status affected participation in these studies differentially between home and international students. This may therefore underrepresent international students with higher risk of CMDs, being less receptive to recruitment and participation (Clough et al., 2019; Glass & Westmont, 2014; Jackson et al., 2013; Nguyen, Serik, et al., 2019). There is a lack of UK studies, similarly to the prevalence evidence base, where existing studies were conducted predominantly in universities in the US (Glass & Westmont, 2014; Jackson et al., 2013), Australia (Clough et al., 2019) or Japan (Nguyen et al., 2019; Nguyen, Le & Meirmanov, 2019). All studies acknowledged a low level of generalisability to other contexts. Studies also tend to treat international students as a single homogenous group. For example, only one study (Shadowen et al., 2019) adjusted for the effect of the region of the world that students originated from: failing to adjust for this may exclude key social and cultural characteristics which underlie differences between students from different countries.

Considering the size of the international student population in the UK, it is necessary to further understand the prevalence of CMDs in this group and any potential factors associated with it, as well as patterns of help-seeking and common barriers to help-seeking. This would allow for the beginning of an understanding of the burden of CMDs in this population to be established and provide insights into whether specific interventions might be targeted towards international students to alleviate this burden.

Additionally, studies which use both quantitative and qualitative data collection and analysis would enable a deeper and richer look into the prevalence of CMDs, connecting to help-seeking and loneliness in international students. A deeper investigation of these concepts may be useful in the form of a mixed-methods study, which addresses the limitation that topics related to mental health, help-seeking, EF and loneliness have been examined separately, through quantitative or qualitative methods.

2.7 Saudi Arabian international students in the UK

While research on international students has provided valuable insights into the general challenges faced by this population, focusing specifically on Saudi Arabian students offers a more culturally nuanced understanding of their experiences. Saudi students represent a distinct subgroup with unique cultural, religious, and linguistic backgrounds, which can influence how they experience mental health, acculturation, academic stress, and help-seeking behaviors (Alhazmi & Nyland, 2013). For example, the emphasis on collectivism, Islamic values, gender norms, and familial expectations in Saudi culture can shape students' coping strategies and attitudes toward mental health support in ways that differ significantly from those of other international student groups (Hamdan, 2009). The need to look at this sub poulation of international students is further highlighted thorogh Alangari et al. (2022) study which indicate that Saudi university students show low intention to seek professional psychological help, despite experiencing elevated levels of psychological distress. Key barriers included fear of social judgment, perceived stigma, and belief in self-reliance or religious coping. Similarly, Al-Krenawi et al. (2011) highlighted that mental illness is often viewed through a religious or spiritual lens in Saudi culture, contributing to underutilization of formal mental health services. Focusing on Saudi students allows researchers to explore how broader themes identified in international student literature such as loneliness, stigma, or adjustment manifest in culturally specific ways.

Organisation for Economic Cooperation and Development (2020) data show that in 2017, 78,344 Saudi Arabian (SA) students were studying internationally, with those in the UK representing around ten percent (7,891) of SA students studying internationally. This grew to around 9,000 in 2019 (UK Council for International Student Affairs, 2019).

Recent data from HESA (2024) for academic years 2021/22 show 8,750 students enrolled. Despite representing a small proportion of overall UK students, SA students are among the ten most common student nationalities in the UK outside of the European Union (UK Council for International Student Affairs, 2019).

In parallel to this, Saudi Vision 2030 has seen an increasing monetary and cultural value placed on education through budgetary expansion, and expansion of international study and education programmes. This promoted the benefits of international educational exchange in understanding foreign culture and the enrichment that such exchange provides (Aldiab et al., 2017).

2.7.1 CMDs prevalence and risk factors in Saudi Arabian international students

Available evidence on this topic in Saudi international students focuses on the nature of adjustment difficulties when studying abroad (Massarweh-Seryani, 2019; Rabia, 2016; Smith & Abouammoh, 2013; Unruh & Obeidat, 2015; Young & Snead, 2017). No study has been identified to date on CMDs directly in SA international students.

This prevents us from fully understanding the burden of CMDs in such students, particularly in the UK as no current studies examine CMDs in SA international students in UK higher education. This means that to begin to bridge this gap in the evidence, it may be informative to look at levels of CMDs in SA students studying in their home country. Several studies point to a high burden of CMDs in Saudi university students within Saudi Arabia (Al Bahhawi et al., 2018; Hakam, 2017; Kronfol et al., 2018). A systematic review of 19 studies conducted by Alhamadi (2019) (including those mentioned above) between 2007-2018 showed that CMDs appear to be particularly prevalent among SA students studying in their home country: 35% to 60%. This is high in comparison to rates of CMDS for other non-international or home students in western settings of around 30% (Ibrahim et al., 2013). While rates of CMDs appear higher in SA students, it is unclear whether this is due to CMDs being more prevalent in this group compared to others, given high variability (around 70%) between prevalence estimates in previous research such as Ibrahim et al. (2013) and Rotenstein et al. (2016). Methodological quality of studies is also low due to the use of many different outcome

measures, use of convenience sampling, and inconsistent reporting of confidence intervals around prevalence estimates. Therefore, it is unclear whether prevalence of CMDs is higher in SA international students than for home students. Nor is there enough evidence to understand both the level of CMDs in this group in the UK, nor how levels of CMDs may be associated with other aspects of the international student experience. This requires further investigation to better understand the risk of adverse mental health outcomes for SA international students.

There is wider evidence that Saudi international students may be exposed to significant social and cultural changes when attending university in Western settings. In particular, loneliness and reluctance to seek help for difficulties are linked to adjustment difficulties for SA students examined in qualitative and quantitative studies (Abouammoh & Smith, 2013; Alahmadi, 2019). The few recent studies I identified around Saudi international students pertain to a North American or Australian context (Heyn, 2014; Massarweh-Seryani, 2019; Young & Snead, 2017; Unruh & Obeidat, 2015). As such, these do not speak to the UK context, and nor do they help us in directly understanding CMDs or mental health risk for these students. In that this evidence base focuses more generally on common barriers to study, social and psychological aspects of adjustment to international study related to culture (desegregation of gender in western educational settings was a recurrent factor), language, religion and identity, and separation from family (Massarweh-Seryani, 2019; Rabia, 2016; Smith & Abouammoh, 2013; Unruh & Obeidat, 2015; Young & Snead, 2017).

Wider qualitative research suggests Saudi students do not seek help for emotional difficulties due to anticipated stigma and fear of experiencing cultural insensitivity; with ethnographic research (Alasiri, 2019) highlighting issues such as depression, moving back home, loneliness, separation from family as recurrent issues (Alajlan, 2017; Heyn, 2014). Other work with SA female international students in the US (Sendi, 2019; Szilagyi, 2015) converges on cultural barriers to help-seeking, loneliness and gender integration issues as prominent themes in adjusting to international study. Finally, a US thematic analysis of several doctoral studies and peer-reviewed research suggests that anxiety and depression are among factors which are associated with adjustment difficulties (social support, finances, loneliness) in SA international students (Almurideef,

2016; Khanal & Gaulee, 2019). Yet, few if any quantitative studies assess these difficulties in relation to prevalence rates of CMDs in Saudi international studies.

The few UK studies available highlight a similar pattern of cultural and behavioural challenges, suggesting that Saudi international students face unique stressors in adjusting to western cultures which may impact mental health negatively (e.g. Almuarik, 2019; Alqahtani & Hezam, 2015). While this highlights the importance of cultural and social barriers in adjusting to UK education and culture, notably loneliness and help-seeking (Alqahtani & Hezam, 2015; Smith & Abouammoh, 2013) it cannot tell us about how these factors relate to levels of CMDs. Though, we know that many Saudi students experience disconnection, loneliness and difficulty adjusting to life in foreign countries, and when moving back to Saudi. As loneliness is linked to CMDs in more general populations, this could point to a need for more comprehensive support when adjusting back to life in Saudi (Almuarik, 2019). Though demonstrating and developing a basis to apply this to improving support is contingent on further research examining loneliness and CMDs in a cohort of Saudi international studying in the UK.

Further to this, while the studies I identified converge on a set of adjustment difficulties experienced by this group, they do not provide parallel insight into group trends of CMD prevalence and associated factors in Saudi international students in the UK. This insight is needed to understand the extent to which available support and access are commensurate to demand or mental health needs. At present, mental health needs or the extent of poor mental health in this population is unknown, meaning there could be unmet mental health needs. This is a gap in the evidence-base and in practice which, if addressed, may have implications for the level and nature of student support targeted at this group, who may be at high risk for developing CMDs.

Common challenges highlighted by both streams of evidence provide a basis for future investigation to inform how best to target mental health support for this potentially at-risk group (Andrade, 2006; Boafo-Arthur & Boafo-Arthur, 2016; Callendar et al., 2011; Clough et al., 2019; Nguyen et al., 2019). To inform this, a quantitative perspective on CMDs in SA international students in UK universities and associated factors may make an important contribution. However, it can be difficult to get the perspectives of students

and the individual barriers, such as perceived barriers to help-seeking using purely quantitative research. Based on this, mixed-methods research may provide depth in investigation of SA international student experiences of studying overseas, more so than quantitative research alone (Cresswell & Cresswell, 2017). Therefore, the current study proposes qualitative work informed by an initial quantitative analysis to enable more deep exploration of potential risk factors surrounding CMDs. Such as loneliness and help-seeking, and to better understand SA students' lived experience of these phenomena. This would inform a view into specific barriers and facilitators to help-seeking, or what association loneliness has on the lived experience of international study, and symptoms of CMDs.

2.8 CMDs, executive functioning and university students

Academic achievement is an important outcome of higher education which is negatively affected by mental illness (Best et al., 2011). And, if one group such as international students suffers more from CMDs or has a higher rate of CMDs (as is suggested by prevalence evidence reviewed previously in section 2.5), then their academic achievement may also be compromised. This is a reasonable assumption given that executive functioning (EF) is crucial to learning and academic outcomes. Executive function represents a core set of skills that enable individuals to manage the simultaneous demands of multiple cognitive tasks towards achieving a specific goal or purpose over time (Nyongesa et al., 2019). This is supported by cross-sectional studies linking better executive function and high grade-point averages (Engel de Abreu et al., 2014; Hassenbeigi et al., 2011). CMDs may result in lower academic achievement through negative effects on executive function, given positive associations between depression, anxiety and impaired executive functioning (Aijichi & Nejati, 2017). It is therefore important to understand whether groups who exhibit a higher rate of CMDs such as international students may also be at increased risk of compromised academic achievement through poorer EF, as they may require increased support. This outlines the focus of the following sections, which will review evidence on which domains of executive function may be impaired by anxiety and depression. Indicating whether there are deficits to specific subdomains of executive function in context to CMDs. Finally, this will draw on available evidence around CMDs and executive function deficits in

university students focussed around identified sub-domains of EF. With potential theoretical and practical implications for targeting student support, this study represents an important contribution to knowledge regarding the interface between mental health, academic and wellbeing related issues while studying abroad.

Primary and secondary research evidence suggests that similar areas of executive function may be impaired in acute phases of anxiety and depression. With depression and anxiety both being negatively associated with working memory, attention and inhibitory control (Aijilchi & Nejati, 2017; Doumas et al., 2016; Snyder et al., 2015; Roca et al., 2015). Cross-sectionally, people with CMDs have also been shown cross-sectionally to have poorer attention, inhibitory control and working memory than healthy controls (Doumas et al., 2016; Brooks et al., 2013; Dulay et al., 2013; Vergara-Lopez et al., 2014; Wagner et al., 2015). Meta-analysis shows that depression has a moderate to large effect upon the magnitude of working memory and attention deficits (Cohen's d = -0.34 to –0.61) (Rock et al., 2015). Similarly, recent secondary evidence shows that the first episode of depression has small to large effects on working memory, shifting and sustained attention, with sustained impairment after remission of core depressive symptoms (Ahern & Semkovska, 2017). Overall, Synder et al. (2015) summarise cross-sectional evidence up to 2015, showing uniform deficits to working memory and motor response inhibition across different anxiety disorders (Billingsley-Marshall et al., 2013; Fuji et al., 2013; Smitheman et al., 2007; Visu-Petra, Miclea & Visu-Petra, 2013). Finally, dose-response relationships have also been demonstrated between depression and executive function deficits (Rock et al., 2014) and for anxiety and executive function deficits (Snyder et al., 2015), suggesting a strong link between CMDs and negative impacts on EF. A more recent cross-sectional study conducted in Europe (Kraft et al., 2023) examined depressed and non-depressed individuals (n=289). This showed poorer executive function skills and greater depression symptoms. Reductions in executive function was associated with fatigue and motivational deficits which may accrue over time. This support broader evidence that executive function and CMDs symptoms are inversely associated.

Overall, evidence suggests that executive function is positively associated with academic and occupational success. However, CMDs such as depression and anxiety

may be associated with executive function deficits or poorer performance on executive function tasks (which could contribute to poorer academic functioning). This has important implications for targeting student support, as CMDs and their burden represent a potential risk factor for poor or worsening EF, with academic and social functioning implications. Outcomes from previous studies on CMDs and students raise numerous concerns for educational institutions in connection to working memory, attention, inhibition and reasoning being compromised by CMDs (Best et al., 2011; Hassanbeigi et al., 2011; Samuels et al., 2016). For example, CMDs have been consistently associated with impairments in executive functions, such as working memory, selective attention, inhibitory control, and reasoning abilities, all of which are essential for academic learning and performance (Rock et al., 2009; Snyder, 2013). Students experiencing depression often show reduced working memory capacity and difficulty concentrating, which may compromise their ability to follow complex instructions, complete assignments, or retain lecture content (Christopher & MacDonald, 2005). Anxiety is frequently linked with attention biases toward perceived threats and difficulty inhibiting intrusive thoughts, which can undermine exam performance and increase susceptibility to academic burnout (Eysenck et al., 2007). These cognitive disruptions affect not only students' academic outcomes but also their ability to engage in classroom discussions, meet deadlines, and manage competing tasks (Owens et al., 2012). For educational institutions, this presents a two-fold concern: first, that untreated CMDs may silently erode students' cognitive functioning and academic progression; and second, that failure to address mental health needs may widen inequities in achievement, retention, and engagement. As such, institutions must prioritize early identification and support systems that consider both mental health and cognitive performance as interdependent dimensions of student success.

This warrants further study to inform research on prevention and intervention in CMDs in university and educational settings; for example, exploring potential associations between impaired executive function and CMDs in this population may have importance in focusing meaningful symptom relief around academic and wider functioning. As such, the following sections will explore working memory, attention and reasoning in relation

to available evidence on the impact of CMDs upon these domains in students and international students.

2.8.1 CMDs and working memory

Working memory (WM) is a multicomponent system for maintaining, representing and processing information to enable its manipulation (Buchweitz,1999; McCabe et al., 2010). WM capacity and function play a central role in enabling goal-directed behaviour over time (McCabe et al., 2010). One of the most common simple paradigms to assess WM experimentally is based on Miller's (1956) early work. Presenting participants with an array of visual stimuli (the type of stimulus varies, some use household objects) for a pre-specified duration (e.g. 30 seconds), after which the stimuli disappear, and the participant is asked to recall as many items as possible.

WM is associated with academic performance and social functioning in childhood and adolescence, as well as in university age individuals (Aronen et al., 2005; Best et al., 2011). In addition to the studies discussed above, evidence of impaired working memory has been replicated in several studies for anxiety and depression; with WM capacity and maintenance of information being implicated specifically (Alves et al., 2014; Bishop, 2009; Huang-Pollock et al., 2017). Similarly to Rock et al. (2015) discussed above, an additionally large-scale meta-analysis (177 studies) shows moderate negative effect sizes for the impact of anxiety upon WM capacity (Moran, 2016). Specifically, the authors conclude that measures of anxiety predict poorer WM performance. However, these findings are based on studies of adolescents, children and adults, and may not be generalisable to other populations. Namely, university students (and international students) comprising adults and young adults in a specific academic setting, may have different levels of CMDs and working memory than adolescents. With exposure to different environmental and social influences (which may impact CMDs and other forms of EF) potentially meaning that levels of executive function and CMDs are different in this group, therefore warranting further study.

Only one study was identified directly relating to university students, working memory and CMDs. Ajilchi and Nejati (2017) showed that working memory was significantly poorer in university students with depression, anxiety and stress than healthy

individuals. This lack of literature in university students suggests value in further investigation regarding the importance of CMDs and working memory deficits.

2.8.2 CMDs and inhibition

Inhibition describes when an individual delays their predominant and reflexive response to a stimulus, in favour of acting upon an alternative stimulus (Eslinger, 1996). A commonly used laboratory task to assess this is the Stop-Signal (or go-no-go task) paradigm (Matzke et al., 2018). One trial of the Stop-Signal paradigm consists of two main tasks in which response time is measured. The primary task ('Go task) has participants produce congruent responses to pictures of directional arrows (left vs. right) when presented with the 'go signal'. Whereas for the secondary task ('No go', occurring in a minority of trials) after being presented with 'go signal' an auditory stop signal is presented, indicating for participants to withhold their response. Clinical reviews and meta-analysis have shown MDD is associated with significant impairments to inhibition with small to moderate effects (Roca et al., 2015; Rock et al., 2014). Importantly, this may suggest that inhibition is an important cognitive mechanism to study with respect to attentional aspects of CMDs, particularly in the maintenance of depressive symptoms.

Fewer studies explore associations between inhibition and anxiety, although a handful highlight specific associations in context to mixed findings. Namely, inhibitory control has been shown to be positively associated with symptom severity in patients with GAD (Price & Mohlman, 2007). Suggesting greater inhibition in anxiety may be associated with more severe pathology. However, (Visu-Petra et al., 2013) found that inhibition and working memory were negatively associated with anxious states related to worry, and trait level anxiety. Recent work demonstrates a link between anxiety (worry state) and inhibition, where reaction times were longer in context to a worry-based threat (Roxburgh et al., 2019).

Only two studies were identified in relation to students, CMDs and inhibition. Aijichi and Nejati et al. (2017) demonstrated that three groups of students with depression, anxiety, and high levels of stress performed worse on inhibitory control measures than the control group. Similarly, Mckian (2015) examined risky decision making in context to stress, CMDs and impulsivity (inhibition, measured via the Go/No Go task), finding a

significant small negative association between inhibition and anxiety, in context to response time (r = -.110). While the nature or existence of causal pathways between CMDs symptoms and executive function deficits is beyond the scope of this thesis,

Our understanding of how inhibitory deficits and CMDs symptoms are associated, and possible cascading effects on other areas of executive function may have importance to improving mental health, wellbeing and academic outcomes are unclear. Although, we do know that executive function appears to have importance to educational outcomes.

2.8.3 CMDs and attention

Attention denotes mental flexibility of cognitive focus upon a task. It has been previously defined in terms of selective, sustained and shifting attention, which relate to the capacity to focus attention upon, maintain over time, and shift focus between stimuli, respectively (Koziol et al., 2014). The Stroop task is one of the most well-known experimental paradigms for measuring selective attention, sustained and shifting attention (Lamar & Raz, 2009) which has participants identify congruence between written words describing colours, and the colour of ink they are written in (Friedman et al., 2009; Shipstead et al., 2016).

Clinical research suggests CMDs are associated with deficits in sustained attention for anxiety disorders, and selective or shifting attention during cognitive tasks in context to depression (Vergara-Lopez et al., 2014). For university students, case-control studies have supported evidence of disrupted attention in students in context to CMDs, using various tasks to measure attention (Stroop task; Wisconsin card sorting task; 'D2 Attention test' -Brickencamp, 1966) and CMDs (DASS; State Trait-Anxiety Inventory-Barnes et al., 2002). In general, these have supported significant differences between healthy students and students with CMDs concerning attention. Specifically, sustained attention and shifting attention were poorer in students with anxiety than depression or controls, whereas selective attention was the same (Ajilchi & Nejati, 2017). Recent meta-analysis on mental health status and cognitive behavioural variables shows moderate to strong associations between sustained attention and negative affect (r= -.36 to -.49, $p < .001$) in relation to depression and anxiety for university students (Irie et al., 2019). However, definitive conclusions cannot be supported given high study

heterogeneity and that included studies largely relied on self-report methods to assess attention.

Poorer selective attention has been highlighted in context to increased anxiety (Fernández-Castillo & Caurcel, 2015). With a potential indirect effect of rumination (across both depression and anxiety) upon deficits to sustained attention (Kertz et al., 2017). Despite caveats such as diversity of instruments used to assess CMDs (where such differences could account for some of the variance in attention that is explained by CMDs), and common limitations of case-control designs (in this case, possible selection bias) the research indicates that sustained, selective and shifting attention could be impaired in students with CMDs. Given the paucity of UK based studies conducted with international students there is value in further study examining the strength and profile of negative associations between CMDs and selective, sustained and shifting attention.

While the literature highlights key factors influencing international students in relation to mental health, loneliness, help seeking and executive function, there is a notable gap in research focusing on those matters among international and specifically Saudi Arabian students. The next chapters outline the methodological approach used to explore this populations in depth.

Chapter 3: Quantitative associations between higher education domicile group, mental health, loneliness and help-seeking.

3.1 Summary

This chapter investigates cross-sectional differences in common mental disorders symptoms, loneliness and help-seeking for mental health problems between UK and international students. Seeking to understand whether international university students have greater CMD symptoms compared to UK students and describe the impact of adjusting for loneliness impact on the association between university student domicile and CMDs (Objective 1). As well as whether help-seeking behaviours for mental health problems differ between UK students and international (EU and overseas) students? (Objective 2).

To investigate my objectives, I used cross-sectional data from a large-scale survey of university students' mental health and well-being (from the student mental health Survey (SENSE) study. I conducted descriptive and inferential analyses on data from 2,027 students with complete cases on CMDs scores, loneliness, help-seeking behaviour and sociodemographic variables.

CMDs were measured using a total score derived from a composite questionnaire consisting of 16 items (9 items: Patient Health Questionnaire-9, Kroenke, Spitzer & Williams, 2001; 7 items: Generalized Anxiety Disorder Assessment-7, Spitzer, Kroenke, Williams & Löwe, 2006). Loneliness was measured as a total score derived from the three-item scale: University of California, Los Angeles Loneliness Scale (UCLA, version 3). Help-seeking was a binary variable indicating whether the study had sought help from a mental health professional while at university (appendix 5).

I used linear regression models to examine the association between CMDs scores and student domicile before and after adjustment for confounding variables (age, gender, sexual orientation, level of study, financial difficulties), and loneliness levels. Binary logistic regression examined the likelihood of having sought help from a mental health professional across student domicile.

UK students (n=1,081; 53.33%) made up the largest group in this sample, followed by overseas (n=504; 24.86%) and EU students (n=442; 21.80%). After adjusting for sociodemographic variables, overseas students had higher CMDs scores on average compared to UK students, partially supporting hypothesis 1. In contradiction to hypothesis 1b, I found mixed evidence concerning loneliness, as there was no statistical evidence of higher CMDs scores for overseas or EU compared to UK students after adjusting for loneliness. While non-significant, and despite mean differences suggesting marginally lower scores in EU, and marginally higher scores in overseas students, adjustment for loneliness (in relation to higher/lower CMDs scores) for EU and overseas students produced a similar change in the model. After adjusting for loneliness, for overseas students the mean difference in CMDs scores increased from 0.97 to 1.23, whereas for EU students the mean difference decreased -0.59 to -0.32.

While results were non-significant reflecting no statistical evidence of a difference in CMDs scores for EU and overseas students, adjustment for loneliness attenuated the difference in CMD scores for EU students compared to UK students. Whereas for overseas students, adjusting for loneliness increased the magnitude of difference (0.97 to 1.27) in CMDs scores compared to UK students. Reflecting a non-significant increase in the difference in CMD scores (higher scores compared to UK students) when the impact of loneliness on this association was considered. This potential difference in the role of loneliness in the association of CMDs scores and overseas and EU suggests mixed evidence in support of hypothesis 2. Overseas students were on average significantly less likely to seek help from mental health professionals compared to UK students before and after adjustment for sociodemographic variables, CMDs and loneliness scores. However, there was no evidence that lower estimates for EU students differed significantly from that of UK students.

This study provides preliminary evidence of the role of sociodemographic variables (age, sex, level of study, ethnicity, nationality, sexual orientation, financial difficulties) in contextualizing potential differences in risk of poor mental health between international students (EU and overseas) and UK students. Further, there was some evidence of differential effect between EU and overseas students concerning the direction of the

impact of loneliness on the CMDs scores student domicile relationship- suggesting that loneliness may play a different role in relation to CMDs across different student groups. These findings have implications for better informing student mental health support and needs assessment in relation to international student groups, who may be at greater risk of CMDs symptoms, yet are less likely to seek professional help for these issues.

3.2 Background

3.2.1 Rationale

The UK is a popular study abroad destination. Studying abroad is valuable and rewarding for many, but comes with inherent and sudden changes to cultural, social and support structures, financial circumstances and stress levels. Despite this, we know surprisingly little about levels of common mental disorders (CMDs) symptoms and the risks of adverse mental health outcomes in the growing cohort of international students at UK universities. This section briefly outlines what we currently know about the mental health, loneliness and help-seeking behaviour of those from foreign domiciles who study abroad. Highlighting the value and rationale of my study in how it addresses the gaps of existing research in this area.

There are several findings from existing literature in this area which inform my research questions and hypotheses. These are summarised below in relation to how findings from the limited available evidence in each area are incorporated into my hypotheses concerning associations between CMDs and student domicile (incorporating loneliness levels), and help-seeking behaviour for mental health problems.

In Chapter 2.5 and 2.6 I reviewed existing literature on the prevalence of CMDs in different student domicile groups- home and international students. As well as research on loneliness and help-seeking behaviour in international students. I was particularly interested in research that looked at these concepts together, examining CMDs in relation to loneliness and help-seeking for mental health problems in groups of international students. Cross-sectional research pointed to point prevalence rates for CMDs between 30 and 35% for general university student populations, or those living in the same domicile or country as their institution (Hope & Henderson, 2014; Ibrahim et al., 2013; January et al., 2018; Rotenstein et al., 2015; Thorley, 2017) Studies in those

with a foreign or international domicile show higher prevalence rates at around 43% (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Skromanis et al., 2018) and up to 70% in some (Lian & Wallace, 2018). Based on this it would be reasonable to hypothesise that foreign domicile students will have higher CMDs scores than home domicile students.

My literature review findings also showed that loneliness and related negative social exposures are known to impact negatively mental health in the general population (Holt-Lunstad, 2021) and in general university student populations (Callendar et al., 2011, 2020; Richardson et al,, 2017).With available qualitative and quantitative evidence suggesting that those from foreign student domiciles could experience greater exposure to loneliness through the social challenges related to studying abroad (Russell, Rosenthal, & Thomson, 2010; Sawir, Marginson, Deumert, Nyland, & Ramia, 2007; Smith & Khawaja, 2011). Together with wider evidence of higher CMDs prevalence than in general population studies or those in home domicile student groups, it may be reasonable to suggest that greater levels of loneliness may play a mediating role on the causal pathway between foreign or international student domicile and greater levels of CMDs. While mediation analysis techniques are available, even with their usage, this cross-sectional study cannot determine causation or how these associations play over time to rule out reverse causation. This informs the rationale for adjusting for loneliness scores in my analyses between student domicile and CMDs scores, to reflect that loneliness may be associated with higher CMDs, and that specific domicile groups (such as those from foreign domicile) may experience greater levels of loneliness. This incorporates the broad findings of available evidence on CMDs and loneliness (as well as CMDs and student domicile) in non-UK contexts, without moving too far from the main focus of my study. As it should be noted that this is an extension to my main objective of understanding the association between student domicile and CMDs scores, rather than a main focus.

Several findings concerning help-seeking for mental health problems in different population and domicile groups inform my final hypothesis and analyses. My literature review in Chapter 2 (Section 2.6) looked briefly at evidence in several areas or populations. Firstly, evidence help-seeking behaviour in clinical studies show several

important findings. These include lower levels of mental health help-seeking, delays to accessing help, and reluctance to access help until severe functional impairment in those (Doll et al., 2021; Salaheddin & Mason, 2016). Perceived stigma and discrimination are also described as playing a role in poorer access and reluctance to seek help. Secondly, university students and international students have also been found to be reluctant to seek support for emotional and mental health difficulties (Callendar et al., 2011; Macaskill, 2013; Clough et al., 2019; Nguyen, Serik, et al., 2019). Qualitative studies support this, highlighting several barriers to access including perceived discrimination, anticipated stigma, and language barriers (Boafo-Arthur & Boafo-Arthur, 2016; Forbes-Mewett & Sawyer, 2016). There were only two UK studies of which I am aware on potential risk factors for CMDs and help-seeking behaviour. One qualitative ethnographic study noted the role of loneliness, acculturation, and access to support or help in relation to depression (Taylor & Ali, 2017). One mixed-methods study found a negative association between greater loneliness and lower use of support services by international students (Wawera & McCamley, 2019). This provides some initial evidence that students from foreign domiciles in the UK experience difficulties with help-seeking or accessing support services. If we consider this with non-UK evidence of higher CMDs in this group, and evidence of reluctance to seek help in context to higher CMDs in wider populations, there is need to understand help-seeking for mental health problems in foreign domicile students in the UK in context to CMDs. From this evidence, it may be reasonable to hypothesise that foreign domicile students may have lower levels of help-seeking for mental health problems in context to CMDs scores. Further study exploring this may be valuable in informing further UK research to enhance student mental health and wellbeing support for this group.

There are several gaps or limitations to this research which inform the need for my study and several reasons for the approach I took. Having outlined the evidence that informs this study across the areas that define my objectives and hypotheses concerning CMDs and domicile (in context to loneliness), and help-seeking behaviour and domicile (in context to CMDs scores). These limit our understanding CMDs and related factors in students from foreign or international domiciles studying in the UK. These are described below in terms of generalisability of limited available evidence to

UK context, variation in outcome measurement and reporting, and the number or granularity of categories to represent student domicile. As well as conceptual gaps in the available evidence which may study seeks to address.

Evidence from US and Australian studies lacks generalisability in several ways, it is not directly applicable to the UK context, and it may not applicable outside the groups studied such as medical students (Hope & Henderson, 2014; Ibrahim et al., 2013; January et al., 2018; Rotenstein et al., 2015; Thorley, 2017). There may be a risk of selection bias in that information about levels of CMDs in these groups may not generalise to different cohorts of students from multiple courses. Use of different outcome measures, as well as different ways of reporting and calculating prevalence rates limit ease of comparison between studies to build a clear picture of how common CMDs are in students from foreign domiciles (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Lian & Wallace, 2018; Skromanis et al., 2018). These studies also examine domicile in a less granular way by examining international students as a homogenous group. which may mask mental health differences between people from different foreign domiciles, such as those from within the EU, and those from overseas domiciles that are further away. I examine foreign domicile in more granular categories of EU and overseas, to illustrate any differences in mental health outcomes.

The available research from quantitative and qualitative studies has conceptual gaps in terms the lack of studies examining CMDs, loneliness and help-seeking together in terms of student domicile (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Skromanis et al., 2018; Russell et al., 2010; Sawir, et al., 2007; Smith & Khawaja, 2011) . To my knowledge, no UK study has examined these concepts together in terms of describing and understanding associations between domicile groups and levels of CMDs while accounting for related factors. Additionally understanding help-seeking behaviour for mental health problems across domicile groups in relation to levels of CMDs. While there is some UK evidence on CMDs and help-seeking in foreign domicile students in the UK, it is largely qualitative. Together with the lack of UK studies in this group to understand levels of CMDs, this describes a need for quantitative cross-sectional studies which provide evidence of levels of CMDs and help-seeking in this group. This study seeks to address these linked gaps in the available literature with a broad frame

to provide initial cross-sectional evidence of levels of CMDs and help-seeking behaviour for mental health problems among different domicile groups in UK higher education, n relation to loneliness.

If there are poorer outcomes in terms of mental health and help-seeking for mental health problems in students from foreign domiciles studying in the UK, higher education stakeholders may need to create strategies to better understand and address their needs. Such as by providing greater or more tailored support. I conducted a secondary analysis of large-scale data from the SENSE survey data to examine the relationship between student domicile and levels of CMDs in context to loneliness and help-seeking or support for mental health. Although it is limited as the data is from only one university so it might not be generalizable to other UK institutions, it Intended as an initial frame to explore CMDs and related factors in Saudi Arabian domicile international students in the UK. For which the paucity of evidence to inform CMDs risk and support needs is greater.

This initial study consists of secondary analyses which represent the starting point of my PhD, which created the initial frame to begin to explore the main focus of my thesis on Saudi Arabian international students. This is also built into the overarching structure of my inferential analyses in Chapter 4 in which I examine the same measure for CMDs and help-seeking for mental health problems as a basis for broad comparison between these associations in the different domicile groups in my study (discussed in Chapter 7.1.1).

3.2.2 Objectives and hypotheses

Objective 1: Understand whether international university students have greater CMD symptoms compared to UK students. Describe the impact of adjusting for loneliness on the association between university student domicile and CMDs.

Hypothesis 1: There will be evidence for an association between international (overseas and EU) student status, and symptoms of CMDs with those with international student domicile having higher CMDs symptoms compared to UK students. Adjusting for loneliness levels will reduce the magnitude and strength of the association between international (overseas and EU) student domicile and symptoms of CMDs. While

mediation analysis techniques are available, I decided to adjust for loneliness scores in my analysis instead, as my study is cross-sectional and so cannot determine causation or temporality even with these techniques.

Objective 2: Do help-seeking behaviours for mental health problems differ between UK students and international (EU and overseas) students?

Hypothesis 2: International students (EU and overseas) will have lower levels of help-seeking behaviours for mental health problems than UK students.

3.3 Methods

3.3.1 Participants

I used data from the student mental health Survey (SENSE) study - a large-scale survey of University College London (UCL) university students' mental health and well-being. An initial recruitment email was sent to all UCL students over 18 years of age in November 2019; this targeted around 43,000 students. There was also ongoing promotion of the survey by the survey online and through university networks and intranet. In total 3,000 undergraduate and post-graduate students attending UCL in the 2019/20 academic year took part in the survey, (7% of all those invited). Of these, 108 (3.73% of the 3000 who participated) subsequently declined to have registry data linked to their survey and were therefore excluded as this data was needed to match responses to demographic data.

Leaving a sample of 2,892 respondents (6.72% of recruited sample). Analyses were conducted on complete data on all variables of interest related to CMDs, loneliness, help-seeking and sociodemographic variables for 2,027 participants, meaning n=869 of those who participated (29.9%) were excluded due to missing data. Complete cases were analysed. Characteristics for the overall sample from the SENSE study is seen in table 1.

3.3.2 Measures

3.3.2.1 Outcomes

Common mental disorders

Common Mental Disorders (CMDs) were assessed using a composite score derived from two validated self-report screening tools: the Patient Health Questionnaire-9 (PHQ-9) for depression and the Generalized Anxiety Disorder-7 (GAD-7) for anxiety.

The PHQ-9 consists of nine items assessing symptoms of depression over the past two weeks, each rated on a 4-point Likert scale from 0 (Not at all) to 3 (Nearly every day), yielding a total score range of 0 to 27. The GAD-7 includes seven items assessing anxiety symptoms, scored on the same 4-point scale, with a total score range of 0 to 21.

A composite measure, referred to as the PHQ-Anxiety and Depression Scale (PHQ-ADS), was computed by summing total scores from the PHQ-9 and GAD-7. This resulted in a total score range of 0 to 48, with higher scores indicating more severe symptoms of CMDs.

Help-seeking

As the focus of my study was help-seeking for mental health problems, I derived a binary variable from the corresponding single item, to capture those who had indicated no (0) or yes (1) to the response of seeking help from a “mental health professional”. The questions that this data was derived from was where respondents were asked whether they had sought help from a mental health professional while at university. This included other sources under a wider question in the SENSE survey. Respondents selected yes/no from a 15-item list of help-seeking sources in response to the question “Which of the following have you ever sought help from for mental health or an emotional problem since you started university? Please tick all that apply.”. Other responses included an array of formal and informal help-seeking sources such as family, religious leaders, university support services.

3.3.2.2 Exposure: student domicile

Students’ domicile was coded as a categorical variable with three levels representing UK, EU or overseas students. This information was derived from a combination of

pooling responses for UCL linked registry records and survey responses based on student domicile data (i.e. home, EU, overseas). If data on student domicile was missing in UCL registry records or had not been indicated in the main survey, the other corresponding data source was used to glean student domicile. This was achieved by combining these variables. Meaning that those for whom student domicile could not be understood form these two available data sources were excluded.

3.3.2.3 Confounders

Confounders were selected based on hypothesised associations as reported in previous studies. It was necessary to base confounding assumptions concerning sociodemographic characteristics and domicile on available data concerning these characteristics from available enrolment data. As there is limited literature to clearly understand confounding factors for CMDs for UK students from foreign domiciles. Given this paucity of evidence to inform a more concrete picture of confounding factors, I also conducted descriptive analyses and pairwise correlations to understand how sociodemographic characteristics were related to both CMDs as the outcome and student domicile as the exposure.

Studies highlight some associations between certain characteristics and the outcome and exposure that could introduce confounding (Hopcroft & Bradley, 2007; King et al., 2008; Richardson et al., 2017; Shadowden et al., 2019). This includes potential confounding associations where age, ethnicity, financial difficulties, gender, and world region are associated with both mental health outcomes, and domicile. We know that there are differences in mental health outcomes between sexual minority and non-minority groups, age, gender and ethnic groups, as well as differences in CMDs prevalence in people from different regions of the world, and people experiencing different levels of financial difficulties. We also know cohorts of students from different domiciles – particularly home versus international domicile- tend to vary in their distribution of age, ethnic groups, gender, financial difficulties and world region. Of these demographic factors, some may also reasonably be anticipated to be associated with domicile. In that CMDs scores are thought to be unevenly distributed between demographic groups of students in different domiciles. For example, students from

foreign domiciles may be on average older than home domicile students, and the gender distribution of EU or overseas domicile is unlikely to be equal based on available data. The financial circumstances of home domicile and foreign domicile students may be expected to differ based on contextual evidence of different fee costs.

Pairwise correlations were conducted with brief outline findings reported below. These were done to understand how to account for confounding and other influences that participant characteristic demographic data may have on potential associations between CMDs and domicile, and domicile and help-seeking behaviour. This showed several variables were associated with both CMDs and exposure status: sexual orientation, age, financial difficulties and ethnicity. Some variables were only correlated with CMDs score (sex, level of study). These variables may have a mediating or moderating effect on the association between domicile groups and CMDs scores or help-seeking behaviour. The decision to account for these variables by adjusting for them in analysis (specifically, for loneliness) was discussed earlier. As my study cannot tease out causation or temporality, I made the decision to adjust for these variables in my analyses.

Gender was a categorical variable with three levels corresponding to male, female and other. Sexual orientation was coded as a binary variable with two levels (0) heterosexual (1) Lesbian, Gay, Bisexual, Transgender or Questioning, Intersex, or Asexual (LGBTQ+). This was previously coded in the SENSE survey to represent homosexual men, homosexual women, bisexual and other as separate categories where participants were asked “What is your sexual orientation?”- as gender is already represented by another variable, the sexual orientation variable was simplified to comprise two categories: heterosexual/ LGBTQ+.

Financial difficulties were an ordinal variable with five levels corresponding to the level of financial difficulty each respondent stated. This was derived from a question within the SENSE survey which asked respondents “How well would you say you are managing financially these days? Would you say you are…”, with the respondent choosing from a list of options, including: living comfortably, doing alright, just about getting by, finding it quite difficult, or finding it very difficult.

Ethnicity was a nominal categorical variable with five levels representing 1) White or White British, 2) Black African, Black Caribbean or Black British, 3) Asian or Asian British, 4) Mixed or multiple ethnic backgrounds, and 5) other ethnic backgrounds. This information was derived from linked student records, with categories corresponding to Office for National Statistics ethnicity reporting categories.

World region was a nominal variable with five levels representing participant nationality across aggregated groups 1) Europe, 2) Asia, 3) Africa, 4) Mediterranean and Middle East, 5) Americas and Oceania- this was derived from grouping participant responses asking about nationality as a categorical variable with five levels, representing the continent or global region within which the participant's self-identified nationality was reported. It should be noted that a small proportion of those whose student domicile was "home" or UK were non-European in nationality. This may be attributable to the fact that eligibility for home student domicile is also available to a range of people with non-European nationality in certain circumstances. For example, people from UK overseas territories whose nationality may be non-European, those with long residence in the UK, as well as those with asylum seeker or refugee status may have non-European nationality and be eligible for home student domicile, or those with dual nationality whose main residence is in the UK.

Loneliness

Loneliness was measured using the University of California, Los Angeles (UCLA) Loneliness Scale (version 3). This is a three-item scale capturing the frequency of feeling lack of companionship, left out or excluded, and isolated over the previous two weeks. Questions are scored on a 3-point Likert scale (ranging from 'hardly ever or never', "some of the time" and 'often'). Individual questions' scores are added up to derive a continuous score ranging from 0 to 6, with higher scores indicating higher levels of loneliness. This measure has been shown to have high internal reliability (Cronbach's alpha= < .80) (Russell, 1996). Validation studies use the following cut-off scores to indicate the presence or absence of loneliness (Scoring range: 3-5= not lonely; 6-9=lonely; Steptoe et al., 2013).

3.3.3 Data analyses

For power calculations I have used the “power” command in Stata. To understand differences in CMDs between UK and EU fee status groups (Objective 1), power calculations indicated that n= 77 participants allocated to groups at a 2:1 ratio (n=53 for UK; EU n=24) would be sufficient to detect a large effect of 0.7 standard deviations with 80% power and 5% significance. For UK and overseas student comparisons, power calculations indicated that n=322 (UK n=222; overseas n=100) being sufficient to detect a moderate effect of 0.34 standard deviations at 80% power with 5% significance. I conducted further power calculations to detect a difference in the likelihood of having sought help from a mental health professional between UK and EU or overseas fee status groups (Objective 2). This indicated that to detect a moderate difference in proportions (0.3), n=840 (Proportion= 0.6, n=579 for UK; proportion= 0.15, n=261 for comparator groups) would be sufficient across two fee status groups to achieve 80% power with 5% significance.

I explored potential differences between those with no missing data, and the 29.9% (n=865) who were excluded due to having missing data on either outcome or exposure variables or sociodemographic characteristics.

To understand whether those who had missing data differed from those who had provided complete data, I examined whether there were differences in average age, CMDs and loneliness scores between those with complete cases, and those with missing data. I used frequencies and proportions to examine differences in sociodemographic characteristics and help-seeking.

I created a binary variable to categorise those with complete cases (0) and those with missing data (1). I then ran t-tests to understand whether means of continuous variables (CMDs, loneliness, age) differed between the two groups. Findings from these analyses are presented in appendix ‘7’ in the form of Stata outputs.

Stata 16 was used to conduct the analyses (Stata Corp, 2019).

I described sample socio-demographic characteristics overall as well as the distribution of confounders by level of exposure using frequency with proportions and means.

To investigate whether there are differences in CMDs scores between UK national and international students I first ran a univariable linear regression followed by two multivariable linear regression models. The first multivariable model was adjusted for sociodemographic variables (age, ethnicity, gender, sexual orientation, CMDs, world region, financial difficulties and level of study). The second model was additionally adjusted for loneliness (research question 1b).

To investigate whether help-seeking behaviours differed between UK national and international students, I ran a univariable logistic regression model followed by three multivariable models progressively adjusting for model 1: sociodemographic characteristics; model 2: CMDs, and model 3: loneliness.

3.4 Results

3.4.1 Sample characteristics

Figure 3 shows a flow chart of study participation/ the number of those with complete data on all variables included in analyses.

After survey distribution, n=3,000 took part in completing the survey and providing consent. At this stage, n= 108 (3.73%) were excluded as they had not consented to linkage of their registry data. After which, n=865 (29.9%) were excluded due to missing data on any variable relevant to the main analysis (missing data on exposure, outcome, confounding or sociodemographic variables). The final sample for this study consisted of n=2,027 participants consisting of 67.56% of the initial 3,000 who had completed the survey.

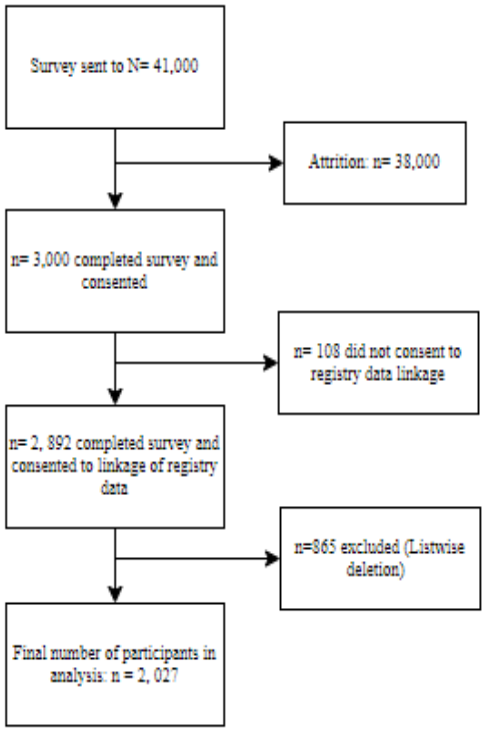


Figure 3. Flowchart showing SENSE study recruitment and participation.

The average age of participants was 24.9 years (SD= 7.33, range=18 to 71). More than two-thirds of participants were female (73.11%; n= 1,482). Just under 80% of participants identified as heterosexual (79.92%; n= 1,620). Just under two-thirds of the

sample identified as being from a White or White-British background (63.35%; n=1,284), with the second largest ethnic background reported being Asian or Asian British (22.2%; n= 450). Under ten percent respondents identified as being from Mixed or Multiple (7.5%; n=152), ‘other’ (4.29%; n=87) or Black, African, Caribbean or Black British ethnic backgrounds (2.66%; n=54).

Just under half of respondents were enrolled in undergraduate courses (47.41%; n= 961), with under one-third being enrolled in postgraduate taught (29.75%; n= 603) and under a quarter enrolled on postgraduate research courses (22.84%; n=463). Under half of respondents reported minimal or low level of financial difficulties (42.67%; n= 865). One quarter were ‘living comfortably’ or having no financial difficulties (25.75%; n=522). With under a third reporting a moderate to severe level of financial difficulty (31.57%; n=640). The sociodemographic characteristics of the final sample are described in further detail in table 1.

Table 1. sociodemographic characteristics for the overall sample from the SENSE study.

Sociodemographic variables	n(%)	Mean(SD)
Age		
Overall		24.9 (7.33)
18-24	1,304 (64.33)	
25-34	556 (27.43)	
35-44	100 (4.93)	
45-54	43 (2.12)	
55-64	19 (0.94)	
65 and over	5 (0.25)	
Ethnicity		
White	1,284 (63.34	
Black	54 (2.66)	
Asian	450 (22.2)	
Mixed	152 (7.5)	
Other	87 (4.29)	
Financial difficulties		
None	671 (25.54)	
Minimal	1,125 (42.82)	
Moderate - severe	831 (31.63)	
Level of study		
UGR	961 (47.41)	
PGT	603 (29.75)	
PGR	463 (22.84)	
Loneliness		
Not Lonely	861 (42.48)	
Lonely	1,166 (57.52)	
Gender		
Male	543 (26.79)	
Female	1,482 (73.11)	
Other	2 (0.1)	
Sexual orientation		
Heterosexual	1,620 (79.92)	
LGBTQ+	407 (20.08)	
World region		
Europe	1,522 (75.09)	
Asia	282 (13.91)	
Africa	16 (0.79)	
Mediterranean, middle east	39 (1.92)	
Americas and Oceania	168 (8.29)	

3.4.2 Exposure status: student domicile: Home, EU and overseas students

UK or home student domicile students (n=1,081; 53.33%) made up the largest group in this sample, followed by overseas students (n=504; 24.86%); the smallest group was EU students (n=442; 21.80%).

Most students UK (71.90%) and EU (91.40%) students identified as having a white ethnic background- this proportion was far lower in the overseas group, where only 20.20% of respondents identified as white. The majority of overseas (57.62%) students identified as having an Asian ethnic background- the overseas group had higher proportions of students from black (3.96%), mixed (9.11%), and other (9.11%) backgrounds than did the EU and UK student domicile.

Most UK (79.30%), EU (75.11%) and overseas (85.54%) students identified as heterosexual- the proportion of respondents identifying as LGBTQ+ was lower in all student domiciles, though a higher proportion of EU students identified as LGBTQ+ (24.89%) than for UK students (20.70%)- with the lowest proportion in the overseas group (14.46%). The EU student domicile had the highest proportion of undergraduate students (51.58%) followed by the UK (49.17%) and overseas groups (40.2%). Overseas group had the highest proportion of postgraduate taught students (39.6%) and the lowest proportion of postgraduate research students (20.2%). A similar proportion of those in the UK and EU group were postgraduate research students (23.57 and 23.98%, respectively).

The distribution of gender and financial difficulties did not differ between UK, EU and overseas domiciles.

3.4.3 Levels of loneliness among student domicile groups

The mean loneliness score was 5.76 (SD=1.89, n=2,027) for the overall sample. UK students had the highest mean loneliness score (mean= 5.81; SD= 1.91, n= 1,081) followed by overseas students (mean=5.75; SD= 1.82, n= 504). EU students had the lowest mean loneliness scores (mean= 5.68, SD= 1.89; n= 442). All student domicile groups had a higher proportion of lonely students compared those identified as not lonely based on cut-offs (Not Lonely=3-5; Lonely= 6-9). The proportion of students

scoring above the cut-off indicating loneliness was highest for overseas student (59.72%) followed by UK (57.54%) and EU (54.98%) students. Notably, over half of students in UK, EU and overseas domicile were identified as lonely. It should also be noted that when presented as proportional data, overseas had the highest proportion of lonely individuals (2.18 percentage points higher than UK). While this difference could have occurred as a result of chance, it may be that there is a different distribution of scores across domicile groups.

Table 2. Distribution of sociodemographic and confounding variables by levels of the exposure variables fee status.

Outcome	Sample (n=2,027)	Exposure UK (n=1,081)	EU (n=442)	Overseas (n=504)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Loneliness (Total score)	5.76 (1.89)	5.81 (1.91)	5.68 (1.89)	5.75 (1.82)
UCLA Loneliness scale score	**n(%)**	**n(%)**	**n(%)**	**n(%)**
3-5 (Not lonely)	861 (42.48)	459 (42.46)	199 (45.02)	203 (40.28)
6-9 (Lonely)	1,166 (57.52)	622 (57.54)	243 (54.98)	301 (59.72)

3.4.4 CMDs, domicile group and help-seeking

Table 3 describes frequencies, proportions, means and standard deviations of the outcome variables by the exposure variable.

The mean CMDs score for the sample overall was 17.56 (SD 11.60; range= 0-48). Mean CMD scores were similar across student domicile. The difference between the domicile groups with the highest and lowest average CMDs scores was 0.71. UK students had the highest mean score for CMDs (mean=17.80; SD= 11.86), followed by Overseas students (mean=17.46, SD= 11.29), with EU students demonstrating the lowest mean CMDs score (mean= 17.09, SD= 11.32).

A total of 574 students (28.32%) or under one-third reported having sought help from a mental health professional at university; over two-thirds (71.68%; n=1,453) reported not having sought help. A greater proportion of UK (32.17%) and EU (29.19%) students had sought help from a mental health professional compared to overseas students (21.32%).

Table 3. Frequencies, proportions, means and standard deviations of each student domicile for each outcome variable.

	Exposure			
Outcome	**Sample (n=2,027)**	**UK (n=1,081)**	**EU (n=442)**	**Overseas (n=504)**
	n(%)	**n(%)**	**n(%)**	**n(%)**
Help-seeking MH professional				
Yes	574 (28.32)	338 (31.27)	129 (29.19)	107 (21.23)
No	1,453 (71.68)	743 (68.73)	313 (70.81)	397 (78.77)
CMDs severity (ordinal)				
Min (≤9)	600 (29.60)	315 (29.14)	131 (29.64)	154 (30.56)
Mild (10-19)	641 (31.62)	340 (31.45)	144 (32.58)	157 (31.15)
Moderate (20-29)	428 (21.11)`	225 (20.81)`	97 (21.95)	106 (21.03)
Severe (≥30)	358 (17.67)	201 (18.59)	70 (15.84)	87 (17.26)
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
CMDs (total score)	17.56 (11.60)	17.80 (11.86)	17.09 (11.32)	17.46 (11.29)

3.4.5 Main analysis: Cross-sectional associations between CMDs and student domicile

Regression analyses examined average mean differences in CMDs scores across the exposure variable student domicile. UK domicile was the reference category, reflecting the following pattern of comparisons across domicile: EU compared to UK and overseas compared to UK.

In the unadjusted model there was no evidence of a difference in CMD scores between EU (Mean difference [MD] -0.70 95% confidence interval [CI]= -1.99 to 0.57, p=0.282) and UK domicile, and between overseas (mean difference -0.34, 95% CI= -1.56 to 0.88, p=0.586) and UK domicile.

Results remained unchanged after adjusting for sociodemographic variables (EU: MD= -0.59, 95% CI= -1.81 to 0.61, p=0.336; Overseas: MD= 0.97, 95% CI= -1.31 to 3.26, p=0.406).

Adjusting for loneliness as a potential mediator reflected no change in the evidence for an association in either overseas (MD= 1.27, 95% CI= -0.75 to 3.30, p=0.218) or EU compared to UK domicile (MD= - 0.32, 95% CI= -1.40 to 0.75, p=0.551). Though there were some changes in model parameters after adjustment, with mean difference increasing in the case of overseas and EU domicile compared to UK (0.30 increase).
Regression analyses examined average mean differences in CMDs scores across the exposure variable student domicile. UK domicile was the reference category, reflecting the following pattern of comparisons across domicile: EU compared to UK and overseas compared to UK.

Table 4. Results of unadjusted and adjusted multiple linear regression models for the association between fee status groups and levels of CMDs.

	CMDs score								
	a: Model 1			b: Model 2			c: Model 3		
Exposure	Mean difference	95%CI	p value	Mean difference	95%CI	p value	Mean difference	95%CI	p value
UK (Reference)									
EU	-0.70	-1.99 to 0.57	0.282	-0.59	-1.81 to 0.61	0.336	-0.32	-1.40 to 0.75	0.551
Overseas	-0.34	-1.56 to 0.88	0.586	0.97	-1.31 to 3.26	0.406	1.27	-0.75 to 3.30	0.218

Legend.

a: Model 1 Univariable linear regression model of CMDs scores by fee status (UK, EU, Overseas).

b: Model 2 Multivariable linear regression model of CMDs scores by fee status (UK, EU, Overseas), adjusting for ethnicity, world region, age, sex, sexual orientation, financial difficulties and level of study as confounders.

c: Model 3 Multivariable linear regression model of CMDs scores by fee status (UK, EU, Overseas), adjusting for all variables in model 2 (sociodemographic variables) and loneliness as confounders.

3.4.6 Cross-sectional associations between help-seeking and student domicile

The unadjusted model showed evidence of lower odds of help-seeking in overseas compared to UK domicile (Odds Ratio [OR]= 0.59, 95% CI= 0.46 to 0.76, p<0.001). There was no evidence that odds of help-seeking differed in EU compared UK domicile (OR= 0.90, 95% CI= 0.71 to 1.15, p=0.424).

Lower odds of help-seeking in overseas compared to UK domicile remained after adjustment for sociodemographic variables (Adjusted OR= 0.62, 95% CI= 0.43 to 0.89, p=0.01). The lack of evidence of a difference in EU compared to UK domicile seeking help odds persisted after adjustment (AOR= 0.87, 95%CI= 0.68 to 1.13, p=0.316).

Further analyses adjust for loneliness and CMDs given that these may be on the causal pathway between domicile group and help-seeking from a MHP. The basis for this is discussed in section 3.1.1, with implications and acknowledgement of the potential causal pathway outlined in section 3.4.3.

Adjusting for CMDs as a potential mediator, the odds of help-seeking remained unchanged for both EU and overseas compared to UK domicile. With evidence for lower odds in overseas compared to UK domicile persisting (Overseas: AOR= 0.62, 95% CI= 0.43 to 0.89, p=0.01; EU: AOR= 0.88, 95% CI= 0.68 to 1.13, p=0.332).

Adjusting for loneliness as a potential mediator reflected marginally lower odds in overseas compared to UK domicile (AOR= 0.66, 95% CI= 0.45 to 0.95, p= 0.027; -0.04 difference), although the strength of the association attenuated to significance at a less conservative threshold (p<0.05 as opposed to p<0.001 and p<0.01 in previous adjusted models). Odds of help-seeking in EU compared to UK domicile remained largely unchanged (AOR= 0.89, 95%CI= 0.69 to 1.16, p=0.420), continuing to reflect no evidence for an association, as was the case in previous unadjusted and partially adjusted models.

Below, I reflect on the change in parameters across regression models for overseas compared to UK domicile, as there was no statistical evidence that EU help-seeking odds differed from UK domicile.

For overseas compared to UK domicile, the bounds for confidence intervals reflected lower odds (upper and lower bounds below 1.00) in unadjusted and adjusted models. Successive adjustment for sociodemographic confounding and CMDs as a potential mediator increased the upper bound to 0.95 which would reflect only marginally lower odds of help-seeking in this group. Though the change in adjusted odds ratios across unadjusted, partially and fully adjusted models reflected those from overseas domicile as being from half as likely in the unadjusted model (to over a third less likely as UK domicile students from seeking help from a MHP.

Table 5. Results of four binary logistic regression models with help-seeking from a mental health professional as the outcome variable, and fee status as the exposure initially.

	Help-seeking from a mental health professional											
	a: Model 1			b: Model 2			c: Model 3			d: Model 4		
Exposure	Odds Ratio	95%CI	p value	Adjusted OR	95%CI	p value	AOR	95%CI	p value	AOR	95%CI	p value
UK (Reference)												
EU	0.90	0.71 to 1.15	0.424	0.88	0.68 to 1.13	0.332	0.89	0.68 to 1.15	0.390	0.89	0.69 to 1.16	0.420
Overseas	0.59	0.46 to 0.75	0.001	0.62	0.43 to 0.89	0.011	0.66	0.45 to 0.95	0.027	0.66	0.45 to 0.95	0.027

Legend.

Unadjusted and adjusted odds ratios, 95% confidence intervals and significance levels are reported for each estimate.

a: Model 1 Univariate binary logistic regression model of help-seeking tendencies by fee status (UK, EU, Overseas).

b: Model 2 Multivariable binary logistic regression model of help-seeking tendencies by fee status, adjusting for ethnicity, world region, age, sexual orientation, sex, financial difficulties and level of study as confounders.

c: Model 3 Multivariable binary logistic regression model of help-seeking tendencies by fee status, adjusting for sociodemographic variables (age, sex, level of study, ethnicity, nationality, sexual orientation, financial difficulties) adjusted for variables in Model 2 and CMDs.

d: Model 4 Multivariable binary logistic regression model of help-seeking tendencies by fee status, adjusting for sociodemographic variables, CMDs and loneliness.

3.5 Discussion

3.5.1 Summary of findings

This study investigated whether there are cross-sectional differences in symptoms of depression and anxiety between UK, EU and overseas students in a sample of UCL students. The study also investigated whether there are differences in help-seeking from mental health professionals across these three groups. To the author's knowledge, this is the first UK based study to investigate difference in both CMDs and help-seeking behaviour for mental health in a large cohort of students from UK and international domiciles.

In contradiction to my hypothesis that overseas students would have higher levels of CMD (hypothesis 1), there was no statistical evidence that overseas or EU domicile was associated with levels of CMDs. For overseas domicile the direction of the regression coefficient changed to reflect higher CMDs after adjusting for sociodemographic variables. Though there was no evidence of an association, random variation or insufficient statistical power may underlie this. It may also be stated that the confidence interval bounds were relatively broad, with fully adjusted model results being comparable with a difference of up to around 0.3 points in the CMDs score. Therefore, it is possible that my analysis could have missed a difference of that size. However, this indication aligns with more recent studies that emphasize within-group variability among international students and caution against treating "international status" as a uniform risk factor (Smith & Khawaja, 2011; Montgomery & McDowell, 2009). This suggests that domicile alone is an insufficient proxy for mental health vulnerability and that risk profiles should be examined through a multidimensional lens that incorporates both structural and personal experiences. These findings highlight the importance of moving beyond categorical assumptions and adopting a nuanced understanding of mental health risk among international students.

The final adjusted model was similar in reflecting no statistical evidence for loneliness as a possible mediator for both EU and overseas compared to UK domicile. Adjusting for loneliness showed a 0.30 increase in the coefficient representing the average mean difference between overseas and UK domicile, reflecting a larger (albeit nonsignificant) mean difference after adjustment. CMDs scores of those in EU compared to UK domicile reflected a smaller difference (from -0.59 to -0.32) after adjustment. This aligns with previous work that warns against oversimplifying the relationship between international status and psychological outcomes (Smith & Khawaja, 2011), and instead encourages exploration of broader ecological and personal factors such as coping style, cultural fit, and institutional support (Yoon & Portman, 2004). Additionally, the absence of a significant mediation effect is consistent with findings that international student mental health outcomes are highly heterogeneous, shaped not solely by structural categories like domicile, but by intersectional factors such as socioeconomic background, social support, and academic self-efficacy (Forbes-Mewett & Sawyer, 2016; Zhang & Goodson, 2011).However, these findings could be due to random variation or other factors, as associations were nonsignificant.

In keeping with hypothesis three, differences in help-seeking from a specific source (mental health professionals) for emotional, wellbeing and mental health problems were identified between student groups. I anticipated lower odds of seeking help in those from overseas domicile based on previous literature outlined in section 3.1.1, which shows poorer access to mental health support and reluctance to access support in international students. In my study, those from overseas domicile were on average less likely to seek help from mental health professionals compared to UK students even after controlling for differences in sociodemographic characteristics, CMDs and loneliness scores between the groups. This was reflected in the adjusted odds ratio and proportion having sought help in the overseas students (0.69; 21.23%). A higher proportion of UK students sought help (31.27%). In contrast to hypothesis three, there was no evidence that lower estimates of help-seeking from a mental health professional identified for EU students differed significantly from that of UK students. This result stands in contrast to literature suggesting that international or non-domestic students may underutilise formal mental health services due to cultural stigma, lack of familiarity with host country

healthcare systems, or perceived inaccessibility (Hyun et al., 2007; Eisenberg et al., 2009).

3.5.2 Strengths and limitations

Strengths

One of the strengths of this study is the wide range of confounding variables adjusted for, in that the SENSE study collected data on a wide range of sociodemographic and other variables that have relevance to CMDs, loneliness and help-seeking in the literature (Forbes-Mewett & Sawyer, 2016; Lian & Wallace, 2018; Nguyen, Serik et al.,2019; Redfern, 2016; Skromanis et al., 2018). Few if any studies in the available literature control for such a wide range of sociodemographic variables. A further strength is the use of a composite measure of CMDs instead of measuring depression and anxiety separately. This more closely reflects the way in which these conditions co-occur in real-world settings, as mentioned in chapter 2 in relation to the co-occurrence of anxiety and depression symptoms in sub-clinical populations.

Several limitations to this study should be noted when interpreting its findings. One issue was with the sample being from one university wich is UCL and that might differ from other universities so can't be generalized.

Also, while statistical power was sufficient, the ratio of international students and EU to home students was unequal. However, this is expected to some extent, as it is unlikely that single-institution studies would feasibly be able to recruit equal proportions of home and international students; given higher enrolment rates of home versus international students. A proportion of the original sample (around 29%) had a high proportion missing data on key variables and were excluded. This may limit representativeness of the sample and conclusions that may be drawn from this study.

limitations

It is also important to consider limitations to my findings which relate to probability and causation. Specifically, it may be that results where there was no evidence to support hypotheses were due to random chance or type 2 error, which is incorrectly accepting the null hypothesis. There are several further comments to make in relation to chance

findings. To mitigate this issue, this relatively small cross-section would need to be replicated in context to the larger picture at a national or multi-institutional level. Suggestions for further study might include linking or joining up in coordinated efforts between universities, to survey a large number of students over time, as longitudinal data may reveal a more complex picture in relation to CMDs, loneliness and help-seeking tendencies between student groups.

While not the central focus of my study I did consider loneliness and its possible place in the causal pathway between CMDs scores and domicile group. I did not undertake formal mediation analysis as the limited added benefits of this in clarifying the potential causal pathway did not justify mediation analysis (given cross-sectional study design). Although I did adjust for loneliness in my analysis and described loneliness levels of the sample overall and between domicile groups. I adjusted for loneliness to acknowledge previous research that international students may be more at risk of loneliness and forms of social isolation (Crockett et al., 2007; Sawir et al., 2008; Taylor & Ali, 2017). This suggests the importance of a brief outline of loneliness levels and comparison with previous research, given that this may be useful for informing further research in this area. My findings are similar to Jones, Lodder and Papadopoulos (2019) who found that home students had slightly higher or comparable (mean difference= 0.05) mean loneliness levels than international students. However, it is important to consider the issue of reverse causation when considering assumptions about the order of variables or direction of the causal pathway. While no causal claims are made, the background to my study carries an implicit assumption that international student experiences and adjustments in the UK contribute to loneliness, which may in turn increase CMDs symptoms. However, It may be that worsening CMDs symptoms lead to greater self-impose isolation, rather than feeling isolated as part of loneliness. This is important for future research to consider, due to different possible indications for intervention timing and support. Such a relationship could also involve or change the nature of help-seeking behaviour. While I make no causal claims, future research might address this longitudinally or provide a foundation to do so thorough understanding experience through qualitative research. Such causal effects may not be mutually exclusive, such

as if there were a complex pattern of bidirectional causal relationships spanning CMDs and loneliness.

The potential for selection bias in this sample cannot be excluded. As it is likely that mental health status and severity of CMDs may differentially affect home and international students' willingness or ability to participate in research. The low response rate (around 3%) for the survey also means selection bias was more likely, as a large proportion did not take part. This under-representation or selection bias may be related to several factors in this case for international students. English language proficiency may influence who may be more or less likely to participate in such research among international students. A potential explanation for lower or similar levels of CMDs could be that recruitment and selection may under-represent international students with a higher risk of CMDs, or those who experience language barriers. This introduces the possibility of selection bias. Which may mean my findings may only generalise to the sub-set of international students who took part in my study, such as those with sufficient English language proficiency being more likely to take part. As mentioned above in relation to mental health status also. The drawback or limitation to my findings is that if another sample were drawn, or the research conducted with the non-selected groups, it may change the findings. This is a possible threat to the reliability of my findings. While I am aware that there are methods to address the problem of missing data, the large proportion of missing data meant such methods would be unlikely to increase the reliability of my findings.

Future studies should aim to address the influence of selection bias by recruiting representative samples where feasible or by using analytical techniques to understand the influence of selection bias. At the point at which a sufficient volume of studies become available, secondary research using sensitivity analysis could clarify the impact of recruitment and selection upon comparative levels of CMDs between student groups.

3.5.3 Meaning of findings

The findings of this study challenge commonly held assumptions about international students' mental health by showing no statistically significant differences in depression and anxiety symptoms between UK, EU, and overseas students. While the hypothesis

predicted higher levels of CMDs among international students, the data suggest that domicile alone is not a reliable indicator of psychological vulnerability. This supports a growing body of literature that cautions against essentializing international student experiences and instead advocates for more nuanced, intersectional approaches that consider cultural, structural, and individual factors. Although loneliness did not emerge as a significant mediator, its influence on the CMD score albeit nonsignificant further suggests that social connection remains a relevant variable worth exploring in future research. Importantly, the study did find that overseas students were significantly less likely to seek help from mental health professionals, even after controlling for mental health symptoms and other covariates. This highlights an ongoing disparity in help-seeking behaviour, potentially rooted in cultural stigma, unfamiliarity with the UK healthcare system, or barriers in access. Therefore, while international status may not uniformly predict mental distress, it may still reflect a meaningful barrier to mental health service utilization pointing to the need for targeted outreach, culturally sensitive services, and better integration of international students into campus wellbeing structures.

3.5.3 Implications

The previous evidence points to prevalence rates between 30 and 35% in home domicile students (Hope & Henderson, 2014; Ibrahim et al., 2013; January et al., 2018; Rotenstein et al., 2015; Thorley, 2017) and around 43% for international students (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Skromanis et al., 2018) though some reflect rates of up to 70% (Lian & Wallace, 2018). In my study, I anticipated that higher prevalence of previous studies might be reflected in higher average CMDs scores in international compared to home domicile students. Higher prevalence of CMDs for those from international domicile in previous non-UK research was not reflected in my study as there was no statistical evidence of a difference between domicile groups.

Descriptive findings from my study show that, according to cut-offs, UK domicile had the highest proportion of students with severe CMDs (18.50%) followed by overseas (17.26%). EU domicile had the lowest proportion with severe CMDs (15.84%) (Kroenke et al., 2017). These findings are similar to a UK study by Jones, Lodder and

Papadopoulos (2019) which found that home students had worse general mental health than international students. Average and median CMDs scores for the overall sample, and for different domicile groups, were between 17 and 19, which is the upper range of a mild to moderate level of anxiety and depression according to cut-offs reported in the literature (Kroenke et al., 2017). Mean CMDs scores did not suggest a large or clinically meaningful difference in the average levels of CMDs between domicile groups. It is plausible that if the level of CMDs were measured in this cohort at a different point in time, it might reflect differently. My findings around CMD scores highlight a need for longitudinal data to make more robust comparisons in levels of CMDs and mental health needs between students from different domicile groups.

The healthy migrant effect is a theoretical explanation for evidence of comparatively poorer outcomes in non-migrants. Here I will outline what this may mean in terms of student domicile. The healthy migrant effect refers to the tendency for individuals who migrate whether for work, study, or resettlement to be healthier than the average population in both their home and host countries. This is often due to self-selection, where individuals who are physically and psychologically healthier are more likely to migrate, as well as selection by governments or institutions that prioritize high-achieving, resilient individuals (Kennedy et al., 2014). There has been evidence that some migrant populations, such as those who migrate for higher education, have better health outcomes such as lower rates of poor mental health. One of the potential explanations is that this may reflect the greater economic and social resources necessary to move and thrive in another country, such as undertaking higher education in a foreign country. It is important to consider the healthy migrant effect in context to my findings. While non-significant, compared to UK domicile, those from EU domicile had marginally lower CMDs scores, with marginally higher CMDs in the overseas domicile.

It should also be noted that previous studies have defined international students as one cohort, rather than as overseas and EU students as in this study. Initial analyses to explore this possibility, defining international students as one group, showed a slightly larger marginal difference with UK students having higher levels of CMDs. This is unlikely to explain the difference in findings.

Alongside an urgent need to better understand how to best facilitate access to mental health support for groups who may have unmet needs in having a higher level of CMDs symptoms and poor access to support. This highlights the value of further study involving UK international student groups exploring barriers to help-seeking, and the reasons underlying low levels of help-seeking in context to CMDs, loneliness.

Finally, this study found that overseas students were less likely than UK students to have sought help from a mental health professional whilst at university, even after controlling for the influence of sociodemographic variables, CMDs and loneliness. This mirrors previous studies which point to lower levels of help-seeking, particularly for mental health problems, among international student cohorts (Boafo-Arthur & Boafo-Arthur, 2016; Clough et al., 2019; Forbes-Mewett & Sawyer, 2016; Nguyen, Serik, et al., 2019; Skromanis et al., 2019). This finding is particularly concerning given that the level of CMDs overall was only slightly lower than for UK students. This suggests a high level of mental health challenges in relation to potentially low levels of help-seeking in students overall, with overseas students being just over one-third less likely to have sought help from a mental health professional while at university. Further research is needed to understand and address the barriers that international students face in seeking help for such issues.

Another implication of my findings in this section (was looked at some of those questions further at in my qualitative section) includes asking how to increase the use or access of support services to appropriate levels in international students. Examining barriers to university support services, acceptability and qualitative perspectives to provide a foundation for informing future support. Such as considering the relative importance of potential solutions including improving whether information provision, mental health literacy or enhancing student knowledge of CMDs and accessing support through education.

In addition, longitudinal research will be of crucial importance in understanding how international students experience CMDs before, during and after their time at UK universities. This is important for understanding the possible scale of any crisis in university student mental health in the UK in several respects. Longitudinal study could

clarify the long-term population health, economic and individual impacts of untreated CMDs during study abroad. As well as whether CMDs, loneliness and reluctance to seek help are related to international study exposures (e.g. language barriers) or experience, a key question will be whether CMDs symptoms and severity exist or change prior to study, and after.

3.5.4 Conclusion

This study explored cross-sectional associations between student domicile CMDs, help-seeking and loneliness, showing lower CMDs scores for EU and overseas students compared to UK students. Although lower levels of CMDs international students contrast previous literature, there was no evidence that these associations differed significantly. While controlling for loneliness and sociodemographic variables showed higher levels of CMDs in overseas students, this was also non-significant. Meaning further study is needed to clarify associations between CMDs and student status in context to loneliness. After controlling for sociodemographic variables, loneliness and CMDs, overseas students were 35% less likely to seek help from a mental health professional than UK students. As average levels CMDs were only marginally lower than UK students overall, this is concerning in suggesting a mild to moderate level of mental health difficulties where overseas students may struggle to access appropriate support.

However, these findings should be interpreted cautiously due to attrition and missing data, potential selection bias, and that this was a single institution study. This highlights a need for longitudinal study to further understand associations between mental health, loneliness and help-seeking in both international and home students.

These findings highlight the importance of further policy making and investment towards enhancing student mental health and well-being support services, particularly for potentially at-risk groups. In which home, and particularly international students, may need more support for CMDs, loneliness and being able to seek help for mental health and wellbeing problems.

Chapter 4: Quantitative associations between levels of CMDs, loneliness and help-seeking behaviour in Saudi Arabian UK international students

4.1 Summary

In this chapter, I investigate whether higher levels of CMDs are associated with higher levels of loneliness within this group (**Objective 3)**. I also conduct exploratory analyses to understand whether there are cross-sectional differences in the likelihood of having sought help from a mental health professional within the sample (**Objective 4a)**. Finally, I conduct a descriptive analysis of help-seeking behaviour sources, perceived usefulness of sources, and barriers to university support services (**Objective 4b**). To address these objectives, I present analyses of cross-sectional survey data gathered from n= 137 Saudi Arabian international students studying in the UK.

Multivariable linear regression models adjusting for sociodemographic variables showed support for Hypothesis 3 in that every unit increase in loneliness scores was associated with on average 2.08 points higher CMDs scores (95% CI= 1.31 to 2.84, p<0.0001). Analyses using loneliness severity categories with minimal loneliness as the reference category showed those with moderate loneliness had on average 3.38 points higher CMDs scores (95% CI= 0.25 to 6.50), and those with severe loneliness had on average 7.66 points higher CMDs scores (95% CI= 4.19 to 11.13).

Multivariable logistic regression models adjusting for sociodemographic variables and loneliness showed no support for Hypothesis 4a, as there were equivalent odds of help-seeking with every unit increase in CMDs score (aOR=1.01, 95%CI= 0.96 to 1.07, p=0.533). Additional analyses showed lower odds of having sought help-from a mental health professional in those with severe compared to those with minimal loneliness before and after adjustment for sociodemographic and CMDs scores (aOR= 0.19 95% CI=0.05 to 0.66, p=0.009).

Descriptive analyses showed that over one-third to just over half of the sample reported having sought help from either of the formal support sources (MHP: 37.23% 95%CI= 0.29-0.45); GP: 41.62%, 95%CI= 0.33-0.50; University support staff: 51.82%, 95%CI=

0.39-0.56). Informal sources of support were more commonly used than not, with between over-two thirds reporting help from either their family or peers while in the UK (Family: 72.99%, 95%CI= 0.64-0.80; Peers: 65.39%, 95%CI=0.57-0.73). There was a high level of perceived usefulness of the range of formal and informal sources, with almost no respondents indicating that services were not useful (2.91% across all sources). The most commonly reported barriers to university support services were lack of time (45.99%, 95%CI=0.37-0.54) and the perception that no one will understand the problem (45.26%, 95%CI=0.36-0.53), whereas lack of service availability was least common (14.60%, 95%CI=0.09-0.21). Around one-quarter of the sample reported not having used university support services due to either perceived stigma (24.09%, 95%CI= 0.17-0.34), fear of unwanted documentation on their academic record (25.55%; 95%CI=0.18-0.33), or fear of unwanted intervention (28.47%; 95%CI=0.21-0.36).

Findings highlight the need for more comprehensive support for specific groups of international students such as SA students. Policymakers should prioritise addressing stigma, language barriers and individual knowledge of mental health as access barriers for this group. My findings have broad implications across several potential areas of support, including enhancing screening and identification of mental health and wellbeing problems, as well as increasing access to social support to alleviate high levels of loneliness and social isolation in SA international students. This is of crucial importance given that loneliness was related to greater CMDs and greater reluctance to seek help from mental health professional sources.

4.2 Background

4.2.1 Rationale

My literature review in Chapter 2 identified several gaps in existing evidence which form the basis for this study, as well as underpinning my objectives and hypotheses described in section 4.2.2. The following sub-section outlines the rationale in context to literature review findings for each area of my objectives.

For Objective 3 concerning whether higher levels of CMDs are associated with higher levels of loneliness, my literature review found that CMDs, loneliness and reluctance to seek help for mental health issues are widely reported in literature concerning general and university student populations (Callender et al., updated 2021; Macaskill, 2013; Mitchell et al., 2017; Salaheddin & Mason, 2016). In general populations, CMDs and loneliness have been found to be strongly associated with one another: symptoms of CMDs may both contribute to loneliness levels and social isolation, and they may arise as a result of loneliness (Kraav et al., 2021; Gulhane et al., 2008). While these factors have been examined in international students in relation to quantitative and qualitative US and Australian cross-sectional research (Chen et al., 2020; Clough et al., 2019; Nguyen, Serik, et al., 2019; Russell et al., 2010; Sawir et al., 2011; Qin, 2019), they have been examined separately. Such as in studies which examine only loneliness or acculturation difficulties, rather than examining these issues collectively in relation to wider behaviour such as mental health or help-seeking behaviour. Another drawback is that some studies examine wider aspects of international study or indirectly related concepts such as language difficulties, social support, help-seeking, mental health difficulties and stigma. With no study examining links between all three areas including CMDs, loneliness and help-seeking in SA international students, we know little about the factors related to poorer mental health and wellbeing in this group. My study seeks to address this gap by examining the association between CMDs and loneliness in SA international students.

For objectives 4a and 4b I planned to investigate whether higher levels of CMDs are associated with higher levels of loneliness and describe the frequency of help-seeking sources, usefulness and barriers. My literature review highlighted quantitative and

qualitative cross-sectional evidence of reluctance to seek help for mental health issues. Including poorer mental health outcomes in relation to reluctance to seek help and a range of barriers to help-seeking for CMDs in international student populations (Boafo-Arthur & Boafo-Arthur, 2016; Clough et al., 2019; de Mojssac et al., 2020; Nguyen et al., 2019a; Nguyen, Le & Meirmanov, 2019). But this research largely examines the social and cultural reasons for reluctance to seek support, and there is some evidence of association between mental health outcomes and how likely a person is to seek help. More recent work in Western higher education has examined the intersection between help-seeking for CMDs, CMDs symptoms and the role of social and cultural factors such as loneliness and cultural factors (Office for Students, 2023; Sakiz & Jencius, 2024). This has highlighted a range of barriers to university and mental health support services, vulnerable groups and possible policy or service development to address this. But this existing evidence does not tell us whether levels of reluctance to seek help and barriers to help-seeking for CMDs are consistent across cohorts of international students from different origin countries.

While there is comparatively less research on help-seeking in UK international student populations (Frampton et al., 2022; UK Centre for International Student Affairs & University of Sunderland, 2017), a report by the Royal College of Psychiatrists (Callender et al., updated 2021) describes support for mental health available to university students and international students in the UK. The report states that international students in the UK experience barriers to psychological support, though there is limited data to understand the extent of barriers or how common these experiences are. Callender et al. (2021) note stigma, long waiting lists for unfamiliar services, as well as difficulty understanding available services among others. There may be a need for increased support for this group alongside efforts to increase the availability, cultural sensitivity and accessibility of current support (Callender et al., updated 2021). But without recent evidence on usage, perceived usefulness or barriers to university support services for SA international students in the UK, we cannot know whether this is the case. Nor do we know whether help-seeking is associated with CMDs or other variables in SA international students in the UK. Alongside unknown levels of CMDs and loneliness in this group, this severely limits university support

services and other stakeholders from understanding mental health needs and tailoring support to this group. This is important as SA international students are a large group who come from a less westernised cultural setting, which may mean they tend to access and view help for mental health in a different way from other groups, such as home students or international students from more westernised settings.

Despite increasing focus on increasing international study in the UK, driven by Saudi Arabian domestic and educational policy, we know surprisingly little about the mental health needs of this group. This means that there is a considerable need for research which takes a broad approach in providing preliminary evidence (within an exploratory frame) on phenomena which may have a material bearing on SA international student experience.

4.2.2 Study time frame and potintial influence of COVID-19

The study ethical approval was recived by the UCL research ethics committee on Feburary 2023. The quantative section data collection took place on the following month (March 2023). Requests for follow-up intervews was sent on April and intervews was done during May 2023.

Potintial influence of COVID-19 pandemic on participants experiences and formation of resposes

Although acute COVID-19 restrictions had largely subsided by 2023, the pandemic's residual psychological, social, and cultural effects remained significant. Some studies reflected heightened introspection, redefined values, and shifts in relational and existential perspectives, elements potentially shaped by the collective experience of uncertainty, grief, and disruption during the pandemic (Pfefferbaum & North, 2020; Van Bavel et al., 2020). These changes may have influenced meaning-making processes, particularly in areas involving worldview, identity, and the role of embodied or ritual practices in navigating stress and change (Hartman et al., 2022; Schippers, 2020).The uncertainty, fear, and disruption caused by the pandemic likely intensified symptoms of anxiety, depression, and stress, particularly among individuals who already had pre-existing vulnerabilities. This can influence how participants perceive and report their mental health status (Vindegaard & Benros, 2020). Lockdowns, social distancing, and

reduced in-person interaction may have heightened feelings of loneliness. This context is crucial when interpreting participant narratives or data related to social connection and isolation (Killgore et al., 2020). Participants may have faced barriers to accessing mental health support, including disrupted services, long wait times, or fear of infection. Alternatively, some may have turned to telehealth or digital support, which could have reshaped their help-seeking patterns (Moreno et al., 2020). Many participants might have experienced a breakdown of regular social and institutional support systems (e.g., schools, community centers, in-person therapy), influencing both mental health trajectories and coping strategies. Further, COVID-19 has also been associated with increased engagement in spirituality, mindfulness, and communal coping strategies, especially among individuals seeking continuity and reconnection after social isolation (Counted et al., 2022; Luhrmann, 2020). These broader contextual factors may have influnced partcepants responsess to this study in its quantatative and qualatative data collection areas. Thisv atudy outcomes (e.g., high loneliness or low executive function scores) might be partly explained by the enduring effects of the pandemic.

Although acute COVID-19 restrictions had largely subsided by 2023, the pandemic's residual psychological, social, and cultural effects remained significant. Some studies reflected heightened introspection, redefined values, and shifts in relational and existential perspectives, elements potentially shaped by the collective experience of uncertainty, grief, and disruption during the pandemic (Pfefferbaum & North, 2020; Van Bavel et al., 2020). These changes may have influenced meaning-making processes, particularly in areas involving worldview, identity, and the role of embodied or ritual practices in navigating stress and change (Hartman et al., 2022; Schippers, 2020).The uncertainty, fear, and disruption caused by the pandemic likely intensified symptoms of anxiety, depression, and stress, particularly among individuals who already had pre-existing vulnerabilities. This can influence how participants perceive and report their mental health status (Vindegaard & Benros, 2020). Lockdowns, social distancing, and reduced in-person interaction may have heightened feelings of loneliness. This context is crucial when interpreting participant narratives or data related to social connection and isolation (Killgore et al., 2020). Participants may have faced barriers to accessing mental health support, including disrupted services, long wait times, or fear of infection. Alternatively, some may have turned to telehealth or digital support, which could have reshaped their help-seeking patterns (Moreno et al., 2020). Many participants might have experienced a breakdown of regular social and institutional support systems (e.g., schools, community centers, in-person therapy), influencing both mental health trajectories and coping strategies. Further, COVID-19 has also been associated with increased engagement in spirituality, mindfulness, and communal coping strategies, especially among individuals seeking continuity and reconnection after social isolation (Counted et al., 2022; Luhrmann, 2020). These broader contextual factors may have influnced partcepants responsess to this study in its quantatative and qualatative data collection areas. Thisv atudy outcomes (e.g., high loneliness or low executive function scores) might be partly explained by the enduring effects of the pandemic.

4.2.3 Objectives and hypotheses

Objective 3: To investigate whether higher levels of CMDs (outcome) are associated with higher levels of loneliness (exposure) within SA international students in the UK.

Hypothesis 3: Higher CMDs scores will be associated with higher levels of loneliness

Objective 4a: To investigate whether higher levels of CMDs (exposure) are associated with increased odds of having sought help from a professional mental health provider source (outcome).

Hypothesis 4a: Higher levels of CMDs will be associated with increased likelihood of seeking help from a mental health professional in the UK.

Objective 4b: To describe the frequency of help-seeking sources, perceived usefulness of sources and barriers to university support services.

This study will also undertake a descriptive comparison of findings with the author's prior analysis of SENSE study data (which concerned levels of CMDs, loneliness and help-seeking tendencies between home and international students). This may provide a basis for crude comparison across different student groups levels of loneliness, help-seeking tendencies, and CMDs.

4.3 Methods

4.3.1 Participants and recruitment

Participants recruitment was conducted through the Saudi Arabian Cultural Bureau (SACB) in the United Kingdom (UK). The Saudi Arabian Cultural Bureau (SACB) is a government-affiliated office that represents the Ministry of Education of Saudi Arabia in foreign countries where large numbers of Saudi students' study abroad such as the United Kingdom. The primary role of the SACB is to oversee the academic affairs of Saudi students studying abroad. Members the SACB typically include Saudi government officials, academic advisors, student representatives and cultural events organisers. Participants of this study are only those invited to participate in the study through the SACB. The Letter of support from the Saudi Arabian cultural burau can been seen in appendix 2. The initial survey link was distributed by SACB students club managers. The Invitation letter sent to participants can be seen in appendix 3**.** 362

people were sent the survey link by email or WhatsApp and accessed the link. I was unable to obtain the total number of students the link was sent to. However, the gender, course enrolment distribution of recent international students registered with the SACB can be seen in appendix 1. information governance and data legislation meant the SACB were unable to provide it. The study link and associated tasks were hosted on the 'Gorilla' surveys website. Study enrolment lasted three months from the point of distributing the survey, followed by a recruitment and interview period of two months for the qualitative aspect of this study (Described in Chapter 6).

4.3.2 Procedure

Participants completed online questionnaires on common mental disorders (CMDs), loneliness, help-seeking and sociodemographic variables (age, sex, level of study, financial difficulties). As well as completing trials of on-screen tasks measuring different domains of executive function (EF) which are mentioned here but described in more detail in the pertinent thesis chapter (Chapter 5). All questionnaires and experimental tasks were hosted via online platform Gorilla- participants received a link via email or WhatsApp, accessing the link and reading through participant information material as well as consent form and support sources available in case of participant distress. Those who consented were assigned a unique identification key and completed each questionnaire, then executive function task. After which, participants indicated whether they wished to be contacted for qualitative interviews, those who ticked no were taken to the study end page. Those who clicked yes read the qualitative participation materials and indicated consent or did not provide consent for qualitative interviews, the findings of which are reported in Chapter 6. Screenshots of all measures are seen in appendix 4.

The study link and associated tasks were hosted using the 'Gorilla' surveys website. Study enrolment lasted three months from the point of distributing the survey, followed by a recruitment and interview period of two months for the qualitative aspect of this study (interview duration: 30 to 45 minutes). Full details of the recruitment process and participant selection procedures are described in later sections relevant to the qualitative aspect of this study.

4.3.3 Measures

4.3.3.1 Outcomes

Common mental disorders

Symptoms of CMDs were measured using a total score derived from a composite measure consisting of two individual screening tools for Depression (Patient Health Questionnaire-9; PHQ-9; Kroenke et al., 2001) and Anxiety (Generalised Anxiety Disorder Assessment-7; GAD-7; Spitzer et al., 2006). Detailed information on the properties of this measure may be referred to in Chapter 3.3.3.

Help-seeking

Help-seeking was measured as a binary variable (No/Yes) whether respondents had indicated having sought help from a mental health professional while at university. These data were derived from an individual item response using the wider question from the SENSE survey (see Chapter 3). In which it was administered in English and respondents selected from a list including 12 specific help-seeking sources in response to the question “Which of the following have you ever sought help from for mental health or an emotional problem since you started university? Please tick all that apply.”. This also included Likert scale ratings ranging from 0 to 3 for perceived usefulness of help seeking sources used, where 0=not used, 1= not useful, 2= useful, 3= very useful). These included: mental health professional, GP, friend, family, peer support, personal tutor, academic staff, university support staff, telephone, internet, religious leader. Barriers to university support services were assessed via a nine-item questionnaire asking participants which asked participants whether they had experienced any of the following barriers: lack of time, concern no one will understand my problem, lack of access, difficulty finding help, lack of confidentiality, fear of stigma, fear of unwanted documentation and fear of unwanted intervention, lack of service availability, other. Eight binary variables indicating yes, or no responses were derived from these variables.

4.3.3.2 Exposures

Loneliness

The University of California Los-Angeles Loneliness Scale (UCLA; Version 3; Russell, 1996)) three- item scale was used to measure loneliness. Further detail as to the properties of this measure is described in an earlier chapter (3.3.3)

Common mental disorders (Outcome and exposure in separate analyses)

As discussed above, CMDs score was as an outcome for Objective 3, and an exposure for Objective 4a.

4.3.3.3 Confounding variables

I adjusted for various confounders in my analyses, including age, sex, level of study and financial difficulties. Loneliness could play a non-confounding role (e.g. mediation) but could also confound relationships. So, I took care when making adjustments for each of the analyses I conducted. My discussion (Section 4.5) will outline the various possibilities in regard to confounding, or mediating effects. However, it should be noted that this is a cross-sectional study, and so causal effects underlying any associations are impossible to determine).

I considered a several variables (age, sex, level of study, financial difficulties) for confounding relationships between executive function and CMDs, CMDs and loneliness, and help-seeking and CMDs.

Age was a continuous variable based on a question which asked respondents to state their age in years.

Sex was a binary categorical variable with responses corresponding to male, female.

Financial difficulties were an ordinal variable with five levels (none at all, minimal, a little, moderate, a great deal), with the survey questions asking “How well would you say you are managing financially these days? Would you say you are…”, with the respondent choosing from a list of options, including living comfortably, doing alright, just about getting by, finding it quite difficult, or finding it very difficult.

Level of study was a categorical variable with three levels describing those enrolled on undergraduate, postgraduate taught and postgraduate research courses.

4.3.4 Data management and preparation

Power calculations for objective 3 indicated that if I split the loneliness score at the median a sample size of n=128 was sufficient to detect a medium effect of 0.50 standard deviations, at 80% power and 5% significance. I used loneliness as a continuous item to maximise the precision of statistical analysis and capture the full spectrum of loneliness severity. By treating it continuously, I could examine the nuanced variations in loneliness levels across individuals, which allows for a more detailed understanding of its relationship with other variables. Power calculations were also computed for use of CMDs as a binary outcome measure. I expect that between 20 to 33% of participants will have a CMD according to my definition. Calculations showed that n=91 would be sufficient to detect a 0.30 difference in proportions screening positive for CMDs between those who are not lonely (proportion=0.50) compared to those who are lonely (proportion= 0.20) at 5% significance at 80% power.

Power calculations for planned analysis using the proportion for help-seeking as the outcome and CMDs score as the exposure indicated the following requirements Calculations indicated that to detect a moderate difference in proportions (0.5), n=91 participants would be sufficient at an allocation of roughly 2:1 (n=61 having not sought help; n=30 having sought help) for 80% power at the 5% significance level.

There are several forms of missing data in my study which I describe below. The breakdown of respondents with missing data or lost to non-response is detailed in my results. Here I refer to the different types of ways in which data were missing from my study briefly, describing implications and the rationale to analyse complete cases or those without missing data. While describing alternative methods for dealing with missing data which I considered but was unable to implement.

The different missing data in my study included:

- Non-response/ did not consent. Of those that activated the survey link, 134 did not provide consent and had no meaningful data. In addition, 17 had consented but not completed any aspect of the survey with missing data on all variables.
- Incomplete outcome or exposure data. Of those with incomplete outcome or exposure data, n=2 had partially complete data on one of two CMDs measures (PHQ, GAD), and 12 had complete data for CMDs and loneliness, but no data for help-seeking measures; 2 respondents had partial CMDs data had partially completed sociodemographic measures.
- Incomplete data on all measures excluding sociodemographic data. Of those who partially completed the survey, 10 provided data only for sociodemographic questions.

I was unable to apply weights based on missing data due to not having a reliable source for values for sample weights to achieve reasonable or informed balance between the sample I collected and the target or wider population from which they are drawn. This is due to such information not being collected or available in the public domain and may relate to the lack of research into SA international students in the UK.

It was not possible to undertake multiple imputation due to the pattern of missing and complete data across different variables. Performance of multiple imputation when imputing mean or average values has higher sample size requirements, and undertaking this method with n=137 data points I had would be unlikely to produce a reliable estimate. Using other methods which use partial data to impute missing values may also not have produced a reliable imputation estimate. Based on this, I used complete cases or those with full response data in my analysis as this was the most straightforward and practical way to interpret and analyse the data. I took care in cautiously interpreting and caveating my findings given the high level of missing data in my study. I acknowledge constraints to the interpretation and meaning of my findings

introduced through use of complete or full cases later in the limitations section of my discussion.

Statistical analyses and data preparation were undertaken primarily within Stata 18 (StataCorp, 2021). Raw data were downloaded from online platform Gorilla as excel spreadsheets with participant identification numbers. Each task or questionnaire within Gorilla generated one spreadsheet in wide form for questionnaires, executive function task data are produced in long-form from Gorilla. Data were collated into a single excel file, where a master sheet with all variables of interest was collated in long form. This was imported into Stata where the remainder of data preparation was conducted (e.g. computing total variables; combining some similar categorical variables with low counts; data inspection; main and descriptive analyses).

4.3.5 Statistical analyses

Descriptive analyses were conducted via frequencies (with proportions) and means (with standard deviations) to describe the characteristics of the sample and the distribution of CMDs scores by socio-demographic characteristics. The distribution of CMDs was described by sociodemographic variables (age, gender, level of study, financial difficulties), as well as in relation to outcomes of interest (loneliness; help-seeking behaviour). Descriptive statistics were also undertaken to examine potential group differences in executive functioning, across inhibition, attention and working memory.

For Hypothesis 3, main analyses consisted of multivariable linear regression assessing cross-sectional differences in CMDs scores according to loneliness levels. Adjusting for sociodemographic variables. The dependent variable or outcome was CMD scores, and the exposure variable or independent variable was loneliness scores. I also assessed the association between CMDs scores, and loneliness severity groups based on cut-off scores reported in the literature. As well as conducting sensitivity analysis to examine the odds of screening positive for CMDs (score above 20 representing moderate to severe level of CMDs symptoms) between loneliness severity groups. Binary logistic regressions were conducted on CMDs as a binary variable, and

loneliness severity group (ordinal variable) before and after adjustment for sociodemographic variables.

For hypotheses 4a, several exploratory binary logistic regression analyses were conducted to assess differences in help-seeking in relation to CMDs. Logistic regressions were undertaken to understand associations between several binary help-seeking variables, and predictor variables of interest including CMDs and loneliness. Binary outcome variable included: having sought help from a mental health professional while studying at university (0=no;1=yes).

Secondary analyses were also undertaken to understand the role of loneliness in relation to help-seeking for mental health problems and using CMDs as a binary variable with loneliness severity group as exposure.

For Hypothesis 4b, descriptive analyses were conducted to understand frequencies and proportions of the participants who had sought help from the presented sources while at university. This also included means, frequencies and proportions in relation to perceived usefulness of different help-seeking sources, as well as in relation to barriers to university support services.

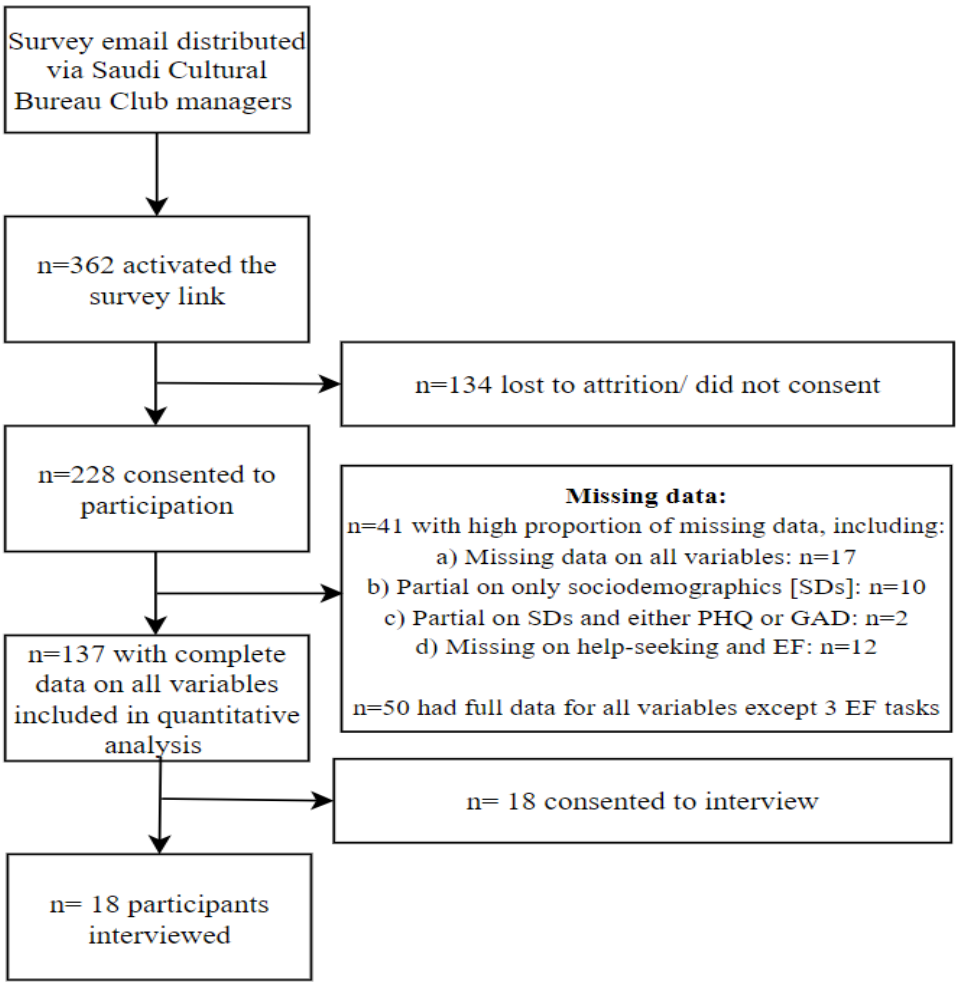
4.4 Results

4.4.1 Sample characteristics

Figure 3 shows a flowchart of the study recruitment, inclusion and exclusion, including the final number of participants included for analysis, based on listwise deletion or complete case analysis. The initial survey link was distributed by Saudi Arabian Cultural Bureau club managers using email. The platform on which the survey link was hosted does not have the capability to show how many times the link was sent to individual email addresses. Thus, it was not possible to ascertain the total number of email addresses which the survey link was initially sent to by SACB club managers.

After distribution by email, n=362 people accessed the survey link; n=134 of these were lost to attrition or not continuing beyond participation and consent information. N= 228 people consented to participation. Of these, n= 91 were excluded due to missing data. N=41 had a high proportion of missing data (n=17 had missing data on all measures; n=10 had partial sociodemographic data; n=2 had partial sociodemographic data and full data for one CMDs measure; n=12 had a lower degree of missingness, having complete data for all tasks bar help-seeking and executive function tasks. Thus, no meaningful analysis could be performed to understand patterns of non-response across n=41 with high proportion of missing data (due to inconsistent slices of partial/ complete data on individual measures). The remaining n=50 had lower proportion of missing data, with missing data only for the three executive function tasks. A breakdown of those with missing or partial data is given in the Figure 4. In total,137 participants with complete cases on all variables of interest were included in the final analysis. The final box of figure 4 shows the number of participants who consented to take part in semi-structured qualitive interviews which are reported in Chapter 6.

Figure 4. Flowchart of SA international student recruitment and participation.



Characteristics of the overall sample are described in table 6. The average age of the sample was 28.54 (SD=4.44). Around 72% of the sample were aged 24 to 34, comprising the largest age group. People aged 35 to 45 comprised 10.21% of the sample (n=14), whereas people in the youngest age group (18 to 24) comprised a larger proportion (n=24, 17.51%). The sample consisted of more females than males- just under two- thirds were female (n=84, 61.31%), with just over one-third third of the sample being male (n=53, 38.69%). The majority of participants were studying on postgraduate taught courses at around 45% (n=62). People on postgraduate research courses made up 35.04% of the overall sample (n=48). Distribution of financial difficulties was roughly similar across the overall sample. While people with no financial

difficulties made up around 35% of the sample, marginally lower proportions had minimal (n=45, 32.85) or moderate to severe levels of financial difficulty (n=43, 31.39%).

Table 6. Overall sociodemographic characteristics of the sample presenting this information alongside available data on SA international students studying in the UK for 2023/ 2024 (Saudi Arabian Ministry of Education, 2024) which provide only the total number of students and the proportion of male or female.

Sociodemographic variables		N (%)	Mean (SD)	Ministry of education data (N/%)
Age				
	Overall	137 (100.00%)	28.54 (4.44)	14, 298 (100.00%)
	18-24	24 (17.51)		
	25-34	99 (72.26)		
	35-45	14 (10.21)		
Financial difficulties				
	None	49 (35.77)		
	Minimal	45 (32.85)		
	Moderate – severe	43 (31.39)		
Level of study				
	UGR	27 (19.71)		
	PGT	62 (45.26)		
	PGR	48 (35.04)		
Loneliness				
	Minimal	30 (21.90)		
	Moderate	67 (48.91)		
	Severe	40 (29.20)		
Gender				
	Male	53 (38.69)		7, 638 (53.42)
	Female	84 (61.31)		6,660 (46.58)

4.4.2 Hypothesis 3: Cross sectional associations between CMDs and loneliness

This section reports findings from descriptive analyses conducted to understand average levels and distribution of my outcome (CMDs) and exposure (loneliness) concerning my first hypothesis. This also describes the distribution of CMDs and loneliness by sociodemographic variables. The final part of my descriptive analyses for Hypothesis 3 describes the distribution of outcome (defined as CMDs score and as an ordinal variable for illustrative purposes) by the exposure loneliness (defined as a continuous score and as an ordinal variable for illustrative purposes. Multivariable linear regressions are then presented to examine cross sectional associations between CMDs and loneliness.

4.4.2.1 Descriptive analyses

CMDs

The average CMDs score in the sample was 20.38 (range=2 to 43). This corresponds to a moderate level of CMDs. Looking at CMDs as an ordinal variable (defined by clinical cutoffs (Kroenke et al., 2017), the largest group was people with a minimal to mild level of CMDs (47.45%), followed by people with a moderate level of CMDs (38.69). People with severe levels of CMDs comprised the smallest group (13.86%). When CMDs was defined as a binary variable, 52.55% of the sample met the cut-off for a positive screen for CMDs (indicating moderate to severe levels of symptoms) whereas 47.45% were negative. (Table 9 gives more description of the CMDs scores meaning)

Looking at the distribution of depression and anxiety scores which comprise CMDs scores, mean depression and anxiety scores were similar (mean= 10.40; mean=10.43) in the overall sample. Ordinal variables based on clinical cut-offs allow us to understand what frequency and proportion of respondents were affected by different levels of severity for depression and anxiety.

Despite similar mean scores for anxiety and depression, more people had severe anxiety than severe depression (anxiety: 18.25%, Depression: 5.84%), with roughly similar proportions of people reporting none (anxiety: 7.30%; depression: 10.22%), mild (anxiety: 40.15%; depression: 33.58%) or moderate (anxiety: 34.31%; depression:

36.50%). However, depression has more categories reflecting severe symptoms than anxiety, with 13.87% of the sample having ‘Moderately severe’ depression.

Loneliness

The mean loneliness score was 5.85 for the overall sample. Cut-offs show that people with a minimal level of loneliness were the smallest group (21.90%); around half of the people in the sample had a moderate level of loneliness (48.91%), with just under a third having severe levels of loneliness (29.20%).

In table 7 the overall levels of the exposure variables CMDs and loneliness in terms of means and SD (including anxiety and depression breakdown). Frequencies and proportions of ordinal variables related to CMDs (CMDs, depression, anxiety) and loneliness are also described.

Table 7. Frequency, proportions, means and SDs of CMDs and loneliness (total scores and ordinal variables in the overall sample).

CMDs and loneliness		n(%)	Mean (SD)
Common mental disorders			
	Overall		20.83 (8.30)
	Minimal-mild	65 (47.45)	
	Moderate	53 (38.69)	
	Severe	19 (13.87)	
Depression			
	Overall		10.40 (5.01)
	None	14 (10.22)	
	Mild	46 (33.58)	
	Moderate	50 (36.50)	
	Moderately-severe	19 (13.87)	
	Severe	8 (5.84)	
Anxiety			
	Overall		10.43 (4.27)
	None	10 (7.30)	
	Mild	55 (40.15)	
	Moderate	47 (34.31)	
	Severe	25 (18.25)	
Loneliness			
	Overall		5.85 (1.56)
	Minimal	30 (21.90)	
	Moderate	67 (48.91)	
	Severe	40 (29.20)	

CMDs and loneliness scores by sociodemographic variables

Table 8 shows that people aged 18 to 24 marginally higher CMDs scores than people aged 25 to 34 (m=20.76) or those aged 35 to 45 (m= 19.50), who had the lowest average CMDs scores. There were minimal differences in terms of average loneliness scores across different age groups, with a 0.02 point difference between those aged 18 to 24 and those aged 25 to 34. Those aged 35 to 45 had marginally lower mean scores. People with no financial difficulties had considerably lower CMDs scores (m=18.14) than people with moderate (m=19.62) difficulties, or severe levels of financial difficulties (m=25.18). A similar trend was observed for loneliness scores, albeit showing smaller group differences- people with no difficulties had the lowest scores (m=5.59), whereas people with moderate (m=5.95), and severe difficulties had the highest (m=6.04). Men (m=21.86) had marginally higher levels of CMDs than women (m=20.19). Men also had higher average loneliness scores (m=5.95) than women (m=5.69). Undergraduates (m=26.70) had the highest average CMDs scores of any category or group within the overall sample. With the highest average scores among different study types. Those on postgraduate taught courses had the lowest average CMDs scores (m=19.06). Those on postgraduate research courses (m=19.83) were slightly higher in terms of average scores. There were minimal differences in average loneliness scores between both post-graduate groups (taught: m=5.70, research: m=5.79), whereas undergraduates had marginally higher loneliness scores (m=6.29).

Table 8. Means and SD (standard deviation) for CMDs and loneliness scores broken down by sociodemographic variables.

		CMDs score	**Loneliness score**
Sociodemographic variables		Mean (SD)	Mean (SD)
Age			
	18-24 (n=24)	21.91 (8.86)	5.87 (1.72)
	25-34 (n=99)	20.76 (7.91)	5.85 (1.72)
	35-45 (n=14)	19.5 (10.27)	5.78 (2.11)
Financial difficulties			
	None (n=49)	18.14 (7.30)	5.59 (1.68)
	Minimal (n=45)	19.62 (7.41)	5.95 (1.58)
	Mod-severe (n=43)	25.18 (8.67)	6.04 (1.37)
Level of study			
	UG (n=27)	26.70 (7.27)	6.29 (1.56)
	PGT (n=62)	19.06 (6.72)	5.70 (1.35)
	PGR (n=48)	19.83 (9.30)	5.79 (1.77)
Sex			
	Male (n=53)	21.86 (7.80)	5.69 (1.61)
	Female (n=84)	20.19 (8.58)	5.95 (1.52)

CMDs and loneliness screening by sociodemographic variables

This section examines potential CMDs or loneliness screening differences across age, sex, level of study and financial difficulties. This is based on CMDs and loneliness as binary screening variables, reported for illustrative purposes. Table 9 shows frequencies and proportions in more detail, brief findings are reported below.

Slightly higher proportions of those aged 18-24 and 35-45 screened positive for CMDs, with under half screening negative. Rates of positive and negative screens were similar across age groups. Similar proportions of those aged 18-24 and 25-35 screened positive for loneliness, with oldest age group having lower proportions of positive screens for loneliness.

Proportionally more of those with moderate to severe financial difficulties screened positive for CMDs compared to those with none or minimal difficulties. With higher proportions of positive screens with an increasing level of financial difficulty, those with no financial difficulties had the highest proportion of negative screens. A similar trend was observed for loneliness screen rates.

Undergraduate students had the highest rate of positive CMDs screens, with postgraduate taught and postgraduate research students having similar proportion of positive and negative screens. A similar trend was observed for loneliness screen rates, with undergraduates having the highest rates of positive screens. Although, postgraduate taught students had a higher rate of positive loneliness screens than postgraduate research students.

A higher proportion of men was positive for CMDs than women, with women having a higher rate of negative CMDs screens. Whereas a higher proportion of women had positive loneliness screens than men.

Table 9. Row frequencies and proportions of screening variables for CMDs by sociodemographic variables, showing proportion and number of respondents across different levels of sociodemographic variables in terms of those who had screened positive for CMDs.

Sociodemographic variables	**CMDs screen** (n/%) Negative (n=65)	Positive (n=72)
Age		
18-24 (n=24)	11 (45.83)	13 (54.17)
25-34 (n=99)	47 (47.47)	52 (52.53)
35-45 (n=14)	7 (50.00)	7 (50.00)
Financial difficulties		
None (n=49)	33 (67.35)	16 (32.56)
Minimal (n=45)	23 (51.11)	22 (48.89)
Mod-severe (n=43)	9 (20.93)	34 (79.07)
Level of study		
UG (n=27)	6 (22.22)	21 (77.78)
PGT (n=62)	34 (54.48)	28 (45.16)
PGR (n=48)	25 (52.08)	23 (47.93)
Sex		
Male (n=53)	21 (39.62)	32 (60.38)
Female (n=84)	44 (52.38)	40 (47.62)

Table 10. Row frequencies and proportions of screening results for loneliness by sociodemographic variables, showing proportion and number of respondents across different levels of sociodemographic variables in terms of those who had screened positive for loneliness.

Sociodemographic variables	**Loneliness screen** (n/%) Not Lonely (n=48)	Lonely (n=89)
Age		
18-24 (n=24)	8 (33.33)	16 (66.67)
25-34 (n=99)	34 (34.34)	65 (65.65)
35-45 (n=14)	6 (42.86)	8 (57.14)
Financial difficulties		
None (n=49)	20 (40.82)	29 (59.18)
Minimal (n=45)	15 (33.33)	30 (66.67)
Mod-severe (n=43)	13 (30.23)	30 (69.77)
Level of study		
UG (n=27)	7 (25.93)	20 (74.07)
PGT (n=62)	21 (33.87)	41 (66.13)
PGR (n=48)	20 (41.67)	28 (58.33)
Sex		
Male (n=53)	21 (39.62)	32 (60.38)
Female (n=84)	27 (32.14)	57 (67.86)

Average CMDs score (outcome) across loneliness severity group

The table below show average levels of the outcome CMDs scores by loneliness severity groups (Table 11), and cross-tabulation of loneliness and CMDs severity groups for illustrative purposes. Table 12 shows average CMDs scores were higher in those with moderate and severe loneliness, with minimally lonely people having the lowest average CMDs scores. While a minority of participants were classified with a severe level of CMDs symptoms, only one of these people had minimal levels of loneliness, with all other cases of severe CMDs also having either moderate or severe loneliness.

Table 11. Frequencies and proportions of those with different loneliness and CMDs severity combinations (e.g. minimal loneliness, but severe CMDs).

Exposure	**Outcome** **CMDs severity group**		
	Min-mild (n=65) n(%)	**Moderate** (n=53) n(%)	**Severe** (n=19) n(%)
Loneliness severity			
Minimal (n= 30)	19 (29.23)	10 (18.87)	1 (5.26)
Moderate (n=67)	35 (53.85)	24 (45.28)	8 (42.11)
Severe (n=40)	11 (16.92)	19 (35.85)	10 (52.63)

Table 12. Average CMDs scores by loneliness severity, showing means and SD.

Exposure	**Outcome**
	CMDs score (Mean [SD])
Loneliness severity	
Minimal (n= 30)	16.56 (6.46)
Moderate (n=67)	20.22 (7.75)
Severe (n=40)	25.07 (7.66)

4.4.2.2 Inferential analysis

Beta values or regression coefficients are reported alongside 95%CIs and significance levels. Results are presented in Table 13. The overall unadjusted model showed a significant association between loneliness scores and CMDs scores. For every unit increase in loneliness scores, there was a 2.31 (95% CI 1.50 to 3.13, p<0.0001) point increase in CMDs scores. Compared to people with minimal levels of loneliness, CMDs scores were on average 3.65 points higher in people with moderate levels of loneliness (95% CI= 0.28 to 7.03), and 8.50 points higher in people with severe levels of loneliness (MD=8.50, 95% CI= 4.79 to 12.21).

The final model adjusting for sociodemographic variables (age, sex, financial difficulties, level of study) showed a significant association between loneliness scores and CMDs scores, attenuating the association. Every unit increase in levels of loneliness predicted, on average, a 2.08-point increase in CMDs scores (coefficient=2.08, 95% CI= 1.31 to 2.84, p<0.0001). Compared to people with minimal levels of loneliness, CMDs scores were on average 3.38 points higher in people with moderate levels (95% CI= 0.25 to 6.50), and 7.66 points higher in people with severe levels of loneliness (95% CI=4.19 to 11.13).

Table 13. Results of two linear regressions with CMDs score as the outcome and loneliness score as the predictor.

	a: Model 1			b: Model 2		
Exposure	Coefficient	95%CI	p value	Coefficient	95%CI	p value
Loneliness score	2.31	1.50 to 3.13	<0.0001	2.08	1.31 to 2.84	<0.0001
Minimal (Reference)						
Moderate	3.65	0.28 to 7.03		3.38	0.25 to 6.50	
Severe	8.50	4.79 to 12.21		7.66	4.19 to 11.13	

Legend.

Unadjusted and adjusted coefficients, 95% confidence intervals and significance levels are reported for each estimate.

a: Model 1 Univariate linear regression model of CMDs score by loneliness score.

b: Model 2 Multivariable linear regression model of CMDs score by loneliness score, adjusting for age sex, financial difficulties and level of study as confounders.

4.4.2.3 Sensitivity analysis: CMDs as a binary variable with loneliness severity group as exposure

Sensitivity analysis was also undertaken using CMDs as a binary variable based on clinical cut-offs used in screening to indicate whether people meet the threshold for positive indication for CMDs (where positive screens for CMDs are indicated by a score above 20- representing a moderate to severe level of CMDs symptoms). This is in line with optimal cut-offs used in the literature for PHQ-9 and GAD-7 separately (cases where total GAD or PHQ scores are above 10- though this varies).

Table 14 shows results of unadjusted and adjusted logistic regression analyses. Results for loneliness score which was a continuous variable (as opposed to severity group) are presented for illustrative purposes.

Loneliness was included in Table 14 as both a continuous predictor and a categorical predictor. This approach was taken to highlight the statistical impact of loneliness while adding further depth to its analysis. Presenting loneliness as a continuous variable allows for an examination of its linear association with the outcome, whereas categorising it illustrates the data in a way that it is easier to interpret as a reader. Additionally, categorisation can reveal patterns in the data that might otherwise be hidden when using only a continuous term in the regression model.

Main sensitivity analysis was undertaken using binary logistic regression to better understand how different levels of loneliness severity are associated with the likelihood of screening positive for CMDs symptoms.

In the unadjusted model, the odds of a positive screen for CMDs were 1.49 times higher for every unit increase in loneliness scores (95%CI=1.16-1.89, $p<0.001$).When examining group differences, the odds of screening positive for CMDs symptoms were 4.55 times higher for people with severe loneliness levels (OR=4.55, 95% CI= 1.64 to 12.58), compared to those with minimal levels of loneliness. People with moderate loneliness levels had on average 1.57 times higher odds of screening positive for CMDs than people with minimal levels (OR=1.57, 95% CI= 0.65 to 3.82).

In the final model, this association remained, with the odds increasing after adjusting for sociodemographic variables (aOR=1.49, 95%CI=1.14-1.94, p=0.003) though the magnitude of change in odds ratios was negligible (0.01). There was evidence that the odds of screening positive were on average 4.83 times higher in people with severe loneliness levels (aOR=4.83, 95% CI=1.56 to 14.90, p=0.006). People with moderate loneliness levels had on average 1.56 times higher odds of screening positive (aOR=1.56, 95% CI= 0.58 to 4.21).

Table 14. Results of two logistic regressions with CMD as a binary outcome and loneliness score as the predictor.

	a: Model 1			b: Model 2		
Exposure	Odds ratio	95%CI	p value	aOR	95%CI	p value
Loneliness score	1.48	1.16 to 1.89	<0.001	1.49	1.14 to 1.94	0.003
Minimal (Reference)						
Moderate	1.57	0.28 to 7.03		3.38	0.58 to 4.21	
Severe	4.55	1.64 to 12.58		4.83	1.56 to 14.90	

Legend.

Unadjusted and adjusted odds ratios, 95% confidence intervals and significance levels are reported for each estimate.

a: Model 1 Univariate binary logistic regression model of CMDs score by loneliness score.

b: Model 2 Multivariable binary logistic regression model of CMDs score by loneliness score, adjusting for age sex, financial difficulties and level of study as confounders.

4.4.3 Hypothesis 4a: Cross-sectional associations between help-seeking, CMDs and loneliness

4.4.3.1 Descriptive analyses

This section reports descriptive analyses conducted to examine hypothesis 4a concerning help-seeking behaviour from a professional source (mental health professional).

Help-seeking from a MHP

Over one-third of the sample reported having sought help from a mental health professional during their time studying in the UK (n=51; 37.23%, 95%CI= 0.29-0.45), whereas the majority had not sought help from this source (n=86; 62.77%, 95%CI=0.54-0.70).

Help-seeking from a MHP by sociodemographic variables

The following examines whether there are sociodemographic differences in the proportion of respondents who reported using versus having not used a MHP while in the UK in relation to hypothesis 4a. Table 15 shows the frequency and distribution of mental health help-seeking responses (Yes/ No) across categories of different sociodemographic variables.

For people aged 18 to 24, as a proportion of the overall sample, similar proportions indicated yes versus no. For those aged 25 to 34, a greater proportion had not used a MHP compared to those who had. For those aged 35 to 45, similar proportions reported having used vs did not use a MHP.

Across all categories of financial difficulties, MHP help-seeking was less common than not having sought help from a MHP, though a people who had sought tended to have higher levels of financial difficulties, as fewer people with no difficulties sought help than those with minimal and moderate to severe difficulties. By contrast, of those who had not sought help from a MHP, people with moderate to severe difficulties made up the smallest group.

While women make up a larger proportion of the overall sample, more women than men reported having sought help from a MHP. When looking at within group differences, differences in proportions of those reporting having used a MHP versus not were greater in men- with of men reporting having not sought help versus who had. Whereas for women, a lesser difference was reflected- though this difference was still relatively large. With of women reporting having not sought help from a MHP, compared to who had sought help for a MHP.

Table 15. Describes the frequency and distribution of mental health help-seeking responses (Yes/ No) across categories of different sociodemographic variables.

Sociodemographic variables		**MHP**	
		Yes n(%)	**No** n(%)
Age			
	18-24	10 (41.67)	14 (58.33)
	25-34	36 (36.36)	63 (63.64)
	35-45	5 (35.71)	9 (64.29)
Financial difficulties			
	None	14 (28.57)	35 (71.43)
	Minimal	18 (40.00)	27 (60.00)
	Moderate - severe	19 (44.19)	24 (53.81)
Level of study			
	UGR	11 (40.74)	16 (59.26)
	PGT	26 (41.94)	36 (58.06)
	PGR	14 (29.17)	34 (79.83)
Sex			
	Male	17 (32.07)	36 (67.93)
	Female	34 (40.48)	50 (59.52)

Help-seeking from a MHP by average levels of CMDs and loneliness

Table 16. Describes help-seeking from a mental health professional response in terms of average CMDs and loneliness scores. Frequencies and proportions for MHP help-seeking are also described by CMDs severity group and loneliness severity group.

People who had sought help from a MHP had marginally higher mean CMDs scores compared to those who had not (n= 51, m=8.77; n= 86, m=20.74). Whereas people who had not sought help from a MHP had marginally higher loneliness scores (m=6.01;

m=5.58). 95%CIs may be referred to in the table below to understand spread around average CMDs and loneliness scores between help-seeking groups.

Table 16. Means and SD for CMDs and loneliness scores between those who had or had not sought help from a MHP.

Sought help from a MHP	**CMDs score** (Mean[SD])	**Loneliness score** (Mean[SD])
Yes (n=51)	21.00 (8.77)	5.58 (1.40)
No (n=86)	20.74 (8.06)	6.01 (1.63)

Of the 51 people who reported having sought help, 15.69% had severe CMDs, with the majority having either moderate (41.18%) or minimal to mild CMDs (43.14%). Of the 86 people who reported not having sought help, a high proportion had moderate CMDs (45.35%), while a small minority had minimal levels of CMDs (18.60%). Notably over one-third of those who had not sought help had a severe level of CMDs.

In terms of loneliness severity, of those who reported having sought help over half had moderate levels of loneliness (54.90%), with under one-quarter having a minimal level of CMDs (27.54%). People with severe levels of loneliness made up 17.65% of those who had sought help from a MHP. Of those who had not sought help from a MHP, a minority had minimal loneliness levels (18.60%), with most having moderate loneliness levels (45.35%). People with severe levels of loneliness made up 36.05% of those who had not sought help.

Table 17. Frequencies and proportions of help-seeking from a mental health professional by CMDs severity group and loneliness severity group.

Exposure variables	**MHP**	
	Yes (n=51)	**No (n=86)**
Common mental disorders		
Minimal-mild n(%) (n= 65)	22 (33.84)	43 (67.16)
Moderate n(%) (n=53)	21 (39.62)	32 (60.38)
Severe n(%) (n=19)	8 (26.31)	11 (74.69)
Loneliness		
Minimal n(%) (n= 30)	14 (46.66)	16 (43.34)
Moderate n(%) (n=67)	28 (41.79)	39 (58.21)
Severe n(%) (n=40)	9 (22.50)	31 (77.50)

4.4.3.2 Inferential analysis: Hypothesis 4a Help-seeking from a MHP while in the UK, CMDs and loneliness severity group

This section reports results from a series of analyses seeking to understand the nature of associations between different help-seeking variables (e.g. having used a mental health professional while at university; number of formal help-seeking sources used while at university) and levels of common mental disorders and loneliness in context to sociodemographic variables.

Help-seeking from a MHP while in the UK and CMDs severity group

Unadjusted and adjusted binary logistic regression models examined how help-seeking tendencies vary by levels of each exposure (CMDs; loneliness) before and after adjusting for sociodemographic variables.

Results of unadjusted and adjusted logistic regression models concerning cross-sectional differences in help-seeking behaviour from a MHP (0= None; 1= Yes) may be seen in table 18. Further exploratory analyses were performed to understand associations between help-seeking behaviour and loneliness levels.

In the unadjusted model, there was no evidence of an association between the odds of help-seeking and CMDs scores. Every unit increase in CMDs scores showed equivalent odds of seeking versus not seeking help from a MHP (OR=1.00, 95%CI=0.96 to 1.04, p=0.121). Odds ratios when using CMDs severity groups as exposure were as follows: moderate CMDs: OR= 1.28, 95% CI= 0.60 to 2.72; severe levels of CMDs: OR=1.42, 95% CI= 0.49 to 4.04).

After adjusting for sociodemographic variables, every unit increase in CMDs showed similar odds of seeking help vs not seeking help from a MHP with minimal change in odds (aOR=0.99, 95%CI=0.94 to 1.04, p=0.764).Adjusted odds ratios when using CMDs severity groups as exposure showed the following for moderate (Adjusted OR [aOR]= 1.09, 95% CI= 0.47 to 2.51) and severe levels of CMDs (aOR=1.34, 95% CI= 0.42 to 4.28).

After adjusting for loneliness scores in addition to sociodemographic variables, lack of evidence for an association was maintained, with every unit increase in CMDs showing

similar odds of seeking versus not seeking help (aOR=1.01, 95%CI= 0.96 to 1.07, p=0.533). Compared to people with minimal levels of CMDs, people with severe levels of CMDs had higher odds of seeking help from a mental health professional (aOR= 2.29, 95% CI= 0.63 to 8.22). Compared to people with minimal levels of CMDs, people with moderate levels of CMDs had higher odds of seeking help (AOR= 1.33, 95% CI= 0.56 to 3.15). Though there was no evidence that this estimate differed significantly from that of people with minimal levels of CMDs.

Notably however, when all other factors were adjusted for as confounders (CMDs and sociodemographic variables) loneliness scores were associated with lower odds of help seeking (aOR=0.75, 95% CI= 0.57 to 0.99, p=0.043). This suggests that there may be additional value to exploring the role of loneliness severity groups in context to help-seeking from a mental health professional, CMDs and sociodemographic variables, which will be the focus of the following exploratory analysis.

Table 18. Unadjusted and adjusted logistic regression models concerning help-seeking from a mental health professional while in the UK at university (0= None; 1= Yes) and CMDs score, with separate model results for CMDs severity groups below.

	Help-seeking from a MHP while in the UK								
	a: Model 1			b: Model 2			c: Model 3		
Exposure	OR	95%CI	p value	aOR	95%CI	p value	aOR	95%CI	p value
CMDs score	1.00	0.96 to 1.04	0.121	0.99	0.94 to 1.04	0.764	1.01	0.96 to 1.07	0.533
Severity group									
Min-mild (reference)									
Moderate	1.28	0.60 to 2.72		1.09	0.47 to 2.51		1.93	0.56 to 3.15	
Severe	1.42	0.49 to 4.04		1.34	0.42 to 4.28		2.29	0.63 to 8.22	

Legend.

Unadjusted and adjusted odds ratios, 95% confidence intervals and significance levels are reported for each estimate.

a: Model 1 Univariate binary logistic regression model of help-seeking from a mental health professional by CMDs score, and CMDs severity.

b: Model 2 Multivariable binary logistic regression model of CMDs score by help-seeking from a mental health professional by CMDs score, and CMDs severity, adjusting for age sex, financial difficulties and level of study as confounders.

c: Model 3 Multivariable binary logistic regression model of CMDs score by loneliness score, adjusting for loneliness in addition to sociodemographic variables

Help-seeking from a MHP and loneliness severity group

Table 19 shows unadjusted and adjusted logistic regression models as performed to understand associations between help-seeking behaviour and loneliness levels.

The unadjusted model showed no evidence of lower odds of having sought help from a mental health professional with every unit increase in loneliness scores (OR=0.83, 95% CI= 0.66 to 1.05, p=0.126). Odds ratios for severity groups show the following: people with moderate loneliness (OR=0.82, 95% CI= 0.34 to 1.95), people with severe loneliness (OR=0.33, 95%CI= 0.11 to 0.93).

After adjusting for socio demographics, there was no evidence of lower odds, though the significance level was just above the 0.05 threshold (aOR=0.78, 95% CI= 0.60 to 1.00, p=0.051), with the association strengthening (reduced odds after adjustment: OR from 0.33 to 0.23, lower p-value after adjustment from p=0.126 to p=0.051). Adjusted odds raios showe the following for: people with moderate loneliness levels showed lower odds for help-seeking (aOR= 0.67, 95% CI= 0.27 to 1.66), and people with severe loneliness levels had significantly lower odds of help-seeking (aOR=0.23, 95%CI=0.08 to 0.72).

After adjusting for CMDs scores in addition to sociodemographic variables, there was of lower odds of help-seeking for people with every unit increase in loneliness scores (aOR= 0.75, 95% CI=0.57 to 0.99, p=0.043). Adjusted odds ratios for loneliness severity groups showed the following for moderate loneliness levels (aOR= 0.63, 95%CI= 0.24 to 1.57) and severe loneliness levels (aOR=0.19, 95%CI= 0.05 to 0.66).

Table 19. Unadjusted and adjusted logistic regressions concerning help-seeking from a mental health professional by loneliness severity group.

	Help-seeking from a MHP while in the UK								
	a: Model 1			b: Model 2			c: Model 3		
Exposure	OR	95%CI	p value	aOR	95%CI	p value	aOR	95%CI	p value
Loneliness score	0.83	0.66 to 1.05	0.126	0.78	0.60 to 1.00	0.051	0.75	0.57 to 0.99	0.043
Severity group									
Min-mild (reference)									
Moderate	0.82	0.34 to 1.95		0.67	0.27 to 1.66		0.63	0.24 to 1.57	
Severe	0.33	0.11 to 0.93		0.23	0.07 to 0.72		0.19	0.05 to 0.66	

Legend.

Unadjusted and adjusted odds ratios, 95% confidence intervals and significance levels are reported for each estimate.

a: Model 1 Univariate binary logistic regression model of help-seeking from a mental health professional by loneliness score and loneliness severity.

b: Model 2 Multivariable binary logistic regression model of CMDs score by help-seeking from a mental health professional by loneliness score, adjusting for age sex, financial difficulties and level of study as confounders.

c: Model 3 Multivariable binary logistic regression model of help-seeking from a mental health professional by loneliness score, adjusting for CMDs score in addition to sociodemographic variables.

4.4.4 Objective 4b: wider descriptive analysis on help-seeking

This section reports on findings from descriptive analyses related to Objective 4b. Sub-sections relate to different areas in describing patterns of usage of formal and informal help-seeking sources while in the UK, acceptability of help-seeking sources. This concludes by describing barriers to university support services reported by those who had a need to seek support but did not or were unsuccessful in accessing support. In some cases, I provide information on distribution by sociodemographic variables for illustrative purposes (such as for data on usage below). It should be noted that these are not directly pertinent to Hypothesis 4b, hence not being reported consistently across usage, acceptability and barriers for brevity.

Help-seeking sources used while in the UK

Table 20 describes the frequency and distribution of different help-seeking sources used while in the UK for a mental health or emotional problem.

For the overall sample, most participants indicated having not sought help from a general practitioner or doctor (GP) (n=80, 58.39%) or university support (n=71, 51.82%) while in the UK. Over one-third to just over half of the sample reported having sought help from either of the formal support sources (GP: 41.62%; University support: 51.82%). Among these, seeking help from university support staff was more common. By contrast, informal sources of support were more commonly used than not, with between roughly 65 and 72% of the sample having reported seeking help from either their family or peers while in the UK (Family: 72.99%; Peers: 65.39%). However, help-seeking via a religious leader was less common than not, with 35.77% of respondents reporting having sought help from this source while in the UK. Of informal sources, seeking help from family and friends was most common.

Between formal and informal sources, seeking help from family in the UK was most common. Notably, seeking help from a MHP, member of university support staff or GP was more common than seeking help from a religious leader while in the UK.

Table 20. Frequency and distribution of different help-seeking sources used while in the UK.

Help-seeking sources used while in the UK		n(%)
Formal help-seeking sources	GP	
	Yes	57 (41.61)
	No	80 (58.39)
	University support staff	
	Yes	66 (48.18)
	No	71 (51.82)
Informal help-seeking sources	Family	
	Yes	100 (72.99)
	No	37 (27.01)
	Peer support	
	Yes	90 (65.69)
	No	47 (34.31)
	Religious leader	
	Yes	49 (35.77)
	No	88 (64.23)

Higher proportions of respondents reported having used all informal sources (n= 38, 27.74%) than all formal sources (n=12, 8.76%). Slightly fewer respondents reported having used only one informal source (n=31, 22.63%) while in the UK than those who used only one formal source (n= 42, 30.66%). Similar proportions used two formal sources compared to those who used two informal sources (n=48, 35.04%; n=47, 34.31%). A greater proportion reported using none of the formal sources (n=35, 25.55%) than those who reported using none of the informal sources (n=21, 15.33%).

Table 21. A table describing the overall frequency and distribution of the number of formal and informal help-seeking sources used while in the UK.

Help-seeking sources used while in the UK		n(%)
Formal sources		
	None	35 (25.55)
	One	42 (30.66)
	Two	48 (35.04)
	Three	12 (8.76)
Informal sources		
	None	21 (15.33)
	One	31 (22.63)
	Two	47 (34.31)
	Three	38 (27.74)

Perceived usefulness ratings for help-seeking sources used while in the UK

Table 22 describes the frequency and distribution of different help-seeking source ratings in terms of perceived usefulness.

Overall, 409 out of 413 responses for have used any help-seeking source found it useful or very useful — that's approximately 99.0%. Only two sources had ratings which implied low or inadequate usefulness- very low proportions of those who used peer support or university support staff as support sources rated these services as not useful (n=2, 1.46%). Other than university support staff and peer support, excluding those who had not used the source, all ratings indicated perceptions of services provided as useful or very useful. Most of the sample reported having not used formal following sources (over 50%), including: MHP, GP, university support staff. This also applied to religious leader sources. Whereas for informal sources related to peer support and family, rates of use were comparatively higher with most of the sample having used such sources. Notably, across all help-seeking sources used while in the UK, the largest response category for those who had used individual formal and informal sources was 'very useful'.

Table 22. frequency and distribution of different help-seeking source ratings in terms of perceived usefulness.

Help-seeking sources used while in the UK			n(%)
Formal help-seeking sources	MHP		
		Not used	86 (62.77)
		Not useful	-
		Useful	7 (5.11)
		Very useful	44 (32.12)
	GP		
		Not used	80 (58.39)
		Not useful	-
		Useful	17 (12.41)
		Very useful	40 (29.20)
	University support staff		
		Not used	71 (51.82)
		Not useful	2 (1.46)
		Useful	7 (5.11)
		Very useful	57 (41.61)
Informal help-seeking sources	Family		
		Not used	37 (27.01)
		Not useful	-
		Useful	15 (10.95)
		Very useful	85 (62.04)
	Peer support		
		Not used	47 (34.31)
		Not useful	2 (1.46)
		Useful	12 (8.76)
		Very useful	76 (55.47)
	Religious leader		
		Not used	88 (64.23)
		Not useful	-
		Useful	5 (3.65)
		Very useful	44 (32.12)

Barriers to university support services

Table 23 describes the frequency and distinction of different barriers to university support services for those considered themselves to have need for, but were not able to use university support services.

Of those who reported experiencing a barrier, the most common barriers reported in the sample were those related to individual perceptions of university support services and personal resources needed to access them. Namely, lack of time (n=63) and concern that no one will understand their problem (n=62; 45.26).

Specific fears or fears around experiencing stigma were reported by a similar proportion of the sample- with just around 26% of the sample reporting each barrier (n=33 to n=39; between 24 and 28%).

Difficulty finding help was reported by 24.82% of the sample (n=34), related barriers in relation to the availability (n=20, 14.60%) and lack of access to (n=27, 19.71%) university support services were least common in terms of reported barriers.

Table 23 frequency and distribution of different barriers to university support services for those considered themselves to have need for but were not able to use university support services.

Barriers to university support services			n(%)
Personal resources and perceptions	Lack of confidentiality		
		Yes	28 (20.44)
		No	109 (79.46)
	Lack of time		
		Yes	63 (45.99)
		No	74 (54.01)
	No one will understand		
		Yes	62 (45.26)
		No	75 (54.74)
Finding help: access and availability	Difficulty finding help		
		Yes	34 (24.82)
		No	103 (75.18)
	Lack of access		
		Yes	27 (19.71)
		No	110 (80.29)
	Lack of service availability		
		Yes	20 (14.60
		No	117 (85.40)
Fear and stigma	Stigma		
		Yes	33 (24.09)
		No	104 (75.91)
	Fear of unwanted documentation		
		Yes	25 (25.55)
		No	102 (74.45)
	Fear of unwanted intervention		
		Yes	39 (28.47)
		No	98 (71.53)

4.5 Discussion

4.5.1 Summary of findings

I investigated three objectives in this study, examining whether higher levels of CMDs were associated with higher levels of CMDs (Obj. 3). I also explore associations between having sought help from a MHP while in the UK in context to CMDs and loneliness (Obj. 4a). Finally, describing the frequency and distribution of formal and informal help-seeking source usage, perceived usefulness, and perceived barriers to university services (Obj. 4b). To explore these objectives, I used logistic and linear regression analyses (as well as some descriptive analyses) to examine these objectives and hypotheses in relation to data from n=137 SA international students. Findings are summarised below in relation to hypotheses.

Objective 3: CMDs and loneliness

The positive trend between higher loneliness and higher levels of CMDs before and after adjustment for sociodemographic variables provides support for hypothesis 2. People with moderate and severe levels of loneliness had significantly higher CMDs scores compared to people with minimal CMDs. This aligns with a well-established body of literature highlighting the detrimental effects of loneliness on mental health. Previous studies have consistently shown that loneliness is a significant predictor of depression, anxiety, and other common mental disorders in student populations (Diehl et al., 2018; Richardson et al., 2017).

Sensitivity analysis (where a screening cut-off was used to identify those who had scores which would indicate a positive screen for CMDs) showed that SA international students with severe loneliness were more likely to screen positive for CMDs than those with minimal loneliness. The results further corroborate the work of Loades et al. (2020), who found that loneliness not only correlates with mental health difficulties but may also act as a precipitating factor for clinical-level symptoms. These findings are particularly relevant in the context of international students, who often face unique challenges in establishing social networks abroad (Sawir et al., 2008). In this regard, the present study confirms the critical role of loneliness in shaping CMD outcomes among Saudi Arabian students and extends the generalizability of prior findings to a population that has been underrepresented in the literature.

Objective 4a: Help-seeking from a MHP while in the UK: CMDs and loneliness

Contrary to hypothesis 3a, where greater levels of help seeking were expected in context to greater levels of CMDs, there was no evidence of an association between CMDs scores and help-seeking from a MHP before and after adjustment for sociodemographic variables and loneliness. These findings reveal a notable paradox: individuals with minimal to moderate CMD symptoms were more likely to have sought help, whereas those with severe CMDs were disproportionately represented among non-help-seekers, despite likely being most in need. This aligns with previous research indicating that those experiencing more severe psychological distress are often less likely to access mental health support, due to a range of individual and systemic barriers (Eisenberg, Golberstein, & Gollust, 2007; Rickwood et al., 2007). Common barriers for individuals with severe CMDs include mental health stigma, diminished motivation, fear of judgment, or a belief that support services will not be effective (Gulliver, Griffiths, & Christensen, 2010; Corrigan, 2004). Additionally, those who are less lonely and experiencing fewer symptoms may be more psychologically resourced and socially supported, making it easier for them to navigate formal help-seeking pathways (Wilson & Deane, 2012). This pattern reinforces concerns about a treatment gap, where the most vulnerable individuals are the least likely to receive care highlighting the importance of proactive outreach and culturally sensitive mental health promotion, particularly for international student populations.

The absence of a significant association between CMD scores and help-seeking from a mental health professional (MHP) among Saudi Arabian international students contrasts with several studies that have reported higher symptom severity to be a strong motivator for professional help-seeking (Eisenberg et al., 2007; Hunt & Eisenberg, 2010). However, this finding is not entirely unprecedented. Cultural factors such as mental health stigma, perceived shame, and concerns about confidentiality have been identified as key barriers that can suppress help-seeking behavior, even among individuals with severe psychological distress (Zolezzi et al., 2017; Al-Adawi et al., 2017). The lack of alignment with hypothesis 3a may thus reflect culturally specific patterns of coping and health beliefs within the Saudi student population. Notably, additional analysis suggested that loneliness levels played a role in the odds of seeking help from a MHP while in the UK for SA international students, a finding that aligns with research suggesting social distress and isolation can directly motivate individuals to seek professional support as a form of connection or relief (Cramer et al., 2019). This underscores the importance of viewing help-seeking as a socially embedded behaviour, shaped not solely by internal distress but by relational and contextual factors, especially in culturally diverse populations.

Objective 4b: wider help-seeking sources, ratings and barriers to university support services

Wider help-seeking sources

SA international students reported higher usage of a range of informal sources (family, friends) compared to formal sources (GP, MHP, university support staff, lecturers) for help-seeking for a mental health or emotional problem while in the UK. Over one-third to just over half of the sample reported having sought help from either of the formal support sources. Help from a MHP was least common, whereas university support staff was more common. Prior studies have shown that individuals from such contexts often rely on close social networks when coping with emotional or psychological distress, viewing formal mental health services as a secondary or last resort (Youssef et al., 2014; Kirmayer et al., 2007). The present study supports this cultural pattern,

Informal sources of support were more commonly used than not, with between over-two thirds reporting help from either their family or peers while in the UK. This preference may reflect not only trust in familiar sources but also stigma, concerns about confidentiality, and lack of culturally sensitive mental health services (Zolezzi et al., 2017; Al-Krenawi, 2005). The relatively higher usage of university support staff compared to MHPs may suggest a degree of accessibility or perceived approachability within the academic environment, though the reasons behind this difference warrant further investigation. Interestingly religious help was less common, as around one-third had sought help from a religious source for mental health while in the UK. the relatively low use of religious help, despite the high religiosity often associated with Saudi culture, may reflect limitations in access to culturally congruent religious leaders while abroad or a shift in preferred coping strategies among students in a UK context. Of informal sources, seeking help from family and friends was most common. Between formal and informal sources, seeking help from family (whether family were in the UK or in another country) was most common. Help from any formal source was more common than seeking help from a religious leader while in the UK. It should be noted that the measures or questions did not allow me to understand whether family, peer or religious leader support was situated outside of the UK or within the UK. These findings highlight

the need for universities to integrate culturally informed informal supports such as peer networks and family related programs into mental health strategies aimed at international student populations.

Perceived usefulness ratings

There was a high level of perceived usefulness of the range of formal and informal sources, with almost no respondents indicating that services were not useful. The vast the majority of those who accessed help from mental health while in the UK rated formal and informal sources as useful or very useful. Prior studies have reported that international students tend to rate formal support services positively when they perceive them as culturally sensitive and accessible (Hyun et al., 2007). Similarly, informal support networks have been found to be perceived as more emotionally attuned and less stigmatizing, which may explain their high usefulness ratings in the sample (Cauce et al., 2002). These findings support the idea that increasing the cultural relevance and approachability of formal services could enhance not just utilization, but also continued engagement and long-term mental health outcomes for Saudi students abroad.

Barriers to university support services

Barriers to university support services were categorised according to three main groups: (1) personal resources and perceptions, 2) barriers to finding help and access, 3) fear and stigma). Lack of time and the perception that no will understand the problem were most common, lack of service availability was least common. A more detailed summary is provided below:

- One-fifth of the sample did not use services due to a perceived lack of confidentiality.
- Just under half did not use services due to their perceived lack of time.
- Just under half did not use services due to their perception that no one will understand their problem.
- Around one-quarter did not use services due to difficulty finding help.
- Around one-fifth did not use services due to lack of access
- Around one-sixth did not use services due to lack of service availability.

- Around one-quarter did not use services due to either perceived stigma, fear of unwanted documentation on their academic record, or fear of unwanted intervention.

The categorization of barriers to university support services into personal resources and perceptions, access issues, and fear or stigma reflects widely recognized themes in the literature on mental health help-seeking among international students. The most commonly reported barriers in this study which is lack of time and the belief that others would not understand the problem, are consistent with findings from previous research showing that practical constraints and low perceived relevance or effectiveness of services are significant deterrents to help-seeking (Gulliver et al., 2010; Hyun et al., 2007). Among Saudi and other Arab-background students, such perceptions are often compounded by cultural beliefs around self-reliance and emotional privacy (Al-Krenawi, 2005). Notably, lack of service availability was the least commonly reported barrier, suggesting that the issue may not be structural access, but rather psychological and cultural readiness to engage with services. The identification of stigma and fear—particularly the fear of being judged or misunderstood also aligns with literature emphasizing the impact of cultural stigma on mental health service use in Arab populations (Zolezzi et al., 2017; Dardas & Simmons, 2015). These findings highlight the importance of culturally sensitive outreach efforts, as well as tailored psychoeducation, to address internalized stigma and reshape students' perceptions of the usefulness and safety of seeking help in a university setting.

4.5.3 Strengths and limitations

Strengths

A key strength of my study is its novelty, given the sparse existing literature on SA UK international student mental health in general. To my knowledge this is the first study to examine CMDs in relation to loneliness and help-seeking in this population (examined further in Chapter 2).

Detailed descriptive reporting also provides a baseline for understanding average levels and severity of loneliness and CMDs in this population, as well as a basic understanding of patterns of usage and acceptability of formal and informal help-seeking sources for mental health and wellbeing. The use of cut-offs or ordinal variables may help to more easily conceptualise severity by showing what proportion of SA students had minimal, moderate or severe levels of CMDs (with depression and anxiety reported additionally) and loneliness. The scope and relevance of my findings and their contribution to the literature on SA student mental health is strengthened by having examined a wide array of help-seeking sources for mental health, usefulness of sources of support, and barriers to university support sources based on SENSE study measures.

Methodological strengths include the use of the measures for CMDs and loneliness (PHQ, GAD, UCLA) which are brief or simple to administer alongside being well-validated, reliable and robust measures for depression, anxiety and loneliness, respectively. A further strength of my study relates to having adjusted for age, sex, level of study and financial difficulties as confounding factors in each of my inferential analyses. Additionally, the use of logistic regression models to examine the odds of binary help-seeking outcomes, as well as the odds for screening positive for CMDs provides a useful frame to conceptualise the potential for increased risk of poorer outcomes in terms of loneliness severity.

Limitations

For each sub-section I outline limitations that apply to individual hypotheses or aspects of my study (e.g. CMDs and loneliness versus help-seeking, CMDs and loneliness), and those that apply broadly or to all areas.

Limitations of analysis

Limitations that apply to all my analyses relate to the drawbacks of cross-sectional research. As this was a cross-sectional study, we cannot determine the role or importance of the different factors in this study on causal pathways to CMDs or poorer outcomes in this group. We also cannot rule out reverse causation. The same limitation applies for CMDs and loneliness levels. In that we do not know whether higher CMDs causes higher loneliness, or vice versa. The picture of causation may be complex and bidirectional. Symptoms of CMDs could bring about greater loneliness and social isolation, and greater levels of loneliness or social isolation could worsen symptoms of CMDs. If true, this would have substantial implications for our understanding of how to identify and prevent poorer outcomes. However, there is no way to confirm this with current data or rule out re-call bias such as people reporting loneliness due to the impact of depression on social perception and cognition. It may be that if these data were collected again at a later point in time, CMDs symptoms, loneliness levels and help-seeking behaviour may have been differently associated. This highlights the importance of why further research should focus on longitudinal studies or assessing CMDs over multiple points in time to eliminate the issues of reverse causation and mitigate against recall bias, which I describe further in later parts of my discussion.

Chance

Concerning all of my hypotheses, my study may not have been sufficiently powered to detect smaller differences. Relating to effect size and statistical power, my study was sufficiently statistically powered to detect medium effects at .05 level. However, if there is a small effect of CMDs severity or CMDs score on help-seeking, this study may not have been able to detect differences at such a level. This applies to both regression and logistic regression analyses in my thesis.

It was also not possible to examine interactions between CMDs and loneliness in context to the likelihood of seeking help from a MHP as this would have required a much larger sample. This is a limitation which applies to help-seeking analyses. While not directly pertinent to my hypothesis, it is plausible that loneliness and CMDs symptoms may interact in different ways in context to help-seeking behaviour groups with different intersections of demographic characteristics. This considers a more complex picture of interactions, where help-seeking behaviour could vary across specific profiles of CMDs and loneliness (e.g. high CMDs, low loneliness; high CMDs and high loneliness) and across clusters of sociodemographic variables. The small sample size meant that I was unable to draw out the more complex picture of interactions among these variables, accounting for sociodemographic differences in mental health, loneliness and help-seeking.

Limitations of measures

There are several key limitations to the measures used in this study. While the rationale for measure selection was justified in aligning with the SENSE study (Chapter 3) to enable ease of comparison and consistency of measurement (with comparison of descriptive results presented in Chapter 7), there were some trade-offs in terms of limitations of measures. As the measures used in my study were consistent across hypotheses or analyses (with the exception of help-seeking behaviour, examined only in relation to hypotheses 4a and 4b), I highlight where limitations of measures apply across my hypotheses.

One drawback of using a composite measure for CMDs (as opposed to using more granular or specific measures for anxiety or depression) is that my study was unable to examine if there were differential or divergent effects of anxiety and depression in relation to loneliness or help-seeking. This applies to all of my main hypotheses. For example, if anxiety or depression were associated with loneliness or help-seeking in different ways. Or if the magnitude of effects differed, with depression being more strongly associated with loneliness or help-seeking than anxiety for example. However, I made the decision to use a composite measure based on the observation that depression and anxiety often co-occur and are both experience as poor mental health.

The use of specific sociodemographic measures mirrored the SENSE study apart from several differences mentioned below, this introduced several limitations which apply across my thesis. I also collected fewer measures, discussed in more detail below in relation to selection bias. Firstly, using more granular age categories may have provided more insight into the age profile of SA international students. Although, sample size limitations would have potentially limited the scope of this to maintain anonymity. Secondly, I used a binary variable for sex and did not account for or measure related variables such as gender identity. This has the limitation of not representing such groups in the SA international student cohort, however the ethical and practical rationale for this is discussed below. The same applies for sexual orientation, as I did not collect this data. This is an important limitation given that sexual and gender minority status is known to be associated with adverse outcomes in terms of help-seeking, CMDs and loneliness. Not representing these groups in my research may introduce bias in terms of my analysis, in not accounting for a sociodemographic factor which could be important to understanding links between mental health, loneliness and help-seeking. Though there are ethical and practical reasons for not collecting this data, which are discussed in relation to selection bias below.

Limitations related to sampling and missing data – Selection bias

There are several sampling and missing data limitations which impinge upon implications and generalisability of findings. The sample was recruited opportunistically or through SACB club managers, and therefore may not be representative. Higher Education Statistical Association (2024) data from 2021/22 academic years shows 8,750 SA international students registered, so my sample is unlikely to be representative of the general population of SA international students in the UK. My sample represents a small proportion (approximately 1.56%).

There may have been under-representation of undergraduates, those under the age of 25, and male students in the sample. For undergraduates and young people, this may be reflective of the point in life, context and motivations for which most SA international students access UK higher education. In that older students on PGR or PGT courses might be expected given that employers incentivise study in the UK to further career

progression. Where most have completed their UG education in Saudi or non-UK countries. Lower proportion of males in the sample may not be representative of gender distribution of SA international students in the UK overall, it could be that this reflects gender differences in attitudes towards participation in research on mental health. This means that while my results may have some generalisability to the SA international student population in the UK overall, findings may have less generalisability to specific groups such as male, undergraduate SA international students of younger ages due to under-representation of these groups in the sample.

Selection bias is also relevant in that my sample may be biased towards or overrepresent those with mental health problems, loneliness or experience of having sought help more for these issues. In that SA international students who have experienced these issues while studying in the UK may see this survey as more relevant to them. Meaning my study sample may have higher rates of CMDs, loneliness or having sought help than the SA international student general population.

While sample size of my study did not impose major limitations or problems with statistical power, there was a high level of attrition and missing data. It was necessary to use complete cases in all analyses due to this, meaning there may have been selection bias. And I was not able to rule out the possibility that attrition or non-participation could be underpinned by more severe levels of CMDs, loneliness or differences in help-seeking.

Residual confounding

As it was not possible to collect further detail on sociodemographic data, there is no way to know whether the observed associations are due to the influence of unmeasured sociodemographic variables which could confound- these include sexual orientation, gender identity, suicidality and self-harm, other non-CMDs mental health diagnoses, disabilities. While residual confounding is a considerable limitation, these data were not collected due to ethical and practical reasons (sexual orientation, gender identity, suicidality, self-harm). In terms of ethical rationale, given cultural stigma around self-harm and suicidality, as well as Middle Eastern cultural attitudes and laws around sexual and gender minority groups, the collection of such data could present an indirect

threat to participant safety and privacy. While steps were taken to minimise and prevent any data breaches concerning participant data, the risk of such events can never be removed completely.

In Chapter 7, I provide further detail on these limitations as threats to validity and reliability of findings in relation to my thesis overall.

4.5.4 Meaning of findings

Objective 3: CMDs and loneliness

My findings suggest that loneliness is important to understanding higher levels of CMDs symptoms in SA international students. While the evidence was weak, SA international students with severe and moderate loneliness levels could be at greatest risk of CMDs symptoms. One interpretation is that this means greater identification and support is needed for lonely students, this is discussed further in relation to study implications in later sections. In general, these findings are consistent with evidence which links loneliness and CMDs, and poorer levels of mental health more broadly. This includes evidence from a range of reviews and primary research (general population studies, clinical population studies, as well as studies with university students) which suggests loneliness is a risk factor for poorer mental health, as well as being a risk factor for poorer functioning across a range of mental health conditions (See chapter 2 literature review).

While causal pathways are not a direct focus of my study, there are several caveats to considering the meaning of my findings, alongside existing evidence on international student experience, which I briefly discuss below.

As this study is cross-sectional, I cannot determine causal relations such as whether loneliness is the cause of more severe symptoms, or the role of international student experiences such as separation from family in these pathways. Or whether more severe levels of CMDs symptoms bring about greater levels of loneliness, (though social withdrawal and anhedonia for example). It may be that both are true at different time points, where loneliness and CMDs symptoms are impacted and exacerbated by one another. The possible patterns of causation are complex, though the literature I

reviewed in chapter 2 highlights some evidence that loneliness and CMDs associations may be bidirectional.

Possible explanations for my findings in context to the wider literature in international students, and some qualitative research in SA international students in non-UK countries, both point to aspects the international student experience such as moving abroad, finding accommodation, renting, isolation from family, difficulty making friends, cultural adjustment difficulties. This evidence mentions depression, anxiety and stress, as well as isolation and loneliness as a consequence of adjusting to these factors, which form part of the stresses or exposures of moving abroad for study.

Objective 4a: Help-seeking, CMDs and loneliness

My findings suggest that CMDs symptoms were not associated with having sought help from a MHP while in the UK in SA international students. Although those with higher loneliness scores were less likely to seek help, the evidence for this was weak.

Findings of exploratory analysis suggested SA international students with severe loneliness levels were less likely to seek help from a MHP while in the UK, with this association being maintained after adjustment for sociodemographic variables and CMDs scores. The finding that severely lonely SA students were around one-fifth as likely as minimally lonely SA students to seek help from a MHP suggest that severe loneliness may be important in relation to understanding reluctance or inability to access MHP support in the UK for this group. Controlling for CMDs symptoms strengthened the association but the magnitude of this change was relatively low. As CMDs scores did not seem to be associated generally with the odds of help-seeking, this may suggest that severe loneliness may be a factor that differentiates SA international students with CMDs symptoms who access a MHP versus those who do not.

While there is limited literature to compare to these findings on the links between loneliness and help-seeking in SA international students, this finding may interpret as suggesting that severely lonely SA international students with high CMDs scores were considerably less likely to seek help from a MHP than those who have CMDs symptoms but are minimally lonely. This could point to severe loneliness as a risk factor for lower odds of seeking help for a MHP in context to CMDs symptoms. Particularly given that

loneliness was strongly associated with increased odds of screening positive for CMDs in earlier previous analyses, together with help-seeking this could implicate loneliness as an important factor in relation to mental health and accessing support in this group.

This may have several wider interpretations, though it is not possible to validate or confirm these interpretations in the absence of necessary factors to establish causation, or a sufficiently large dataset to robustly account for these variables in analysis. It may be that this group are reluctant or unable to access formal support from a MHP, consistent with some evidence that international students may experience access, attitudinal or knowledge barriers in accessing support from a MHP while studying overseas (Becker et al., 2018; Boafo-Arthur & Boafo-Arthur, 2016; de Moissac et al., 2020; Nguyen et al., 2019)). Alternatively, it may be that these students accessed mental health support from other sources. It may also be that loneliness increases likelihood of using informal sources of support. While interesting in the wider scope of international student mental health, understanding how mental health and loneliness shape usage of specific help-seeking sources was beyond the aims of my thesis.

Objective 4b: Wider help-seeking trends

My findings concerning higher usage of informal sources compared to formal sources for help-seeking for a mental health or wellbeing problem while in the UK are consistent with evidence in wider general and university student populations (Becker et al., 2018; Boafo-Arthur & Boafo-Arthur, 2016; Calendar, updated 2022; de Moissac et al., 2020; Nguyen et al., 2019). One explanation for this may be that informal sources are accessed at a lower threshold or more easily available to SA international students than formal sources.

Family members were the most common sources of help sought by SA international students. This may be due to the circumstances of studying abroad and separation from social circle (e.g. having to make new friends or new social relationships). In that requesting help from family may be more acceptable, familiar or accessible for mental health and wellbeing, than help from peers (Calendar et al., updated 2022; Clough et al., 2019; Russell et al., 2008).

Higher usage of university support staff compared to GP or MHP usage may be consistent with the tiered structure of pathways to access for mental health support in the UK. In which university support staff represent a lower tier form of support which may be more immediately accessible and visible to SA international students. With GP and MHP services requiring registration and referral with organisations external to the university, and typically having higher waiting times (Cage et al., 2020; Duffy, 2023; Eisenberg et al., 2007). More recent evidence from young adult populations in the UK show considerable delays to accessing mental health support through GP or statutory services, with many of those who are eligible for NHS mental health support struggling to access support or being unable to receive support in context to lengthy waiting lists (Punton, Dodd & McNeil, 2022).

High ratings for perceived usefulness may suggest that SA internationals student have positive experiences of accessing support for mental health and wellbeing while in the UK, perceiving informal and formal sources of support to be highly acceptable in terms of their usefulness. However, there are several alternative explanations for what this may mean. This could be a reflection of bias or the influence of cultural attitudes towards authority in terms of help-seeking sources, as students may have been reluctant to give negative ratings for help-seeking sources or may have wanted to show compliance. Alternatively, considering the level of missing data in the sample, it may be that those with the highest levels of CMDs symptoms and the poorest or least acceptable experiences of seeking help declined to participate or withdrew (Cage et al., 2020; Duffy, 2023).

My findings on barriers to support services pointed to several prominent barriers, consistent with barriers reported in recent literature, albeit in different student populations to those examined here (Cage et al., 2020; Duffy, 2023). Lack of time was most common. One interpretation relates to high levels of PGT and PGR students in the sample, where lack of time could be due to course demands and the higher demands of post-graduate study may coincide. Nearly as common was the perception that ‘no one will understand my problem’ which may be consistent with underlying beliefs, perceptions and knowledge about available mental health support structures, and mental health literacy in students from Middle Eastern backgrounds. In terms of

fear or stigma related barriers, cultural influences concerning attitudes and perceptions of mental health and accessing formal support may have some role in explaining these findings. In that students from Middle Eastern backgrounds may perceive or experience greater stigma or cultural barriers towards using mental health services, being more likely to report this barrier to using university support. Among university students, stigma has been shown to influence attitudes toward counselling, with many perceiving help-seeking as a sign of weakness or personal failure (Eisenberg, Downs, Golberstein, & Zivin, 2009). Cultural background further intensifies this barrier. In collectivist societies, such as those in the Middle East and Asia, the stigma associated with mental illness is often more pronounced due to concerns about family reputation and social judgment (Zolezzi et al., 2018; Abdullah & Brown, 2011). This is particularly relevant for international students and students from conservative cultural contexts, where fear of shame or dishonor can overshadow perceived benefits of seeking help (Hyun et al., 2007).

Overall, these findings may be interpreted in light of wider literature, however, this are limited to no sources for direct comparison and deeper insight. Based on this, I triangulate these broad findings and their interpretations with more detailed qualitative data (consisting of my themes on barriers and help-seeking) in Chapter 6.

4.5.5 Implications of findings

Findings from across my objectives have broad implications for international student support provision at several levels. They articulate the need for support for SA international students across several potentially linked areas.

A key implication of the relatively high average CMDs scores in the sample (alluding to moderate severity) and high proportion screening positive for CMDs, is the need for targeted mental health support such as proactive identification and screening for SA international students. I discuss and compare CMDs scores and other across the samples of my thesis briefly, in Chapter 7. A focus around CMDs and loneliness or social isolation should form a key part of this support, as the strong association between loneliness and CMDs could underlie poorer outcomes for people with CMDs who experience loneliness. The implication that more targeted support and identification are

needed is strengthened when considering that severely lonely SA international students were more likely to screen positive for CMDs, as well as having considerably lower odds of seeking help from a MHP in content to CMDs symptoms. Importantly, findings in this area may imply that loneliness may play important in terms of understand likelihood of accessing MHP support in the UK in this group than CMDs scores. Though further study is needed to confirm this implication and understand any causal role that loneliness may play alongside or instead of CMDs symptoms in terms of SA international students odds of accessing MHP support while in the UK. If loneliness does play an important role, improvements in university support or interventions to increase social support, friendships, or availability of events to meet fellow students may be an important part of wider support, as indicated in qualitative findings in Chapter 6.

The link my study has to the SACB as a stakeholder in this research may also provide a potential route for using the findings from this research to collaborate with UK, HE institutions to improve general and targeted support for SA international students studying in the UK. With a particular focus on: CMDs, mental health and wellbeing, executive function and academic difficulties, loneliness and help-seeking for mental health and wellbeing.

Relatively high levels of usage of formal and informal sources of help, as well as ratings scores have positive implications in terms of access to support and acceptability. Higher usage of university support staff, and lower usage of GP services and MHP support may be in line with the structure of pathways to access for support in the UK. With the implication that fewer students may use GP services or MHP as these have more stringent criteria and complicated pathways for accessing support. However, as there is limited research on SA international students, it is hard to know how or whether data on proportions are reflective of any unmet need or disparity in usage or acceptability. And we do not know whether demand characteristics or bias played a role in the data. As such, further research is needed to clarify these to better inform our view of the implications of help-seeking behaviour, perceptions of usefulness, and the degree of barriers to support experienced by SA international students. Particularly in relation to a relative comparison of whether different groups of SA students access different sources of help or are reluctant to access help for mental health support while in the UK.

Further, over-representation of those with positive and perceptions of seeking help could be related to those with negative experiences of using formal and informal sources of support for mental health opting not to participate.

Overall, my thesis findings with respect to CMDs loneliness highlight the need for greater support, with roles for a range of higher education stakeholders, including university support services, academic departments and staff, SACB and wider agencies linked to Saudi Arabian government with a role in policymaking. While these associations point to a need for further support, more research which uses longitudinal methods with a larger cohort or SA international students is needed to disentangle the nature of these associations. As well as more clearly understanding directionality in terms of the role of loneliness in relation to CMDs symptoms during international study.

The lack of evidence on SA international students in the UK limits direct comparison and implication with my findings. However, it may be reasonable to discuss the implications of my study in relation to frame I established in chapter 2 consisting of: wider evidence on Saudi university students studying in Saudi international university students generally. This evidence base points to potentially elevated levels of CMDs in these groups compared to general population evidence. Though, differences in measures make it hard to directly compare, it may be reasonable to suggest that SA international students in the UK are a risk of poor mental health outcomes and in need of support in this area.

It should be noted that the limited evidence base on SA students has limitations for making implications from my thesis findings. As above it makes it hard to compare or understand whether the findings around CMDs and loneliness in this sample of SA international students is consistent with other directly relevant research. A key implication of the limited evidence is that we do not know how the mental health, loneliness or help-seeking tendencies differ between international students and specific nationalities of international student such as SA international students. Based on this a final implication of my thesis findings in these areas is that they highlight that this limited basis for comparison means that we cannot yet understand how the level and type of support for CMDs, loneliness, and help-seeking may be different between different

student groups. Such as SA international students, international students more widely (including specific groups of international students such as those from non-middle eastern backgrounds) and home students. This comprises one of the areas of further study described in the subsequent section.

4.5.6 Future directions

My findings show the potential feasibility and value of larger study of SA international students in the UK. Large scale data collection and engagement in further research could surmount attrition issues, and the use of longitudinal design could further address knowledge gaps in this area. In particular, further study could use such a methodology to disentangle specific aspects of the international student experience which may underly risk of poorer mental health and social outcomes. Specifically understanding whether or how loneliness may be causally linked to CMDs symptoms in this group.

There may be considerable value in a large multi-centre study across different universities and support organisations which SA international students might use, in order to create better or more comprehensive sources of data. My findings and their implications outline a potential opportunity for future researchers and HE institutions in terms of addressing this limitation, given the limited basis for comparison and lack of existing data. As universities have formal contact with international students through registration, playing a crucial role in assessment of documentation and provision of support, there may be a basis for routine outcomes measurement in terms of mental health, help-seeking and loneliness. This should be done across institutions to build larger and more comprehensive databases with which to understand and address international student mental health. A consistent approach to this and collaboration across institutions may address the knowledge gap in terms of international student mental health in the UK, while also addressing this for specific groups such as SA international students. This endeavour should be undertaken in a minimally disruptive or burdening way and must be co-produced and co-designed meaningfully with international students as well as HE institutional stakeholders. This complex endeavour could be undertaken longitudinally to further our understanding of causation and better inform the most impactful areas where support could be improved or better targeted.

However, the considerable logistical constraints of the cross institutional collaboration and funding that would be required mean that this may not yet be a reasonable possibility.

To achieve a deeper understanding of these issues and how best to provide support, we need answers to questions about how CMDs, loneliness, and help-seeking transact and relate to one another in terms of shaping SA international student lived experience, which quantitative methods alone may not be able to address. Chapter 6 of my thesis seeks to address this critical need and evidence gap. Specifically, seeking to understand what wider factors shape mental health, loneliness, tendencies and attitudes to help-seeking in this group while studying abroad. Achieving this deeper understanding may inform whether there are suitable or appropriate avenues for intervention and support at different parts of this pathway. Informing a view to how best to provide support, for example whether support for CMDs should be provided directly, or indirectly via social opportunities to alleviate loneliness. My quantitative findings indicate importance of loneliness with respect to both CMDs and help-seeking from a MHP- future study could use this frame to investigate international student lived experience for specific groups, such as SA international students.

Overall, further research should clarify whether these findings replicate in larger samples of SA international students, or in parallel research on SA international student experience in other countries. Longitudinal research of the SA international mental health in context to student experience, as well as life preceding and following international study could further extend our understanding of how to better support the mental health in SA students, as well as international students more broadly. While there may be logistical barriers, this could also provide some basis to understand causation and risk.

4.5.7 Conclusions

This exploratory study contributes several novel findings to the extant literature on SA mental health, and international student mental health more broadly in relation to loneliness and help-seeking.

Severely lonely SA international students were considerably more likely to screen positive for CMDs, as well as being considerably less likely to seek help from a MHP compared to minimally lonely students. These findings suggest the need for more in-depth understanding of the role of loneliness in relation to how it shapes lived experiences of SA international students and their experiences of CMDs. The main implication for provision from my findings is that there should be consideration for loneliness support in addition to current service provision which may focus on CMDs or mental health symptoms. As loneliness may be a risk factor for poorer or adverse outcomes in term of CMDs symptoms and not seeking from a MHP for mental health support.

My descriptive findings give a much-needed account of help-seeking sources, perceived usefulness, and barriers to university support services in this group. This may provide different stakeholders (including future researchers, university policy makers, staff in university and Saudi Arabian Cultural Bureau support services) with useful information to understand usage of formal and informal sources of help and acceptability.

However, it is important to recognise that the depth of inference and application of my findings is reduced by limitations of my study and the limited evidence base overall. Qualitative analysis in context to mixed methods may be able to contribute to achieving a deeper understanding of these issues and how best to provide support. Given that such information does not currently exist in the published literature, Chapter 6 of my thesis builds on these findings in a qualitative investigation to broaden and deepen our understanding of important aspects of SA student experience in the UK. Whereby a qualitative investigation of the factors associated with mental health and well-being in this student group will enhance our understanding of how-to best tailor academic, mental health and wellbeing support in SA international students.

Chapter 5: Quantitative associations between levels of CMDs and executive functioning in Saudi Arabian UK international students

5.1 Summary

In this chapter, I conduct cross-sectional research to examine whether CMDs symptoms are negatively executive functioning outcomes (H5: inhibition; H6: attention; H7: working memory) in Saudi Arabian international students in UK higher education settings. I present findings from descriptive statistics and regression analyses of cross-sectional survey data gathered from n= 137 participants.

Findings showed support for hypothesis 5. Multivariable linear regression models adjusting for sociodemographic variables and loneliness scores showed evidence that those with higher CMDs scores had poorer inhibition task accuracy. Every unit increase in CMDs scores was associated with on average 0.44 points lower Flanker accuracy scores (MD= -0.44, 95% CI= -0.85 to -0.03, p=0.032); those with severe CMDs scores had on average 11.91 points lower flanker accuracy scores compared to those with minimal CMDs scores (95% CI= -21.27 to -2.54). While adjustment for loneliness attenuated this association, evidence for poorer inhibition task accuracy scores in context to higher CMDs scores remained. There was mixed support concerning hypothesis 6, every one-point increase in CMDs scores was associated with on average 0.42 points lower Stroop accuracy scores (MD= -0.42, 95% CI= -1.06 to 0.21, p=0.194), though this association was not significant in fully adjusted models. Despite there being evidence for a negative association following adjustment for level of study, this attenuated to non-significance after adjustment for loneliness scores. Contrary to hypothesis 7, there was no evidence of an association between CMDs scores and digit span accuracy scores across unadjusted or fully adjusted models.

My findings highlight the need for more comprehensive support for specific groups of international students such as SA students. As deficits in EF are related to CMD and may lead to additional disability in student populations. With broad implications across several potential areas of support, including enhancing screening and identification of mental health and wellbeing problems, the need for greater academic support and engagement to understand the importance of deficits to inhibitory control in context to

severe CMDs, as well as accessing social support to alleviate high levels of loneliness and social isolation in this group. However, measurement, analysis and missing data limitations of this study, alongside limited existing research in this area mean that further qualitative and quantitative research is required to confirm or expand upon these findings.

5.2 Background

5.2.1 Rationale

This section outlines the rationale for examining how executive function is associated with CMDs in SA international students given the limited evidence in this area. While at a surface level executive function may appear a different or tangent topic to the main focus of international student mental health, help-seeking and loneliness, the link between CMDs, related factors and executive function is an important and neglected area of research in this group. If CMDs contribute to poorer executive function in populations such as international students, this may have important implications for university education and arguably subsequent occupational or employment outcomes. This is particularly important as bidirectional associations between executive function and CMDs may be plausible- greater levels of CMDs may impair EF, and academic difficulties through impaired executive function may worsen CMDs symptoms such as low mood or hopelessness. This is my broad rationale for investigating executive function and CMDs in SA international students, which I describe further in this section. This may have important implications given evidence of poorer mental health outcomes in students, and that studying abroad may bring greater cognitive demands and stressors.

The gaps between topics and how they have been applied highlight a novel area of research that may have value in informing how to improve international student support. Taken collectively, existing evidence points to a potential pathway of worsening mental health and wellbeing linked to executive function in context to the academic demands of studying abroad. However, we do not know if this is the case, as no existing research

has examined these topics in SA international student in the UK, or international student cohorts more broadly.

My literature review in Chapter 2 highlighted evidence that CMDs and executive function are negatively associated in wider groups, that executive function is positively associated with academic performance, engagement, school readiness. I discuss available evidence from this in more detail below.

Firstly, there is ample existing evidence in wider general and clinical non-student populations in which high levels of CMDs symptoms are associated negatively associated with EF. As primary and secondary cross-sectional research notes poorer inhibition, attention, working memory and higher or more severe CMDs symptoms clinical and general populations (Alves et al., 2014; Aronen et al., 2005; Brooks et al., 2013; Doumas et al., 2016; ; Dulay et al., 2013; Snyder et al., 2015; Roca et al., 2015; Vergara-Lopez et al., 2014; Wagner et al., 2015).Yet no cross-sectional research has examined whether these associations are reflected in international students, despite there being evidence in non-international student populations. The fewer studies in university students reflect a similar pattern of associations to research in non-student groups, their limitations include using self-report to assess EF, assessing a single domain of executive function or CMDs, and not accounting for wider factors associated with CMDs, executive function or both, such as age, sex, level of study and financial difficulties (Aijilchi & Nejati, 2017; Fernández-Castillo & Caurcel, 2015; Irie et al., 2019; Kertz et al., 2017; Mckian, 2015). This means that we know very little about how or whether CMDs symptoms are associated with attention inhibition and memory performance in international student and SA international student groups.

The limited evidence on this is surprising, given links between executive function, academic achievement, school readiness in adolescent and young adult populations, and evidence of CMDs in international student populations (Best et al., 2011; Bierman et al., 2008; Clough et al., 2019; Thorley, 2017). Greater executive function deficits and CMDs symptoms could be present in this population. Unmitigated, this could reasonably be anticipated to impact academic achievement, readiness, and engagement in studying and learning given the links above. Although we ultimately do not know if this

is the case, as no studies for international students or SA students examine these associations. This suggests there may be value in examining these associations across multiple domains of EF, CMDs, accounting for wider variable such as age, sex, financial difficulties and loneliness.

There are several contextual aspects of moving to the UK as an SA international student which could confer greater risk of adverse outcomes in relation to mental health, attention, inhibition, memory and the demands of academic study. The cognitive demands and wellbeing impacts of studying abroad such as language barriers, navigating unfamiliar cultures and educational systems, structures and methods of learning and assessment are areas which could increase risks for poor mental health and worse executive function in SA international students (Almurideef, 2016; Boafo-Arthur et al., 2016; Taylor & Ali, 2017). It is plausible that these demands may confer greater risk for CMDs and greater demands on executive function due to the nature of studying abroad in a non-Muslim or Western country given qualitative evidence reporting on acculturation and academic challenges in SA international students. Though we do not know if this is the case as I am not aware of any study that has examined CMDs and executive function in this group. This highlights the value in understanding these associations in SA international students through my study. This is intended as a first step to understanding the pathway of associations between CMDs and executive function in context to international study.

It is also important to briefly consider key findings and gaps in the evidence base around international student mental health, and mental health of SA nationals (as limited evidence on CMDs exists in SA international students in the UK). There is some evidence of higher levels of CMDs in university students, and international student groups to some extent. Despite my findings in study 1, which did not reflect a considerable difference in CMDs scores among these groups, more homogenous sub-groups of international students such as SA international students may still have elevated levels of CMDs. This may be reasonable given studies showing higher CMDs prevalence in SA nationals studying in Saudi and international students more widely.

5.2.2 Objectives and hypotheses

Objective 5: To investigate whether higher levels of common mental disorders (exposure) are associated with poorer inhibition accuracy scores (Flanker task) in SA international students enrolled in UK higher education.

Hypothesis 5: Higher CMDs scores will be associated with poorer inhibition task accuracy.

Objective 6: To investigate whether higher levels of CMDs (exposure) are associated with poorer attention task accuracy scores (Stroop task) in SA international students enrolled in UK higher education.

Hypothesis 6: Higher CMDs scores will be associated with poorer attention task accuracy.

Objective 7: To investigate whether higher levels of common mental disorders (exposure) are associated with poorer working memory task accuracy scores (forward digit span task) in SA international students enrolled in UK higher education.

Hypothesis 7: Higher CMDs scores will be associated with poorer working memory task accuracy.

5.3 Methods

5.3.1 Participants and recruitment

Participant recruitment process is detailed earlier in Chapter 4 (Section 4.3.1) in more detail. The same number of participants were used for this study (n=137) as participant response data was drawn from the same sample and survey as in the previous chapter.

5.3.2 Procedure

In addition to the procedure described in Chapter 4 (Section 4.3.2), participants completed trials of on-screen tasks measuring different domains of executive function (EF), including attention (13 trials), working memory (4 trials) and inhibition (16 trials). Stimuli were presented to participants for an average of 1000ms. Task instructions, stimuli and step-by-step screenshots for on-screen trials may be seen in appendix 4 for

Flanker, Stroop and Digit-span tasks. Due to the complex nature of the instructions displayed before each task, an Arabic translation for the instructions was available to participants alongside English.

All questionnaires and experimental tasks were hosted via online platform Gorilla- participants received a link via email or WhatsApp, accessing the link and reading through participant information material as well as consent form and support sources available in case of participant distress. Those who consented were assigned a unique identification key and completed each questionnaire, then executive function task. After which, participants indicated whether they wished to be contacted for qualitative interview, those who ticked no were taken to the study end page. Those who clicked yes read the qualitative participation materials and indicated consent or did not provide consent. Screenshots of all measures may be seen in appendix 4.

5.3.3 Measures

5.3.3.1 Outcomes

Executive functioning

Further details on the presentation and sequence of each task is presented under the procedure heading prior to measures.

Inhibition

An online version of the Flanker task was used to measure inhibitory control (Eriksen & Eriksen, 1974). The main aspect of this measure used in analyses was task accuracy as a percentage of correct/incorrect trials, formed from participant accuracy scores representing ability to suppress inappropriate responses in certain contexts. Mean response time across congruent and incongruent trials, as well as number of correct and incorrect trials were also assessed across 16 trials. This task was also hosted via online platform Gorilla using available flanker task templates.

Attention

An online version of the Stroop task was used to measure attention (MacLeod, 1992) Data on mean response time across congruent and incongruent trials, as well as number of correct and incorrect trials were measured via online trials. These were hosted and data collected via online interface Gorilla- across 16 trials, correct and incorrect responses as well as congruent and incongruent reactions times were assessed. The main aspect of this measure used in analysis was Stroop accuracy score.

Working memory capacity or recall (digit span)

An online version of the forward digit-span task was used to assess working memory capacity, represented as the number of items participants correctly recalled during the Miller task (1956). Accuracy scores were derived from the digit span task hosted via a shortened online task via Gorilla platform. This shortened task contained four trials in total, ranging from examining lowest digit span score to highest (e.g. 7 digits). Data collected included correct and incorrect responses.

Rationale for selection of measures or data

There were several rationales for using accuracy scores in place of mean reaction times data (or interference scores derived from the difference between congruent and incongruent trials) for both inhibition (Flanker) and attention (Stroop). Firstly, these data are typically used in experimental studies to compare the speed or latency of response across participants, to understand whether a Flanker or Stroop effect (i.e. slower responses on incongruent trials vs congruent trials, representing greater interference) is present in context to certain variables. This study seeks to understand associations between levels of common mental health symptoms and executive function performance- namely, whether higher CMDs scores are associated with poorer performance. As opposed to understanding whether a Stroop or Flanker effect (i.e slower reaction times on incongruent trials, reflecting the presence and scale of interference effects) is present, and to what degree across people with different CMDs score. Which would be a more robust use case for using reaction times or interference

scores data. Accuracy scores may also be more straightforward in their interpretation in relation to statistical analysis. It is logical to capture CMD-related executive function task performance differences for inhibition, attention and working memory in the form of accuracy scores, where poorer CMD-related executive function performance would be indicated by lower proportions of correct answers in context to higher levels of CMDs. This would more clearly reflect differences in the skills required to be able to inhibit responses in the flanker task, selectively attend to the correct Stroop stimulus, and correctly recall numerical sequences in the digit span task.

5.3.3.2 Exposure

Common mental disorders

It should be noted that CMDs was used as an outcome in one analysis (Objective 2), and as exposure in others (Objectives 1 and 3a). Full details of this measure are given here for convenience. Symptoms of CMDs were measured using a total score derived from a composite measure consisting of two individual screening tools for Depression (Patient Health Questionnaire-9; PHQ-9; Kroenke et al., 2001) and Anxiety (Generalised Anxiety Disorder Assessment-7; GAD-7; Spitzer et al., 2006).

5.3.3.3 Confounding variables

Confounding variables are mentioned in more detail in my previous study chapter 3 section 2.2 as the same variables or data were used. Here I briefly mention the confounding variables included in my analyses for EF. I adjusted for various confounders in my analyses, including age, sex, level of study and financial difficulties. Loneliness was another variable of interest. It is possible that loneliness is a a confounder. However, it is also plausible it might be on the causal pathways between depression and these executive function variables. So, I took care to make adjustments for loneliness separately for each of the analyses I conducted. My discussion (Section 5.5) will outline the various possibilities in regard to confounding or mediating effects. However, it should be noted that this is a cross-sectional study, and so causal effects underlying any associations are impossible to determine.

5.3.4 Data management and preparation

Power calculations undertaken individually for the three different measures of EF are summarised together below (Objectives 5, 6 and 7). Assuming about a third of the respondents will have a CMD, n=128 participants would be sufficient to detect a moderate effect of 0.5 standard deviations between those with and without CMDs on executive function scores at 80% power, with a 5% significance level.

To understand data preparation and how raw data were cleaned and managed across the survey platform and statistical analysis software, I refer the reader back to Chapter 4.3.4 where this is described in full.

5.3.5 Statistical analyses

Descriptive analyses were conducted via frequencies (with proportions) and means (around standard deviation) to describe the characteristics of the sample and the distribution of exposure (CMDs scores) and outcomes (EF) by sociodemographic variables (age, gender, level of study, financial difficulties) and loneliness as an additional confounder. Descriptive statistics were also undertaken to examine how executive function scores by CMDs severity groups, as well as the overall distribution of CMDs and executive function scores.

For my three hypotheses, main analyses consisted of multivariable linear regression analyses conducted to assess cross-sectional differences in executive functioning scores by CMD, before and after adjustment for confounding variables. These analyses utilise accuracy scores across the three tasks to represent executive functioning performance or levels of executive function as the dependent or outcome variable.

The dependent variable changed in each set of regressions corresponding to percentage accuracy scores corresponding to the area of executive function or specific task: H5) inhibition, H6) attention and H7) working memory. With the independent variable remaining as CMDs (as a continuous variable). In addition to assessing cross-sectional differences in executive function scores using CMDs as a continuous variable, executive function outcomes were assessed across CMD severity groups using CMDs

as an ordinal variable based on clinical cut-off scores, reported to illustrate potential group differences.

For each hypothesis, I report descriptive and inferential analyses together.

5.4 Results

5.4.1 Sample characteristics

Key sample characteristics are repeated briefly here. I provide further detail as to sample characteristics, flowchart for study recruitment and inclusion, as well as the basis for complete case analysis given missing data in Chapter 4.5.1.

The sample consisted of 137 SA international students. The average age of the sample was 28.54 (SD=4.44). Around 72% of the sample were aged 24 to 34, comprising the largest age group. People aged 35 to 45 comprised 10.21% of the sample (n=14), whereas people in the youngest age group (18 to 24) comprised a larger proportion (n=24, 17.51%).

The sample consisted of more females than males- just under two- thirds were female (n=84, 61.31%), with just over one-third third of the sample being male (n=53, 38.69%). The majority of participants were studying on postgraduate taught courses at around 45% (n=62). People on postgraduate research courses made up 35.04% of the overall sample (n=48). Distribution of financial difficulties was roughly similar across the overall sample. While people with no financial difficulties made up around 35% of the sample, marginally lower proportions had minimal (n=45, 32.85) or moderate to severe levels of financial difficulty (n=43, 31.39%).

5.4.2 Descriptive analyses from earlier chapters

This section repeats findings from descriptive analyses conducted in Chapter 4.4.2 which describe the distribution of variables which play a role in my analyses in this chapter. It is necessary repeat this as these variables play a role as factors in my analyses. This is important to guide the reader in terms of the underpinning basis for my regression analyses in which CMDs is represented as an exposure (continuous and ordinal variables), and loneliness.

Levels of CMDs and loneliness

The average CMDs score in the sample was 20.38 (range=2 to 43). This corresponds to a moderate level of CMDs. Looking at CMDs as an ordinal variable (defined by clinical cutoffs (Kroenke et al., 2017), the largest group was people with a minimal to mild level of CMDs (n=65; 47.45%), followed by people with a moderate level of CMDs (n=54; 38.69%). People with severe levels of CMDs comprised the smallest group (n=19, 13.86%). When CMDs was defined as a binary variable, 52.55% of the sample met the cut-off for a positive screen for CMDs (indicating moderate to severe levels of symptoms) (n=72) whereas 47.45% were negative (n=65).

Looking at the distribution of depression and anxiety scores which comprise CMDs scores, mean depression and anxiety scores were similar (mean= 10.40; mean=10.43) in the overall sample. Ordinal variables based on clinical cut-offs allow us to understand what frequency and proportion of respondents were affected by different levels of severity for depression and anxiety.

Despite similar mean scores for anxiety and depression, more people had severe anxiety than severe depression (n=25, 18.25%; n= 8, 5.84%), with roughly similar proportions of people reporting none (anxiety: 7.30%; depression: 10.22%), mild (anxiety: 40.15%, 32.21-48.63; depression: 33.58%) or moderate (anxiety: 34.31%, 95%CI=26.78-42.70; depression: 36.50%). However, it should be understood that depression has more categories reflecting severe symptoms than anxiety, with 13.87% of the sample having ‘Moderately-Severe’ depression.

Table 24. A table that shows overall levels of the exposure variables CMDs and loneliness in terms of means and standard deviation.

CMDs and loneliness		n(%)	Mean (SD)
Common mental disorders			
	Overall		20.83 (8.30)
	Minimal-mild	65 (47.45)	
	Moderate	53 (38.69)	
	Severe	19 (13.87)	
Loneliness			
	Overall		5.85 (1.56)
	Minimal	30 (21.90)	
	Moderate	67 (48.91)	
	Severe	40 (29.20)	

Distribution of CMDs and loneliness scores by sociodemographic variables

To avoid repetition, I refer the reader back to descriptive statistics presented in Chapter 4.4.2, with full data presented in Table 8.

5.4.3 Main analyses

5.4.3.1 Hypothesis 5: Cross-sectional associations between inhibition and CMDs

Descriptive analyses

This section describes average and median levels of performance in terms of inhibition derived from shortened executive functioning task Flanker task. Median and range of each variable are also described to better describe spread of scores given high standard deviations. Accuracy scores are described in units of proportions or percentages, reaction times scores are described in units of milliseconds.

Average inhibition scores

Mean flanker accuracy scores were around 82.34 (SD=18.06, range= 25 to 100). Median flanker accuracy scores were 87.50.

Mean congruent reaction time scores were around 710.62 ms (SD=555.07, range= 22.10 to 3805.50), whereas mean incongruent RT scores were marginally slower at around 742.94 ms (SD=496.38, range= 55.38 to 2908.25). By comparison, median values reflect a smaller difference in average reaction times between congruent and incongruent flanker trials- with median congruent and incongruent RTs being 583.31 and 585.74, respectively.

Inhibition scores by sociodemographic variables and loneliness

Table 26 describes how average executive function task performance varies between demographic groups such as men and women.

This shows some key differences, with greater accuracy in younger people aged 18-24 than those in older age groups. Higher accuracy scores in those with the greatest level of financial difficulty and the lowest in those with a minimal level of financial difficulty. Sex differences were minimal. Those on undergraduate courses had higher inhibition task accuracy scores, whereas those on post-graduate courses had lower scores, with minimal differences between those on taught versus research-based post-graduate courses. For loneliness, the distribution of average inhibition scores followed a negative

trend with increasing loneliness severity. As those with minimal loneliness level had higher accuracy scores than those with moderate or severe loneliness; with severely lonely students having the lowest inhibition accuracy scores.

Table 25. Average levels of flanker task performance scores across demographic variables and loneliness (means and standard deviation or SD).

Sociodemographic variables	Flanker accuracy
	Mean(SD)
Age	
18-24 (n=24)	86.19 (15.52)
25-34 (n=99)	81.31 (18.28
35-45 (n=14)	83.03 (20.71)
Financial difficulties	
None (n=49)	86.19 (15.52)
Minimal (n=45)	81.31 (18.28
Mod-severe (n=43)	83.03 (20.71)
Sex	
Male (n=53)	86.19 (15.52)
Female (n=84)	81.31 (18.28
Level of study	
UGR (n=27)	86.19 (15.52)
PGT (n=62)	81.31 (18.28
PGR (n=48)	83.03 (20.71)
Loneliness	
Minimal (n=30)	86.19 (15.52)
Moderate (n=67)	81.31 (18.28
Severe (n=40)	83.03 (20.71)

Levels of inhibition scores (Flanker task; outcome) by CMDs severity group (exposure)

Table 26 shows the distribution of average inhibition scores by CMDs severity group.

People with severe levels of CMDs had the lowest mean Flanker task accuracy scores (n= 19, m=72.69), with people with moderate levels of CMDs having the highest accuracy scores (n= 53, m=85.49,). People with minimal to mild levels of CMDs (n=65, m= 82.59) had slightly lower mean accuracy scores than those with moderate levels of CMDs.

Table 26. Means and 95%CIs for Flanker accuracy scores by CMDs severity group.

	CMD Minimal-mild (n=65)	CMD Moderate (n=53)	CMD Severe (n=19)
Outcome	Mean (SD)	Mean (SD)	Mean (SD)
Flanker accuracy score	82.59 (17.20)	85.49 (16.84)	72.69 (21.57)

Inferential analysis: Hypothesis 5 Inhibition and CMDs

Results of unadjusted and adjusted regression models for inhibition are reported, comparing model results for CMDs scores and CMDs severity groups in table 28. Analyses compared the difference in individual executive function task accuracy scores and levels of CMDs before and after adjustment for sociodemographic variables and loneliness.

The unadjusted model showed no evidence of an association between flanker accuracy scores and CMDs scores. While the unadjusted model showed a 0.26 point decrease in Flanker accuracy scores for every one point increase in CMDs there was no evidence of statistical significance (beta coefficient= -0.26, 95% CI= -0.63 to 0.09, p=0.151). When looking at CMDs severity groups Flanker accuracy scores were on average 9.9 points lower in people with severe levels of CMD (95% CI=-19.03 to -0.75). Flanker accuracy scores were on average 2.89 points higher in people with moderate levels of CMDs (95% CI=-7.20 to 5.63) compared to those with minimal levels of CMDs.

After adjusting for sociodemographic variables (sex, age, level of study, financial difficulties), there was a significant association between flanker accuracy scores and the level of CMDs in the overall sample. For every unit or one point increase in the level of CMDs symptoms, Flanker accuracy scores were on average 0.65 points lower (95% CI= -1.02 to -0.28, p=0.001). When examining CMDs severity groups for illustrative purposes, Flanker scores were 16.33 points lower for people with severe levels of CMDs (95% CI=-25.30 to -7.36) compared to people with minimal levels of CMDs. Flanker accuracy scores were on average 0.78 points lower in people with moderate levels of CMDs (95% CI= -7.20 to 5.63) compared to people with minimal levels of CMDs.

Examining the relative contribution of confounder to this association, table 28 shows stepwise change in regression parameters between the unadjusted model, and each subsequent model adjusting for sociodemographic variables (age, sex, financial difficulties, level of study). Age and sex showed no meaningful change in model parameters, whereas the addition of financial difficulties and level of study increased the

mean difference from -0.26 to -0.65 (p<0.01) reflecting poorer accuracy in context to higher CMDs scores.

Table 27. Regression coefficients for Flanker accuracy scores by CMD score with a variety of adjustments. Model 1 is unadjusted, models 2-5 adjust for the following variables sequentially: age, sex, financial difficulties and level of study.

	Flanker accuracy score		
Model	Mean difference	95%CI	p value
Model 1 (a)	-0.26	-0.63 to 0.09	0.151
Model 2 (b)	-0.26	-0.63 to 0.10	0.163
Model 3 (c)	-0.27	-0.65 to 0.10	0.151
Model 4 (d)	-0.51	-0.89 to -0.12	0.009
Model 5 (e)	-0.65	-1.02 to -0.28	0.001

Legend.

a: Model 1 Univariable linear regression model of Flanker accuracy scores by CMDs scores.

b: Model 2 Multivariable linear regression model of Flanker accuracy scores by CMDs scores, adjusting for age.

c: Model 3 Multivariable linear regression model of Flanker accuracy scores by CMDs scores, adjusting for sex (in addition to age).

d: Model 4 Multivariable linear regression model of Flanker accuracy scores by CMDs scores, adjusting for financial difficulties (in addition to age and sex).

e: Model 5 Multivariable linear regression model of Flanker accuracy scores by CMDs scores, adjusting for level of study (in addition to age, sex, financial difficulties).

The final adjusted model showed a significant association with every one-point increase in CMDs scores predicting on average 0.44 points lower flanker accuracy scores (MD= -0.44, 95% CI= -0.85 to -0.03, p=0.032). Accuracy scores were on average 11.91 points lower in people with severe levels of CMDs (95% CI= -21.27 to -2.54) compared to people with minimal to mild CMDs. Flanker accuracy scores were on average 0.78 points higher in people with moderate levels of CMDs (95% CI= -5.60 to 7.16) compared to people with minimal to mild levels of CMDs.

Table 28. Results of unadjusted and adjusted multiple linear regression models for the association between Flanker accuracy scores and levels of CMDs. Showing the difference in model parameters as well as the change in model parameters with the addition of each confounder.

	Flanker accuracy score								
	a: Model 1			b: Model 2			c: Model 3		
Exposure	Mean difference	95%CI	p value	Mean difference	95%CI	p value	Mean difference	95%CI	p value
CMDs score	-0.26	-0.63 to 0.09	0.151	-0.65	-1.02 to -0.28	0.001	-0.44	-0.85 to -0.03	0.032
Severity group									
Min-mild (reference)									
Moderate	2.89	-7.20 to 5.63		-0.78	-7.20 to 5.63		0.78	-5.60 to 7.16	
Severe	-9.90	-19.03 to -0.75		-16.33	-25.30 to -7.36		-11.91	-21.27 to -2.54	

Legend.

a: Model 1 Univariable linear regression model of Flanker accuracy scores by CMDs scores.

b: Model 2 Multivariable linear regression model of Flanker accuracy scores by CMDs scores, adjusting for age, sex, financial difficulties and level of study as confounders (Only financial difficulties and level of study confounded the association).

c: Model 3 Multivariable linear regression model of Flanker accuracy scores by CMDs scores, adjusting for sociodemographic variables and loneliness as confounders.

5.4.3.2 Hypothesis 6: Cross-sectional associations between attention and CMDs

Descriptive analysis

Average attention scores

Mean Stroop accuracy scores were 69.28 (SD=25.72, range= 7.69 to 100, median=76.92).

Mean congruent reaction time scores were around 1388.97 ms (SD=1013.93, range= 230.50 to 6637.50, median= 1060.53), whereas mean incongruent RT scores were slower at around 1441.99 (SD=812.70, range= 321.03 to 4826.61, median= 1238.92). When comparing median values, RTs were faster or lower overall, while reflecting a larger difference between congruent and incongruent trial RTs.

Levels of attention scores (outcome) by sociodemographic variables and loneliness

Attention accuracy scores were lowest in older age groups (aged 35-345), with those aged 25-34 having slightly higher mean scores. Those aged 18-24 had the highest mean accuracy scores. There was minimal attention accuracy score differences between those with no financial difficulties and those with moderate to severe difficulties. Those with minimal financial difficulties had marginally higher scores. Women had lower attention accuracy scores compared to men. Attention accuracy scores were highest in undergraduate students, with those in post-graduate courses having lower accuracy scores (with minimal differences between post-graduate taught and research students). Accuracy scores were higher in those with minimal loneliness levels, with similar accuracy scores for those with moderate and severe loneliness levels.

Table 29. Levels of attention scores (outcome) by sociodemographic variables and loneliness.

Sociodemographic variables		Stroop accuracy
		Mean (SD)
Age		
	18-24 (n=24)	72.43 (26.34
	25-34 (n=99)	68.91 (25.22)
	35-45 (n=14)	66.48 (29.50)
Financial difficulties		
	None (n=49)	68.28 (24.95)
	Minimal (n=45)	71.45 (24.95)
	Mod-severe (n=43)	68.15 (28.06)
Sex		
	Male (n=53)	72.85 (27.47)
	Female (n=84)	67.03 (24.45)
Level of study		
	UGR (n=27)	74.92 (30.06)
	PGT (n=62)	67.74 (25.86)
	PGR (n=48)	68.10 (22.88)
Loneliness		
	Minimal (n=30)	79.23 (21.10)
	Moderate (n=67)	66.24 (24.87)
	Severe (n=40)	66.92 (28.84)

Levels of attention scores (outcome) by CMDs severity group (exposure)

People with severe levels of CMDs had the lowest mean Stroop accuracy scores (m= 54.25), followed by people with minimal to mild levels of CMDs (m=71.10), whose mean accuracy scores were roughly similar to people with moderate levels of CMDs (m=72.56).

Table 30. Means and SD for executive function accuracy scores by CMDs severity group.

	CMD Minimal-mild (n=65)	CMD Moderate (n=53)	CMD Severe (n=19)
Outcome	Mean (SD)	Mean (SD)	Mean (SD)
Attention (Stoop task)			
Accuracy score	71.00 (22.45)	72.56 (27.63)	54.25 (26.70)

Inferential analysis: hypothesis 6 Attention and CMDs

The unadjusted model showed no evidence of an association between Stroop accuracy scores and CMDs scores While the unadjusted model showed a 0.41 point decrease in Stroop accuracy scores for every one point increase in CMDs there was no evidence of statistical significance (beta coefficient= -0.41, 95% CI= -0.93 to 0.11, p=0.121). Using means and CIs to examine differences in this association across CMDs severity groups, Stroop accuracy scores were on average 16.75 points lower in people with severe levels of CMD (95% CI=-29.74 to -3.76) compared to people with minimal levels of CMDs. Whereas Stroop accuracy scores were on average 1.56 points higher in people with moderate levels of CMDs (95% CI=-7.65 to 10.77) compared to those with minimal levels of CMDs.

After adjusting for sociodemographic variables (sex, age, level of study and financial difficulties) model parameters (F (7, 129) =1.27, p=0.269, R2=0.0645; AdjR2= 0.0138) showed that for every unit or one point increase in the level of CMDs symptoms, Stroop accuracy scores were on average 0.62 points lower (95% CI= -1.20 to -0.03, p=0.037). Means and CIs for CMDs severity groups showed Stroop accuracy scores were on average 20.41 points lower for people with severe levels of CMDs (95% CI=-34.29 to -6.54) compared to people with minimal levels of CMDs. Whereas Stroop accuracy scores were on average 0.19 points lower in people with moderate levels of CMDs (95% CI= -10.13 to 9.73) compared to people with minimal levels of CMDs.

Below, I examine relative contribution of each sociodemographic variable to this association, in terms of which confounders strengthened or attenuated the association between lower Stroop accuracy and higher CMDs scores. Table 32 depicts the stepwise contribution or change in exposure and outcome observed in each successive model adjusting for individual sociodemographic variables. I report mean difference, p values and 95%CIs for each step where a new sociodemographic variable was added, from the unadjusted model between Stroop scores and CMDs (model one) to the adjusted model with all sociodemographic variables (model 5 in which the final variable level of study was added). It should be noted that model parameters for the final step are the same as model 2 in the main analysis above (Table 30) as this consists of all sociodemographic

variables. Below, I report the change in model parameters for each step to understand which variables confounded the relationship.

Model 2 adjusting for age did not meaningfully impact the association between Stroop accuracy scores and CMDs scores (no change in mean difference, 0.01-point change in CI, 0.001-point change in p-value).

Model 3 adjusting for sex in addition to age strengthened the association marginally (change in md=-0.04, p value from 0.122 to 0.090).

Model 4 adjusting for financial difficulties increased the mean difference in Stroop accuracy scores (change in md=-0.03, change in p-value: 0.090 to 0.093).

Model 5 adjusting for level of study had the largest impact on the association between Stroop accuracy and CMDs scores, strengthening the association to below $p<0.05$ (change in md=-0.14, p-value: 0.0093 to 0.0037).

Table 31. Stepwise change in regression models between unadjusted model for Stroop accuracy scores and CMDs scores – model 1- and model 5 adjusting for all sociodemographic variables. Models 2-4 adjust for the following variables sequentially: age, sex, financial difficulties and level of study.

	Stroop accuracy score		
Model	Mean difference	95%CI	p value
Model 1 (a)	-0.41	-0.93 to 0.11	0.121
Model 2 (b)	-0.41	-0.94 to 0.11	0.123
Model 3 (c)	-0.45	-0.99 to 0.07	0.090
Model 4 (d)	-0.48	-1.05 to 0.08	0.093
Model 5 (e)	-0.62	-1.20 to -0.03	0.037

Legend.

a: Model 1 Univariable linear regression model of Stroop accuracy scores by levels of CMDS.

b: Model 2 Multivariable linear regression model of Stroop accuracy scores by levels of CMDs, adjusting for age.

c: Model 3 Multivariable linear regression model of Stroop accuracy scores by levels of CMDs, adjusting for sex (in addition to age)

d: Model 4 Multivariable linear regression model of Stroop accuracy scores by levels of CMDs, adjusting for financial difficulties (in addition to age and sex)

e: Model 5 Multivariable linear regression model of Stroop accuracy scores by levels of CMDs, adjusting for level of study (in addition to age, sex, financial difficulties)

The model adjusting for loneliness, in addition to sociodemographic variables (age, sex, financial difficulties, level of study) showed some attenuation of the association between Stroop accuracy scores and CMDs scores. Showing that every one-point increase in CMDs scores was associated with on average 0.42 points lower Stroop accuracy scores (MD= -0.42, 95% CI= -1.06 to 0.21, p=0.194). This shows that the magnitude of the association attenuated (md=-0.62 to -0.42) after adjusting for loneliness, with the association becoming non-significant after adjustment (p=0.037 to 0.194). Stroop

accuracy scores were on average 16.94 points lower in people with severe levels of CMDs (95%CI=-31.72 to -2.16) compared to those with minimal levels of CMDs. Stroop accuracy scores were on average 1.93 points higher in people with moderate levels of CMDs (95%CI=-9.04 to11.11) compared to those with minimal levels of CMDs.

Table 32. Results of unadjusted and adjusted multiple linear regression models for the association between Stroop accuracy scores and levels of CMDs.

	Stroop accuracy score								
	a: Model 1			b: Model 2			c: Model 3		
Exposure	Mean difference	95%CI	p value	Mean difference	95%CI	p value	Mean difference	95%CI	p value
CMDs score	-0.41	-0.93 to 0.11	0.121	-0.62	-1.20 to -0.03	0.037	-0.42	-1.06 to 0.21	0.194
Severity group									
Min-mild (reference)									
Moderate	1.56	-7.65 to 10.77		-0.19	-10.13 to 9.73		1.93	-9.04 to11.11	
Severe	-16.75	-29.74 to -3.76		-20.41	-34.29 to -6.54		-16.94	-31.72 to -2.16	

Legend.

a: Model 1 Univariable linear regression model of Stroop accuracy scores by levels of CMDS.

b: Model 2 Multivariable linear regression model of Stroop accuracy scores by levels of CMDs, adjusting for age, sex, financial difficulties and level of study as confounders (though only level of study confounded the association).

c: Model 3 Multivariable linear regression model of Stroop accuracy scores by levels of CMDs, adjusting for sociodemographic variables and loneliness as confounders.

5.4.3.3 Hypothesis 7: cross-sectional associations between working memory and CMDs

Descriptive analysis

Average working memory scores

Mean forward digit span scores were 1.94 (SD= 1.14; range= 0 to 4, median=2.00)

Mean digit span accuracy scores were 48.54 (SD=28.56, range= 0 to 100, median=50.00).

Average working memory scores by CMDs

While people with severe levels of CMDs had the lowest mean digit span accuracy scores, this was roughly similar to people with minimal levels of CMDs (m=43.42, SD=36.17; m=45.00, SD=26.59)

People with moderate levels of CMDs had the highest accuracy scores (m=54.71, SD=27.32). However, forward digit span scores between people were roughly similar.

Table 33. Average working memory or digit span accuracy scores.

Outcome	CMD Minimal-mild (n=65) Mean (SD)	CMD Moderate (n=53) Mean (SD)	CMD Severe (n=19) Mean (SD)
Working memory Accuracy score	45.00 (26.59)	54.71 (27.32)	43.42 (36.17)

Working memory by sociodemographic variables and loneliness

Table 35 describes how average digit span task performance varies between demographic groups such as men and women. This shows a negative trend with increasing age- with higher accuracy in younger age groups and lowest accuracy in those aged 35-45. Digit span task accuracy tended to be higher in those with moderate to severe financial difficulties compared to those with a lower degree of financial difficulties. Men tended to have higher digit span accuracy scores than women. Undergraduate students had higher accuracy scores than students on post-graduate courses, with minimal differences between post-graduate taught and research. Those with severe loneliness had higher accuracy scores, with similar scores between those with minimal and moderate loneliness levels.

Table 34. A table describing digit span task accuracy across demographic groups and loneliness in terms of means and SD.

Sociodemographic variables	Digit span accuracy
	Mean(SD)
Age	
18-24 (n=24)	53.12 (35.59)
25-34 (n=99)	48.98 (27.64)
35-45 (n=14)	37.50 (18.98)
Financial difficulties	
None (n=49)	53.12 (35.59)
Minimal (n=45)	48.98 (27.64)
Mod-severe (n=43)	37.50 (18.98)
Sex	
Male (n=53)	53.12 (35.59)
Female (n=84)	48.98 (27.64)
Level of study	
UGR (n=27)	53.12 (35.59)
PGT (n=62)	48.98 (27.64)
PGR (n=48)	37.50 (18.98)
Loneliness	
Minimal (n=30)	53.12 (35.59)
Moderate (n=67)	48.98 (27.64)
Severe (n=40)	37.50 (18.98)

Inferential analysis: hypothesis 7 Working memory and CMDs

The unadjusted model showed no evidence of an association between digit span accuracy scores and CMDs scores (F (1, 135) =0.25, p=0.616, R2=0.0019, AdjR2=0.0005). While the unadjusted model showed a 0.14-point increase in accuracy scores for every one point increase in CMDs there was no evidence of statistical significance (95% CI= -0.43 to 0.73, p=0.616).

After adjusting for sociodemographic variables (sex, age, level of study, financial difficulties), the overall model (F(7, 129)=2.27,p=0.032, R2=0.1098; AdjR2= 0.0615) showed no statistical evidence for an association between digit span accuracy scores and the level of CMDs. With every unit or one point increase in the level of CMDs symptoms, digit span accuracy scores were on average 0.32 points lower (mean difference [MD]= -0.32, 95% CI= -0.96 to 0.30, p=0.308).

Below, I examine relative contribution of each sociodemographic variable to this association. Table 36 depicts the stepwise contribution or change in exposure and outcome observed in each successive model adjusting for individual sociodemographic variables. I report mean difference, p values and 95%CIs for each step where a new sociodemographic variable was added. It should be noted that model parameters for the final step are the same as model 2 in the main analysis above as this consists of all sociodemographic variables.

There were no statistically significant changes in model parameters with sequential adjustment, though the coefficient changed from positive to a negative or lower average digit span score after adjustment for all sociodemographic variables. As the bounds of confidence intervals cross zero for all sociodemographic adjustments made, the impact of these factors on the association is negligible.

Table 35. Stepwise change in regression models between unadjusted model for Stroop accuracy scores and CMDs scores – model 1- and model 5 adjusting for all sociodemographic variables. Models 2-4 adjust for the following variables sequentially: age, sex, financial difficulties and level of study.

	Digit span accuracy score		
Model	Mean difference	95%CI	p value
Model 1 (a)	0.14	-0.43 to 0.73	0.121
Model 2 (b)	0.10	-0.48 to 0.70	0.718
Model 3 (c)	0.06	-0.52 to 0.66	0.825
Model 4 (d)	-0.08	-0.71 to 0.55	0.803
Model 5 (e)	-0.32	-0.96 to 0.30	0.308

Legend.

a: Model 1 Univarable linear regression model of digit span accuracy scores by levels of CMDS.

b: Model 2 Multivariable linear regression model of digit span accuracy scores by levels of CMDs, adjusting for age

c: Model 3 Multivariable linear regression model of digit span accuracy scores by levels of CMDs, adjusting for sex (in addition to age)

d: Model 4 Multivariable linear regression model of digit span accuracy scores by levels of CMDs, adjusting for financial difficulties (in addition to age and sex)

e: Model 5 Multivariable linear regression model of digit span accuracy scores by levels of CMDs, adjusting for level of study (in addition to age, sex, financial difficulties).

After adjusting for loneliness in addition to sociodemographic variables ($F(8, 128)=2.03$, $p=0.047$, $R2=0.1128$, $aR2=0.0574$) model parameters showed no statistical evidence for an association between digit span accuracy scores and CMDs, with model parameters showing on average 0.42 decrease in accuracy scores for every unit increase in CMDs scores (95%CI= -1.12 to 0.27, $p=0.231$).

No comparative or illustrative analyses were conducted (using CMDs as an ordinal variable) as initial models which treated CMDs as a continuous variable that shows no statistical evidence for an association between working memory accuracy scores and CMDs scores.

Table 36. Results of unadjusted and adjusted multiple linear regression models for the association between digit span accuracy scores and levels of CMDs. Showing the change in accuracy scores for every unit increase in CMDs scores, as well as the change in model parameters with the addition of each confounder.

	Digit span accuracy score								
	a: Model 1			b: Model 2			c: Model 3		
Exposure	Mean difference	95%CI	p value	Mean difference	95%CI	p value	Mean difference	95%CI	p value
CMDs score	-0.14	-0.43 to 0.73	0.121	-0.32	-0.96 to 0.30	0.308	-0.42	-1.12 to 0.27	0.231

Legend.

a: Model 1 Univariable linear regression model of digit span accuracy scores by levels of CMDs.

b: Model 2 Multivariable linear regression model of digit span accuracy scores by levels of CMDs, adjusting for age, sex, financial difficulties and level of study as confounders.

c: Model 3 Multivariable linear regression model of digit span accuracy scores by levels of CMDs, adjusting for sociodemographic variables and loneliness as confounders.

5.5 Discussion

5.5.1 Summary of findings

I examine cross-sectional associations between three outcomes measuring executive function task performance and levels of CMDs, including inhibition (H5), attention (H6) and working memory task accuracy scores (H7).

For Hypothesis 5 (H5), there was evidence of an association between lower inhibition task accuracy and increasing CMD score after adjustment for sociodemographic variables and loneliness. This is in line with previous research that has shown that individuals with depression and anxiety frequently experience difficulties inhibiting automatic or irrelevant responses, reflecting cognitive interference that can impair academic and daily functioning (Snyder, 2013). While there is limited research specifically examining Saudi Arabian international students, my findings extend this literature by highlighting that cognitive inhibition difficulties may represent a neurocognitive correlate of CMD symptoms in this population. This underscores the importance of considering cognitive functioning when developing mental health and academic support strategies.

Financial difficulties and level of study were found to confound the association, reflecting an increased association between CMD and poorer inhibitory accuracy scores after adjustment. Whereas adjustment for loneliness attenuated strength and magnitude of the association. Though the significant association between greater CMDs scores and poorer inhibitory accuracy scores remained in fully adjusted model. This highlights the complex and multifactorial nature of cognitive functioning among international students. Prior research has shown that financial stress contributes significantly to psychological distress and can exacerbate cognitive difficulties by increasing mental burden and reducing attentional capacity (Cooke et al., 2006; Richardson et al., 2017)

I found partial support for hypothesis 6 (H6), with evidence of an association between increasing CMDs scores and poorer attention task accuracy after adjustment for sociodemographic variables. Only level of study was found to confound, reflecting a

marginal increase in magnitude of the negative association. Though, the association attenuated to being non-significant after adjusting for loneliness scores. Previous studies shows academic level may influence both the intensity of academic pressure and the cognitive demands placed on students, with postgraduate or advanced-level students potentially experiencing more sustained cognitive load and stress-related cognitive decline (Beiter et al., 2015). The attenuating effect of loneliness on the CMD-inhibition relationship suggests that social isolation may act as a shared pathway through which CMD symptoms and cognitive impairments emerge, possibly by amplifying rumination and reducing motivation (Qualter et al., 2015).

For hypothesis 7 (H7) there was no evidence of an association between CMDs and digit span accuracy scores. This was the case across unadjusted and fully adjusted models. Based on this, no further findings are summarised for this hypothesis. The absence of a significant association between CMD symptoms and digit span accuracy suggests that working memory, as measured in this study, may not be reliably impaired among Saudi Arabian international students experiencing CMDs. This contrasts with several prior studies that have reported moderate impairments in working memory among individuals with depression and anxiety (Rock et al., 2014; Snyder, 2013) but aligns with others suggesting that such deficits may be subtle, task-dependent, or more pronounced only under higher cognitive load (Rose & Ebmeier, 2006).

In further analyses I represented the exposure using an ordinal variable to understand potential differences in scores across CMDs severity groups, with minimal to mild CMDs as the reference category. Evidence of poorer attention, inhibition and higher levels of CMDs appeared to be strongest in those with the most level of severe CMDs, compared to those with minimal to mild CMDs severity. These results are consistent with meta-analytic findings that report greater neurocognitive impairment in individuals with severe depression and anxiety, particularly in tasks measuring executive function and attentional control (Semkovska et al., 2019). In the context of international students, such impairments may be compounded by external stressors such as cultural adjustment and academic demands, which likely exacerbate the negative cognitive consequences of more severe CMD presentations (Owens et al., 2012). These findings underscore the clinical importance of early intervention, not only to address emotional

symptoms but also to prevent the downstream academic and functional impairments associated with worsening CMD severity.

Loneliness attenuated associations between poorer executive function task accuracy and CMDs scores for inhibition and attention. This is consistent with existing literature indicating that loneliness is not only a psychological stressor but also a factor that affects cognitive functioning, particularly in attention, processing speed, and executive control (Lam et al., 2021). For Saudi Arabian international students, whose cultural background may place strong emphasis on familial and communal bonds, loneliness could be particularly salient, intensifying its impact on both mental and cognitive health. These findings underscore the importance of addressing social connectedness in mental health interventions, not only to improve psychological well-being but also to mitigate cognitive consequences associated with CMDs.

5.5.2 Strengths and limitations

Strengths

This study makes a novel contribution to the limited existing research on mental health and executive function in SA international students.

There are several strengths to the exploratory approach I took in examining broad domains of executive function in relation to a composite measure of anxiety and depression. Given no existing research examines this topic in SA international students, such an exploratory approach has the strength of providing the right balance of depth and breadth of focus. This is a strength as it provides broader information on multiple domains of EF, rather than more focused information provided by examining only one domain. This may have more utility given the limited information on this topic in SA international students. This also addresses a limitation of the existing research by examining several domains of executive function using online measures. As the research I identified in wider populations (university students, general population) tended to examine a single domain of EF, as opposed to examining multiple domains of EF.

A further strength is in assessing both anxiety and depression in a composite measure. This has the strength of addressing the limitations of existing research on executive function in university student populations, which tends to examine only anxiety or depression. I use robust and well-validated measures for depression (PHQ-9) and anxiety (GAD-7) in the form of a composite measure used in previous research (Kroenke et al., 2019). Thus, a strength of this study relates to the fact that the PHQ-9 and GAD-7 are widely used, brief, robust and well-validated instruments in terms of their use in clinical and non-clinical populations, as well as their ease of interpretation.

Limited research also accounts for the potential role of loneliness in relation to a variable which might span the CMDs symptom's executive function deficits pathway. My study took loneliness levels into account in all analyses, using a valid, reliable and short measure for loneliness. The use of the UCLA-short form is a strength of this study as the measure has robust psychometric properties in being reliable and well-validated in different populations, as well as being a briefer measure than other loneliness scales to reduce response fatigue. In summary, several key strengths of my study relate to the use of broad measures of multiple domains of EF, anxiety and depression, and loneliness to address the fact that existing research has not examined these topics collectively. This exploratory and broad approach has value of providing a breadth of information on a set of topics for which limited information exists in SA international students.

In relation to the selection of measures for executive function and the data I used to represent performance, reaction time data or interference scores for executive function tasks is used in wider experimental studies to demonstrate the relevant effect (e.g. a 'Stroop effect' for attentional interference and a 'Flanker effect' for inhibitory interference). By using task accuracy data for executive function instead, this better capture's poorer executive function performance in context CMDs and other variables, as well as being more straight-forward in interpreting direction of associations in relation to what they may mean (i.e. lower accuracy in context to higher CMDs). The rationale for this is discussed further in Chapter 4 methods (Chapter 4.3.5). Further, by using experimental measures of these task in an online setting, this will have mitigated some

aspects of recall or self-evaluation bias that may have been present with the use of self-report measures for capturing EF. The use of these via online platform as opposed to laboratory or controlled experimental conditions meant that data collection was less intensive and less time consuming than with use of a more controlled environment. Which may have led to longer task administration time and therefore more limited sample size. A strength of my study is that it seeks to apply experimental measures within an online setting to bypass this potential limitation of experimental or laboratory-controlled conditions.

limitations

Limitations of analysis

While sufficiently statistically powered to detect medium effects, if there is a small effect of moderate/ mild CMDs on executive function task performance (or other variables), this study may not have been able to detect differences at such a level. It is also plausible that executive function task deficits may only show up in the most severe levels of CMDs. There are a number of potential explanations for this. It may be that lower levels of CMDs have a smaller effect on executive function task performance. With a medium effect on task accuracy for those with the most severe level of CMDs symptom severity.

One limitation of my analytical approach is that it cannot speak to differences between anxiety or depression, or domain specific clusters of CMDs symptoms, in relation whether they may be differentially associated with executive function domains. This is due to analysing average CMDs scores and CMDs severity, as opposed to examining associations between executive function and different questions or symptoms domains from the questionnaires which comprise these measures. For example, it may be that different clusters of symptoms (e.g. negative thoughts, rumination) or symptom profiles of anxiety and depression are differently associated with domains of EF. While uncovering these differences was not a focus of my study, this would be useful in building a more detailed picture for future research.

I used multivariable linear regression to analyse my data with regressions for each outcome in terms of executive function domains. Alternatively, with more recruitment or a greater sample size, it may have been possible to use statistical analyses which incorporate multiple dependent variables, such as multivariate multiple regression or multivariate analysis of variance. This is a potential limitation of my study, as it may be that CMDs-related deficit in one area of EF, such as inhibition, may relate to deficits in other areas of EF. This is plausible, as initial analyses (not reported for brevity) to explore the data by assessing correlations between key outcomes showed positive associations between executive function outcomes, meaning higher scores in one area were positively correlated with scores in another executive function domain. While these are not reported due to not being pertinent to my analyses, these could suggest value in further study to understand interdependencies between different areas of EF. As my analysis does not capture or rule out whether there is any relationship or association between my dependent variables. This may be an important area for future research to consider, as executive function domains likely operate simultaneously and interdependently in context to complex tasks in the real world. For example, thinking about the university student context in a busy or distracting environment, effective rehearsal of information for working memory may require or rely on selective attention in a busy environment. As such, my analysis, while appropriate to the sample size and broad exploratory scope of this research, is not able to clarify whether dependencies between areas of executive function exist in this data, or what effect they have on associations with CMDs symptoms.

Limitations of measures

I describe limitations of my analysis related to this point above, but this point is important to repeat concerning measurement in relation to use of a composite measure, and use of self-report methods. For example, the use of distinct or separate measures for anxiety and depression would be necessary to detect differential effects mentioned above. An additional limitation is the use of self-report measures. While these may be more practical and resource efficient in this context, there may be a level of self-report bias in the data. Usage of clinical interviews may be a way for further research to

increase the validity or reliability of measures to understand levels of CMDs symptoms, their severity and whether they meet the threshold for clinical diagnosis in this population.

For online executive function tasks hosted via gorilla, while there is evidence to support online or internet-based assessment of executive function skills using template tasks, editing or adapting available tasks to achieve the level of depth of assessment and validity of lab-based experimental executive function tasks (e.g. a high number of trials [n=60] for each measure) would not have been feasible. While doing so may have given better measurement accuracy, sensitivity and validity in terms of attention, inhibition and working memory, this would constrain survey brevity and impose a potentially excessive response burden on participants (where there was already attrition for executive function tasks). A limited number of trials compared to traditional experimental tasks is a key limitation of the executive function measures used. The implications of this are that if more comprehensive inhibition, attention and working memory measures were used this may have enabled identification of more granular differences in executive function task performance at different levels of CMDs symptoms. Further, it could be that associations between increasing CMDs scores and poorer attention and inhibition task performance in my study were artefacts of executive function measurement via online task. That is, my negative findings, where I fail to find associations, could be due to measurement bias. To rule this out, further research would need to compare experimental or laboratory tasks to online tasks to see whether measurement via online or more stringent laboratory environments impinge upon the direction and strength of findings.

Limitations related to sampling, data collection and missing data

While sample size of my study did not impose major limitations or problems with statistical power, there was a high level of attrition and missing data. It was necessary to use complete cases in all analyses due to this, meaning there may have been selection bias. As I was not able to rule out the possibility that attrition or non-participation could be underpinned by more severe levels of CMDs, or higher attention, inhibitory or working memory deficits.

The sample was recruited opportunistically or through SACB club managers, and therefore may not be representative. For example, there may have been under-representation of undergraduates, those under the age of 25, and male students in the sample. For undergraduates and young people, this may be reflective of the point in life, context and motivations for which most SA international students access UK higher education. However, there is no current data through which to know this definitively. Internal data from the SACB show this may be true for male under-representation, as roughly equal rates of enrolment or registration with the SACB are reported for males and females. However, without data sources on enrolment which align with UK HESA enrolment statistics, population characteristics of SA international students in the UK are unclear. This means that while internal SACB data may clarify broad points such as sex distribution, we do not know have more granular information to know, for example what is an average level of financial difficulties in this group. Or the rough proportion of SA students on different kinds of courses. This makes it hard to definitively assess sampling bias, though from limitations discussed in Chapter 4.5, this sample is unlikely to be representative in being drawn from a small proportion (1.6% of 8,750 total) of SA international students in the UK (according to HESA, 2024 data from 2021/22 academic years).

As it was not possible to collect further detail on sociodemographic data, there is no way to know whether the observed associations are due to the influence of unmeasured confounders which may be relevant to associations between mental health and the concepts I investigate. These include a range of factors such as sexual orientation, gender identity, self-harm, other non-CMDs mental health diagnoses, disabilities. While this is a considerable limitation, these data were not collected due to ethical and practical reasons (sexual orientation, gender identity). In terms of ethical rationale, given cultural stigma around self-harm and suicidality, as well as Middle Eastern cultural attitudes and laws around sexual and gender minority groups, the collection of such data could present an indirect threat to participant safety and privacy. While steps were taken to minimise and prevent any data breaches concerning participant data, the risk of such events can never be removed completely.

5.5.3 Meaning of findings

There are several interpretations of my main findings which showed lower inhibition and attention accuracy scores in context to higher CMDs scores. My broad findings appear consistent with wider primary and secondary evidence in general population, clinical and university student populations (though evidence in this area is considerably limited) concerning CMDs-related impairment to inhibition and attention highlighted in my literature review in Chapter 2 (Ahern & Semkovska, 2017; Aijilchi & Nejati, 2017; Brooks et al., 2013; Doumas et al., 2016; Dulay et al., 2013; Snyder et al., 2015; Roca et al., 2015; Rock et al., 2015; Snyder et al., 2015). These findings suggest that SA international scores with higher CMDs scores may exhibit deficits to inhibitory and attentional task accuracy. Along with confounding, my findings may reflect when the influence of specific factors is considered, some SA international students may be at greater risk of experiencing difficulties related to their attentional or inhibitory skills.

Representing CMDs as an ordinal variable, there was weak evidence to suggest those with severe CMDs had poorer attention and inhibition accuracy scores compared to those with minimal CMDs. This suggests that severe CMDs may be related to attentional or inhibitory deficits in relation to task accuracy, as Stroop and Flanker accuracy scores were poorer for those with the most severe levels of CMDs. This finding should be interpreted with caution given the weak level of evidence.

This pattern of results also showed differing strength or magnitude of association between CMDs and inhibition versus attention, which could suggest that this risk is more prominent for inhibitory processes. As this association remained significant after adjustment for effect of confounding and loneliness scores on CMDs scores and executive function accuracy. Although there is no UK evidence concerning university student, international student and SA international student populations for direct comparison and triangulation of meaning. This makes it hard to give an interpretation of specific areas of my findings, such as understanding the relative difference in the magnitude of associations between higher CMDs symptoms for inhibition versus attention. Though on the surface stronger evidence for associations concerning poorer inhibition after adjustment could suggest that CMDs impact inhibitory processes more

than they do attentional processes (Aijilchi & Nejati, 2017; Fernández-Castillo & Caurcel, 2015; Irie et al., 2019; Kertz et al., 2017; Mckian, 2015). Or that the effect of CMDs symptoms in relation to executive function task accuracy deficits is more pronounced for inhibitory than attentional processes. Though ability to test this is limited without a larger sample size to robustly conduct multivariate tests to examine relative contribution or effects of CMDs across multiple dependent variables for EF. Evidence I reviewed in Chapter 2 did not examine or compare CMDs related deficit across different domains of executive function to compare my findings to (Aijilchi & Nejati, 2017; Doumas et al., 2016; Snyder et al., 2015; Roca et al., 2015). Although the focus of my thesis was not to compare the magnitude or strength of CMDs related deficits across different executive function domains this is an interesting finding. This could inform further study also examining whether attention and inhibition are linked or associated with one another in context to CMDs related deficits.

For inhibition, adjustment for sociodemographic factors suggested that higher levels of financial difficulties and, age and being on PGR or PGT courses may be important confounding factors in the association between higher CMDs scores and poorer Flanker accuracy. The association was significant and inhibition task accuracy scores were poorer after accounting for these in the adjusted model. For attention, only level of study had an impact on the association. Loneliness appeared to play a role in both the association between inhibition scores and CMDs symptoms, and attention and CMDs symptoms. This is discussed further below.

Loneliness attenuated the strength of both associations after adjustment (albeit to different degrees across inhibition and attention). Loneliness is reported to be positively associated with the exposure (CMDs) in wider research on international students (Russell, Rosenthal, & Thomson, 2010; Sawir, Marginson, Deumert, Nyland, & Ramia, 2007; Smith & Khawaja, 2011). Though I found limited research on this topic, some neuroimaging and observational research in non-clinical adolescent, clinical adolescent and clinical and non-clinical samples of older adults shows loneliness is negatively associated with correlates of executive function such as cognitive control, social inhibition, and attention to social threat (Gao et al., 2020; Mogg & Bradley, 2016; Najmi et al., 2012; Sin et al., 2021).

In my study, wider analyses I conducted to build my regression models showed that loneliness was associated with task accuracy outcomes (inhibition, attention) and exposure (CMDs scores). However, as my study is cross-sectional, we cannot exclude that loneliness may be part of the causal pathway between higher CMDs symptoms and poorer executive function task accuracy for attention and inhibition. Which is what would be required to conclude that loneliness confounds this relationship (Jager et al., 2008). To interpret their potential meaning we must understand the wider picture of what my findings show in relation to adjustment. Unadjusted models showed no association between CMDs scores and inhibition or attention. Adjusted models showed evidence for higher CMDs scores and poorer task accuracy, though different sociodemographic factors were implicated across inhibition (financial difficulties, level of study and age) and attention (only level of study). The meaning of this in relation to my study is discussed further below, but they broadly suggest different sociodemographic factors play an important role in the presence of attentional and inhibitory task accuracy deficits in context to higher symptoms of CMDs. There was a major difference between fully adjusted models for each outcome in this area. Previous studies I examined in Chapter 2 in relation to CMDs and executive function tended not to account for confounding, beyond age and gender and specific confounding variables relevant to study hypotheses (e.g. health information such as smoking status). In general, quantitative studies tended to include age and gender, showing poorer performance with age, and higher performance in males and those from higher socioeconomic backgrounds.

Loneliness was negatively associated with task accuracy scores and positively associated with CMDs (in separate models in my thesis). Adjusting for loneliness scores attenuated the magnitude of negative associations between CMDs symptoms for both attention and inhibition. However, for attention, the degree of attenuation was greater, as there was no longer evidence for an association between higher CMDs scores and poorer attention task accuracy. Whereas evidence for an association between higher CMDs scores and poorer inhibition task accuracy scores remained after adjustment for loneliness scores. The greater degree of attenuation may point to loneliness possibly playing a greater role shaping the risk of poorer attention versus inhibition in context to higher CMDs scores. This could suggest different underlying mechanisms or pathways

between poorer performance and CMDs. Implicating different factors or the same factors in a different way.

These findings broadly point to the importance of loneliness in relation to CMDs and poorer executive function task accuracy in SA international students. In which loneliness may be a potential risk factor in the pathway leading to poorer inhibitory and attentional task performance in relation to higher levels of CMDs. Though to differing degrees for attention versus inhibition. However, it should be noted that the cross-sectional design of my study means we cannot understand causation from this. The sample size of my study and cross-sectional nature limits any statistically robust investigation of whether there are mediating effects of different sociodemographic variables and loneliness levels on the pathway between higher CMDs scores and poorer inhibitory and attentional task accuracy scores.

On the surface findings may suggest that CMDs symptoms are not related to working memory, however, it is more plausible that the lack of an association may be due to measurement limitations discussed earlier for the digit span task. These findings contrast with the wider evidence base on the impact of CMDs symptoms on WM processes (Alves et al., 2014; Aronen et al., 2005; Brooks et al., 2013; Doumas et al., 2016; Dulay et al., 2013). Based on limitations, it may not be reasonable to interpret this as definitive or firm evidence of no impact of CMDs on working memory in SA international students.

Overall, these findings align with evidence of executive function deficits and poorer attention and inhibition performance in clinical and non-clinical populations with respect to anxiety and depression, as well as in university student populations. The lack of evidence on executive function and CMDs in international student and SA international students limits more detailed comparison of how my findings compare to research in this field. This is also true for evidence around the role of loneliness and different sociodemographic factors on the pathway between CMDs scores and executive function task accuracy. As there is only a limited evidence base of studies on wider non-student populations which examine loneliness and executive function in relation to correlates or non-EF cognitive constructs such as cognitive control which I refer to

above. Based on this a cautious interpretation of what my findings mean for SA international students relates to the potential importance of CMDs in this area. As higher levels of CMDs scores, along with severe CMDs symptoms, were related to poorer inhibition, and to a lesser extent poorer attention. Despite showing the possible importance of these factors, my design cannot clarify the nature of any causal pathways. This shows the importance of further study to clarify the nature of these associations with respect to causal pathways and exposure to risk.

5.5.4 Implications of findings

Findings from across my objectives have broad implications for international student support provision at several levels.

At the broadest level my findings point to a potential need for broader support around mental health and wellbeing in relation to attention and inhibition. Depending on how CMDs symptoms impact attentional or inhibitory deficits, and whether this develops over the course of study, this could point to a need for early identification and proactive intervention for this group. Further study concerning the mechanisms or pathways by which poorer executive function task performance may arise in context to CMDs is needed to inform this. Though early identification and intervention through screening could be the optimal approach to preventing adverse outcomes, if executive function deficits as a result of long-term or untreated CMDs symptoms. Though, to be able to evidence the need or extent to which this might be valuable for university support services to consider, we need further research to understand how CMDs-related executive function deficits impact further or wider academic, social and wellbeing outcomes in SA international students over the course of their time in the UK. However, if we consider wider evidence linking executive function or similar cognitive skills to correlates of academic performance (such as academic engagement, grade-point averages), as well as evidence that poorer academic performance can worsen CMDs symptoms and stress, there is limited reason to assume that such associations would not be reflected in SA international students. As such, there may be a need for university support services, as well as academic departments to consider that experiences of CMDs symptoms may be related to poorer attention and inhibition. It

may be that those with severe CMDs may benefit from academic support or adjustments to assessment in the short-term. Though further research is needed to inform support in this area, it may be valuable to understand specific areas of impairment or deficit in terms of multi-component models of cognition arising from CMDs symptoms. As well as how impairment of different components of attention or inhibition might contribute to adverse academic and social outcomes.

The different factors which confounded association between higher CMDs, and poorer inhibitory or attentional task accuracy were level of study, age, and financial difficulties, and level of study, respectively. In particular, for inhibition, being over 25, experiencing moderate to severe financial difficulties, or being enrolled as non-undergraduate students were associated with worse accuracy scores in context to CMDs symptoms. This shows some demographic groups may display higher levels of CMDs related inhibitory deficits. With further replication these areas or groups could be a focus for targeted mental health, practical or academic support. People experiencing greater financial difficulties may require support in this area. Limitations of my study as well as limited existing research to draw together these concepts mean that further research is needed to confirm or rule out these factors as being related to poorer executive function in relation to CMDs symptoms in this group.

Adjustment for loneliness attenuated associations between higher CMDs symptoms and poorer inhibitory and attentional task accuracy scores. While this may suggest loneliness as a potentially important factor on the pathway between more severe CMDs symptoms in SA international students and poorer executive function task performance, my data cannot confirm this. My findings reflect that SA international students with poorer executive function task performance may have been more likely to have greater levels of CMDs and experience loneliness. However, my study cannot attribute relative importance among these factors or their place in the possible pathway. Despite this cautious interpretation, my findings have implications for a wide range of higher education sector stakeholders with overlapping remits in terms of academic support, pastoral support and wider mental health and wellbeing support as an initial piece of research in this under-studied area. For example, it may be that academic staff and

those with a role in providing academic and pastoral support could play a role in identifying those at greater risk of loneliness. Depending on the nature of longitudinal associations and causation along this pathway, it may be that providing support to alleviate loneliness in SA international students with high levels of CMDs could prevent a cycle of adverse and exacerbating outcomes in terms of poorer EF. Additionally, this could be undertaken by widening the current university mental health support service offer to address loneliness in relation to CMDs. As well as collaboration between academic departments, university support services, as well as those with a role in visa registration and monitoring of international students (such as the SACB) to create ways to systematically identify those with the greatest need.

Taken together with wider research, my findings on CMDs, executive function and loneliness may point to a potential cycle of risk and adverse outcomes in which more severe levels of CMDs and greater levels of loneliness may underlie deficits to inhibitory task accuracy. This is concerning and warrants further research, as well as coordinated efforts to identify those most at risk of adverse outcomes from university support services and wider stakeholders. Drawing in wider research, international students and SA international students may be at particular risk. Although this requires clarification through further research in relation to impacts of poorer executive function on wider outcomes, we know that international study has been tied to experiencing loneliness or social isolation in qualitative research. The main implication is that these findings should form a focus for higher education stakeholders who engage with SA international students, and potentially wider international student groups. While requiring further research to replicate and inform direct action, this study provides foundational evidence for the need for mental health and wider academic support for this group to account for links between mental health conditions and difficulties with executive function in terms of attentional or inhibitory deficits. Also considering the impact of negative social exposures such as loneliness and social isolation, which may be common in this group and associated with poorer functioning in relation to the impact of CMDs symptoms upon attentional or inhibitory skills.

5.5.5 Future directions

Several directions for further study are implicated in relation to replication or extension of my findings using more robust, detailed, or alternative methods. As well as directions for future research which might create the basis for better understanding potential support needs concerning mental health, and executive function as it may relate to academic and wider life as a SA international student in the UK.

Given the limitations of my study and my null findings concerning CMDs related deficits on working memory task accuracy, there is a need for further study to replicate this null result in similar online samples. To rule out or exclude the possibility of measurement bias, this should assess multiple measures of working memory in a larger sample using a larger number of trials or a larger span of digits to recall. This may also create deeper insight by examining one domain of executive function in detail as opposed to assessing multiple dimensions of executive function using shorter tasks to account for participant task fatigue.

In relation to more robust or different methods which may extend this area of research, there are several areas in which further research using longitudinal methods could have considerable value. It will be crucial to understand whether these associations persist over time. Depending on the timepoints for data collection this could also clarify whether poorer executive function task accuracy in context to higher CMDs was present before university or developed during time in the UK. Clarifying whether CMDs symptoms and poorer executive function task accuracy persist after university, and whether this association relates to graduate outcomes and adjustment could have considerable value in informing the need and nature of further support which may be needed in this area for SA international students in the UK, and beyond their journey in the UK.

Longitudinal methods may also be used to understand causation. As cross-sectional methods cannot clarify whether higher levels of CMDs symptoms cause attentional or inhibitory task performance deficits, or whether deficits to executive function give rise to more severe expressions of CMDs symptoms. It is possible that the pattern of causation may be bi-directional, and there is a pressing need to understand what wider factors might span this pathway. Loneliness may be a candidate factor given the effect of

adjustment in my analyses. Longitudinal research with detailed and robust measurement of executive function domains alongside measures of academic engagement or difficulty and CMDs (such as using clinical interviews) could also clarify to what extent deficits of executive function related to CMDs compromise wider academic or educational outcomes and over what time period.

Further research which addresses measurement limitations in my study and the limited existing work in this area could test or evaluate multi-component theories and models of executive function and how domains link together in context to CMDs symptoms-. This could take several forms. One is through multi-dimensional assessment of different domains of working memory, attention or inhibition in a laboratory setting, with clinical assessment of CMDs through clinical interviews. This has value being able to disentangle distinct associations between specific clusters of symptoms and different domains of EF, such as whether mechanisms for CMDs related impairment for attention and inhibition are linked. Alternatively, further study could use measures and theory around multi-component models of memory to understand whether specific CMDs symptoms are associated with poorer performance in long versus short-term memory in this group.

From the perspective of understanding which groups may have the greatest need for support, further study could also examine whether these associations are replicated in wider groups of students such as home and international students. Comparison of the pattern of associations between these groups, as well as more specific groups such as SA international students could be useful in informing whether there is a need for greater support in specific groups. Further studies in this area should seek to understand, if CMDs related deficits to executive function performance are present in international student populations, how pronounced are they across different groups such as international students from different middle-eastern backgrounds.

In terms of alternative methods or approaches which could create novel insight into this topic, qualitative research may be underutilised in relation to research on mental health and domains of executive function or cognitive skills. Given that there is considerable quantitative research on executive function domains and measurement of these

concepts through positivist or empiricist approaches which seek objectivity in wider populations. Qualitative research may have exploratory value in this sense. Providing a different lens to understand how CMDs. There may be value in qualitative approaches to research which seek to understand experiences of CMDs among SA international student and reported or perceived impacts on subjective aspects of EF, such as blocking out distractions. While this may be limited in objectively measuring the scale of impacts or comparing them between individuals objectively, subjective understanding may be sufficient to build a more detailed picture of insight. Such an approach may provide information on CMDs and executive function that purely quantitative approaches cannot, where qualitative research may better represent the complexity of wider factors in how specific CMDs symptoms affect the ability to block out distractions by preserving the context around interviewee responses. Providing insight into how CMDs symptoms and 'subjective' forms of executive function are embedded within wider context of life as a SA international student in the UK. This also may be necessary to bypass potential limitations to recruiting enough SA international students in the UK to conduct large-scale research necessary to provide detailed information on these links via purely quantitative methods. Given the potential novelty and value of this approach and the information it may provide, and the quantitative information I gathered in this study, I conducted further research on this topic. This was via qualitative interviews and analysis described in a later part of my thesis (Chapter 6) which also incorporated wider areas of my thesis on mental health, help-seeking and loneliness.

5.5.6 Conclusion

Findings from my cross-sectional survey and online experimental tasks undertaken by n=137 SA international students in the UK showed that under some conditions, higher CMDs scores was associated with poorer accuracy on measures of attention and inhibition. Adjustment for loneliness attenuated these associations to different degrees for attention and inhibition. This study is the first to provide cross-sectional evidence of links between mental health, loneliness, and poorer attention and inhibitory control in SA international students in the UK. Before framing implications, it is important to briefly acknowledge that previous evidence mentioned briefly in my study rationale and rapid review (Chapter 2). With executive function likely being related to academic performance and educational outcomes. My findings have implications for the provision of support at the interface of mental health, negative social exposures such as loneliness and deficits to executive function (which may plausibly underlie academic difficulties). Suggesting that better identification of those with unmet needs in relation to mental health, loneliness or executive function is needed. The main implication for university mental health policy is a need for coordination between university stakeholders with a remit in international student mental health, academic and administrative support to better understand and address these issues by widening the remit of traditional mental health support to include loneliness. As well as exploring ways to consider how to better support SA international students concerning the potential link between CMDs symptoms and poorer attention or inhibition. Though my study has several limitations in relation to measurement and analysis, these arose in-part from taking a practical and broad approach needed to provide a breadth of information on this unexplored area of research. However, it should be noted that, given these limitations, further research to replicate these findings, as well qualitative or longitudinal research to understand these issues in more depth is needed. Developing a basis to explore and apply these findings to practically improve support for SA international and wider student groups in this area contingent on further research to establish a link between poorer mental health, poorer inhibition or attention and academic or wider difficulties that may arise.

Chapter 6: Exploring aspects of the study abroad experience for Saudi Arabian students in the UK: CMDs, subjective executive functioning

1.6 Summary

UK qualitative studies concerning interlinked aspects of the SA student mental health, loneliness, help-seeking and academic study are sparse. No studies examine such perspectives using parallel quantitative data or in wider student groups, such as home and international students. To address these gaps, I sought to answer six research questions related to these areas of research, including:

(1) How do Saudi Arabian international students experience the symptoms of CMDs and the impact of these symptoms?

(2) How do social, educational and financial aspects of the SA international student lived experience shape experiences of CMDs?

(3) How do SA internationals students experience loneliness and social isolation and how do these experiences relate to CMDs?

(4): What role do CMDs play in the specific context of international student narratives around academic life?

(5): How do SA international students experience CMD symptoms in relation to difficulties with paying attention, inhibiting responses or remembering things in an academic context?

(6): What common barriers to seeking help and support for mental health and well-being do SA international students experience and what sources of help do they perceive as acceptable?

To address these questions, I used applied thematic analysis on a data corpus of 18 semi-structured interviews to develop corresponding themes and sub-themes. I give a brief snapshot of findings, as the range and depth of themes developed was too rich and detailed to fully outline here.

CMDs were experienced in the form of withdrawal or retreat from social activities, and recurring negative thoughts linked to a vicious cycle of worry and fear. Symptoms of depression and anxiety were intertwined (RQ1). Several key factors shaped CMDs such as living situation and finances (finding accommodation, high living expenses), separation from family and existing support, unfamiliar academic challenges, and 'culture shock' (RQ2).

While some experienced a positive social life and an expansion of existing relationships and increase in awareness of other cultures, others 'felt strongly lonely here' (RQ3). Several key factors shaped social life for SA international students: binary social choices (socialise with others or succeed academically at PhD level), cultural and religious differences, negative or apprehensive attitudes towards SA peers or those from similar cultures, and COVID-19 lockdowns (RQ3). Loneliness was related to worsening anxiety and depression symptoms, with one interviewee recognising loneliness as crucial in their development of depression and anxiety: 'loneliness […] leads to depression and anxiety'. Separation from family, existing support networks, living alone and homesickness shaped symptoms of anxiety and depression which arose from experiences of loneliness (RQ3).

There was evidence of a 'vicious cycle' of academic difficulties and experiences of CMDs, where CMD symptoms increased academic difficulties and vice versa (RQ4). Some perceived that depression symptoms such as low mood, amotivation and tiredness or fatigue had increased distraction and loss of focus, compromising ability to concentrate (RQ5). Anxiety symptoms (particularly continued symptoms) increased task completion time and threatened task completion (e.g. 'writer's block') (RQ5). Some also reported links between experiencing both anxiety and depression symptoms, and 'memory decline', with wider connections to burnout and stress (RQ5).

Help was sought when mental health difficulties crossed a certain threshold or when the person could no longer cope, with symptoms becoming unmanageable. Professional sources, university support services and academic staff were commonly used for mental health and wellbeing support (RQ6). Specific modes of support included cognitive behavioural therapy, mindfulness, a "coping team", a psychological centre at university

and counselling services. Acceptability was generally high for these sources (RQ6). Familial or peer support were commonly used and perceived as mostly acceptable or mixed. There was some reluctance to use family or friends for support due to privacy concerns and not wanting to cause worry (RQ6). Common barriers to mental health and wellbeing support among Saudi Arabian international students in the UK included (RQ6): Mental health literacy and individual knowledge of mental health services (e.g. thinking GPs are only for physical health issues), lack of consistent information giving practises in relation to available services, and language barriers to available services and the lack of translated materials providing information about available support. Other barriers include lack of opportunities to build social support networks, high service demand with insufficient availability and limited appointment times. Some people used private services, GP and mental health services to access support tailored appropriately to their language and culture.

This study provides comprehensive details about the intensity and a sense for how prevalent symptoms of CMDs are in this group of SA international students in the UK. This makes connections between social isolation, loneliness, and academic challenges. With my findings contributing to the scant literature on SA international students in the UK. This work has several key implications: it is clear that this group may have unmet needs academic, social and financial needs which affect CMDs symptoms. Alongside the finding that CMDs worsen academic difficulties and vice versa, the subjective evidence of perceived difficulties with executive function in context to CMDs in this population indicates the need for support in this area. Loneliness was one of the wider aspects of life as an international student linked to CMDs. Data on help-seeking, acceptability and barriers to support provide a concrete basis to undertake service improvement for this group. I synthesise these data as part of my discussion to provide 7 recommended improvements to university support services concerning international study, mental health and pastoral support. Which have significance in attempting to address unmet needs in this group in relation to CMDs and broader aspects of international student life.

6.2 Background

6.2.1 Context

My earlier literature review highlighted several aspects of existing qualitative and quantitative research on student mental health and wider factors such as loneliness and cultural adjustment. These form the context and background for this qualitative study, which I describe in more detail in my literature review in Chapter 2. I briefly outline how this research informs the context of my study below.

Firstly, existing research suggests university students have high rates of poor mental health, high rates of loneliness and may have a reluctance to seek professional help for mental health issues (Hope & Henderson, 2014; Ibrahim et al., 2013; January et al., 2018; Rotenstein et al., 2015; Thorley, 2017). High levels of loneliness and social isolation, as well as a reluctance or inability to access appropriate support are known risk factors for poorer mental health outcomes in international student groups (Mofatteh et al., 2021; Wawera & McCamley, 2019). Wider research suggests that this broad group experience these challenges at a higher rate than the general population (Russell, Rosenthal, & Thomson, 2010; Sawir, Marginson, Deumert, Nyland, & Ramia, 2007; Smith & Khawaja, 2011). Studies have also shown that poor mental health is negatively associated with executive function in university student populations (i.e. performance on tasks that involve paying concentrating and attention, short term memory and inhibition), and that poor executive function may adversely affect mental health (Aijichi and Nejati, 2017; Best et al., 2011). Yet little is known about these experiences for SA international students studying in the UK, despite this group being one of the ten largest populations of non-EU international students who study in the UK (UK Council for International Student Affairs, 2019). No existing research has examined the link between executive function and CMDs symptoms in international student populations using qualitative research. While there is existing evidence on links between executive function and mental health applies to general and clinical populations, and less so to student or international students (with no research in international students). This body of research uses largely quantitative methods, meaning there may be value and novelty in examining these concepts using qualitative methods in a seldom studied group such as SA international students.

This is important for several reasons. Relatively little is known about how poor executive function and poorer mental health might be linked to other issues experienced by this group, such as seeking help for mental health in an unfamiliar country, or experiences of loneliness and social isolation. Partly due to existing qualitative research exploring these topics separately. This points to a need for further investigation which considers these together as they may be interconnected. As currently, studying these concepts separately has made associations between mental health, help-seeking and loneliness difficult to uncover. It should also be considered that these factors could impact international student experience through poorer educational outcomes or academic difficulties.

The importance of this link is highlighted by evidence on executive function and academic performance. Evidence shows executive function skills have been positively associated with aspects of academic performance such as standardised testing scores (Best et al., 2011; Engel de Abreu et al., 2014; Hassenbeigi et al., 2011). If CMDs are prevalent or under-recognised in this group alongside loneliness and issues with access to support, this could compromise educational and wellbeing outcomes through poorer attention, inhibition or working memory.

Exploring how these issues are experienced by Saudi Arabian international students has fundamental importance for improving planning and delivery of university support services. As well as understanding quantitative associations between these variables, it is also important to understand what Saudi students themselves say about these topics as this may provide deeper insight into potential links between CMDs, academic difficulties and EF. These links, and insights from experience would not otherwise be captured via a purely quantitative approach. The qualitative approach taken in this study is intended to extend or deepen insights from the quantitative part of my thesis, as well as generate novel avenues for further research.

The context underpinning this approach is that existing qualitative studies focus more on challenges related to acculturation difficulties (i.e. adjusting to cultural differences between Arabic and English-speaking countries or difference between secular and non-secular cultures), loneliness and language barriers. Existing research tends to explore a

single aspect or concept, lacking exploration of how these concepts might relate to mental health and to each other. No study seeks to develop a more broad and integrated perspective in considering mental health in relation to loneliness, help-seeking and executive functioning in Saudi students in the UK (Alqahtani & Hezam, 2015; Crockett et al., 2007; Sawir et al., 2008; Smith & Abouammoh, 2013; Taylor & Ali, 2017).

Gathering this information through quantitative and qualitative means may provide a future foundation for developing more targeted and culturally sensitive programmes of academic and mental health support for international students. This is important for international and Saudi students, given the added challenges of acculturation stress and language barriers mentioned in prior literature (Alqahtani & Hezam, 2015; Smith & Abouammoh, 2013). Importance is further highlighted when considering the wider evidence that Saudi international students face unique stressors in adjusting to Western culture which may impact mental health negatively (e.g. Almuarik, 2019; Alqahtani & Hezam, 2015). Describing help-seeking tendencies and loneliness levels and examining how they are associated with CMDs could provide a basis for comparison across different student groups. With qualitative methods giving insights into access barriers to appropriate support for SA international students.

6.2.2 Rationale

Despite existing evidence of poorer executive function linking to higher levels of CMDs (and established links between executive function and academic performance), we do not know whether high levels of CMDs may compromise executive function skills related to academic performance in SA international students. What is absent from the literature is quantitative data on this group alongside qualitative data exploring experiences directly. As described in the previous section and in relation to Chapter 2 literature review findings, qualitative research literature explores acculturation difficulties, language difficulties, and loneliness (Alqahtani & Hezam, 2015; Crockett et al., 2007; Sawir et al., 2008; Smith & Abouammoh, 2013; Taylor & Ali, 2017). With limited exploration of how these concepts relate to CMDs and EF, through the lens of academic and social life at university. No study exists for this area for SA international students in the UK. It is important to clarify this, as poorer academic performance may worsen symptoms of depression or anxiety. Such a relationship has important implications for the prevention of mental ill-health and understanding the role of academic support in preventing deterioration in mental health.

The results of this study will provide useful information for understanding the experiences of SA students in the UK. To better understand the factors associated with mental health and well-being in this student group. This is intended to enhance understanding of how to best tailor academic and wellbeing support. Given that there is some evidence to suggest that university students have poorer mental health than the general population, there may be student groups such as international students who may be at greater risk due to the potential isolation, language barriers and academic challenges of studying abroad. In addition, exploring the role of help-seeking tendencies for mental and emotional wellbeing, and loneliness levels, in relation to executive function and CMDs may provide a novel basis to understand what wider support might be warranted.

6.2.3 Objectives and research questions

Objective 1:

To explore how Saudi Arabian international students experience symptoms of common mental disorders (CMDs) and to examine the perceived impact of these symptoms on their lives.

Research question 1: How do Saudi Arabian international students experience the symptoms of CMDs and the impact of these symptoms?

Objective 2:

To investigate how social, educational, and financial aspects of the Saudi Arabian international student experience influence the development and manifestation of CMDs.

Research question 2: How do social, educational and financial aspects of the SA international student lived experience shape experiences of CMDs?

Objective 3:

To understand the experiences of loneliness and social isolation among Saudi Arabian international students and examine how these experiences relate to CMDs.

Research question 3: How do SA international students experience loneliness and social isolation and how do these experiences relate to CMDs?

Objective 4:

To examine the role of CMDs in shaping Saudi Arabian international students' narratives and perceptions of their academic lives.

Research question 4: What role do CMDs play in international student narratives around academic life?

Objective 5:

To explore how Saudi Arabian international students experience CMD symptoms in relation to cognitive difficulties such as attention, memory, and response inhibition in academic settings.

Research question 5: How do SA international students experience CMD symptoms in relation to difficulties with paying attention, inhibiting responses or remembering things in an academic context?

Objective 6:

To identify common barriers Saudi Arabian international students face when seeking mental health support and to assess which sources of help are perceived as acceptable and accessible.

Research question 6: What common barriers to seeking help and support for mental health and well-being do SA international students experience and what sources of help do they perceive as acceptable?

6.3 Method

6.3.1 Theoretical / philosophical paradigm

Qualitative analytic approach

The subtle realist worldview or philosophical stance supported the mixed methods design by allowing me to use different approaches based on what works best for answering the research questions, bridging subjective and objective knowledge claims (Creswell & Poth, 2018). My thesis takes a mixed methods approach in which qualitative and quantitative studies are integrated with elements of reflexive, and codebook thematic analysis and a worldview-informed methodology where meaning development is co-constructed rather than discovered. The qualitative analytic approach used is nested within the family of thematic analysis. Braun and Clarke (2022) acknowledge that combining elements of reflexive and codebook thematic analysis is somewhat uncommon, due to different epistemological underpinnings of approaches, they also note that it is possible it is the most appropriate course of action under certain conditions. They underline that when using such a hybrid approach, it is recommended to carefully justify the rationale (Braun and Clark 2023; Lassiter et al. 2025; Koopmans & Schiller, 2022).

My study uses the existing concepts (mental health, executive function, help-seeking, loneliness) to guide development of the topic guide and the coding of qualitative data. I wanted the freedom that brought in themes/emerging patterns from the data as well, and to be able to draw reflexively from my own perspective as an international Saudi student, as this experience likely would allow for richer understanding of the data and better address the research questions. My focus was on both mapping the patterns in the data around these concepts, as well as understanding how participants experience and explain these constructs, to maximize the usefulness of the analysis and findings. The modified form of thematic analysis used was adjusted to the needs of the project; to best address the research questions and this strengthened the qualitative study in many ways. Reflexivity is especially important in under-researched specific areas, to ensure transparency. The researcher's subjectivity is regarded and treated as a resource in the process of interpretation through use of reflexive notes and the integration with

quantitative data (Creswell & Plano Clark, 2018; Berger, 2015). Using a codebook approach, with deductive elements guided by existing theories or findings from the quantitative phase, provided a structure to organize meaning, and framework from which exploration of specific themes in more depth, while maintaining alignment with the overall research objectives (Braun & Clarke, 2006). Using a codebook thematic analysis enhanced the ease of comparing and integrating the qualitative findings with the quantitative results, which is an important consideration for mixed-methods research (Creswell & Plano Clark, 2018; Braun, Clarke, & Weate, 2016). Together, these strategies ensured that my qualitative component is rigorous, theory-informed, and effectively contributes to the broader mixed methods inquiry.

This study fits in with my wider thesis in several ways. First, it extends the lines of inquiry around mental health in relation to several key areas (EF, help-seeking and loneliness) by providing further detail and adding another experiential dimension to our understanding of CMDs in SA international students in the UK. The research questions guiding this chapter/qualitative study align roughly with my objectives in study 2 (chapter 4 and 5). These prior areas of my thesis explored links between mental health, loneliness, help-seeking, as well as the link between EF, CMDs and loneliness. This qualitative study enables deeper insight into each area of our understanding, providing a basis to answer wider over-arching questions about mental health and its role in poorer EF, loneliness, and help-seeking behaviour. Levels of CMDs are high in this group, and this study examines whether there is evidence of mental health related executive function deficits. Qualitative investigation using semi-structured interviews to understand how CMDs symptoms relate to difficulties in paying attention or remembering things in an academic context may provide subjective evidence of the importance of these factors in relation to each other. This is one instance of how my research questions and the broad areas they relate to have been devised to provide a broader and more detailed perspective on topics in studies 2 and 3 (Chapter 4 and 5).

This qualitative study also fits into the wider aim for my thesis in that it addresses evidence gaps that need to be filled to improve the information available for student support services and wider stakeholders. Currently there is no research which provides descriptive information concerning UK SA international students and their experiences

of CMDs symptoms or severity, executive function or subjective executive function in an academic context, help-seeking tendencies, or experiences of loneliness. In this way, thematic analysis of semi-structured interview data provides a descriptive as well as analytic account of these issues fitting within the broader frame of my thesis to address these gaps.

6.3.2 Design

All Participants who agreed to take part in the interviews were contacted. Semi-structured interviews were used as they provided the flexibility to explore certain important points arising during the interview (Schensul & LeCompte, 1999) and structure to ensure the areas relevant to the research questions were covered. These interviews were undertaken virtually (via telephone, Zoom or Microsoft Teams). Participants were asked to answer a series of questions around the factors that affect psychological health and well-being and their lives as international students (topic guide can be found in appendix 6). The interviews had the purpose of understanding how SA international students experience CMDs, and how CMDs relate to broader aspects of SA international student life such as academic, social and help-seeking experiences. To be able to do this the same points had to be covered in each interview to provide a consistent frame to understand common aspects of people's experience. However, a degree of flexibility was needed to be able to explore what came up, which could not be predicted. This has the benefit of being able to describe more consistent patterns in the data, while also providing flexibility to gather information on topics or aspects of experience that might not be mentioned in a structured interview with little deviation from core questions or follow-up. The topic guide was designed to ask questions about my core research questions in a broad way to enable a flexible approach, interview duration is described in section 6.4.1 (Schensul & LeCompte, 1999).

There are several things to consider in relation to the structure of the interviews and my role and insight as a SA international student interviewer. Semi-structured interviews were chosen as opposed to in-depth methods using ethnography or grounded theory. Practically, semi-structured methods may be more appropriate to resource constraints

as well being more appropriate for a basis to draw patterns across experiences of individuals, rather than methods focusing on understanding unique perspectives.

6.3.3 Procedure

Participants were recruited through the Saudi Arabia Cultural Bureau in the United Kingdom. A hyperlink to a survey page was sent to Saudi Club representatives and was distributed to participants via social media means such as WhatsApp groups and Facebook (the invitation letter can be found in Appendix 3). Participants indicated whether they wished to be contacted for qualitative interview via the Gorilla survey website using a contact request page for participants to include their information such as email address or telephone. The sample of interviewees included 18 Saudi Arabian students who participated in the studies described in Chapters 4 and 5 (Participants- first described in Chapter 4.3.1) who wished to be contacted for interview. Having transcribed, read and re-read each interview after their completion, I was confident after 18 interviewees that saturation in terms of no new or novel topics and themes were raised across interviewees, with considerable data on main topics relevant to research questions at this point.

Interviews were recorded via computer or using the digital recording technology that is built into the video calling platform used (Teams). Recordings were stored securely and encrypted within the UCL shared drive.

6.3.4 Areas of semi-structured interviews

Based on my research, eight broad subject areas/issues were derived to elicit participants' experiences around mental health, studying abroad, risk factors for poor mental health and help seeking. Given the semi-structured interviewing, prompts for further detail have also been provided to give the opportunity to explore novel data. The structure and style of questioning intended will start from general to more and more specific concepts. This enabled interviewer familiarisation and rapport building, before exploration of the research questions in more detail. Topic guide with interview questions is presented in appendix 6.

6.3.5 Reflexivity

I consider my experiences and identity as a Saudi Arabian international student and the role these aspects played in my interest in the topic, how I designed the study and my experience of interviewing participants and analysing the data. My identity played a central role in drawing me to this topic and in developing my understanding of the gaps in the existing research. Addressing these gaps could improve student experience, which is an important motivating factor for me. As a Saudi Arabian mother studying for a PhD, there were aspects of the data that were familiar to me in the parallels they struck with my own experience of navigating motherhood, family life, and academic requirements. This had the benefit of it being easier to build rapport with female students in similar positions as mothers on post-graduate courses. While reasonable to assume that this might affect what I was drawn to most in my analysis, the impact of this was limited by there being limited data from men due to lower participation. This is discussed more below.

Considering interviews and my position in terms of identity, while I initially approached data collection in thinking that being an Arabic national would enable greater insight into the experiences of SA international students as a single group, I reflected that this may not have been the case. My gender and seniority as a post-graduate student may have impacted recruitment or responses from male participants from undergraduate courses, as males tended to give much shorter responses and had shorter interview durations generally than females. Females made up a large part of those who I interviewed. This can be understood through intersectionality describing how the impact of belonging to multiple groups in terms of disadvantage or social advantaged are not experienced separately (Crenshaw, 1989; 1992). Applying this to experiences of my study, I did not experience my Arabic nationality, motherhood and gender, education status, or their impacts on the process of data collection and analysis separately. My identity and how others see me is not of either a Saudi, a student, woman, or a mother, but as all of those things in a specific place and time. Although I am Saudi Arabian and a student, male interviewees may have been less able to describe their experiences to me because of other facets of my identity such as my gender for example. This may also reflect the role that gender plays in openness to talk about mental health in SA men.

Mental health is an important topic for all students, but culture affects how we view and recognise things like poor mental health, along with other identity lenses. I was aware of the impact of culture on willingness and ability to disclose and discuss experience of mental health issues. For example, those with ultra-conservative religious or spiritual beliefs may view and describe mental health issues (and treatment and support) through this lens. As a Muslim woman I was aware of this in my own experience of mental health and wellbeing. I considered how this might show up in my interviews, understanding that views of identities such as men from more conservative religious backgrounds, or religious professions such as clerics or religious scholars, might be under-represented due to the subject matter.

The shared identities may have made disclosure easier and more honest for some participants. My particular interest in this area and lived experience mean I could approach the data with a form of empathy that might not have been possible without having gone through some of these experiences. The process of qualitative analysis involved me writing about my experiences and reflecting on how my views, identities and lenses might have shaped the analysis and what appeared most important.

6.3.6 Analysis: Applied thematic analysis (Braun & Clarke, 2019)

While the broad rationale for using applied or “reflexive” thematic analysis as opposed to ‘small Q’ qualitative methods has been mentioned in previous sections, I will briefly summarise aspects of this rationale here based on Braun and Clarke (2019). Firstly, thematic analysis allows the researcher to identify patterns in the underlying data, who plays an active role in shaping findings. This has the advantage of incorporating researcher experience, rather than trying to minimise this for objectivity. Secondly, that previous research has taken a quantitative approach to explore some aspects of these concepts means thematic analysis may make a valuable contribution here as opposed to methods from more interpretative or hermeneutic qualitative methods. There is a need to examine executive function through a qualitative lens which brings the benefits of acknowledging the subjective while still being able to identify meaningful or consistent patterns across the data. Though ethnographic methods or grounded theory centre subjectivity or uniqueness of individual experiences, this may limit our ability to identify

patterns in the data across or between individuals, which is a key utility of thematic analysis. In that thematic analysis may be more practically applied to achieve the aims of a subtle realist paradigm- bringing together the subjective experience of the researcher and of individuals, with a frame to identify an objective reality or realities across individuals. For the purposes of this research which relates to examining a novel area to generate better understanding of CMDs, qualitative methods such as thematic analysis enable us to understand possible patterns of meaning between individuals. Which is essential to understand what the needs of the group may be (or for example, if individual needs or views conflict). Finally, as this topic has not been explored in this group before, use of thematic analysis has a practical rationale in being an accessible and flexible method to enable rapid generation of foundational knowledge on CMDs and related issues in the form of themes.

Transcription and familiarisation

I conducted interviews in Arabic to make the conversation more accessible to participants, and help participants feel more comfortable and able to share and allow for the most detailed, in-depth and honest discussion possible (Aloudah, 2022). This also had benefits for me as the researcher in being able to ask more detailed questions and focus more on the meaning of speech and what follow up questions to ask (Aloudah, 2022). Rather than translating back and forth from Arabic to English during the interview. Interview data was translated from Arabic to English as the findings have relevance to stakeholders at UK universities, conducting analyses and reporting findings in English may mean they accessibility of findings to a broader non-Arabic speaking audience. I used interview recordings to transcribe the data to ensure data familiarisation. While there may be some loss of meaning with direct translation, this was carefully considered, and interviews were translated within a short timeframe of being conducted to mitigate against loss of meaning (Aloudah, 2022). Each finished English language transcript was then read and edited to familiarise myself with the content and develop ideas for initial codes which capture the data using written notes initially, then a word document which would serve as the basis for my thesis results draft.

Data management and initial codebook development

The process of data management, coding and analysis were conducted within NVivo 14, while some data analysis activities were conducted by hand and via word document (e.g. written notes as an aid for theme development and iteration; word document to collect quotes under themes or ideas that related to research question). After transcription, translation, transcripts in English language were imported into Nvivo to being the process of data management and initial coding.

After repeated exposure to raw data of each transcript within Nvivo, an initial codebook was developed with each code serving as a “bucket” or space to capture information on the topics that structured or came through interviewees talk in interview. Each code contained statements or quotations in the form of raw data that was identified and tagged so as to progressively and iteratively group the data into categories about a particular topic or theme.

Coding

I then read each transcript and coded the data to the codes within the codebook using Nvivo. After coding each interview, I collected quotes that stood out or were distinct (e.g. those that link CMDs using the word document that would later serve as the basis for themes development, and then the thesis results section (grouping these under codebook codes which pertained to specific areas of the research questions). I organised similar and contrasting quotes about the same topic or aspect of the data that was relevant to my research questions under headings which were linked to my research questions.

When data were fully coded using deductive and inductive coding. The rapid repetition of ideas in transcripts was notable. I used NVivo to produce extracts of the coded data under each node or code in the codebook. I then reviewed each codebook node (e.g. mental health, loneliness) for each research question in a structured or systematic way (reading each extract, gathering further quotes under initial headings, grouping similar and dissimilar quotes) to examine patterns in the data.

Data extracts

When data were fully coded, I used Nvivo to produce extracts of the coded data under each node or code in the codebook (See final codebook). I then reviewed each codebook node (e.g. mental health, loneliness) for each research question in a structured or systematic way (reading each extract, gathering further quotes under initial headings, grouping similar and dissimilar quotes) to examine patterns in the data.

Analytical process of the development of initial themes

The decision was taken to capture important data related to the key research questions under two analytic views of lenses: descriptive (which seek to provide a description of an aspect of the data in relation to answering research questions which relate to understanding for example, the type of CMDs symptoms reported across different interviewees) and interpretative (which describe aspects of lived experience or interviewees' subjective perceptions based on their descriptions of specific aspects of their lives in relation to CMDs, loneliness, help-seeking, cultural differences, academic and educational factor). These views or lenses served as basis identifying patterns in the data and grouping quotes to develop and iteratively refining themes related to each research question.

In relation to further detail about the process of analysis for each research question, these lenses were used by grouping quotes that were similar under headings that reflected either: descriptive (e.g. quotes which gave descriptions of anxiety and depression symptoms, severity, diagnoses) and interpretative or related to lived experience (e.g. quotes which describe how interviewees related to CMDs, or describing the perceived impact of CMDs in their lives). This was undertaken within the initial document mentioned earlier.

Sub-headings which pertained to different elements or topics of each research question were developed and refined within the word document and populated with quotations which spoke about each topic. This was done in parallel with reviewing extracts for each code across the codebook and writing about each group of similar or contrasting quotes

for a topic (under a specific theme e.g. diagnosis in relation to CMDs) using these lenses.

Iterative refinement of themes and write-up of results

Throughout the phases of coding and iteration of codes, I had developed an idea of which data within the codebook (under which combinations of codes) were relevant or described an aspect relevant to my research questions, I used this to review extracts in a structured way. For example, for my research question related to understanding how loneliness and social experiences impact Saudi student lived experience of CMDs, gathered quotes on links between loneliness, social contact and CMDs by reviewing multiple extracts: loneliness, CMDs, help-seeking, suggestions for improvement (i.e. those which spoke about the need for improvements to social events in relation to loneliness and lacking social contact with fellow Saudis students).

During the process of reviewing extracts and developing each heading or sub-heading for themes, the basis for themes was identified and developed where a group of similar quotes were identified and collated (e.g. where a group of quotes was similar in describing perceived impacts of CMDs symptoms on academic studies and subjective EF).

Themes were developed by iteratively grouping quotes from the extracts and writing descriptions of the possible patterns in the data across similar or contrasting quotes about a topic using the descriptive and interpretative lenses described previously. Progressing to the eventual naming and refining of themes in line with the difference between “bucket” themes and “storyboard” themes outlined by Braun and Clark (2008). Though, it should be noted that the aims of some of my qualitative theses are descriptive in nature, and so themes or headings which give a summary of the content outlined by participants (in context to each research question), rather than those which are interpretative, or aim to tell a detailed story or narrative alongside interpretation. This process served as the foundation of analysis and process by which themes were refined iteratively in relation to each research question. This document also served as the basis for the write-up when both repeated data related to themes had been noticed and supporting quotes had been collated under each written descriptive and analysis of

the data for each topic. Where the write-up process and refinement and naming of themes occur in parallel (as part of the process for refining findings).

Results section and reporting

The structure and format of my results section is important to note, as I present a different set of themes pertaining to each research question, divided into separate sections corresponding to each question. This is outlined in more detail in Section 6.4.2. Themes and sub-themes in each section are supplemented by the most salient quotes as evidence, accompanied by discussion and interpretation in relation to how data support the theme. I present full evidence for each theme in the form of tables of wider supporting quotations at the end of each section.

6.4 Results

6.4.1 Interviewee characteristics

In total, data from n=18 Saudi Arabian international students were analysed using thematic analysis (Braun & Clarke, 2006). Semi-structured interviews lasted between 45 to 60 minutes generally, though some were shorted in duration (25 minutes) were undertaken virtually (via telephone, Zoom or Microsoft Teams). Key findings in terms of themes and sub-themes are described within each relevant section.

The table below describes quantitative data collected as part of the main survey where 18 participants asked to be contacted for a qualitative interview.

Table 37. A table outlining sociodemographic, CMDs and loneliness related data for the n=18 who were interviewed.

ID	Age	Sex	Depression	Anxiety	CMDs	Loneliness
1	25-34	Male	Severe	Moderate	Severe	Severe
2	25-34	Female	Mild	Mild	Min-mild	Minimal
3	25-34	Male	Moderate	Moderate	Moderate	Moderate
4	25-34	Female	Moderate	Moderate	Min-mild	Moderate
5	25-34	Female	Mild	Mild	Min-mild	Moderate
6	25-34	Female	Severe	Moderate	Moderate	Severe
7	35-45	Female	Moderate	Moderate	Moderate	Moderate
8	35-45	Male	Moderate	Mild	Min-mild	Moderate
9	25-34	Female	Moderate	Moderate	Min-mild	Severe
10	25-34	Female	Moderate	Mild	Min-mild	Minimal
11	35-45	Female	Moderate	Severe	Severe	Severe
12	25-34	Female	Moderate	Moderate	Moderate	Minimal
13	35-45	Female	Mild	Mild	Min-mild	Minimal
14	35-45	Female	Mild	Mild	Min-mild	Minimal
15	18-24	Female	Severe	Severe	Severe	Severe
16	25-34	Male	Severe	Severe	Severe	Moderate
17	25-34	Male	Severe	Severe	Severe	Moderate
18	18-24	Female	Mild	Moderate	Min-mild	Minimal

Legend.

Most interviewees were female (n=13), with few males (n=5)- this reflects the distribution of sex in the wider sample (n=137). Most were enrolled on post-graduate research courses (n=12), with fewer on post-graduate taught courses. Only one interviewee was enrolled as an undergraduate. The majority were aged between 25 to 34 (n=11), fewer people aged 18 to 24 (n=2), or 35 to 35 (n=5). The majority reported minimal (n=8) or moderate to severe (n=7) financial difficulties. With few reporting no financial difficulties (n=3). Levels of CMDs (depression and anxiety) and loneliness in the sample of interviewees was high overall- this may be observed from the relatively high proportion of interviews with severe or moderate levels of these variables (the majority had moderate or severe depression, anxiety and loneliness levels: over 50% across all three). Though CMDs and loneliness scores were similar between the overall sample and those interviewed (n=119, mean CMDs= 20.83, mean loneliness=5.89; n=18, mean CMDs=20.88, mean loneliness= 5.55).

6.4.2 Outline of each results section

Results are divided into sections (relating to each research question described in Section 6.2.3) containing themes derived from thematic analysis. Themes consist of descriptive evidence in support of each research question, as well as more interpretative or exploratory evidence. For example, descriptive evidence is used to establish basic information about symptoms of mental health, whereas interpretative or exploratory evidence is used to understand aspects of deeper meaning about experience. Themes and sub-themes have been developed iteratively to reflect fully developed themes which describe the content of the theme in relation to the research question or topic and reflect some nuance or deeper insight about the data.

For each section, the key research questions or objectives are given, followed by paragraphs which set out a) how the section aims to address the research question using different lenses to interrogate the qualitative data (outline); and b) a summary of key findings related to themes, including a table of key themes and sub-themes.

The main write-up of results or findings of thematic analysis are presented after this summary, under the relevant heading for each theme or sub-theme. With evidence for each provided with brief edited and anonymised quotations to support each key claim

about the data. This presents only the most salient quotes for brevity, with tables containing the full range of supporting quotations presented at the end of each section. This includes the six sections which correspond to my research questions.

Table 38. Themes and sub-themes across all qualitative results sections.

Research question 1: How do Saudi Arabian international students experience the symptoms of CMDs and the impact of these symptoms?	
Theme 1: Withdrawal, seasonality, cycling thoughts, changes to sleep, eating and motivational symptoms	
Theme 2: Fear, panic, rumination and the physical or somatic nature of anxiety symptoms	
Theme 3: Varied representations of CMDs severity in Saudi Arabian international students	
3a	Representations of anxiety severity- "Anxiety is not going away"
3b	Representations of depression severity- frequency, perceived impact on behaviour and persistence of symptoms
3c	Depression and anxiety are intertwined
3d	Representations CMDs severity through reported experiences of diagnosis and treatment seeking
Research question 2: How do social, educational and financial aspects of the SA international student lived experience shape experiences of CMDs?	
Theme 4: Precarious accommodation, managing new responsibilities and limited support intensify stress and anxiety	
4a	Managing high living expenses and new financial responsibilities in London creates an unsustainable situation of stress and anxiety
4b	'Accommodation, it was a nightmare'- finding accommodation with limited support was a continued source of anxiety
Theme 5: Experiences of CMDs are shaped by academic challenges brought on by an unfamiliar higher education system	
5a	Changes in self-care and ability to meet basic needs and CMDs symptoms
Theme 6: Cultural, familial (home, homesickness, and loneliness) and social factors, including cultural differences between the UK and Saudi Arabia	
6a	Separation from cultural roots cultural and climate differences between Saudi and the UK can increase CMDS symptoms
6b	CMDs symptoms were tied to physical and emotional separation from family and wider social connections and support networks
Theme 7: COVID-19 and the consequences of lockdown	
7a	Uncertainty and insecurity arising from COVID-19 created fear and anxiety
7b	Isolation, loneliness and difficult family situations from COVID-19 adversely impact CMDs symptoms
Research question 3: How do SA internationals students experience loneliness and social isolation and how do these experiences relate to CMDs	
Theme 8: The nature of social life, loneliness and social isolation	
8a	Positive UK social life- expand relationships and awareness of other cultures
8b	" I felt strongly lonely here" / "Sitting alone is not pleasant at all": experiences and impacts of isolation and loneliness in Saudi Arabian international students
Theme 9: *'Loneliness that leads to depression and anxiety':* the role of homesickness, social isolation and living alone and SA support networks	
9a	Loneliness is related to a range of anxiety and depression symptoms
9b	Loneliness and isolation as fundamentally liked to CMDs –"loneliness that leads to depression and anxiety is an important topic"
9c	Separation from family, living alone increases symptoms of depression and anxiety
9d	"I miss my country, my family, my place" living alone as a consequence of separation from family shapes experiences of loneliness which underlie CMDs
9e	Familiarity of Saudi Arabian social support networks for positive mental health
Theme 10: Diverse factors shape social life and experiences which underpin loneliness related to CMDs for Saudi Arabian international students	
10a	Binary choice at PhD: socialise to the detriment of academic performance or isolate socially to succeed
10b	Cultural and religious differences restrict seeking positive social experiences with other backgrounds
10c	Drawbacks and advantages to seeking out Saudi peers
10d	COVID-19 adversely impacted mental health through increasing loneliness and isolation
Research question 4: What role do CMDs play in the specific context of international student narratives around academic life?	
Theme 11: Intertwined in a cycle: academic difficulties precipitate worsening mental health; worsening mental health can precipitate academic difficulties	
11a	CMDs and mental health struggles increase academic difficulties
11b	Academic stressors increase CMDs symptoms
11c	Specific academic stressors and challenges which shape academic life and mental health

Research question 5: How do SA international students experience CMD symptoms in relation to difficulties with paying attention, inhibiting responses or remembering things in an academic context?
Theme 12: Attention: CMD symptoms and social factors shape concentration and focus
12a Depression symptoms (mood, amotivation, fatigue) affect distraction, loss of focus and concentration
12b General and continued anxiety decreases focus, increasing task completion time or preventing task progression ('I can't work' ; 'writing block').
12c Social factors shape focus or productivity
12d Changing and controlling study environment to surmount CMDs symptoms related attentional challenges
Theme 13: Working memory: Depression and anxiety increase forgetfulness and 'memory […] decline'
13a General links between depression, anxiety and "memory […] decline"
13b Burnout and stress as contextual factors in terms of links between CMDs and memory difficulties
13c Systems to help memory and diagnoses related to learning and attention
Research 6: What common barriers to seeking help and support for mental health and well-being do SA international students experience and what sources of help do they perceive as acceptable?
Theme 14: Attitudes, behaviours and perceptions around mental health help-seeking
14a Cultural stigma towards mental health help-seeking– "How I grew up taught me not to seek help from religious people or doctor or psychologist."
14b High levels of unmet mental health and wellbeing support needs
14c Thresholds for seeking help for mental health and wellbeing issues: "I only request help when it's absolutely necessary"
Theme 15: Usage and acceptability of support from formal sources: mental health professionals, GPs and university support services
15a Non-use of formal support was aligned with 'informal support' fulfilling perceived needs, or perceived lack of need
15b High usage of mental health professionals, GPs, university support services : Saudi students accessed a range of treatment modalities
15c Lecturers and personal tutors as sources of mental health signposting, pastoral and practical support
15d Mixed usage and perceptions of remote or online support from formal sources
15e Usage of "Libeah"- to access culturally acceptable private mental health support
Theme 16: Usage and acceptability of support from informal sources: family, friends and religious
16a Family as an important source of financial, emotional and psychological support
16b Friends and peers as a source of academic and informal psychological support
16c Mixed views on sharing 'private' emotional matters with friends
16d Positive attitudes towards external and internal (personal) sources of religious and spiritual mental health support
16e non-usage of religious or spiritual institutions for mental health support "My problems were not spiritual in nature" / "having mental problems does not mean a weak relationship with God"
Theme 17: Logistical (Financial, access and availability), linguistic, attitudinal and informational barriers restrict access to formal support
17a Navigating financial barriers: cost and need to access private treatment and diagnosis
17b Language barriers affect access and reduce acceptability of university support services and psychological therapy
17c Service availability, short appointment times, and not wanting to consume resources needed for those with greater needs are barriers to NHS support
17d Role of support agencies in improving awareness of opportunities and avenues to access support
17e "I only considered going to a GP for physical health"- lack of knowledge about GP service mental health service provision
17f Responsiveness of university support services and wider agencies and difficulty accessing relevant information
Theme 18: Attitudinal (reluctance to rely on family) and environmental barriers (no opportunities to meet friends) restrict access to informal support
18a Reluctance to use family for emotional support: "having to teach them what is happening to you" / "they will be affected and fearful over me"
18b Lack of opportunities to meet fellow Saudi students restricts access to informal support friends and peers

6.4.3 Section 1: SA student lived experience of the symptoms, severity and impact of CMDs

Research question 1: How do Saudi Arabian international students experience the symptoms of CMDs and the impact of these symptoms?

Outline

This section presents key findings and themes related to Saudi Arabian student experience of CMDs while studying in the UK. These convey descriptive information related to CMDs, including outlining the kinds of symptoms, severity of symptoms or experiences. As well as relevant information on diagnosis to understand aspects of Saudi student experience of CMDs. This is intended to provide a basis to describe the nature of CMDs symptoms, impacts and severity among the sample of interviewees. By collating this information around CMDs related to symptoms, severity and stated impacts, this section identifies patterns in the data related to how CMDs impact this group. As well as how they relate to or navigate these impacts as part of their lived experiences as Saudi international students.

Summary

As may be observed from the breadth of quotations on CMDs (ranging from mentioning specific symptoms of anxiety and depression, or general experiences, to statements about diagnosis, severity and impact of CMDs symptoms), many interviewees reported experiences of CMDs symptoms. With interviewees describing a broad range of symptoms. Quotations analysis describing these for depression and anxiety are displayed below. Table 40 describes supporting quotations and types of symptoms described across interviews across depression, anxiety and combined experiences of symptoms.

Some mentioned having received a diagnosis for anxiety or depression while at university, or having a pre-existing mental health condition, whereas some spoke about CMDs generally or the severity of their experiences, despite not having a formal diagnosis.

Table 39. Describes the three main themes related to student lived experience of the symptoms, severity and impact of CMDs.

Theme 1: Withdrawal, seasonality, cycling thoughts, changes to sleep, eating and motivational symptoms	
Theme 2: Fear, panic, rumination and the physical or somatic nature of anxiety symptoms	
Theme 3: Varied representations of CMDs severity in Saudi Arabian international students	
3a	Representations of anxiety severity- "Anxiety is not going away"
3b	Representations of depression severity- frequency, perceived impact on behaviour and persistence of symptoms
3c	Depression and anxiety are intertwined
3d	Representations CMDs severity through reported experiences of diagnosis and treatment seeking

Theme 1: Withdrawal, seasonality, cycling thoughts, changes to sleep, eating and motivational symptoms

Interviewees described a range of depressive symptoms experienced while studying in the UK, which often occurred as part of a cyclical and interlinked process. These symptoms spanned emotional withdrawal, persistent negative thoughts, environmental stressors, and disruptions to basic routines such as sleeping, eating, and motivation. The following A, B,C D points capture key aspects of these lived experiences

A: Feeling depressed – withdrawal

Participants commonly reported feelings of emotional fatigue, sadness, and withdrawal from daily activities and social life. These emotional states were often linked to feelings of helplessness and the psychological toll of academic and cultural stressors.

"*those sort of things makes me tired and want to withdrawal from the world. On top of that I was sick, anxious, depressed, I have less power to wake up in the morning and less motivation to get things done in my study." (P8)*

*“I felt depressed many times as there is difficulties that even when putting hard effort to handle it or cover it in a safe way for your psychological health” (P9***)**

B: Cycle of negative thoughts

Several participants described recurring negative thought patterns and persistent self-criticism, particularly following academic setbacks. These cognitive patterns often intensified feelings of depression, reinforcing a cycle of emotional distress.

“Up for almost two days, I wasn’t feeling well, felt frustrated, I was pacing, so many negative thoughts were going through my mind and it’s lasted until now. Thoughts like, you are failure, I started something I am not able to finish ” (P9)

“when I failed another course I got depressed as negative thoughts started bothering me such as no I can’t continue, I am a loser, good universities are for better people not for me” (P17)

C: Seasonal affective symptoms

Some participants linked their depressive experiences to the UK’s climate and seasonal changes, suggesting a pattern of seasonal affective symptoms. The dark, cold winters and shorter daylight hours were seen to negatively impact mental well-being.

“in addition the weather has its impact on my mental health, this cold weather troubled me, you don’t see the sun and the day hours shortens [...]" (P7)

“Well depression in a low dosage its mostly due to the weather change, the sun set very early I think this is called, I think it's called seasonal depression. In terms of anxiety yes for sure I experiences it during exams with more force, I had many episodes of that, well not much but you can say more that usual.” (P16)

D: Low mood linked to changes to sleep, eating and motivation

Participants also described how depression interfered with their basic routines and motivation. This included insomnia, overeating or loss of appetite, and inability to engage in previously enjoyable or healthy habits—particularly during stressful academic periods.

“it is depression as I spent over three weeks not going out at all, I had over eating habits, it was not normal, I knew I was consoling myself with food but I know this is connected with my

negative mental health, I felt unable to feel good as what every I do my results did not reflect my put in effort, it was not satisfying to me, not what I used from myself in Saudi Arabia, I was an excellent student, I have been told my work is great you are special but here I don't get distinction, jut pass, pass, pass." (P12)

"That time influenced me so much as I am a person that always like to go out, limiting my movement and staying home got me depressed, this was affecting other things in my life like my apatite I was not eating much and one of the things that aids me in depression is doing sports and going to the gym that was also prevented" (P14)

"I had an accompanying sense of failure and fear of the consequences, and I have constant stress, I felt a tendency toward depressive feelings, I don't have diagnosis, but I go through periods of very low mood (P14)

These accounts highlight how depressive symptoms among Saudi students in the UK are experienced not as isolated phenomena, but as interconnected processes. Emotional withdrawal, negative thinking, environmental challenges, and disrupted routines create a compounding effect that reinforces low mood and reduces functioning. This theme is closely connected with the somatic and anxiety-related symptoms described in Theme 2, suggesting a complex interplay between emotional, physical, and cognitive experiences.

Theme 2: Fear, panic, rumination and the physical or somatic nature of anxiety symptoms

Interviewees mentioned a broad range of anxiety related symptoms or experiences. Notably, one participant stated implying that experiences of anxiety are ubiquitous or widespread among people studying post-graduate research level.

"I don't think anyone on a PhD programme does not have anxiety- if they exist, then they are heroes. My anxiety was correlated to my study." (P14),

Some expressed fear related to negative expectations of failing, that increased the burden they feel mentally.

"The thoughts of the possibility of not succeeding was very intense, I lost sleep and wasn't eating much. [...] my anxiety was high, and I was not used to these demands yet. In addition, the weather has its impact on my mental health, this cold whether troubled me, you don't see the sun and the day hours shortens, sometimes I felt anxiety yes […]." (P7)

Several reported experiencing panic attacks in relation to anxiety- one participants had never experienced this before and struggled to make sense of the symptoms.

"I started getting panic attacks and I got so depressed and anxious these made my life difficult. [...] it was a scary period with unknown future" (P8)

"I used to get panic attacks when I first came here, I thought that I had breathing issues or heat problem, I did not know what panic attacks is," (P13)

" [...] I do still get panic attacks but […] I think its not related to my study perhaps not directly [...]" (P2)

"Until now the I am still experiencing anxiety, my first two exams got me shocked, I even experienced panic attack when I am the exam room" (P10)

"my first two exams got me shocked, I even experienced panic attack when I am the exam room" (P10)

Somatic symptoms which present as physical sensations to the person experiencing them were reported specifically. Examples include heart palpitations, sweating,

headaches or migraines. With P3, in reference to panic attacks, describing this as a very physical experience in relation to feeling hot and experiencing breathing issues. Where participants spoke about specific symptoms, these tended to be centred on how participants experienced them physically.

"Alhumdullah [Thank God] I am an excellent student but wanting to keep going on a high level makes me anxious especially as I am coping with different learning style and requirements, sometimes my pressure drops, and I have fast heart beat due to fear and anxiety over my results" (P9)

"[…] I thought that I had breathing issues or heat problem, I did not know what panic attacks is," (P13)

"I can't work while someone speaking behind me sometimes if I felt nervous, [...] If I feel that I am nervously alert and I have a migraine in the sides of my head, I didn't know it was a nervous headache and I was seeing things as blurry, when I spoke with counsellor, they informed me what

Theme 3: Varied representations of CMDs severity in SA international students'

The severity of CMDs or depression and anxiety symptoms experienced by those interviewed was highlighted across wide range of data extracts where interviewees spoke about how their symptoms had impacted them over time, or in terms of social withdrawal or ability to complete academic tasks.

Sub-theme 3a: Representations of anxiety severity- "Anxiety is not going away"

Amongst those who mention formal diagnoses, and those who do not, there are several extracts which might indicate moderate to high anxiety symptom severity overall, where a handful describe their symptoms as strong or severe, and ongoing or unremitting.

" [...] I do still get panic attacks but […] I think it's not related to my study perhaps not directly [...]" (P2), or that they have spanned what may be considered a long period of time.

"I found myself anxious twenty for hours to be honest anxiety is a lot especially with deadline of the starting stage of anything. [...] . Still, I feel anxiety is not going away its present, I think this is not just my experience I have seen many students go through the same." (P6)

[...] I can say in most days I do experience anxiety and stress due to the fear of not knowing if I am doing things correctly" (P12) "Until now the I am still experiencing anxiety, my first two exams got me shocked, [...] for me even before coming into the exam my anxiety was to the sky, my stress, fear all that negative energy with me in my exam, I had the expectation that I will fail [...]" (P10)

"In terms of anxiety yes for sure I experiences it during exams with more force, I had many episodes of that […] (P16)

"I have been through anxiety most of my time here, and because prior coming here and during my stay […]" (P18)

Sub-theme 3b: Depression severity is represented through daily symptoms, behavioural impacts and persistent symptoms over weeks

Amongst those who mention formal diagnoses, and those who do not, several extracts indicate moderate to high depression symptom severity in relation to the frequency of symptoms, or stated impact of specific symptoms in relation to behaviour

"so many negative thoughts were going through my mind […]" (P9), as well as the implied duration or persistence of symptoms "[…] negative thoughts […] and it's lasted until now […]" (P9)

Key to this was experiencing this pattern over a longer period of time such as weeks or 'until now'. Several examples are given below:

"I went through severe depression and letdown. I had moments when I wanted to give up, because I was facing difficulties […]" (P11)

"it is depression as I spent over three weeks not going out at all, I had over eating habits, it was not normal, I knew I was consoling myself with food but I know this is connected with my negative mental health […] (P12)

Wider quotations in this section which outline how depression severity was represented over a longer-term course relate to cycling through burnout and feelings of hopelessness, cyclical symptoms of CMDs, as well as one who notes.

(P7) having outlined anxiety and depression symptoms and seeking formal diagnosis.

'[…] struggling with […] mental health when I first came and until now'

This speaks to how the severity was represented by some interviewees through their experiences of depression symptoms in daily life, how it had impacted their behaviour in terms of eating and sleeping and describing these experiences in terms of the longer term.

Sub-theme 3c: Depression and anxiety are intertwined

While some reported only anxiety or depression, many spoke about both depression and anxiety, alluding to the nature of CMDs symptoms as being intertwined or connected. This may also be observed regarding the facet of the above sub-theme concerning CMDs severity: many of those who indicated or described severity through their experiences of seeking treatment or diagnosis described experiences of both anxiety and depression symptoms. Notably, one participant referenced burnout in context to symptoms of anxiety and depression, whereas another highlighted entering a cycle of depression and anxiety.

"[...] a little depression […] I found myself fearful to get out, [...], I felt edgy all the time due to the multiple requirements that comes with study [...] I found myself anxious twenty for hours [...]. Still, I feel anxiety is not going away its present, I think this is not just my experience I have seen many students go through the same. [...] The burnout that I experienced was making me unable to work [...]." (P6)

"I start to blame myself and question why did I do that to myself, does this mean that the programme I am doing is bigger than my energy, I enter a cycle to anxiety, depression, stress due to questioning myself [...]." (P10)

"The burnout that I experienced was making me unable to work and at the same time not able to go out, have fun or relax. It kind of freezes situation, [...] taking a break? No, it does not let do

you do this [...] . I have been experiencing this a lot lately, during the last six months I would feel burnout almost continually"(P6)

"I can't deny I went through anxiety and depression like you say, you need to study but in the same time have family problems back home, this how life is [...]." (P7)

Also, the pattern of education in Saudi Arabia differs from what is done here I got anxious and depressed overcoming the challenges of this massive shift in the way of learning" (P11)

"The majority of my feeling of depression and anxiety stems from the worries around how to divide my time between study, exploring this new environment I am living in, and self-improvement as I am here [...] (P15)

I left my family and taken a big goal and need to be the best I can be. I do not want to fall short on myself and my aims, after all this hard separation, leaving my country my family, I can't not meet those goals so this makes me very anxious, I feel frustrated and depressed as I need to align myself continuously with the goals I came for, what my family expect out of me, anything off track will waste my efforts." (P15)

What is also notable about this data is that in one case, an interviewee who described experiences of intertwining symptoms of CMDs and burnout also stated that they '[…] have seen many students go through the same.'. While it is impossible to verify this objectively here, this is a concerning finding along with the fact that it was not uncommon for interviewees to describe experiences of anxiety, panic, worry for the present or the future, low mood, feeling like a failure, difficult experiences meeting social needs, as well as the wider challenges related to international study. For these individuals, these patterns could speak to the intersecting or intertwining nature of anxiety and depression experiences in context to the wider picture of what it means to study abroad as a SA international student.

Sub-theme 3d: CMDs severity is represented through 'clinical' symptoms, seeking diagnosis or treatment

Further, some indicate symptom severity though reporting formal mental health diagnoses or in describing clinical treatment received for a CMD alongside other

conditions such as ADHD. Notably, many described both anxiety and depression symptoms, which may suggest that mixed symptoms of anxiety and depression- or experiences of depression and anxiety symptoms- tended to be intertwined, rather than being experienced separately.

"*Eventually, I went back to Saudi Arabia and got the diagnosis there. [...] Alongside with my ADHD diagnoses I was also diagnosed with depression and anxiety." (P5)*

" I took some [counselling and therapy] sessions, they indicated that I have high anxiety and mild depression" (P17)

Wider quotes highlight how the severity of CMDs symptoms was represented by some interviewees by reports of their experiences of seeking clinical treatment or diagnosis, or indirectly in terms of those who had made statements of having sought help from university or wider wellbeing support, stating that they still experienced or struggled with symptoms in the present. Interestingly two interviewees used the term 'clinical' to describe severity, with one stating '[…] it was not normal […]' (P8). P6 outlines '[…] depression, but to a clinical point […]', with P8 describing that ' […] since 2018 clinical depression started in me'. Both also describe either wider experiences of anxiety symptoms such as panic attacks or being anxious for 24 hours.

"I went through stages [...] let's say a little depression, but to a clinical point" (P6)

"I did experience that, since 2018 clinical depression started in me it was not normal, and panic attacks and anxiety [...]" (P8)

"I was struggling with my mental health when I first came and until now. I could not deal with this, so I go to Saudi for shorts visits every couple of months" (P7)

"Until now the I am still experiencing anxiety, my first two exams got me shocked, [...] for me even before coming into the exam my anxiety was to the sky, my stress, fear all that negative energy with me in my exam, I had the expectation that I will fail [...]" (P10)

6.4.4 Section 2: Factors which shape experiences of CMDs

Research question 2: How do social, educational and financial aspects of the SA international student lived experience shape experiences of CMDs?

Outline

This section examines the factors or experiences which interviewees identified as shaping CMDs experiences. I also analyse how factors related to studying abroad and CMDs intersect with one another. Individual factors are listed with supporting evidence and analysis presented, consisting of a) short descriptive quotes which identify a factor and linkage to CMDs across multiple interviewees, and b) longer more discursive quotes which provide a more detailed outline of the role of the factor in relation to lived experience at individual-level (through looking at the pattern of description or meaning across individual interviewees data or talk). This presents key findings as to how mental health problems shape, and are shaped by, fundamental aspects of Saudi student experience of studying abroad, in relation to factors said to underlie or shape CMDs symptoms. Reporting any perceived links between mental health and related factors while at university in the UK. Perceived or subjective impacts on academic experiences (which played an important role in relation to CMDs) are reported elsewhere, as part of a different section related to academic difficulties and CMDs generally. For brevity, only the most salient quotations are presented as evidence within the main body of this section for brevity.

Summary

Table 40 shows four key themes and sub-themes which describe the factors that SA international students see as shaping their experience of CMDs, there were a wide range of factors or experiences stated to underlie or exacerbate experiences of CMDs symptoms by interviewees, as well as more indirect factors referenced by interviewees, which while not directly attributed, are known risk factors for CMDs. Notably, while interviewees describe discrete factors (i.e. standalone, for example describing the impact of an individual stressor), many also describe several factors or experiences as underlying or exacerbating CMDs symptoms.

Table 40. Key themes and sub-themes which describe factors underlying Saudi student lived experience and how they relate to CMDs.

Theme 4: Precarious accommodation, managing new responsibilities and limited support intensify stress and anxiety	
4a	Managing high living expenses and new financial responsibilities in London creates an unsustainable situation of stress and anxiety
4b	'Accommodation, it was a nightmare'- finding accommodation with limited support was a continued source of anxiety
Theme 5: Experiences of CMDs are shaped by academic challenges brought on by an unfamiliar higher education system	
5a	Changes in self-care and ability to meet basic needs and CMDs symptoms
Theme 6: Cultural, familial (home, homesickness, and loneliness) and social factors, including cultural differences between the UK and Saudi Arabia	
6a	Separation from cultural roots cultural and climate differences between Saudi and the UK can increase CMDS symptoms
6b	CMDs symptoms were tied to physical and emotional separation from family and wider social connections and support networks
Theme 7: COVID-19 and the consequences of lockdown	
7a	Uncertainty and insecurity arising from COVID-19 created fear and anxiety
7b	Isolation, loneliness and difficult family situations from COVID-19 adversely impact CMDs symptoms

Theme 4: Precarious accommodation, financial hurdles and limited support intensify stress and anxiety

This was identified across several interviewees, who described this as intensifying stress, or as being linked to lack of coping, or as playing an important role in CMDs symptoms by interviewees. A range of sources of financial difficulties were identified as intersecting or coming together in interviewees' experience of them in relation to studying abroad and in London. These included: accommodation and its impact on finding the money required to live in London (this issue also intersected with what several interviews identified as insufficient financial support for students in relation to

current London living costs), as well as the added burden of adjusting to new and unfamiliar systems for taxation, fuel and energy.

Sub-theme 4: Precarious accommodation, financial hurdles and limited support intensify stress and anxiety

While not generalisable to all individuals, one interviewee provides a detailed account of how financial factors around living expenses play out to increase stress and anxiety. They describe interlinked difficulties of finding adequate accommodations, managing high living expenses in London, and experiencing 'new responsibilities' and navigating unfamiliar systems for taxation, fuel and energy and personal banking. Increased stress and a range of challenges arising from managing high living expenses and new responsibilities in relation to living in an unfamiliar country. Formal support was limited, and some described these experiences as increasing anxiety levels.

"The financial aspect, It makes you tired and the monthly allowance from our scholarship does not cover the rent no way, especially when you are living alone with no one to help you with it[…] you put pressure on yourself not to waste money, only to find a place to live in, so the prices are dramatic its very high, there is no considerations for students " (P7)

"[…] I was not aware of council tax, such things is new considering that I live by myself I have to take full responsibility, learning about electricity bills and choosing the best company, energy, gas and water bills and council tax which was a dilemma for me as a new person […]" (P7)

Further quotations from this interviewee below describe how in 'Saudi we used to live with our family and never handle things like bills'. Including additional stresses such as opening bank accounts and putting stress on yourself to not waste money to balance the fact that monthly scholarship allowances do not cover basic living expenses such as rent. This was an interlinked issue with accommodation under the next sub-theme where 'the prices are dramatic, there is no consideration for students.

"This got me into a continuous state of anxiety concerning money when I lose fifty to seventy pounds [...]per night, [...] what is remaining [...] is not enough to then pay for the [rented] accommodation when I finally find one. So, a person will definitely feel anxious [...]" (P3)

“until this day I ruminate a lot about this and I became obsessive about how much I have, is it enough, will we be ok. It is basic rights of my family to meet their needs and take them out, I used to do so on weekends only but not during the week. Despite that I remained thinking about preserving money for accommodation rent once we settle. Thus, living expenses has a role.” (P3)

“[...] as an international student coming to a new place experiencing different regulations, there is new responsibilities.” (P7)

I faced new things you know in Saudi we used to live with our family and never handle things like bills, I was not aware of council tax, such things is new considering that I live by myself I have to take full responsibility, learning about electricity bills and choosing the best company, energy, gas and water bills and council tax which was a dilemma for me as a first times comer, when I started my language course I was surprised that I am not eligible to get an exemption it stressed me financially but I was excluded when I started my PhD. (P7)

“these things were challenging and the bills you have to monitor it, checking your consumption rate, checking if the amount requested is correct as some companies did some defrauding some clients or students, you need to be alert for such things.” (P7)

“The procedures of opening bank account I feel it’s more complicated here than in Saudi, all these things were new, all of them in one hand and study related things in the other, in the beginning these things distracted me hugely, discomfort and the accommodation matter made me anxious but you well settle once you find a long term contract, you well get used to things with time I guess, I set a few things on direct debit. It’s not easy to adapt to the new lifestyle but with times you well.” (P7)

Sub-theme 4b: ‘Accommodation, it was a nightmare’

Several interviewees noted this struggle as having a detrimental impact to their mental health, where they felt limited support was available. Interviewees highlighted this as draining their mental and monetary resources, serving as a stressor and barrier to study- navigating the private-sector rental system in London (particularly when renting with a family) was described as a “nightmare” by one interviewee, who stated that they were sure the interviewer would here similarly experience by other Saudi students. Accommodation and financial difficulties (or having the money to support the interviewee and any of their dependents) were fundamentally linked to one another, and to worsening mental health. One participant described the continued anxiety of struggling to find appropriate rented accommodation for themself and their family.

Transitioning between multiple temporary accommodations was stated to have imposed such a toll on the interviewee's living expenses that by the time they had found permanent rented accommodation, the money that remained was insufficient to cover the associated costs of renting.

"[...] accommodation it was a nightmare to be honest, I am sure that you had to have heard about it from others. Living in central London, it hard to find a place with good price and good condition. I placed many offers and was rejected, this brought me anxiety [...]" (P7)

Theme 5: Experiences of CMDs are shaped by academic challenges brought on by an unfamiliar higher education system

There was a considerable amount of data where CMDs and academic difficulties or stressors were spoken about with interviewees directly linking the two. This is explored more detail under Theme 5a: CMDs and academic difficulties, which describes a bi-directional relationship between the two, where CMDs symptoms played a role in academic difficulties, and experiencing academic difficulties (such as failing an assignment) played a role in worsening or maintenance of CMDs symptoms.

Sub-theme 5a: Academic stress precipitates changes in self-care, reducing ability to meet basic needs in context to CMDs symptoms

This was referenced in relation to some interviewees being unable to sleep, eat or undertake activities of daily living. In some interviewees' talk, this was highlighted because of meeting academic requirements (with stress and lack of self-care intensifying with academic deadlines), or as an impact of the stress of meeting academic requirements over time.

This includes changes in patterns of meeting basic needs (such as sleeping or eating more or less than usual). While it is not the purpose of this thesis to concretely reason the direction of this pattern in terms of which comes first, quotes from some interviews describe situations where their sleep or eating was affected as a result of trying to meet or exceed standards for academic performance. With some describing experiences of CMDs symptoms arising from this process. Though, this is one of many plausible

realities, as for others who spoke about these issues, struggles with CMDs symptoms also appeared to play a role in worsening academic difficulties (at several levels), such as struggling to meet deadlines due to low mood. Evidence for these may be seen in the description of CMDs symptoms of the sample overall and in terms of evidence supporting CMDs symptoms severity.

"*During my English language course, the pre-sessional, it was more stressful as it is about pass or fail and my offer for my PhD was conditional, depending upon passing it, the thoughts of the possibility of not succeeding was very intense, I lost sleep and wasn't eating much. It included assignments" (P7)*

"[...] one day I had open book exam all day while my son was sick and I was also breastfeeding, the night came everyone slept, I collapsed I was not even able to sleep even though i stayed up for almost two days, I wasn't feeling well, felt frustrated, I was pacing, so many negative thoughts were going through my mind and it's lasted until now" (P9)

"I think I entered a phase of depression it was strong but I was not diagnosed [...] it is depression as I spent over three weeks not going out at all, I had over eating habits, it was not normal, I knew I was consoling myself with food but I know this is connected with my negative mental health, I felt unable to feel good as what every I do my results did not reflect my put in effort, it was not satisfying to me, not what I used from myself in Saudi Arabia, I was an excellent student, I have been told my work is great you are special but here I don't get distinction, jut pass, pass, pass." (P12)

Theme 6: Cultural, familial (home, homesickness, and loneliness) and social factors, including cultural differences between the UK and Saudi Arabia

Sub-theme 6a: Separation from cultural roots cultural and climate differences between Saudi and the UK can increase CMDS symptoms

Two interviewees linked symptoms of depression, loneliness and missing aspects of Saudi Arabia in relation to differences in the weather between the UK and Saudi and missing family, Arabic people and Arabic food. With P1 describing feeling psychological distress when going out of the house due to UK weather differences, as well feeling depressed due to the weather. P16 mentioned having seasonal depression.

"Well depression in a low dosage its mostly due to the weather change, the sun set very early I think this is called, I think it's called seasonal depression […]." (P16).

Notably however, one interviewee reported an experience where they had sought mental health support from a therapist or counsellor. They reported a negative experience in which they felt that the professional had misattributed or over-attributed their CMDs symptoms to seasonal depression and weather changes.

"I reached a point where I confronted myself and decided to see a therapist. Unfortunately, it was not a good experience, I was not shocked or anything and still believe in the idea of getting counselling however, his overall idea was that' what you are going through is just winter blues', pointing out that I came from a place that is mostly desert and I am not used to this cold, and expressed this is why you are depressed. I did not argue, I said 'thank you and goodbye'." (P5)

"I have gone through many issues related to anxiety and feeling down as I tend to think a lot and for most, I believe its because I miss some things that I am yearning for. I miss speaking in Arabic and I miss Arabic food. [...]. Yes, a lot [Said in response to [Interviewer probe: So, this made you feel depressed?] and in addition the weather here is always cloudy with a lot of rain and its very cold. When I go out I feel distressed psychologically and not many Arabs around me that I can hang out with. So many things, I think. (P1)

Sub-theme 6b: CMDs symptoms were tied to physical and emotional separation from family and wider social connections and support networks

Several interviewees described symptoms and experiences related to CMDs which were tied fundamentally to separation from family in Saudi Arabia, feeling disconnected from them, as well as feelings of loneliness and social isolation. Interviewees described this in a social and emotional sense of not being able to communicate or see family, as well as in a practical support sense where it was more difficult to support family emotionally from the UK.

"in terms of social life what makes me anxious is that my family are away from me and I feel distant from the society I lived in. And when I call my family and friends as I miss them, they always surprise me with questions like 'when are you coming back, when will you finish your course'. When I tell them I don't know I don't have specific time we end the conversation and again when I call in another time, they ask me the same. This happened multiple times and it makes me anxious and distress and everything thing." (P1)

“Living alone also had a toll on my mental health, in the beginning I was fearful, especially when I first moved here. Afterwards I started to feel safe. I can’t deny I went through anxiety and depression like you say,”(P7)

I don’t take long, maximum of two to three months and I go back for a visit. This is what I can handle- three months. I will get very bad homesickness after it, I miss my family so much and I have a cat that I unfortunately could not bring here with me.” (P7)

“Being away from my family also contributed to my worsened mental health since coming here, I felt so lonely and as I am now living alone this emphasizes my thoughts to focus on me being single, and this created emotional problems for me that I had not felt before while I was with my family.” (P11)

“Sometimes I feel anxious due the fact of been away from my family for long years” (P12)

“[...] after all this hard separation, leaving my country, my family. If I cannot meet those goals this makes me very anxious, I feel frustrated and depressed [...]” (P15)

“I felt so lonely, I got out even when there is fear I could not handle the isolation it was activating all negative thoughts in my head, ruminating on things years ago, all in negative view, I actually went to the famous London landmarks during that time, the absence of physical interaction got me depressed, I wanted to meet with my friend, discuss things in relation to our study, isn’t this all about living the studying abroad experience ?” (P17)

This also occurred in the sense of feeling alone and having no practical support around daily and administrative tasks. With the perception that the responsibility for everything in the household rested on the interviewee. This also intersects with data on financial difficulties and having no family support while opening bank accounts and paying bills described in the section above.

“In terms of anxiety, I felt edgy all the time due to the multiple requirements that comes with study and on top of that my personal life everything kind of gathered on my head, I am living alone, no one around me I need to do all things by myself with no assistance” (P6).

P15 spoke in detail about intersecting issues of loneliness, separation from family, being surrounded by unfamiliar cultures, and CMDs, they link depression, anxiety and loneliness to these issues. Consequently, they are describing feeling alone frequently, and getting used to social isolation at home. They go on to describe the fundamental link between anxiety and depression, and loneliness in their experience as an international student. Notably, they highlight knowing several new students being affected by similar issues, with this impacting both social life and academic achievements.

"Something almost like depression to me is loneliness, even when there is people around me, the transformation from living in a big house and large family to living alone, and living in a place that have multiple cultures that not similar to me, that influences me so much, I felt alone many times, and then I got used to wanting to at home alone not wanting to see others." (P15)

"I just wanted to emphasize how much loneliness causes depression and anxiety as international student, I know several new students who came this year, and they are affected by anxiety and depression, which influences their social life and academic achievements, loneliness that leads to depression and anxiety is an important topic," (P15).

Those who lived with family (such as their partner and child or children) domestic and family responsibilities played a role in stress and symptoms of anxiety and depression.

"Another thing is about the family, when one of my daughters get sick or something this make me so stressed, and it is very draining. Approximately, I think these are the things that makes me tired and anxious sometimes while I am here." (P2)

"[...] I felt a tendency toward depressive feelings, I don't have a diagnosis, but I go through periods of very low mood. It It was difficult for me to balance between the psychological pressure of studying for a doctorate and the family and children, because they needed to be in school"

Theme 7: COVID-19 and the consequences of lockdown adversely impact mental health

Data here intersect with data on academic difficulties at multiple levels, where several participants outline CMDs symptoms and coping during COVID-19. The lockdown

adversely impacts their ability to conduct research (in the sense of logistics and organising recruitment), with academic difficulties being underpinned by the adverse impacts on mental health in context to loneliness, and separation from social life, as well as separation from family and children arising from COVID-19 and lockdown. These data also intersect with data on loneliness and separation from family in relation to their impact on the lived experience of CMDs above.

Sub-theme 7a: Uncertainty and insecurity arise from COVID-19 create fear and anxiety

Some describe the adverse impact of uncertainty and fears from border closures arising from the COVID-19 situation. Which P18 stated had affected them psychologically. Others state more general or broad impacts of the COVID-19 situation on their anxiety or fear levels or affecting their 'psychology' in general.

"I remember when they publicly announced that Saudi Arabia announced the closure of the borders, what will we do? confusion and fear of the unknown dominated me, what will happen tomorrow, the fear was not medically but more psychologically" (P18).

I *have been through anxiety most of my time here, and because prior coming here and during may stay, I know about forty to fifty people who I closely know and they continued their education in the UK, […] I think we have been through something that was not experienced before, was not expected at all, it Corona which influenced you […] your psychology, on your study, [it was a] thing that challenged everyone around the world." (P18)*

Some describe Adverse impacts or disruption to study from COVID-19

"Covid-19 pandemic, that was difficult to process mentally, my study was cut in my second year of my study […]." (P18)

"[…] this was one of the most things that troubled me, for over three months I was not able to work on my study uuuum no productivity for so long in my PhD[…]." (P18)

Sub-theme 7b: Isolation, loneliness and difficult family situations from COVID-19 adversely impact CMDs symptoms

Experiences around COVID-19 make domestic life more difficult in context to having to manage studying and caring for children, with fear arising from children or family members contracting the virus or displaying symptoms, which created fear and anxiety for som. P3 outline fear and stress in relation to adverse developmental impacts of COVID-19 lockdowns on their child' social development.

P3 state "due to this I am psychologically damaged this caused me anxiety"

More broadly, two interviewees allude to the impact of 'corona' on a person's psychology or mental health.

"What we fear now is our child he has a problem as he not speaking much with others, […]. Until now I did not find suitable school […] due to this I am psychologically damaged this caused me anxiety and my son as well was affected because for a long time he did not meet up with other children so his ability to speak got weakened […] at home he is all the time on his phone we couldn't prevent that from him[…]."(P3).

For one interviewee COVID-19 had meant separation from their children who were in Saudi Arabia.

"I was here alone, and my children are all in Saudi I was scared over what will happen to them, I couldn't travel to them", (P18).

Lockdown and socialisation restrictions to prevent spread of COVID-19 had adversely impacted the mental health of some in restriction of activities which were beneficial for mental health and coping:

"I am one of the people who do not like others to impose restrictions on my movement and mobility, its disempowering when someone tells you, you are prevented from coming in coming out, and that was for a very long time and with unknown period of time, it this raised my anxiety." (P18).

Some described Difficult family situations:

“I felt depressed many times as there is difficulties that even when putting hard effort to handle it or cover it in a safe why for your psychological health […] was much harder during Corona, I was breast feeding just gave birth with all of the chaos around you we had depression and anxiety over our health and our loved ones as well as our academic outcomes not knowing what to expect, my Kids had symptoms of Corona that was hard so hard the fear is unbelievable, many decisions we were about to take but I am glad we did not we were discussing leaving everything and just going back.” (P9)

Lockdown and socialization restrictions to prevent spread of COVID-19 had adversely impacted the mental health of some in restriction of activities which were beneficial for mental health and coping:

“Covid-19 pandemic, that was difficult to process mentally, my study was cut in my second year of my study, the lockdown started before I had the opportunity to go back to Saudi, fortunately […]. That time influenced me so much as I am a person that always like to go out, limiting my movement and staying home got me depressed, this was affecting others things in my life like my appetite I was not eating much and one of the things that aids me in depression is doing sports and going to the gym that was also prevented due to the lockdown, my study was going well because the balance between studying and doing something you like was not there , I couldn’t focus. […] “ (P14)

“I am one of the people who do not like others to impose restrictions on my movement and mobility, its disempowering when someone tells you, you are prevented from coming in coming out, and that was for a very long time and with unknown period of time, it this raised my anxiety” (P18)

6.4.5 Section 3: Experiences of loneliness and social isolation in the social lives of Saudi Arabian international students

Research question 3: How do SA international students experience loneliness and social isolation and how do these experiences relate to CMDs?

Outline

This section describes what interviewees said about loneliness and social life, seeking to identify any recurrent patterns in interviewees' discussion of loneliness and social life as international students. Firstly, understanding how commonly reported experiences of loneliness or social isolation were and the nature of such experiences. Examining and describing stated or implied references to the role of loneliness in relation to Saudi Arabian international student's experiences related to mental health. As well as understanding what kinds of factors were highlighted as shaping social life, loneliness and social isolation.

Summary

Interviewees spoke about how loneliness, social isolation and social relationships these shaped their lives as Saudi Arabian international students. Loneliness, social isolation and social relationships in general played an important and varied role in the international student experience - with experiences of loneliness, social isolation being reported among a high proportion of those interviewed. Family and connections to Saudi Arabia play a key role in this, and in buffering loneliness- this was described by several interviewees. Some described loneliness and homesickness in relation to missing food, weather or other aspects of their home country. Mental health was explicitly linked to loneliness, social isolation and homesickness in many aspects of interviewees talk. Some directly tied experiencing loneliness to increased or worsened symptoms of depression and anxiety. Some reported experiences of perceived social rejection or social difficulty in getting to know people, maintaining friendships in an unfamiliar context.

Table 41. Key themes and sub-themes related to experiences of loneliness and social isolation in the social lives of Saudi Arabian international students.

Theme 8: The nature of social life, loneliness and social isolation	
8a	Positive UK social life- expand relationships and awareness of other cultures
8b	" I felt strongly lonely here" / "Sitting alone is not pleasant at all": experiences and impacts of isolation and loneliness in Saudi Arabian international students
Theme 9: 'Loneliness that leads to depression and anxiety': the role of homesickness, social isolation and living alone and SA support networks	
9a	Loneliness is related to a range of anxiety and depression symptoms
9b	Loneliness and isolation as fundamentally liked to CMDs –"loneliness that leads to depression and anxiety is an important topic"
9c	Separation from family, living alone increases symptoms of depression and anxiety
9d	"I miss my country, my family, my place" living alone as a consequence of separation from family shapes experiences of loneliness which underlie CMDs
9e	Familiarity of Saudi Arabian social support networks for positive mental health
Theme 10: Diverse factors shape social life and experiences which underpin loneliness related to CMDs for Saudi Arabian international students	
10a	Binary choice at PhD: socialize to the detriment of academic performance or isolate socially to succeed
10b	Cultural and religious differences restrict seeking positive social experiences with other backgrounds
10c	Drawbacks and advantages to seeking out Saudi peers
10d	COVID-19 adversely impacted mental health through increasing loneliness and isolation

Theme 8: The nature of social life, loneliness and social isolation in Saudi Arabian international students

Sub-theme 8a: Social life in the UK as positive- expanding relationships, awareness of other cultures

Some identified that they had not experienced what they would regard as loneliness or had experienced largely positive social interaction and social life in the UK. With others stating that they had not experienced much loneliness or social isolation due to links with their family or being able to travel outside of the UK to see family periodically (data which examines the positive impact of family and Saudi social links on mental health is reported further below), or in being surrounded by friends from other countries or fellow Saudi international students. Quotes below highlight these experiences, with several interviewees highlighting growth, challenge, or positive experiences in relation to socialising while in the UK and "expanding relationships":

[…] making other friendships, I knew people from different nationalities from Italy, China, Indonesia, Turkey this was amazing as I got to be aware of other cultures[...] this is the first time for me to blend in with people from different backgrounds. [...] I did not have much difficulty. This subject [loneliness] was easy for me. " (P4)

"Expanding my relationships beyond Arabs challenged me, we would clash at many levels, our opinions, likes and dislikes may differ. I always looked forward meeting my Arab friends, knowing them supported me mentally and emotionally and I was blessed with nice and kind friends."(P14).

"[...] I was surrounded by my friends I was able to go back to see my family, husband so I rarely felt lonely. I can't recall anything related to that" (P4)

"As a social experience it was interesting, when I first came, I was the only Muslim on my course, so I pushed myself to get to know other students from different backgrounds. I think it easier for international students to be friend with another international student […]" (P5)

"The positive experiences socially overshadowed the negative ones, I did not go through a bad social time here, [...] all is well." (P10)

“I made some friendships in my department or university, especially with Arabs and Saudi girls and from Jordan and they were very supportive, it felt comfortable. [...]” (P14)

“Before coming here, I knew five to six people who is still here and I know them for a long time in Saudi, so for me I did not have to make relationships, I felt comfortable with in my circle of Saudi friends, so I couldn’t blend in other groups to be honest” (P18)

Sub-theme 8b: “I felt strongly lonely here” / “Sitting alone is not pleasant at all” : experiences and impacts of isolation and loneliness

In contrast, far more interviewees spoke about experiences of loneliness and experiences of social isolation. This is indicated by the range of quotations in which loneliness or social isolation such as living alone are referenced directly. Some made passing comments or brief mention about having low levels of social interaction and the impact of social challenges on their experience of university. Many others made more direct statements about feeling lonely, isolated or alone, highlighting the struggle and potential distress in desiring a level or type of social contact that they were unable to achieve. Several of the quotes which described a level of loneliness, social isolation and desire for social contact reflected on the impacts of these experience in relation to concepts such as: coping(“struggling”), ‘handling’ own emotions, and feelings of distress.

“There was a time when I sat alone, living by myself here in London and everyone I knew went back to Saudi due to work [...], I found myself feeling so lonely, no one very close to me, at that time I was not able to handle that. […] Sitting alone is not pleasant at all.” (P6).

I am living alone by myself and used to live with my family before, so I felt strongly lonely here” (P7)

“ [....] something almost like depression to me is loneliness, [...]I felt alone many times, and then I got used to wanting to be at home alone not wanting to see others.” (P15)

“[...] sometimes people just have to live alone. But [...] I never had to live by myself, alone. This did not allow me to cope despite the fact that I am a mother and for sure people depend on themselves for that. But I am still struggling with that” (P2)

"[...] its very challenging for a student while studying abroad to be away and miss out things.in terms of social life here in the UK, my friends[...] it is difficult though, sometimes I sense the feeling of loneliness and isolation which influences you in many ways" (P5)

"I encountered many incidents where I felt lonely even though there are people around me still, I felt alone, maybe it's because I am living alone by myself and used to live with my family before, so I felt strongly lonely here" (P7)

"a feeling of distress was always there. [...] I go back for a visit, this is what I can handle, three months. I will get very bad homesickness after it, I miss my family so much [...]" (P7)

Interestingly, some highlighted experiencing loneliness or isolation even while surrounded by people or in a public place:

"It was a feeling that I am alone even when I am with people [...]" (P6)

"Yes, I encountered many incidents where I felt lonely even though there are people around me still, I felt alone, maybe it's because I am living alone by myself and used to live with my family before, so I felt strongly lonely here" (P7)

Theme 9: 'Loneliness that leads to depression and anxiety': the role of homesickness, social isolation and living alone and SA support networks

Sub-theme 9a: Loneliness is related to a range of anxiety and depression symptoms

The breadth of interviewees who mentioned or linked loneliness and poor mental health directly, or indirectly, was striking. With a range of descriptions of specific symptoms of depression, anxiety and psychological distress, that were mentioned in parallel to or linked to experiences of loneliness or social isolation. Notably, these descriptions also give an impression of how severely or frequently these experiences were encountered by Saudi Arabian international students while studying in the UK. With quotations below are supporting evidence, these include:

Feeling more depressed due to low social contact or the absence of physical contact or in-person interaction with people.

"*[...] something almost like depression to me is loneliness, [...]I felt alone many times, and then I got used to wanting to be at home alone not wanting to see others." (P15)*

"[...] the absence of physical interaction got me depressed, I wanted to meet with my friend, discuss things in relation to our study. Isn't this all about living the studying abroad experiences?" (P17)

Feeling bored and alone.

"one big factor that caused me depression and anxiety and those kind mental health issues, I felt bored. [...] I was not able to get to know people, always sitting at home, even my lectures, attending from home, I noticed also [...] every nationality is staying together, [...] and that made me lonely" (P17)

Feeling anxious and distressed.

"In terms of anxiety, I felt edgy all the time [...] and on top of that my personal life everything kind of gathered on my head, I am living alone, no one around me, I need to do all things by myself with no assistance" (P17)

Negative thoughts, rumination and social withdrawal

"I felt so lonely, I got out even when there is fear I could not handle the isolation it was activating all negative thoughts in my head, ruminating on things years ago" (P17)

Experiencing emotional problems

"being away from my family also contributed to my worsened mental health since coming here, […] I felt so lonely and as I am now living alone [...] this created emotional problems for me that I had not felt before while I was with my family." (P11)

Sub-theme 9b: Experiences of loneliness and isolation are widespread and fundamentally liked to CMDs – "loneliness that leads to depression and anxiety is an important topic"

There was a recurring pattern in which loneliness and poor mental health were referenced as interlinked- as a range of interviewees stated perceived links between poor or worsening mental health, and experiences of loneliness and social isolation. There was considerable overlap between themes related to CMDs, and those related to

social life and loneliness. While a facet of this is reported under CMDs related themes, this section explores this in more detail.

Data from two interviewees provide deeper insight into the complex layers of meaning concerning the fundamental link between CMDs and loneliness in Saudi international students, and the importance of this link to the experience of Saudi Arabian international students in the UK. P16 describes their perception that depression related to loneliness or separation from family may be experienced by many:

"I think many students feel extreme sadness and depression over being away from their families, especially students coming alone, single or without their kids, I know one friend of mine she cries very often, when I say go back if this is influences you this much, she reply that's she needs to finish, it is demand by my work place, so I think for people that are coming here not by choice, the Saudi Arabian cultural bureau should offer things"(P16)

One interviewee highlighted loneliness and CMDs as being fundamentally interlinked in their experience. They reflect that this was wider than their personal or own experience as an individual, with the implication being that they had perceived this link in other new students. Notably, they state that loneliness causes depression and anxiety - highlighting the importance of "loneliness that leads to depression and anxiety". Notably, they draw attention to elevated levels of depression and anxiety impact both social life and academic achievement.

"I just wanted to emphasize how much loneliness causes depression and anxiety as [as an] international student, I know several new students who came this year and they are affected by anxiety and depression, which influences their social life and academic achievements, loneliness that leads to depression and anxiety is an important topic." (P15)

"[…]something almost like depression to me is loneliness, even when there is people around me, the transformation from living in a big house and large family to living alone, and living in a place that have multiple cultures that not similar to me, that influences me so much, I felt alone many times, and then I got used to wanting to at home alone not wanting to see others." (P15)

Sub-theme 9c: Separation from family, living alone and being socially isolated increases symptoms of depression and anxiety

While some were less direct in their attribution of a causal link, many described specific symptoms of depression or anxiety or types of emotional experiences in relation to their experiences of loneliness or social isolation. While the social factors or nature of desired interaction differs across these examples (i.e. in missing family; living alone; not being able to make friends; feeling distant from home society), these quotations all make a link between aspects of loneliness or social isolation, and poorer mental health.

"Living alone also had a toll on my mental health, in the beginning I was fearful, especially when I first moved here. Afterwards I started to feel safe. I can't deny I went through anxiety and depression like you say [...]" (P7)

" [...] being away from my family also contributed to my worsened mental health since coming here, [...] I felt so lonely and as I am now living alone [...] this created emotional problems for me that I had not felt before while I was with my family." (P11)

Sub-theme 9d: "I miss my country, my family, my place" living alone as a consequence of separation from family shapes experiences of loneliness which underlie CMDs

Interviewees also described a range of factors around their experiences of loneliness, social isolation and mental health while at university. Separation from family and from culture was described as playing an important role in experiences of poor mental health, increasing stress and homesickness by a range of interviewees.

"in terms of social life what makes me anxious is that my family are away from me and I feel distant from the society I lived in. [...] And when I call my family and friends as I miss them they always surprise me with questions like when are you coming back, [...]. This happened multiple times and it makes me anxious and distress and everything thing." (P1)

"there are times where my family are not here, not long periods where they are away but its hard psychologically when that happened. Even while I am trying to live by the idea that I should depend on myself, and no matter what, sometimes people just have to live alone. But [...] I never had to live by myself, alone. This did not allow me to cope despite the fact that I am a mother and for sure people depend on themselves for that. But I am still struggling with that, I don't let anyone knows as I

don't want them to be worried about me. However, inside myself I hope someone comes to me here." (P2)

"Handlining family issues while studying, its very hard you barely manage yourself, you are the only one taking care if yourself from A to Z, you know we come from a background in which were to taking care of everything, not in terms of cooking, cleaning, paying bills sometimes not even transportation and we had the support of home workers as well, its completely different experience to be honest, so feeling of distress was always there. I don't take long maximum of two to three months, and I go back for a visit this is what I can handle three months, I will get very bad homesickness after it, I miss my family so much and I have a cat that was unfortunately could not bring here with me." (P7)

"Living alone also had a toll on my mental health, in the beginning I was fearful, especially when I first moved here. Afterwards I started to feel safe. I can't deny I went through anxiety and depression like you say, (P7)

"I think the lack of family, friends' presence makes it difficult, expenses, that kind of support network is needed. Stressing, not able to sit with them, and on top of that I need to handle academic stressors, I miss my country, my family, my place" (P9)

" [....] something almost like depression to me is loneliness, even when there is people around me, the transformation from living in a big house and large family to living alone, and living in a place that have multiple cultures that not similar to me, that influences me so much, I felt alone many times, and then I got used to wanting to at home alone not wanting to see others." (P15)

"I was anxious all the time, [...] any time I feel lonely, anxious I can't study it distract me, the quality of understanding is not the same if I am not feeling well." (P15)

"[...] being away from my family also contributed to my worsened mental health since coming here, I felt so lonely and as I am now living alone this emphasises my thoughts to focus on me being single, and this created emotional problems for me that I had not felt before while I was with my family." (P11)

While at university many SA international students mention living alone and being independent in relation to their experiences of loneliness and social isolation, and poor mental health. A core aspect was being separated from existing support networks. Separation from existing support networks and key social relationships in not being able to be physically present or experience the physical presence of family members, friends and work colleagues. Many did not anticipate major lifestyle changes to social

experiences and home life- data here intersects with negative impacts on mental health Separation from family support adds to the burden of domestic, administrative and general household responsibilities when living alone. Some outline the impact of being alone or separate from family on negative emotions and thoughts. With negative emotions or feelings of loneliness also arising from being separated from home country and family.

Sub-theme 9e: The familiarity of Saudi Arabian (family, other Saudi students) social support networks as a valuable resource for positive mental health

Connecting with family - living with spouse and children, visiting Saudi Arabia periodically and calling home - creates positive impacts on mental health and resilience. Also, through social relationships with peers who in similar positions culturally which are positive resources for mental health and coping.

With P10 noting that

"*my Saudi friends aid me to feel better", familiarity, freedom from restraint, or not having to give introductions were important.*

One interviewee noted the crucial role that this had played in his mental health, as well as in relation to attending events to socialise with other Saudi students that were arranged through the Saudi student club in London (noted as a resource to rely on to "stay steady" or "lean on"). Notably, "an effective exchange of talk" with friends he met through this had led to practical solutions and "a more balanced perspective".

"[…] my Saudi friends aid me to feel better in times I need to feel good or need to express my feeling, I talk to them on phone or in person, the Saudi student club makes me experience the familiar feelings of meetings back home. You feel you have no restraints to express and talk, when I am with them I don't [need to] give any introductions, I just speak about what is going with me. " (P10)

"I knew a Saudi friend through the student centre, he led me to the Saudi student club in London in addition to the Saudi group at my university. This community had a good roll in my mental health, I attended a Ramadan night eating event, I also attended Eid gathering in the Saudi Arabian cultural bureau, it was a wonderful experience you don't feel left alone, [...]" (P17)

“[...] everyone expressing their issues led us to find solutions suggested to each other, whether it’s financial issues. [...] finding a find a good kindergarten was eased by them giving me choices, they listed options of places or finding a nanny, there was an effective exchange of talk, five or six friends of mine, I knew them through these events. This gave me a balanced perspective; my life should not be only my study. When I first knew Osama from the student centre and the Saudi student club my life got easier, once they organized a meeting in the Hyde Park, [...] I now rely on this club to stay steady- lean on it when it’s hard.” (P17)

Some expressed contrasting attitudes towards relationships with Saudi Arabian peers or those from similar cultures

“*At my university I encountered one incident where a Saudi student was getting into my personal issues, but I realized in professional environment its better go keep distance, so I never faced many challenges, I stated to adapt this style even in my personal relationships, it is very balanced approach no one is leaning on the other, it was to some degree successful way. “ (P13)*

“For example, I felt that when I meet Saudi people in the UK, they prefer to be with non-Saudi friends I think. So, their interaction with Saudi people is shallow only greetings and stuff like that.” (P1)

However, I think the other Arabs are more friendly, they meet in social groups, they go out with you so, I think their friendship is much deeper […] I think maybe because of fear as in Saudi it is commonly known that if someone is not from your social circle they may cause you trouble so that’s why people fear by far, I think.” (P1).

Theme 10: Diverse factors shape social life and experiences which underpin loneliness related to CMDs for Saudi Arabian international students

There was considerable and varied data on the nature, impact and factors which promote or constrain the formation and maintenance of social relationships, loneliness and social isolation as a Saudi international student. Interviewees noted a range of factors which impacted forming and maintaining social relationships with their peers including UK students, other international students, and Saudi international students.

The most salient supporting quotes are provided for each sub-theme in the section below for brevity.

Sub-theme 10a: Binary choice at PhD level: socialise to the detriment of academic performance or isolate socially to succeed

Several stated that academic requirements and stress from completing assignments had constrained their social experiences. With some highlighting that for PhD study, they perceived a dichotomy or binary choice: socialise to the detriment of academic performance and stress or isolate socially to ensure academic performance and engagement.

"I have my friend group here but sometimes you need to stay by yourself if you want to meet your academic goals and that sometimes makes me feel lonely, self-imposed loneliness but hard to get through" (P10)

"[...] I don't have much time, as I need to in my classes or studying, here it's more self-learning, you need to look for the books, papers, they only suggest a few in the beginning then it's all on you, so I did not have much time for relationships that need a long time to be present [...]." (P17)

Other factors that may underpin this relate to it being 'hard […] to balance between being a student and wanting to the live the social life you desire […].' (P5). In context to 'many obstacles that prevent new friendships', P6 notes that 'with academic stress I would not have time as relationships need commitment and I can't be under these circumstances.'. This points to an inherent tension underpinning this binary choice between 'new friendships' and 'self-imposed loneliness', where the commitment or time needed to invest in meaningful social relationships is hard to balance with the time commitments of PhD level study.

Sub-theme 10b: Cultural and religious differences can restrict seeking positive social experiences with students from different backgrounds

Some highlighted difficulty in socialising and making friends in relation to cultural differences or highlighted a sense of being isolated or being 'the only Muslim on my course'. With some noting challenges in terms of socialising and navigating other people's perceptions and misunderstandings about religious dietary restrictions. With the interviewee who mentioned this noting that it made her feel 'outcasted'.

“As a social experience it was interesting, when I first came, I was the only Muslim on my course, so I pushed myself to get to know other students from different backgrounds. I think its easier for international students to be friends with another international student. I only had one British friend, but by far everyone was nice and kind. Later four Saudi students came to my department that was different and interesting, we helped each other a lot” (P5)

“[...] I was the only Muslim girl wearing a hijab, one day they decided to go out to a cafe or something one of them invited me, [...] she said we are going out for drinks so I felt uncomfortable, as I don’t mind if I sat with others while they are drinking. It’s ok I will not judge them, and I can order no alcoholic drinks, but this incident happened many times, it makes me feel outcasted or unwanted.” (P9)

“it took me a while to process my feelings regarding that, I tried many times to explain that Islam is not judgmental i will not come with you ad judge you have you own practices and i have mine. Due to such experiences I learned to be more flexible over time” (P9)

“my Saudi friends aid me to feel better in times I need to feel good or need to express my feeling, I talk to them on phone or in person the Saudi student club makes me experience the familiar feelings of meetings back home, you feel you have no restrains to express and talk, one I am with them I dint give any introductions I just speak about what is going with me.“ (P10)

“I missed talks with my coworkers in Saudi, talking with people who know you over three to five years is precious, the experiences are different here although I have friends, I need to give them a full background on who I am then we start to blend and talk. “(P10)

“Social life, [...] I think getting to know people is hard, I don’t know where the girls who have the same interests are. All my relationships were inside my university, all were international like Italy but not much Saudi girls. Due to this I miss having someone who understands me and come from the same background have common interests. I feel bad why there is no Arabic society, something similar to Saudi gatherings. “(P12)

Sub-theme 10c: Drawbacks and advantages to seeking out Saudi peers

Some data suggested a contrasting perception regarding making friends with people from Saudi Arabia. Some stated a reluctance or avoidance of friendships or close relationships with people from their home country, or noting more shallow interaction with those from similar cultures, they felt Saudi people preferred to be with the non-

Saudi friends while in the UK. These are potential drawbacks to seeking out Saudi peers:

"At my university I encountered one incident where a Saudi student was getting into my personal issues, but I realised in professional environment its better go keep distance, so I never faced much challenges, I stated to adapt this style even in my personal relationships, it is very balanced approach no one is leaning on the other, it was to some degree successful way. "(P13)

"I think maybe because of fear as in Saudi it is commonly known that if someone is not from your social circle, they may cause you trouble so that's why people fear by far, I think." (P1)

"For example, I felt that when I meet Saudi people in the UK they prefer to be with non-Saudi friends I think. So, their interaction with Saudi people is shallow only greetings and stuff like that. (P1)

However, I think the other Arabs are more friendly, they meet in social groups, they go out with you so, I think their friendship is much deeper […] I think maybe because of fear as in Saudi it is commonly known that if someone is not from your social circle they may cause you trouble so that's why people fear by far, I think." (P1)

One participant noted that knowing or relying on people from your home country could have a benefit and a drawback- they highlight that restricting their social circle in this way had negatively impacted their ability or want to make friends with people outside of the people they knew from Saudi Arabia:

"[...] I know some people coming from Jeddah to the UK, this is a benefit and drawback as I feel good knowing they are here but that also made me very attached to them and not willing to expand my circle. They did make new friendships, but I did not in times that really hurt me, it influenced me so much, I am not seeing them much, can I make new friends? It took me about three years to discover that having a friendship may not mean having them forever (P15)"

Sub-theme 10d: COVID-19 adversely impacted mental health through increasing loneliness and isolation

COVID-19 was noted to have had a considerable detrimental impact on this aspect of university life and levels of loneliness and social isolation in general.

“After Corona, things got upside down […] I felt stuck. After that I felt that I did not have the energy to get to know someone new, […]. I was not open to get to know people after Corona. Social life flipped one hundred and eighty degrees due to Corona. “ (P8)

“[…] I only have me, my wife and daughter no third person. […] Covid was one of the reasons for me not to having negative experiencing of studying aboard, it affected me psychologically to a deepen level.” (P17).

“ [During Corona] I was here alone and my children are all in Saudi” (P18)

6.4.6 Section 4: The role of CMDs in SA student narratives around academic difficulties

Research question 4: What role do CMDs play in the specific context of international student narratives around academic life?

Outline

This section explores and describes the subjective role that CMDs played a role in how interviewees characterised and related to some of the more challenging aspects of international study, as well as the 'load' or burden of stress involved. Findings and evidence in the form of quotations are outlined under three sub-themes which describe the nature of links between CMDs and academic difficulties as well as the different stressors relevant to these links. These findings were developed by examining repeated patterns of meaning across interviews in relation to experiences of academic life, stressors and mental health.

Summary

Worsening mental health was spoken about as both a consequence of general academic difficulties, and as a potential cause or underpinning factor in relation to ongoing academic difficulties.

CMD symptoms impacted subjective areas of executive function (attention, working memory); where CMDs symptoms were mentioned as perpetuating or intensifying general academic difficulties through negative impacts on attentional and memory processes. However, this is covered by themes in the next section related to EF. A handful of interviewees spoke about 'continual stress' or 'burnout'; while a wider range of interviewees did not reference these terms specifically, many highlighted the impact of extraneous non-academic stressors (e.g. domestic responsibilities), as well as content-specific stressors (specific to the experience of studying abroad) in relation to ongoing experiences of CMDs symptoms and academic difficulties.

Table 42. Theme and sub-themes describing findings concerning the role of CMDs in context to international student narratives around academic life.

Theme 11: Intertwined in a cycle: academic difficulties precipitate worsening mental health; worsening mental health can precipitate academic difficulties	
11a	CMDs and mental health struggles increase academic difficulties
11b	Academic stressors increase CMDs symptoms
11c	Specific academic stressors and challenges which shape academic life and mental health

Theme 11: Intertwined in a cycle: academic difficulties precipitate worsening mental health; worsening mental health can precipitate academic difficulties

Sub-theme 11a: CMDs and mental health struggles increase academic difficulties

Extensive data outlines adverse impacts of CMDs symptoms, in terms of physical and emotional experiences (such as heart palpitations, as well as stress and burnout) that make studying or engaging with the tasks involved in completing assignments difficult. Impacts were described in the following ways:

“Sometimes my psychological health wouldn’t allow me to work, study, write so I asked for extension for my study, in times I would request a postponing my meeting with my supervisor." (P7)

“Does my psychological health affect my study? Yes, sometimes I try to separate my emotions but yes it did- any time I feel lonely, anxious I can’t study, it distracts me, the quality of understanding is not the same if I am not feeling well.” (P15)

“Since I was very young, I always been an excellent student in my elementary, high school or later, I can’t really see the difference here but one thing that I noticed now is yes, my psychological heath influenced my study [...]” (P6)

“Sometimes my mental health influenced my study as I did not have a motive to study, I know I am here to get a PhD but I, sometimes I could not focus I push myself and its due to my mental issues perhaps. This impacted my productivity” (P7)

“[…] I experiences freeze under the pressure sometimes, but I push to make it done so yes stress was present” (P14)

Sub-theme 11b: Academic stressors increase CMDs symptoms

Notably, there was considerable data in which interviewees outlined those academic difficulties or academic stress had affected their psychological health and wellbeing (such as in stress causing neglect of personal needs in terms of eating, sleeping) leading to increased CMDs. With some articulating a feedback cycle- where CMDs and

stressors contribute to academic challenges, and academic challenges and the stress arising from this contributes to worsening CMDs.

“Both ways, [...] My academic requirement by itself was causing me panic attacks and anxiety, deadlines, submissions in its times, having less trust in my own level of writing, is it enough, is it good quality, does it reach PhD standards.” (P8)

“Alhumdullah [Thank God], I am an excellent student but wanting to keep going on a high level makes me anxious especially as I am coping with different learning style and requirements, sometimes my pressure drops, and I have fast heart beat due to fear and anxiety over my results” (P9)

One interviewee describes “a cycle” of anxiety, depression and stress, where difficulty studying affects mental health negatively, and poorer mental health effects can create difficulties with studying.

For one participant, the impact of this on academic study and wellbeing was noted as severe:

“The burnout that I experienced was making me unable to work and at the same time not able to go out, have fun or relax. It kind of freezes situation, [...] taking a break? No, it does not let do you do this [...] . I have been experiencing this a lot lately, during the last six months I would feel burnout almost continually“ (P6)

Others expressed academic study burdens in other ways

“academic stressors influence my overall physical and mental health and I struggled to balance things out” (P5)

“In the beginning there was anxiety as it’s a matter of fail or pass this impacted my mental health.” (P7)

“My academic requirements influence my body too, during exams times, I find myself unable to sleep, no appetite to eat, everything vanish only study, study, [...] (P10)

“[...] only study, study, [...] to the point that after the exam is done, [...] I suddenly have been aware of how long I did not sleep or haven’t eat well in days this led me to feel depressed as I start to blame myself and question why did I do that to myself? Does this mean that the programme I am

doing is bigger that my energy? I enter a cycle to anxiety, depression, stress due to questioning myself, if I am enough why this is weighing on me, I am not able cope." (P10)

In terms of academic demands, it is making me stressed and anxiety, but I was not allowing this to affect my performance or outcomes academically, my studies went ok" (P14)

"The subject of study was influencing my mental health largely I was anxious all the time, questioning why I came here, I thought that was an excellent student, intelligent student but I faced a different reality." (P15)

"Having this [failing an academic assignment] start in my academic journey got me depressed if this the beginning what will happen later, maybe I a not suitable to be here, I started questioning myself," (P17)

"During my master's degree my academic results was very important and due to the different study system, I felt stressed most of the time, this impacted me negatively I think I entered a phase of depression it was strong, but I was not diagnosed" (P12)

"it is depression as I spent over three weeks not going out at all, I had over eating habits, it was not normal, I knew I was consoling myself with food but I know this is connected with my negative mental health, I felt unable to feel good as what every I do my results did not reflect my put in effort, it was not satisfying to me, not what I used from myself in Saudi Arabia, I was an excellent student, I have been told my work is great you are special but here I don't get distinction, jut pass, pass, pass." (P12)

"When I failed another course, I got depressed as negative thoughts started bothering me such as no, I can't continue, I am a loser, good universities are for better people not for me, but then I met Osama and other students I discovered that most international student failed a subject or two, one of my wife friends, she failed two subjects" (P17)

Sub-theme 11c: Specific academic stressors and challenges which shape academic life and mental health

Interviewees spoke about several stressors, challenges and experiences which had impacted or shaped their academic life in relation to difficulties studying. Some were spoken about as barriers to surmount, or initial challenges while adjusting to course requirements and studying in a new country. Others linked these challenges - explicitly

or implicitly - to ‘mental health. Central to the talk around specific academic challenges and their links to mental health was the idea of threats to confidence or self-efficacy and motivation. Negative experiences of initial challenges and transitions had adversely impacted some interviewee’s confidence or positive perception of academic competence. A list of stressors or challenges related to (with some being directly related to transition from Saudi Arabian educational system to UK higher education Saudi Arabia and the UK) are described below.

Different expectations, course structure and culture in terms of different assignments, pass or fail requirements for different courses, differences between previous education systems such as the US and Saudi Arabia.

“In the beginning there was anxiety as it’s a matter of fail or pass this impacted my mental health.” (P7)

“[…] the way the education here is taught, I thought that I am an intelligent, excellent student, I imagined things being easy for me here, but my first exam i got exactly fifty score out of one hundred, the second one I failed it, it was difficult in terms of how the question is organed and request from you, the element of critical analysis was needed this kind of evaluation are not familiar to us right?” (P17)

Difficulty adjusting to written assignments such as essays, and larger projects such as dissertations and thesis projects, and the timelines in which these pieces of work were able to be produced.

“my school in Saudi was following an American system so transitioning to the UK system wasn’t easy, the way exams was set, evaluation lines, lectures, everything was different, it took me a year to adjust, my grades also was an issue, I was an excellent student in Saudi, that is not the same here, (P15)

English language requirements. Pre-sessional English courses- admission to PhD study was contingent on passing these. Impact of English language and course requirements on mental health, levels of fear and anxiety, and fear of failure.

Experiencing perceived failure in terms of lower performance than expected overall or failing an academic assignment or exam. Efforts not matching expected outcomes in terms of performance.

“A focus on course work and written assignment as opposed to examinations.” (P7)

“[…] one time I decided to drop out of my course even though I don’t know what my main fears was, I was just overwhelmed, if my husband did not step in, I would’ve really left it I don’t know what happened, maybe it’s language issues” (P9)

“I am putting the effort but the outcomes was not matching that, I don’t get the sense of reward for my accomplishments, my scores is below average, I got scared and confused, no one informed me about this difference, maybe I should have been searched myself, my university did not offer introductory sessions to prepare us for the change in the system, I did not know how to best study it and succeed, it took me a year to understand that change and try to cope”

By contrast, one interviewee spoke about the impact of these challenges, describing how they had surmounted these challenges. This implicitly draws in the concept of “resilience” or “bouncing back”.

“moments of strengths can accrue. In terms of depression, it’s hard to say I am depressed or not as I can’t diagnose myself, I did experienced periods of mental load and low in emotions. In times where I hardly get through an issue in my study, its hard but it’s fine, the workload can be very wakening sometimes, but I pass through stressors but continuing on my study.” (P18).

“A focus on course work and written assignment as opposed to examinations.” (P7)

“[…] one time I decided to drop out of my course even though I don’t know what my main fears was, I was just overwhelmed, if my husband did not step in, I would’ve really left it I don’t know what happened, maybe it’s language issues” (P9)

“[…] the other thing is knowing about the exam organisation, my performance shifted after being introduced to the way it’s done. Another thing is when exams are set part from each other this makes me less anxious to have enough time to study after each exam and to the other. However, my psychological health influenced so much while I started working on my dissertation” (P17)

6.4.7 Section 5: CMDs: inhibition, attention and working memory

Research question 5: How do SA international students experience CMD symptoms in relation to difficulties with paying attention, inhibiting responses or remembering things in an academic context?

Outline

This section explores how CMDs symptoms were described by interviewees in relation to subjective areas of executive function in terms of attention and memory. Outlining how subjective executive function was spoken about, whether CMD related impacts were perceived by interviewees, and understanding what the effects of impacts were. In addition to general academic challenges described (and the reciprocal or bi-directional relationship between experiences of academic challenges [stress] increasing CMDs, and high levels of CMDs symptoms, such as anxiety, creating or intensifying academic challenges), interviewees also spoke about impacts on specific areas of cognitive function, including attention and working memory. Notably, interviewees spoke less explicitly about inhibition or impulsivity.

Summary

Findings highlighted the perceived impacts and consequences of mood or anxiety symptoms (as well as social factors) related to attentional difficulties. Interviewees also described the kinds of situations and tasks where they felt attention or focus was important or crucial, and personal or individual strategies they had developed to block out external signals from the environment or 'threats to concentration' (such as task interruption).

Patterns of meaning in terms of perceived impacts and consequences of mood or anxiety related difficulties with WM were less clear than for attention. While some linked anxiety or depression explicitly to memory, for others CMDs symptoms were mentioned indirectly (such as in relation to mental health, or burnout) concerning memory. For some interviewees, they had made statements about task-related difficulty concerning memory, while also describing CMDs related diagnoses or experiences of CMDs symptoms elsewhere in their interview. Interviewees also described the kinds of

situations and tasks where they felt WM was important or crucial to performing well. Describing personal or individual strategies they had developed to remember things from the environment or 'threats to concentration' (such as task interruption).

Table 43. Table outlining key themes and sub-themes concerning the broad alignment of academic difficulties and CMDs with subjective executive function concepts (concentration; memory/ remembering information).

Theme 12: Attention: CMD symptoms and social factors shape concentration and focus	
12a	Depression symptoms (mood, amotivation, fatigue) affect distraction, loss of focus and concentration
12b	General and continued anxiety (on edge; 'nervously alert') decreases focus, increasing task completion time or preventing task progression ('I can't work' ; 'writing block').
12c	Social factors shape focus or productivity
12d	Changing and controlling study environment to surmount CMDs symptoms related attentional challenges
Theme 13: Working memory: Depression and anxiety increase forgetfulness and 'memory […] decline'	
13a	General links between depression, anxiety and "memory […] decline"
13b	Burnout and stress as contextual factors in terms of links between CMDs and memory difficulties
13c	Systems to help memory and diagnoses related to learning and attention

Theme 12: Attention: CMD symptoms and social factors shape concentration and focus

Attention was referred to within the data corpus in a number of ways- some spoke about 'focus' or completing a task while blocking out external stimuli. Others spoke about this in terms of distraction or concentration. Where some spoke about attention implicitly- referencing concepts such as "productivity" and productivity.

Negligible or no impact

Some interviewees stated or implied that the suggested impact of CMDs symptoms or mental health issues was negligible, or that they had not identified any differences in relation to their mental health and academic experiences.

"In terms of attention, memorising and focus this is something that I could say I can handle one hundred percent due to my work requirements at Saudi Arabia." (P1).

"Attention and memory were ok but distraction I get influenced by it [...] (P4)

"[...] memory and attention, I don't have complaints but sometimes when I am too zoomed in to my work, I forget things in other aspects of my life but not that it is noticeable." (P14)

"I am ok with distractions; I need to get things done everything is ok I think in terms of those things." (P18)

Sub-theme 12a: Depression symptoms (mood, amotivation, fatigue) affect distraction, loss of focus and concentration

Whereas others highlighted experiences that may underlie difficulties with attention or attentional deficits related to depression symptoms- with one interviewee noting "depression but to a clinical point". Several attributed difficulties to "internal distraction" or negative internal emotional experiences related to depression or low mood, exhaustion or loss of motivation. Highlighted as impeding focus, attention to specific academic tasks or 'study' in general:

" I went through stages [...], depression but to a clinical point, I found myself fearful to get out, not able to write and my concentration on my study is not like before this is one point." (P6).

", my distraction was not due to my surrounding direct environment but I get distracted due to my inner state if I was not feeling well psychologically, I can't focus in addition, since coming here I had sleeping problems, I find myself exhausted and that influence my focus " (P9)

", when I was in month six or seven [...] I had many thoughts not related to study which made me not focus on study so much, [...] sometimes my mood affects my attention if I am in good mood and choosing the right place is needed [...] (P17).

Sub-theme 12b: General and continued anxiety (on edge; 'nervously alert') decreases focus, increasing task completion time or preventing task progression ('I can't work'; 'writing block').

Interviewees also described the perceived or subjective impact of specific anxiety symptoms on attentional processes related to specific tasks (e.g. completing time sensitive or time pressured tasks such as assignments and meetings). These included feeling on edge, nervous or alert, getting stress or anxiety headaches, 'continued anxiety'. Several stated that tasks take 'much longer than [they] used to" (P7), taking 'days or weeks' compared to 'hours' (P6), experiencing 'writing [sic: writer's] block' (P5). Stress was also said to arise from this experience by P6. Further, P5 reflected that these attentional difficulties had led them to seek a formal ADHD diagnosis- "[...] my difficulties in academic matters led me to seek an ADHD diagnosis" (P5).

Examples progression difficulties included participants saying

"When I reached later stages in my PhD a sense of block or as they say writing block happened to me, I could not recognize why, is it due to anxiety, why I suddenly became stupid! I reached a point where I felt that my path was not clear" (P5).

"Due to the continued anxiety, I found myself not able to focus, [...] I spent days or weeks for a task that I can do in hours. I don't know what has changed since coming here. I used to be fast accomplisher, [...] I am stressed that its taking much longer now to be done with an easy task, my focus is not centred" (P6) .

"when I feel anxiety I can't focus, its hard especially when you have assignments or meetings, [...]. So, things takes much longer that it used to if I had anxiety at that time" (P7).

"I can't work while someone speaking behind me sometimes if I felt nervous, [...] If I feel that I am nervously alert and I have a migraine in the sides of my head, I didn't know it was a nervous

headache and I was seeing things as blurry, when I spoke with counsellor, they informed me what it was. After that I started to try to relax, I need to be nice with myself so that I can control the symptoms and focus on my study." (P13)

Sub-theme 12c: Social factors shape focus or productivity

Some appeared to link attentional processes and functioning to the social or support environment around them- implicitly linking social connection in the form of being around family, to better focus and productivity. Some highlighted a social impact of their distraction or attentional difficulty in relation to studying, through needing to study at home they were unable to undertake group study with friends, which had impacted their social life. Notably, separation from this, or social isolation from family and support, and 'missing Saudi Arabia or loneliness, was explicitly mentioned in relation to attention and depression by participant:

"in any given time that I felt stress yes, my attention will be not ok. When I am in a state of missing Saudi Arabia, feeling lonely affects my attention so much. I usually try to talk myself out of the depression." (P15)

"I can't focus on my study, my mind is focused on making time go by [...] when I see my family, I felt more centred and able to focus, high concertation and my productivity there is better to be honest." (P7)

"In terms of anxiety, I felt edgy all the time due to the multiple requirements that comes with study and on top of that my personal life everything kind of gathered on my head, I am living alone, no one around me I need to do all things by myself with no assistance" (P6)

"I get really distracted, I need to study at home unlike others who can focus in the library, this influenced my social life as my friends were meeting for group study, I can't do that, I need a very quiet place." (P15)

Sub-theme 12d: Changing and controlling study environment to surmount CMDs symptoms related attentional challenges

Interviewees mentioned a range of strategies, coping mechanisms and forms of support for reducing distraction or controlling the environment with respect to distractors or other external or internal stimuli perceived to impact attentional processes. While many of these are related to predictability or stability of environment or similar external changes

(e.g. studying in a place where there is less noise, using headphones to prevent interruption;), some mentioned methods of internal regulation such as relaxation.

"In terms of attention if something requires keen attention in writing, I don't like to work in public places, I get distracted by people coming in and out or listening to what they say. But if I need to things that does not require attention its fine, I can work outside places such cafes." (P6)

"in terms of disconnecting myself from any noise, sometimes I find that hard, I can't focus I need quite place, but that's not allows sometimes I work in cafe shop, it like hearing white noise it helps you to be attentive." (P12)

"I when I spoke with counsellor, they informed me what it was. After that I started to try to relax, I need to be nice with myself so that I can control the symptoms and focus on my study." (P13)

"I get really distracted, I need to study at home unlike others who can focus in the library, this influenced my social life as my friends were meeting to group study, I can't do that, I need very quiet place." (P15)

"I get distracted easily, if I have a paper to write I cannot do it around people, its either that I will stay home or go to a higher floor of the library where there is no disturbance" (P16)

Theme 13: Working memory: Depression and anxiety increase forgetfulness and 'memory […] decline'

Working memory was referred to within the data corpus in a variety of ways. Though, it is important to note that WM was mentioned comparatively less than attention. Some spoke about WM directly, referencing memory or memory loss. Some spoke about memory implicitly, or in relation difficulty or success around specific tasks which use working memory. These references to WM included: remembering a sequence of numbers, or referencing concepts such as needing reminders, forgetfulness and remembering, calendars and scheduling and exam performance (remembering and using course content to answer exam questions). One participant spoke about 'knowing where [they were]' in relation to identifying what stage of work they were at in relation to

remembering which tasks were recently completed or uncompleted in relation to studying generally.

Sub-theme 13a: General links between depression, anxiety and "memory […] decline"

Similarly to attention, several interviewees referenced negligible or no perceived impact of CMDs in relation to WM and related academic experiences or tasks. However, several participants explicitly linked CMDs symptoms of depression or anxiety with difficulties with memory.

"I went through stages [...] depression but to a clinical point, I found myself fearful to get out,[...] I felt edgy all the time [...] memory to be honest, I feel I forget things, I am definitely not like before, my memory […] declined" (P6)

"I don't remember what I did when I was out, what was the name of that place or certain things I did for my study. I think it's due to the burnout and continued stress I am not able to stabilise things" (P6).

"things takes much longer that it used to if I had anxiety at that time, even my memory I don't think its as usual or at its best." (P8)

Examining interviewee talk about CMDs and memory in more detail, P8 described issues with CMDs symptoms in relation to motivation and memory loss in detail. They outline difficulties with psychological health restricting their ability to write and study in general, describing being "sick, anxious, depressed". They go on to describe issues with memory loss, reflecting

"I had a severe memory problem, I think [...] I would read an article [...] have a break when I come back [...] I don't remember everything I read before". Notably, in relation to memory loss, they highlight that "losing trust in my work makes my psychological health worse" (P8).

Some expressed negative mental state that occurred with memory difficulties

I actually got nervous a breakdown to the point that I am forgetting things, once I am out of my university, I forget what I was doing [...]" (P13)

“so many negative thoughts were going through my mind and it’s lasted until now. Thoughts like, you are failure, I started something I am not able to finish […] At times I felt attention and memory is very low, I would forget things like where I put things or forget that I already done some tasks” (P9)

“For memory and attention, it might be random or depends on my current mental health [...] it’s clear that memory is gone starting from now, [...] never got diagnosed or know it’s really a problem or not [...] it’s on and off button thing, not in the middle, it either I am full on or not at all or like [...] if there is things presented in order I can’t count all, I get lost For example, in one of the exams I was asked write about a sequence of movements, what steps! I remember the start move and the end one, what in between I can’t recall, I am blessed if I recalled it.” (P10)

Sub-theme 13b: Burnout and stress as contextual factors in terms of links between CMDs and memory difficulties

Further detail on what might underlie self-reported or perceived issues with memory in relation to studying is provided by P6. Having mentioned depression, stress and burnout, they report experiencing forgetfulness, speculating that their memory has declined, and they forget things related to their research. They speculate as to the mechanism through which they might experience this forgetfulness and memory decline:

“I think it’s due to the burnout and continued stress, I am not able to stabilise things [...] It’s also due to avoidance [...] I am using avoidance as a mechanism to cope [...] I am aware of it but can’t force myself back and do it. I am mentally avoiding things so that I feel I don’t have accumulated [too many] things to do.” (P6)

Other participants who reported or mentioned experiencing difficulties with memory or task related to WM had also reported experiencing CMDs symptoms, with some having diagnoses of anxiety or depression. With others linking mental health more broadly in relation to both memory and attention.

“For memory and attention, it might be random or depends on my current mental health [...] it’s clear that memory is gone starting from now, [...] never got diagnosed or know it’s really a problem or not [...] it’s on and off button thing, not in the middle, it either I am full on or not at all or like [...] if there is things presented in order I can’t count all, I get lost For example, in one of

the exams I was asked write about a sequence of movements, what steps! I remember the start move and the end one, what in between I can't recall, I am blessed if I recalled it." (P10)

"I had a severe memory problem, I think [...] I would read an article [...] have a break when I come back [...] I don't remember everything I read before […] losing trust in my work makes my psychological health worse" (P8).

"In terms of memory, I have a problem when I have more than one thing on my list to do, I sleep and wake up, oh shit I forgot to this, there is a problem, stress has role in that I think." (P12)

Sub-theme 13c: Systems to help memory and diagnoses related to learning and attention

In terms of other data that did not fit themes but did not have enough data to support a sub-theme, some interviewees also reported diagnosis related to learning and attention in the form of ADHD and dyslexia, with one participant mentioning iron deficiency in relation to memory loss. The lack of reference to working memory in participants' accounts may reflect differences in how lay individuals conceptualize attention versus working memory, rather than indicating that working memory is not a significant factor. Difficulties related to memory included the following:

"*memory I think was poor due to ADHD, [...] I write down my thought immediately otherwise I will not remember them" (P5)*

"On top of my dyslexia [...] nowadays when I am about to write I remember my previous supervisor voice saying 'read, read don't you see your mistakes', that ruined my confidence in myself [...] I am forgetting things [...]" (P13)

There were also far fewer references to strategies or coping mechanisms developed to cope with or surmount difficulties with memory in relation to CMDs, compared to those for attention. These included: using calendar alerts and writing down or recording thoughts.

"I have created certain systems for myself to follow such as putting everything in my calendar and I activate alerts to remind me. I also have a journal to write in my daily tasks. I write down my thought immediately otherwise I will not remember them" (P5).

6.5.6 Section 6: Help-seeking for CMDs

Research question 6: What common barriers to seeking help and support for mental health and well-being do SA international students experience and what sources of help do they perceive as acceptable?

Outline

This section seeks to address the above objectives in terms of exploring and describing Saudi Arabian international student help-seeking tendencies in context to CMDs, outlining common barriers to support and help-seeking, and examining perceived acceptability of different sources of help-seeking.

Summary

Table 50 describes key themes and sub-themes for this section which outline help-seeking attitudes, behaviours and tendencies in context to CMDs; as well as acceptability, usage and barriers to formal and informal sources of support.

There was a tendency to wait before seeking help or a reluctance to seek help before relying on themselves, underpinned by specific thresholds for seeking help for mental health. Other factors which describe how help-seeking attitudes and tendencies was shaped by lived experience of CMDs included: the role of avoidance or denial of there being a problem, wanting to keep everything under control, not wanting to burden others and selecting the right person to seek support from. The perceived role of stigma was outlined in the lived experiences of several interviewees in relation to CMDs and mental health support.

The breadth of data suggested a high level of usage of formal sources of help in terms of mental health professionals and healthcare professionals (Mental health professional, therapist, psychiatrists, GP), university support services (e.g. wellbeing centre) and university staff (lecturer or personal tutor). A wide range of forms of psychological therapy or more general support, and services used included: cognitive behavioural therapy, mindfulness, “coping team”, enabling centre, psychological centre at university, counselling services. There were limited perspectives on prescribing or medication for mental health issues.

Results showed mostly positive perceptions of the suitability and impact of individual forms of support in relation to counselling, pathways of support and referral from university services to NHS services (‘I contact the GP [...] they referred me to a third person, I don’t know what they are, but it was within the counselling team, that was very useful’.). Notably, two interviewees highlighted the usefulness of an online psychotherapy application for accessing mental health support from Saudi professionals, with one articulating a lack of “trust in the health care system here”. There were some descriptions of negative experiences of using counselling or mental health support services on the NHS, with one outlining the negative impact of using personal tutor support in relation to discuss and exploring the impact of neurodevelopmental conditions (ADHD) on their coursework.

Informal sources of help for mental health and wellbeing, including family, friends and religious support were reported as being mostly acceptable or with mixed acceptability. Family appeared to be commonly used by interviewees for financial and psychological support, consistent with a strong cultural focus on collectivism or the family unit in life and relationships. Usefulness and acceptability of family support was generally positive-with some describing this as their first source of support for CMDs. Though some described not seeking help from such sources due to need for privacy, not wanting family members to worry, and the barrier of having to explain mental health concerns in detail. Friends or peer support followed a similar trend in appearing to be widely used where available, acceptable and useful to a range of interviewees. Though some stated low acceptability of peer support ascribing this to a need for privacy and individual views and preferences on what to share with friends. Across family and friends, descriptions of the type of support provided were more general than for formal sources which described, to some extent, treatment modalities. Where family and friends support were framed more in terms of sharing feelings and general issues, letting them know you are struggling, In terms of religious support, there was limited data to understand patterns in the data around barriers. However, attitudes towards religious support were mixed. Some attitudes or perceptions had prevented some from viewing religious support, specifically from religious leaders or representatives, as a useful or appropriate source of mental healthcare or wellbeing support.

Table 44. A table describe key themes and sub-themes related to usage and acceptability of formal and informal help-seeking sources, as well as those related to barriers to formal and informal support.

Themes and sub-themes concerning help-seeking for mental health and wellbeing in context to Saudi Arabian international student lived experience	
Theme 14: Attitudes, behaviours and perceptions around mental health help-seeking	
14a	Cultural stigma towards mental health help-seeking– "How I grew up taught me not to seek help from religious people or doctor or psychologist."
14b	High levels of unmet mental health and wellbeing support needs
14c	Thresholds for seeking help for mental health and wellbeing issues: "I only request help when it's absolutely necessary"
Theme 15: Usage and acceptability of support from formal sources: mental health professionals, GPs and university support services	
15a	Non-use of formal support was aligned with 'informal support' fulfilling perceived needs, or perceived lack of need
15b	High usage of mental health professionals, GPs, university support services : Saudi students accessed a range of treatment modalities
15c	Lecturers and personal tutors as sources of mental health signposting, pastoral and practical support
15d	Mixed usage and perceptions of remote or online support from formal sources
15e	Usage of "Libeah"- to access culturally acceptable private mental health support
Theme 16: Usage and acceptability of support from informal sources: family, friends and religious	
16a	Family as an important source of financial, emotional and psychological support
16b	Friends and peers as a source of academic and informal psychological support
16c	Mixed views on sharing 'private' emotional matters with friends
16d	Positive attitudes towards external and internal (personal) sources of religious and spiritual mental health support
16e	Non-usage of religious or spiritual institutions for mental health support "My problems were not spiritual in nature" / "having mental problems does not mean a weak relationship with God"
Theme 17: Logistical (Financial, access and availability), linguistic, attitudinal and informational barriers restrict access to formal support	
17a	Navigating financial barriers: cost and need to access private treatment and diagnosis
17b	Language barriers affect access and reduce acceptability of university support services and psychological therapy
17c	Service availability, short appointment times, and not wanting to consume resources needed for those with greater needs are barriers to NHS support
17d	Role of support agencies in improving awareness of opportunities and avenues to access support
17e	"I only considered going to a GP for physical health"- lack of knowledge about GP service mental health service provision
17f	Responsiveness of university support services and wider agencies and difficulty accessing relevant information
Theme 18: Attitudinal (reluctance to rely on family) and environmental barriers (no opportunities to meet friends) restrict access to informal support	
18a	Reluctance to use family for psychological emotional support: "having to teach them what is happening to you" / "they will be affected and fearful over me"
18b	Lack of opportunities to meet fellow Saudi students restricts access to informal support friends and peers

Theme 14: Attitudes, behaviours and perceptions which shape mental health help-seeking

Sub-theme 14a: Cultural stigma towards mental health help-seeking– "How I grew up taught me not to seek help from religious people or doctor or psychologist."

There was a recurrent pattern across several interviewees who explore and describe tendencies towards help-seeking in context to CMDs and other factors. Primarily this related to those who spoke about culturally ingrained attitudes towards mental health and seeking help for problems such as these from sources such as religious people, doctors or psychologists.

Some showed stigma related concerns. One interviewee noted

' if someone seeks help from a consultant or psychologist they will be perceived as crazy.' (P1)

Others referred to society norm and how it impacted their choices

"Because the basic thing that prevented me from asking for help is how my upbringing was, I grew up in a society that did not have theses as options and in my culture if someone seeks help from a consultant or psychologist they will be perceived as crazy. So, how I lived previously this notion was not familiar to us, anything related to psychology is considered mad not like current days. How I grew up taught me not to seek help from religious people or doctor or psychologist." (P1)

Some noted feeling stressed and experiencing this stigma directly.

"I know in our culture there is stigma over going to a therapist, this view is changing and for me I never felt it is shameful to do that but I am a secretive person by nature and I do not want to reveal what is inside me, I know their purpose is to help and they will not talk about me to others but to be honest I did not find myself acceptable to that idea [...] I don't judge anyone going to them, maybe one day I will [go myself] I don't know. "(P16)

"Another thing is that I was so stressed due to the stigma related to mental health among Saudi people, as many kept asking me 'why are [you] seeing a therapist' like it's not an ok thing for them, [...] mentally distrust crazy people or weak ones, still there is stigma around that" (P5)

Some expressed uncertainty to seek psychological help

"Well, my husband did mention that but I guess my study of psychology led me to feel that I don't need that, I wasn't due to stigma or anything in fact I think people are getting very open about that but I don't think I needed "(P8)

"I think also if people want to seek help from a clinic, psychologist, even though I am a psychology [student] I think there is fear [...]" (P15)

"going to them, maybe one day I will [go myself] I don't know. " (P16)

Sub-theme 14b: High levels of unmet mental health and wellbeing support needs

There were several quotes across interviewees which indicated high need or usage of mental health support from professional sources such as a mental health professional. This may be observed from the range of participants who reported experiences of having used or sought help from such sources in the section below on formal and informal sources of help-seeking. As well as in the quote below which reports that many Saudis are in the same situation of needing help or support for mental health and wellbeing.

"many Saudi students if I ask for help, they respond 'we are like you needing help' [...]' if you find help, please let us know' indicating that they are in the same situation." (P3)

Sub-theme 14c: Thresholds for seeking help for mental health and wellbeing issues: "I only request help when it's absolutely necessary"

Several interviewees described their tendencies towards seeking help in terms of how long they would wait and their feelings about seeking help in general, and from particular sources. Several described a tendency to wait before seeking help or a reluctance to seek help before relying on themselves. One noted being "a very conservative person, I don't like others to know my struggles" (P9), with a reluctance to share information outside of family support structures. Several described waiting until they felt it was critical or necessary to seek support for mental health and emotional wellbeing, with one interviewee describing a cycle of waiting, convincing themselves

everything is fine and pushing through. Others also described a threshold for seeking help –

'if I reach a red line' (P3), 'if it's severe I contact other sources if needed' (P9).

Several described reluctances to burden other people with their feelings. Example responses in related to this matter are the followings.

"[...] I always depend on myself until I reach a point where I feel I can't anymore If I reach a red line[...], I Postpone the request for help until it is necessary, it then that I speak but prior that maybe I hint sometimes, but not directly I say it" (P3)

"In terms of the GP and a psychologist I am not aware of how and by far I only request help when it's absolutely necessary." (P3)

"I will tell you that I am a very conservative person, I don't like others to know my struggles, I think if I can speak to someone closer like my husband or my mother and express my feelings fully, I don't need to share it with an external circle outside my family. [...] if it's severe I will contact other sources if needed. (P9)

"No, not immediately and only if super needed." (P4)

"No, I take a while to decide on that as I try to push myself and say will things will get better with time or I don't want to trouble others with my issues so I push through the day but unfortunately, I wake up the next day and it's worse, I get stuck in this cycle of convincing myself I just need to sleep and wake up and all will be good when it's not. Sometimes I can't get out of my bed, lately I don't want to. If this lasted for more than two months here, I ask for help"(P8)

"I used to get panic attacks when I first came here, I thought that I had breathing issues or heat problem, I did not know what panic attacks is, gradually I started talk to seek help" (P13)

"No, I take time to select someone who can handle things I want to let out of my chest, I don't want to be burden on anyone, I don't want to become that person who always had an issue to talk about do I need to have a different person every time so that they don't develop that image about me." (P10)

"[...] I was denying that until my personal tutor indicated that I changed from … who first came and she submitted a student concern file for me [...] It was like self-denial as I do need support, I was saying to myself 'I am ok everything is under control' until the time came where I couldn't handle the accumulated stress, sometimes I feel I don't want to trouble others or let them know my personal things." (P17)

Theme 15: Usage and acceptability of support from formal sources: mental health professionals, GPs, university support services, lecturing staff and personal tutors

Regarding formal sources of support for mental health and wellbeing, this section outlines quotations which indicate usage and individual experiences of seeking help from: formal sources: mental health professionals (psychologist, therapist, psychiatrist), GP (doctor, general practitioner), university support staff (lecturers, personal tutors) and university support services and other related forms of support. Usage, acceptability and barriers to informal sources of psychological support, such as family, friends and religious leaders or religion are reported in subsequent sections.

Each section outlines recurring patterns in the data in regard to each source in relation to: usage (e.g. professionals used and modalities of support where this information is given by interviewees), experience (positive and negative experiences) and acceptability, and any other relevant aspects that appeared to be linked to interviewees' lived experience of help-seeking for mental health and wellbeing while at university. Including, perceived barriers or attitudes or perceptions which prevented interviewees from accessing or considering the usage of support, or suggestions for improvement tied to a specific service or barrier to access.

It is important to note that there is some overlap between sections (e.g. where interviewees mention university support as part of seeking support from a mental health professional) which reflects formal referral and or informal access (e.g. word of mouth; suggestion from lecturer or personal tutor) pathways to mental health and wellbeing support, as well as the varied structure of interviewees' talk or description of their experiences (such as mentioning several sources in the same statement, or talking about their experiences overall in long or discursive statements).

Sub-theme 15a: Non-use of formal support was aligned with 'informal support' fulfilling perceived needs, or not perceiving the need for formal support

Far fewer interviewees highlighted not having used formal sources of mental health and wellbeing support due to a perceived lack of need due to lack of awareness, 'family support' fulfilling perceived needs, or not perceiving the need for formal support in terms of wider available support and the perceived severity of issues.

"I don't think I needed; I found the support that I want so never thought of going to a psychologist. Mabey, I needed to but at the time it did not come to my mind I did not have the awareness of that until later on " (P4)

"Seeking professional help, no I did not try however, my family support is what kept me going " (P12)

"Well, some of my supervisors were actually asking how things are going, I did express that I am stressed and feel lost, my friend that I told you about she is the biggest support for me, in anything I just pick the phone and call her, other options no I did not think my issues need a psychotherapist or GP not to that point. " (P14)

Sub-theme 15b: High usage of mental health professionals, GPs, university support services: Saudi students accessed a range of support modalities

A broad range of interviewees described having used different kinds of professional or formal sources of support (including psychotherapist, psychiatrist or GP, and counsellor) for mental health or wellbeing reasons while in the UK or in Saudi Arabia. While more general support experiences were highlighted, several described having attempted to or having successfully accessed psychological support through university mental health services, or NHS-based assessment or screening, referral and treatment. Support was described in the form of talking therapy or psychological therapy, counselling, cognitive behavioural therapy, mindfulness-based approaches.

Overall, the broad range of interviewees describing accessing formal support, as well as the diversity of different forms of support provided concerning different modalities of

therapy or treatment for CMDs points to a high level of usage of formal support sources. A limited number of illustrative quotes are provided below.

In terms of CBT and mindfulness-based approaches

“[...] took a mindfulness course online provided from an organisation in the UK for two months, even though I did not full apply the skills, but it was beneficial, and I took that course as I wanted to incorporate aspects of mindfulness in my study so that was the main reason.” (P6)

“I've been trying to attend psychological sessions whenever I can and I've requested it through the GP, once they put me on eight weeks programme to take on cognitive behavioural therapy. I started to aid myself [...]” (P13)

“ When I asked my GP, he immediately did a referral for me to something called coping team I think, the same it was based on cognitive behavioural therapy, I got an appointment even though I don’t feel I need it now but I wanted to know what I have in times of crisis, when I need it, I know where to go, this is very important, meanwhile I was dealing with myself doing yoga, exercise, hangout, go on long walks. Unfortunately, I feel sometimes that I am wasting time as I can’t focus on my study. “(P7)

General references to psychological therapy, ‘programmed to maintain psychological health”:

“The GP and the enable centre [...] were offering therapy sessions, paintings [...] it was more like social events, but it helped. Evaluating that I would say it did not change me much as I was already depressed and was not open to really engaging in it all but for stress and anxiety it was beneficial but due to my depression I regret even going once I am there.” (P8)

“After a while, I went to the psychology centre at my university and then I got back to Saudi to get treatment with a psychiatrist, I started to fellow certain programmed to maintain my psychological health [...] “(P8)

“[...] my personal tutor indicated that I changed from …. who first came and she submitted a student concern file for me, as a result, I got contacted by a psychotherapist, I stayed with them for four to five sessions, mostly I suffered depression, little bit of anxiety, it was more around being homesick, I think that was we discussed. “ (P17)

“[...] there was free sessions at my university [...] until I reached a point [...] there was a psychologist who said what changes you feel within yourself, she said people have three behavioural outcomes, they either think about it, stay still in the problem or escape, I am now able to think, therapy enlisted your mindset so you can then think, so I loved speaking to her”(P13)

In relation Psychotherapy and counselling

“I asked for help once from my university and they provided me with counsellor, I only met her two times concerning family issue, things was happening at my family home in Saudi and the counsellor did help as, you know not being able to make a difference because you are so far away this caused me great frustration, I told her what was going on and expressed my feeling towards that, she explain that it is normal to feel that way, that was the only time I asked for help regarding my mental health” (P15)

“I talked to my supervisor about getting an extension, she referred me to do counselling first and said don’t worry about the extension I will help in that. I took some sessions, they indicated that I have high anxiety and mild depression but she did not prescribe any medication but she suggested that I contact the GP but let her know, they referred me to a third person, I don’t know what they are but it was within the counselling team, that was very useful, getting to know myself, my thoughts, I put a to do list, I ask for help from people.” (P17)

Sub-theme 15c: Lecturers and personal tutors as sources of mental health signposting, pastoral and practical support

Different university staff appeared to play a role in signposting and directing students to support for mental health and wellbeing issues, as well as providing some level of pastoral support in relation to these issues and academic difficulties.

“my supervisor was very supportive he told me about the enabling centre so he tried [...] he would express that he knows that I am stressed and such enabling survives can help or you can contact the GP and he offers to give me a break up to three months or me an extension the most important thing is that my psychological health is prepared to do the work. He is very supportive I am grateful that God blessed me with him being my supervisor.” (P8)

“my supervisor significant role in supporting me, she would explain [...] prepare for what might coming, one subject was oral examination, she explained [...], the pre-exam talk eased my anxiety and depression over upcoming new exams [...]” (P17)

Several of these quotes describe a pattern of understanding or support from lecturers in relation to family or personal issues, having empathy and providing practical support in relation to mental health and wellbeing. One quote illustrates this in terms of practical academic adjustment and family issues:

"In terms of my lecturers, I contacted them one my father got sick, all of them were very understanding and supportive, many students had family issues, they give extensions, so I didn't feel I need further help" (P16)

However, this was not the case for all, with one interviewee describing a more formal relationship with university staff in relation to wider pastoral support around mental health-

"With my tutor, only depression or stress related to my academic or study matters. My lecturers, not the relationship is very formal." (P15).

As well as P17, who outlined limitations and boundaries around sharing personal things, such as disclosing a need for mental health support to their supervisor.

"I think there is limitation and boundaries around what is work and what is not so I don't really like to share things when I am my department, their might create conflict in in interests among this type of relationships and even my supervisor for the same reason I don't ask for her help." (P17).

Sub-theme 15d: Mixed usage and perceptions of remote or online support from formal sources

There were considerably fewer references to the use of online or remote forms of support or reflections on perceived barriers to support. As such this sub-theme combines usage, acceptability and barriers. Several interviews described support in the form of using telephone, helpline, or online mediums.

"In terms of telephone therapist well after Corona you can mostly meet your psychiatric on phone or online." (P8)

“The help line at my university …..I contacted them many times, it was useful but when I am at my peak pain […], they were kind and nice, but I never aimed to reconnect again, it was not the help I need” (P13)

Though some outlined differing perceptions, awareness of or usage of telephone based mental health and wellbeing support.

“In terms of help line I never heard about it, what else’s you mentioned” (P7)

“help lines I did not know about, I heard about the 111 line I think it’s for cognitive issues help or support I just knew the services at my university and counselling services as it is suggested form my supervisor “ (P17)

Sub-theme 15e: Usage of an online psychotherapy application to access culturally acceptable private mental health support

Several highlighted a phone or web-browser based application for mental health support. Which was highlighted as allowing Saudi students to access privately funded psychological support from Saudi mental health professionals. One interviewee noted that they relied on this app to access professional support due to previous experiences and the perception that ‘if I went to a psychologist here, they will not understand me.’ Where they also stated, ‘I don’t have trust in health care system here’.

“For mental health I used an application called …… it is a Saudi Arabian originated app, it very good and help me a lot, I used back home and here for letting go of my worries by speaking to a counsellor, if I have a problem that I need a professional to help, I use this app.” (P10)

“ there is an application called ….. it usually come to my mind because I know doctors who work on it may understand what I am going through, this is not understatement of what can be offered here but I don’t think I will mention one experience, this was before two months, someone I knew was very stressed to the point that they do not sleep, they called the GP and explained what going on and lacking motivation and all sort of things, they prescribed pills to them, I don’t know what was it but I believe you shouldn’t consider medication before doing vitamins check and advising healthy lifestyle, I don’t have trust in health care system here” (P12).

Theme 16: Usage and acceptability of psychological support from friends and family

Help-seeking for informal sources such as family and friends was commonly reported among interviewees- ranging from seeking emotional support from parents, siblings or other extended family members to those who reported leaning on or using their friends at university as an informal source of mental health and wellbeing support.

Sub-theme 16a: Family as an important source of financial, emotional and psychological support

A range of support from family was described- several described financial support from family, primarily parents. Several described support from their spouses or within their marriage. This came in the form of psychological support in terms of discussing feelings and issues with wellbeing, as well as in helping to calm immediate distress and crisis. Though, this was not the case for all in terms of psychological support from family, with P5 stating

"Help from family, to be honest not much, I requested financial help mostly to afford seeing a therapist." (P5)

"Well, I can't recall exactly but it was not hard for me to ask because those are my base go to people, I need to go back to them with a lot of things and in anything they are there for me." (P1)

"I got support from my family as well financially and psychologically." (P4)

"Seeking professional help, no I did not try however, my family support is what kept me going". (P12)

The way in which my family in Saudi helped me is that I sent a WhatsApp message to the family group. I described my situation with finding an accommodation and how I have been asked to pay upfront. I wrote that I will need your help once I reach a stage where there is not enough money [...], I will then ask for your help, not now but later. My father objected and said if you need money, we will not wait until the situation is difficult, we will help you now." (P3)

"[...] my family for financial matters but before everything, I put my trust in God and my wife god bless her, if she saw me working on my study she would bring me a cup of coffee, she prepares food

or sweets she has a big role in calming me down in such situations and sometimes if I felt stressed and needed to talk with someone alhamdulillah I get to express my feeling to my wife. I can talk to her on any matters, we like to discuss things with her, we look for thing to laugh about." (P3)

"I got support from my family as well financially and psychologically." (P4)

"I think if I can speak to someone closer like my husband or my mother and express my feeling fully, I don't need to share it with an external circle outside my family. Of course, if it's severe I will contact other sources if needed. (P9)

"Family and friends yes I think I did ask for help from them [...] "(P15)

Sub-theme 16b: Friends and peers as a source of academic and informal psychological support

Several interviewees also described the role of friendships or peer support from those who were on their course or in their social circles, as well as colleagues or co-workers back in Saudi or at university. This was highlighted as playing an important role in informal mental health and wellbeing support, as well as in relation to academic or general matters. Some also noted that their first source of support would be their friends or peers on their course or workplace.

"Yes, me and my friends used to help each other. If I needed psychological support or needed some mode changing, I would ask my friends to clear our minds. [...]" (P4)

My friends is actually the first resource in case I have a problem, if I felt any anxiety depression, or sadness [...] "(P15)

"my friend that I told you about she is the biggest support for me, in anything I just pick the phone and call her. Other options no, I did not think my issues need a psychotherapist or GP not to that point. "(P14)

Sub-theme 16c: Mixed views on sharing 'private' emotional matters with friends

However, P9 indicated that while they had spoken about emotions and feelings with friends as a 'random happening', further describing a reluctance to share private

matters or ‘make them [friends] feel bad about me’. This was underpinned by a perceived need for privacy around the topic.

“There were times where me and my friends gathered and share our feelings, but it isn’t a direct request for help, but more random happenings, our talks were more in general terms rather than specific struggles. To be honest if I spoke about very private matters with my friends I don’t feel well, it's not right to say private stuff to your friends, I don’t like that they know that i am in need or help or make them feel bad about me.” (P9)

Usage and acceptability of religious support, leaders or institutions for mental health needs

There was considerably less data on usage of religious or spiritual sources of support for mental health across interviews. As such this section consists of themes describing usage and attitudes towards these sources among interviewees from available data. Overall, there were fewer of those who indicated using external sources of religious support for mental health needs, and many reported not having used such external sources – such as a religious or spiritual mentor, leader, or institution – for mental health support.

Sub-theme 16d: Positive attitudes towards external and internal (personal) sources of religious and spiritual mental health support

Several interviewees described the nature of religious support in relation to their lived experience of CMDs, and in relation to their wider perceptions of the usage of spiritual or religious support for mental health and wellbeing. With some describing positive attitudes towards seeking help from religious leaders or sources of support for mental health. This included from a private counsellor, as well as using spirituality to cope with psychological health, and individual or personal religious practices.

“ I also found a private counsellor, I asked for his support and help, that's all the channels I used for help. I am a religious person so I believe in asking God for help, talking to him so I can feel better, the bridge between me and my mental health is God, when I need to get things out of my chest it is him, I turn to., so these were my main options.” (P13)

“In terms of religion, I do not think of it as another person, but I help myself in these areas, I strengthened my relationship with God I pray on time every day I read Quraan and do my Islamic practices, [...]” (P17)

“My number one for help seeking is God. Prayer at the time of necessity is one of the reasons for God to answer you. My chest gets relieved at the time of supplication and prayer. Psychological health in the first shocking moments, it is normal to feel anxiety. If anxiety comes to someone or something bad happens to him this crushes him. What we need to understand that this is not continuous and well dissolve if one got back to his God and make an effort to solve the problem. So, I pushed myself and made an effort and my issues was solved. I did not feal I need to ask for help from the others sources you mentioned.” (P3)

“[...] In terms of a religion personal there is one, I am in contact with him as he also has a master’s degree in psychology, he used to say I count you as a sister, if there anything you need do not hastate to contact me, I call him in times where I feel suffocated from certain stressors,” (P13)

Sub-theme 16e: Non-usage of religious or spiritual institutions for mental health support “My problems were not spiritual in nature” / “having mental problems does not mean a weak relationship with God”

And others noted explicitly that they have not or would not use a religious leader or religious support to seek help for mental health issues. Though some noted positive impacts of spirituality and religion on their mental health and wellbeing, their relationship to this was more personal or individual, with the use of religious support being only for the purposes of religious practise or spirituality

“Religion inquires […] no I did not seek help from them, I mean for my religion I would pray and give donations but never ask for help in that area to my psychological issues no.” (P8)

“I prefer Islamic activities that I do by myself, pray, reading Quraan, reading about the stories of the prophets and messengers and how to overcome difficulties. You need to aware that when God test you with some challenge, it’s not to torture you, but to make you stronger, I overcome many of my worries since coming here using that, it gets me back on track. “ (P10)

“Let me start with religion, I did not ask for help using that support but doing my practices reading Quran, pray for God, this makes me feel good and well. I think if its in your capability to

do these things you don't need to go to a religious person, my problems were not spiritual in nature- got magic practiced over me or had an evil eye- no. It was just coping, and adjustment matters with the new place" (P9)

Further detail regarding acceptability and attitudes towards religious sources of support for mental health was provided by P10. They describe their own negative perceptions and rejection of specific ultra-conservative religious attitudes around the causes and treatments for mental health. Specifically, they reject what they experience as religious stigma around mental illness which attributes the cause of mental struggles to moral or spiritual failure- 'mental problems [do] not mean a weak relationship with God.

With this interviewee stating they if they choose to speak to religious leaders or support sources, they check '[...] they do not have that kind of view, and they do not judge you, [they] know that having mental problems does not mean a weak relationship with God'

''if you have psychological issues, you are too far from God'. (P10)

"a religion person no, not while I am here, if I felt things are closed on my face set alone and pray, when I was in Saudi there is Islamic centres, I am against those who say if you have a psychological issue then it's because you got far from God, no that's not right. If I choose to speak to a religious person I need to check if they do not have that kind of view and they do not judge you, they know that having mental problems does not mean a weak relationship with God. (P10)

Notably, one interviewee noted stigma around mental health, stating that their upbringing taught them to never ask for help for mental health issues from a religious person, psychologist or doctor-

'How I grow up taught me not to seek help from religious people or doctor or psychologist.' (P1).

Theme 17: Barriers to formal support: logistical (Financial, access and availability), linguistic, attitudinal and informational barriers restrict access and acceptability

Across interviewees who mentioned successfully using or initially seeking help from formal sources (or those who reported not accessing such services), such as mental health professional or GP services. A range of barriers were identified.

Data described under attitudes and tendencies towards help-seeking highlighted a recurrent pattern in the data in relation to stigma around seeking support from doctors or psychologists for mental health problems - the quotations highlighted as evidence for this describe one interviewee who stated ‘i did not find myself acceptable to the idea’ in reference to a previous observation ‘I know in our culture there is stigma over going to a therapist, this view is changing and for me I never felt it is shameful to do that but I am a secretive person by nature and I do not want to reveal what is inside me’ (P16). Data from P8, P5, and P1 respectively outline not seeking help but not due to stigma, seeking help but being stressed by stigmatising experiences, and cultural or societal stigma impacting upbringing.

‘How I grow up taught me not to seek help from religious people or doctor or psychologist.” (P1).

Concerning preferences related to barriers to accessing mental health support, P5 highlighted

“Many Saudi students studying abroad reached out via [mental health] apps established in Saudi Arabia for mental health and wellbeing, so more things are offered. I openly speak about my mental health and going to a therapist so those of my friends who want to the same here expressed that they prefer to speak to someone on Arabic for their mental health it is available in Saudi.” (P5)

Other data under this theme also describe attitudes or perceptions related to the length of time interviewees reported waiting before seeking help from formal sources for mental health and wellbeing problems. As well as a needing to trigger a high threshold of severity, not recognising the issue, noting wanting to burden others, and perceived needs for control, privacy. These aligned with:

'I am not aware of how and by far, I only request [...] when [...] absolutely necessary' (P3)

taking 'a while to decide on that as I try to push myself and say will things will get better with time or I don't want to trouble others with my issues' (P8)

being 'a very conservative person, I don't like others to know my struggles' (P9), 'I take time to select someone who can handle things' (P10) 'self-denial [...] 'I am ok everything is under control' until the time came where I couldn't handle the accumulated stress' (P17).

Sub-theme 17a: Financial barriers and cost of accessing therapy and diagnosis

One participant noted needing financial support to access a therapist.

"Help from family to honest not much, I requested financial help mostly to afford seeing a therapist." (P5)

With others also highlighting the cost or financial burden associated with seeking psychological support or diagnosis for a mental health, emotional or neuro developmental or learning condition such as ADHD or dyslexia.

"[…] your co-workers and friends, you can express yourself, but you will not get the best help you will not a solution like from therapist, however considering going to a therapist brings out financial issues, private sessions are very expensive, […]" (P7)

"I recently known that the Saudi student centre recommended a few places for psychological aid, I have not used it but I list that in my emergency notes should I needed. If I needed appointment right away, I need to go to privet clinic how much this will cost? Here prices are high its expensive. In terms of help line I never heard about it, what else's you mentioned" (P7)

"[...] when I told the Saudi cultural bureau that I am struggling with things related to ADHD. Diagnosis and treatment are expensive when done privately, so I wish they supported me. They explained that they don't cover such things unless it is for special needs students, it was a bit vague and disappointing [...]" (P5)

In particular, P5 highlighted financial barriers around accessing therapy, specifically when 'therapist shopping' or trying to find a suitable professional or therapist. "It's expensive to seek therapy [while not covered by private insurance] so making that possible for students will help.

“[...] I believe in therapist shopping as you might not get along with the first one you go to; it may take you some time, I think this should be considered and remove restrictions. Mental health should be treated just as physical health.” (P5).

Sub-theme 17b: Language barriers affect access and reduce acceptability of university support services and psychological therapy

Seeking help in this way was highlighted as being associated with the need for culturally responsive psychological support which considered language barriers or provided services in Arabic, with P5 noting that may Saudi students want wellbeing services which fulfil this role. Where this might avoid the need to pay for support privately, such as paying a psychiatrist in Saudi Arabia.

“[...]I think if Saudi student clubs provided more information for others, it would be useful. In every university there is a wellbeing team, it’s available for international students, however Saudi students want this service in Arabic.” (P5)

Further information on how language barriers affect access to university support services and access to psychological therapy is provided by P16, who notes that university support services do not provide services in Arabic. They suggest that there is a need for therapy and psychological support in Arabic, highlighting that government agencies could solve this problem by offering a phone line for this type of problem. They go on to suggest that issues with access to support in Arabic, as well as unmet need and greater risk of poor mental health, may affect female students who are mothers more greatly than others.

“some female students come here with their kids without their husband due to their job in Saudi, three to four years of separation and full responsibility over the kids while tackling study stressors, mothers are very strong, they go through severe pressure, if the embassy or our government offered a line to help them or help over the internet sites with full privacy, at least it will be a way of letting go , to talk and express, seek help in our language as some cannot do so in other ways. “(P16)

“the university does [offer psychological support and therapy] but not all people can express freely in English, it's easier in Arabic so they may miss out on the benefit of the university services, if our governments offered phone help line to those abroad, because we do have

many psychologists in Saudi, if they let them in contact, so student find a way to express their feelings" (P16)

Sub-theme 17c: Service availability, short appointment times, and not wanting to consume resources needed for those with greater needs are barriers to NHS support

Others described the perceived barriers to university support services and GP and mental health services for support, which highlighted: perception of taking up a place of someone in more need, lack of time to discuss (feeling rushed) issues properly, lack of service availability in the form of difficulty getting an appointment. They further highlight that this is a reason why many actively avoid using NHS GP services for mental health problems.

"I think also if people want to seek help from a clinic, psychologist, [...]I feel I am taking a place of someone in more need for it, especially if I am going to the GP or NHS and they will give an appointment, I feel maybe someone is in much more need for that place, I don't want to take it. [...] (P15)

"[...] they have issues with health care services which influence us as Saudis. [...] delays in appointments, if someone needs to be checked urgently there are no near appointments. [...] " (P2)

"The GP i once did go for stomach-ache, I went not planning to tell him anything about my mental health […] it was a private GP not from the NHS as you cannot find appointment, it not easy." (P15)

"On the British side, [...] they have issues with health care services which influence us as Saudis. [...] delays in appointments, if someone needs to be checked urgently there are no near appointments. [...] solutions should be undertaken by our government; they should respond faster to our requests. I did not come across many issues, but I see it in our group as when Saudis ask for things it gets delayed administratively. [...]. Dealing with such things will benefit students here. " (P2)

Sub-theme 17d: Role of support agencies in improving awareness of opportunities and avenues to access support

Several interviewees indicated that for some of these potential barriers to accessing GP and healthcare services, the SACB and university support teams could have a role in improving this situation, particularly in improving opportunities for students to become aware of how to access NHS mental health and GP services, and wider student events on mental health.

"I don't know if this already existed, but the Saudi Arabian cultural bureau should provide psychological help, like doing workshops on mental health, […] Organising mental health-oriented events will benefit Saudi Arabian students here massively. "(P10)

"I think its beneficial if new student gets introductory sessions for Saudi students in specific so that it become like a guide, knowing how to be covered medically, I spent a full year here not knowing how to register at a GP, I was not aware of Saudi student club" (P12)

"I think many students feel extreme sadness and depression over being away from their families, especially students coming alone, single or without their kids, I know one friend of mine she cries very often, when I say go back if this is influences you this much, she reply that's she needs to finish, it is demand by my work place, so I think for people that are coming here not by choice, the Saudi Arabian cultural bureau should offer things"(P16)

Sub-theme 17e: "I only considered going to a GP for physical health"- lack of knowledge about GP service mental health service provision

Some described not knowing that GP services can offer low level mental health support such as guidance around self-management and onward referral for more serious issues related to mental health and wellbeing. Or not perceiving this to be part of the scope of such services, with beliefs that GP services are for physical health issues only, this was reflected in several interviewees indicated usage for physical health but not mental health issues:

"[...] GP, well I only went to see a doctor for physical matters, not for mental health, I actually don't know if they have such services. Do they offer that? [...] I only considered going to a GP for physical heath, for example having fever or stomach pain, like that, never for psychological issues." (P10)

“The GP I once did go for stomach ache, I went not planning to tell him anything about my mental health but I guess the stress was causing pain in my stomach, when he said its related to stress, I opened up a bit and talked on that only once and it was a private GP not from the NHS as you cannot find appointment, it not easy.” (P15)

“I don’t know if this already existed but the Saudi Arabian cultural bureau should provide psychological help, like doing workshops on mental health, just like my university gives you a reminder every Wednesday to take care of your mental health, if they did such things, it will much more impactful as you well be in a circle of people who come from the same background and understand you better. Organising mental health-oriented events will benefit Saudi Arabian students here massively. You feel supported this way and taken care of, in simple words you feel better, you feel ok. “ (P10)

“I think its beneficial if new student gets introductory sessions for Saudi students in specific so that it become like a guide, knowing how to be covered medically, I spent a full year here not knowing how to register at a GP, I was not aware of Saudi student club, […]” (P12)

Sub-theme 17f: Responsiveness of university support services and wider agencies and difficulty accessing relevant information

In relation to university support services and wider agencies, such as the Saudi Arabian Cultural Bureau, several interviewees reflected not knowing how to or being unable to access relevant information about the GP, or these services being perceived as unresponsive at times. However, one interviewee noting contrasting perceptions and experiences where they reflected positive perceptions and high awareness of available support in terms of mental health events hosted by the university. This illustrates contrasting perceptions of the accessibility of information and opportunities around mental health support.

“The Saudi Cultural Bureau [...] they are supposed to send emails to new students explaining important stuff such as the GP, I have not heard about that until recently for over two months I had no idea. While it is on the Bureau website [...] its hardly clear to find it. I knew about it from other Saudi students. (P3)

“let me start with the Saudi cultural bureau in London their effort is well organised and beneficial but there is a bit complication over the online communication on Safeer website, a student may

suffer stress just waiting to get a reply over a few days when you need it urgently, this adds more anxiety on the student I think, even on phone it was it easy to get respond." (P9)

"I thought why can't [the SACB] send the email to explain the steps for registration with a GP or a way of treatment for urgent matters. They should send a survey to the students to inquire about their current information needed such as do you know about the GP, [...] I think they should consider sending information on health services, [...] There is shortage in health services things like late appointments, knowing that as Saudi students, this was financially covered we paid for [private] health "(P3)

"concerning this aspect there is support in other areas, I don't believe they are open and available in the way people think they are, only in times of corona now you contact them they respond, nowadays they don't respond for six or seven months and the same applies to Saudi Arabian cultural bureau" (P18)

"[...] The best way for me was the private counselling as it is available at my university with certain conditions. [...] one time I got an irritating email, I called the well-being centre and went to the dyslexia centre as well while I was in pain, seeing everything dark and no one responded to me at all, I waited so long, after that I lost trust in them, I need to rely on myself." (P13)

However, one interviewee described the positive role of mental health week and other university mental health and wellbeing related events, contrasting this with their experiences as an undergraduate in Saudi Arabia, where such support was not provided. They highlighted this as reflecting the emphasis in their current academic environment:

'here, their emphasis on this matter, they want you to graduate [as a] psychologically normal person, not collapsed.' (P10)

"I heard that in my university [...] like this week is mental health week, so they provided many events I attended some actually, if I am not wrong I think also every Wednesday something is held toward mental health issues and they post on Instagram reminder to take deep breath, your mental health is important, so I like that, unlike my undergraduate experience when I was in Saudi there was so much stress but with no psychological support given, here they emphasis on this matter, they want you to graduate psychologically normal person not collapsed." (P10).

Theme 18: Attitudinal (reluctance to rely on family) and environmental barriers (no opportunities to meet friends) restrict access to informal support

Sub-theme 18a: Reluctance to use family for psychological emotional support: "having to teach them what is happening to you" / "they will be affected and fearful over me"

Some highlighted a reluctance to rely on family due to having to "teach them what is happening to you", others did not want to disclose distress due to causing fear or stress in their family members. Despite there being data to indicate family being a positive source of psychological support several reported not wanting to burden family members or cause worry.

Some disclosed only the good information, and not sharing negative news due to this reason. One indicated that the responsiveness of support from family was high and that this played a role in their decision to only disclose positive information to them:

"my mother and father will come right away if they know something is going on, so I only share with them good and not the negative things. " (P15).

There was also data where some implied or stated reluctance to accessing informal support from family due to 'having to teach them what is happening to you [...]', and an associated fear of causing distress or concern in family members in sharing a perceived burden around mental health and wellbeing issues. Notably, none described a reluctance to seek support from family for financial difficulties, which were indicated in other areas to be tied to CMDs and high levels of stress.

" Family and friends yes I think I did ask for help from them however, as I did not want my family to be concerned about me I did not used to tell them in details if I am in a bad state, my mother and father will come right away if they know something is going on, so I only share with them good and not the negative things." (P15)

"To be honest my family I don't like to used them for support because, they are already concerned about me, I don't like to say anything negative to them, I call ask how they are, thy ask about how am I doing, just surface things I don't want to tell them if I'm in distress or tired because they will be affected and fearful over me, when I call my father, I assure him that everything is ok." (P16)

"[...] family, God bless them, they're always there for psychological support, however sometimes I know they have issues to deal with, social problems or psychological things so I tend not to add on them with my issues and I don't want them to worry about me while I am away in another country, this makes me sad to tell them what's going on but its for the best, but I get happy contacting them" (P10)

"What prevents you from asking for help from your family from the people around you? You have to teach them what is happening with you, I did not appreciate that before and saw that it was a weakness, but when I went through this experience, I knew how important it was. […]" (P17)

"

Sub-theme 18b: Lack of opportunities to meet fellow Saudi students restricts access to informal support friends and peers

Having noted attitudinal barriers to seeking help from family, several interviewees provide information as to a lack of opportunity for events to socialise and meet people who are in the same situation. Many who reported loneliness and social isolation in their peer circle also highlighted not knowing many Saudi people who were in their situation. Some highlighted not knowing about social events organised by the university, describing a need for better information sharing (earlier on or before enrolment) around events and available support that could have a positive impact on mental health, wellbeing, and the opportunity to build support networks with fellow Saudis. This was noted to be particularly impactful for Saudi women and girls.

"Yes, I think as girls this if they provided a strong community that is specialised in only for girls this would be better as not many of us considered going to such events as it was mixed. I think It would be useful to think about organising events or trips that are only for girls. I don't think they provided such things. I think it would be useful. "(P4)

"I spent a full year here not knowing [...], I was not aware of Saudi student club, I had no contact with Saudi people here, it would be beneficial the club organised an event for new people so that they don't feel left out they are not alone, so that they don't have to go throughout this experience isolated, not knowing there are others sharing their experiences." (P12)

"[...] Saudi Cultural Bureau or student clubs. If they can organize introductory course for new students firstly for the students to gather and knew each other and raise a feeling of friendships

and gave them a guide to the basic procedures such as UK regulations or study related matters because me right now while I'm on my third or fourth year now here, I still do not know things in the basic file Safeer on the Bureau student website, until now I don't have enough information, on top of the stressors I am going through it is more pressure when I ask , I don't get clear respond sometimes. So, id there was such course it will benefit new people no matter how old they are, but all stated same time, they know and support each other [...]" (P6)

"doing more Saudi social events, it is one of the great things they are doing, getting connected on our national day, Eid. such things are nice, keep going with that, its really good changing mood, it gives a sense of belonging and sense of family when you meet your people. That's all what I thought of." (P7)

Notably, one interviewee was not aware of events for socialising for Muslim Saudi students, they note that this should be addressed in terms of stating 'loneliness that leads to depression and anxiety is an important topic'

"I know several new students who came this year and they are affected by anxiety and depression, which influences their social life and academic achievements, loneliness that leads to depression and anxiety is an important topic, universities are doing their best to help students, this should be looked after, unfortunately most of the events at my university it revolve around drinking, many Muslim students will not go for that reason, this is one of the things I mostly struggled when it comes to university events, I haven't joined the Saudi society you told me about yet, maybe they do organise events that is better serving to Saudi students." (P15).

6.5 Discussion

6.5.1 Summary of findings

Below I give a summary across the range of my themes for each research question. Before highlighting findings in more detail for each area of this study.

The interrelatedness of factors I examined in terms of how loneliness, help-seeking and executive functioning related to CMDs, and the SA international student experience is an important finding. This confirms that the existing research in examining these factors separately is missing part of the picture. Not accounting for this complexity may prevent interventions from effectively supporting SA international students.

SA international students experienced broad range of CMDs symptoms. Following a depressive pattern in in terms of social withdrawal, seasonal affective symptoms, changes in eating, sleeping and motivation (RQ1). As well as a more anxious pattern of fear, panic, rumination and physical aspects of anxiety symptoms. Severity of CMDs related to persistent anxiety and depression, recurring depressive symptoms which impact behaviour, intertwined anxiety and depressive symptoms and diagnosis and treatment seeking experiences. Accommodation, new financial responsibility, academic challenges, cultural, familial and social factors and COVID-19 resulting social restrictions shaped CMDs in relation to RQ2.

Some people "felt strongly lonely here," whereas others had a good social life, expanded relationships, and gained more awareness of different cultures (RQ3). SA international students' social lives were influenced by a number of major elements, including COVID-19 lockdowns, cultural and religious differences, views toward fellow SA or people from similar backgrounds (RQ3). Loneliness had a critical role in some people’s development of anxiety and depression. Anxiety and depression symptoms that resulted from experiences of loneliness were shaped by being away from family, having no support systems in place, living alone, and experiencing homesickness (RQ3).

Academic difficulties were described as being intertwined in a cycle in which difficulties worsen mental health, and poorer mental health can lead to academic difficulties (RQ4). Academic stressors and experiences related to continual stress and burnout were important to this.

A deeper examination of academic difficulties links depression and anxiety as well as social factors to attentional difficulties which impacted study skills (RQ5). Memory difficulties were linked to depression anxiety, burnout and stress (RQ5). Strategies to memory and attention related to changing the study environment and having systems to aid memory.

There was a breadth of findings related to help-seeking behaviour and barriers to support. SA international students tended to wait for problems to worsen before seeking help (RQ6). Formal support sources were viewed mostly positively, as were informal sources (RQ6). Some described negative experiences or reluctance to seek help from these. Financial, access and availability factors were described in relation to barriers, as well as attitudinal and information-based barriers to support services. Mental health, academic and social factors such as loneliness were linked in relation to help-seeking experiences (RQ6).

Research question 1: How do Saudi Arabian international students experience the symptoms of CMDs and the impact of these symptoms?

Withdrawal, recurring negative thoughts linked to a vicious cycle of worry and fear, changes to sleep, changes in eating and reduced motivation were reported as frequent symptoms of depression. Anxiety symptoms were experienced as fear or uncontrollable worry, rumination over negative thoughts and experiences, and somatic expressions such as heart palpitations. CMDs severity was experienced through daily experiences of symptoms, how they impacted behaviour (e.g. not going out; negatively impacting studies) and persistence of this over a longer timeframe. Key to this was the experience of depression and anxiety symptoms as being intertwined. Experiencing both anxiety and depression was relatively common.

These findings are not surprising given the relatively high level of moderate CMDs symptoms reflected in earlier chapters of my thesis which looked at this topic

quantitatively (Chapter 4). Comparing with limited available evidence in this area, such a level of intertwined anxiety and depression is not surprising (Al Bahhawi et al., 2018; Hakam, 2017; Kronfol et al., 2018). As we know that students from Saudi Arabia and other comparable middle eastern countries have a high burden of CMDs symptoms compared to prevalence in Western student cohorts which I reviewed in my literature review in Chapter 2. Given limited detailed examination of this issue, it may suggest a level of unmet needs.

Research question 2: How do social, educational and financial aspects of the SA international student lived experience shape experiences of CMDs?

Stress and anxiety were linked to finances and ensuring a sustainable living situation through challenges finding accommodation, navigating high living expenses, separation from family and existing support (particularly support around managing a household without family support), unfamiliar academic challenges, and 'culture shock'. COVID-19 and lockdown restrictions were said to create fear and anxiety, as well as exacerbating loneliness. Cultural, familial and social factors played an important role in shaping CMDs symptoms in relation to climate differences between Saudi and the UK, separation from culture and the gap left by reduced family support and social fulfilment.

This is consistent with existing evidence on social, educational and financial factors in wider non-Saudi student populations, and in Saudi student populations outside of the UK (Massarweh-Seryani, 2019; Rabia, 2016; Smith & Abouammoh, 2013; Unruh & Obeidat, 2015; Young & Snead, 2017). There is also considerable amount of evidence which highlights some of these factors as important in wider non-Saudi populations of international students (Andrade, 2006; Boafo-Arthur & Boafo-Arthur, 2016; Callendar et al., 2011; Clough et al., 2019; Nguyen et al., 2019). This evidence also reflects a major focus on cultural and social adjustment factors related to language, how these affects social life and in turn CMDs symptoms (Almuarik, 2019; Alqahtani & Hezam, 2015). The focus on familial separation and cultural adjustment is reflected in the wider evidence. Novel aspects relate to how factors studied separately fit together in context to student lived experience, and the identification of financial factors linked to accommodation as centrally important to navigating studying abroad. This points to the importance of wider

determinants of mental health in this student population, with chronic stress and burnout as possible links between these factors and what may precipitate poorer mental health outcomes.

Research question 3: How do SA internationals students experience loneliness and social isolation and how do these experiences relate to CMDs?

Some SA international students frequent or profound experiences of loneliness in relation to isolation from others. These experiences were fundamentally linked to CMDs in the data- reflected best by a statement by one interviewee that *'loneliness that leads to depression and anxiety is an important topic'.* Living alone and separation from family and friends in Saudi was reported to increase CMDs symptoms. Living alone as a consequence of this separation was a prominent factor that shaped loneliness in this context. SA support networks a positive resource for mental health.

Positive aspects of social life while studying the UK related to expanding relationships and increased awareness of other cultures. A range of factors shaped social life and experiences related to loneliness and CMDs: having to choose between socialising or succeeding in academic endeavours at PhD; cultural and religious differences creating friction in seeking positive social experiences with those from other cultural backgrounds. While friendships with Saudi peers had benefits to providing a support network, others spoke about hesitance in this area or the need to maintain boundaries in these relationships due to privacy needs. COVID-19 and lockdown restrictions had severely impacted mental health by increasing levels of loneliness and social isolation.

While there is no evidence to compare with directly, given the absence of studies in this area, we may broadly compare these findings with some available evidence on loneliness and related factors (Russell, Rosenthal, & Thomson, 2010; Sawir, Marginson, Deumert, Nyland, & Ramia, 2007; Smith & Khawaja, 2011). My findings align with cross-sectional studies have shown that increased social or peer support is associated with lower depressive symptoms; with Nguyen, Le and Meirmanov (2019) finding that poor social connectedness were negatively associated with depression (Crockett et al., 2007; Jackson et al., 2013; Shadowen et al., 2019). This points to the importance of loneliness and low social support as risk factors in context to CMDs and international

student status, given that some students in my study made direct links between loneliness and worsening mental health symptoms.

Research question 4: What role do CMDs play in international student narratives around academic life?

Academic difficulties and CMDs were intertwined in the sense that interviewees reported experiences in which CMDs, and mental health difficulties had led to academic difficulties or increased challenges. As well as those academic stressors led to worsened mental health through increased symptoms of CMDs such as persistent anxiety and stress. These stressors tended to be experiences which shaped both academic life and mental health. Including unfamiliar learning and grading systems, failing assignments or getting a lower mark than expected, and navigating course requirements around written assignments.

While there is no evidence in Saudi students, or international students in the UK, these findings are not surprising in indicating that CMDs and academic life are related. Previous evidence in different populations has shown links between experiencing more severe symptoms of anxiety and depression may increase the risk of poorer educational outcomes and course engagement (Callendar, updated 2021; Best et al., 2011; Hassanbeigi et al., 2011). This aligns with the findings of my study to some extent, though my findings deepen understanding showing that it may apply both ways. As my themes showed that academic difficulties can underpin worsening CMDs symptoms, and that CMDs symptoms be a source of difficulty in terms of engaging in academic study tasks, coursework or exams. Showing a repeating or intertwining cycle.

Research question 5: How do SA international students experience CMD symptoms in relation to difficulties with paying attention, inhibiting responses or remembering things in an academic context?

Low mood, loss of motivation, and tiredness or fatigue negatively impacted attention. General levels of anxiety, worry and stress as well as long term anxiety reduced focus. Referring to distraction, loss of focus and struggling to concentrate or block out noise when studying. Depression and anxiety over longer term was outlined in relation to decline in memory, marked by struggling to retain information. Burnout and stress were

linked to CMDs symptoms and difficulties with memory. Interviewees also described changing their environment to surmount attentional challenges and creating systems like making notes to help with learning and memory.

There is no existing evidence which explores this topic with SA international students. There is quantitative evidence from non-Saudi student and general populations which links higher CMDs symptoms to poorer executive function performance (Snyder, 2013). While this makes direct comparison difficult, if we consider the wider picture of research linking executive function deficits to CMDs symptoms, finding links between attention and memory challenges and mental health problems is not surprising. We know that specific symptom profiles also map to some extent onto specific difficulties, for example, rumination and negative automatic thoughts have been linked to inhibitory and attentional deficits such as attending to negative stimuli more, with high levels of CMDs also linked to poorer working memory (Best et al., 2011; Hassanbeigi et al., 2011; Kertz et al., 2017; Samuels et al., 2016). While a direct comparison is not warranted, students in my study spoke about rumination and negative thoughts in context to struggling to concentrate and forgetting things.

There was little to no information provided by interviewees around inhibition or inhibitory capabilities in relation to studying. This contrasts cross-sectional general and clinical population evidence of poorer inhibitory control in context to anxiety and depression, as well as some evidence in university students studying outside the UK (Alves et al., 2014; Bishop, 2009; Huang-Pollock et al., 2017; Rock et al., 2015). The absence of information on this in my qualitative study contrasts with evidence of poorer inhibition scores in context to increasing CMDs identified in study 3 (Chapter 4). This could be due to impacts on inhibition being implicit, or outside of the individual's conscious awareness, so they may not be picked up by qualitative methods.

What is interesting, and not well represented in the wider literature, is the depth of information provided to understand how these factors relate in this population. Particularly in terms of how they relate to burnout and chronic stress, recurrent factors which were related to CMDs, loneliness, a cycle of academic challenges and worsening

mental health. This suggests a need to consider the whole picture or how these concepts fit together to better inform student supports.

Research question 6: What common barriers to seeking help and support for mental health and well-being do SA international students experience and what sources of help do they perceive as acceptable?

Some only sought help when mental health difficulties crossed a certain threshold in becoming unmanageable. The role of cultural stigma around mental health difficulties was noted as a factor which impacted help-seeking. This aligns with findings from international student populations where stigma plays an important role in determining reluctance to seek help (Clough et al., 2019; Nguyen, Serik, et al., 2019).

Surprisingly, there was high usage of professionals, university support services and academic staff for general mental health and wellbeing support. Specific support included cognitive behavioural therapy, mindfulness, a “coping team”, enabling centre, psychological centre at university, counselling services. Acceptability and positive perceptions of formal support sources was generally high, though some outlined negative experiences in relation to accessing support. Though there are no available data with which to make a robust or cautious comparison.

Usage of familial or peer support was common and perceived as mostly acceptable or mixed. Family support for mental health and wellbeing was common (stated as the first place of support for many), though also provided indirectly through financial support or listening to concerns. Peers provided useful informal support in being in similar situations. There was reluctance to use family or friends for support due to privacy concerns and not wanting to cause worry.

Data on religious support was limited, though some outlined positive attitudes towards religious support for mental health difficulties. Though there were mixed attitudes in terms of others viewing religious leaders or institutional support as only appropriate for spiritual needs. Being inappropriate for support for mental health conditions or treatment.

Attitudes and perceptions towards specific sources and help-seeking were reported. This included stigma around mental health as a barrier to formal support; self-reliance or not wanting to burden others for informal support (or having a high threshold for recognising need for help), or reluctance to access GP services for fear of taking the place of someone who might need it more. These findings are not surprising given previous evidence. While this is not a standardised comparison, qualitative studies also find that international students are less likely or able to seek help for mental health difficulties because of several barriers including perceived discrimination, anticipated stigma, and language barriers (Boafo-Arthur & Boafo-Arthur, 2016; Forbes-Mewett & Sawyer, 2016). This is consistent with my findings.

Finally, in terms of describing and mapping common barriers to mental health and wellbeing support among Saudi Arabian international students, several barriers were indicated across formal services, across both informal or formal services (in relation to attitudes around mental health and support and access to information). Mental health literacy and individual knowledge of mental health services was a barrier to requesting or accessing GP services, with several perceiving such services to be for physical health only. There was a lack of consistent information giving practise in relation to available services (including GP registration and accessing NHS services, as well as for university support services). Language barriers led to some being unable to access university support services. Lack of opportunities to socialise and build social support networks was noted in relation to links between CMDs and loneliness, with lack of such opportunities precluding availability of social support or peer networks. High demand (GP, NHS) with insufficient supply or service availability and limited appointment time, with some actively avoiding GP services due to these factors. Some used private GP and mental health services to access appropriately tailored support around language and culture- this was associated with personal financial cost.

My findings on barriers align with existing research which shows barriers to GP and MHP services registration and referral, with organisations external to the university being seen as a more serious form of intervention, typically having higher waiting times (Cage et al., 2020; Duffy, 2023; Eisenberg et al., 2007). While no evidence exists on SA international students, recent evidence from young adult populations in the UK show

considerable delays to accessing mental health support through GP or statutory services, with many of those who are eligible for NHS mental health support struggling to access support or being unable to receive support in context to lengthy waiting lists (Punton, Dodd & McNeil, 2022). My study provides novel evidence that these barriers may also affect SA international students who may seek to access privately funded mental health support.

6.5.2 Strengths and limitations

Strengths

This is the first study to examine links between CMDs, loneliness, help-seeking, academic difficulties in relation to attention and working memory. The benefit of taking such a broad approach is that this provides new information about a broad range of topics that may be linked in the experience of interviewees, which is a strength given the limited information about these topics in existing literature. This broad approach allowed me to examine SA international student experiences concerning CMDs, loneliness, help-seeking and academic experiences collectively. This is a strength given that previous literature on SA international students and international students more widely has only examined these areas individually or indirectly (e.g. Boafo-Arthur & Boafo-Arthur, 2016; Forbes-Mewett & Sawyer, 2016). This is outlined in further detail in my literature review (Chapter 2).

Concerning study design, while the topics I investigate when considered individually may be broad in nature, they were informed and focused by my findings and frame in study 2 (Chapter 4). Asking questions about phenomena from an earlier part of my thesis and integrating this thinking into my planning, interviews and analysis is a particularly important strength. This allowed me to extend and deepen my understanding of CMDs in SA international students from study 2 by using qualitative methods to examine experience. This provides a deeper perspective as to how a range of factors appear linked to CMDs symptoms in the context of life as an SA international student in the UK. This study took a reflexive practice approach, it was in particular important to engage in critical self-reflection on my role, assumptions, and influence on the research process. My values, cultural background, theoretical orientation, and personal experiences shaped the framing of research questions, interpretation of data, and conclusions drawn in line with worldview practice (Berger, 2015). This is especially relevant in my qualitative section, where I am not a neutral observer but a co-constructor of meaning. This reflective approach supported my research by its transparent and honest account of meaning-making.

Methodological strengths include the use of semi-structured interviews and applied thematic analysis. Use of these two approaches to data collection and analysis respectively provide both a consistent and well-structured frame and process to compare responses across individuals, and flexibility to explore novel topics which arise. For example, I was able to synthesise findings across the data corpus to provide suggestions for improvement, a considerable benefit considering the limited information on this for SA international students in the UK. This flexibility is a key advantage of my use of thematic analysis (ref). Further strengths includes that this method is more appropriate for describing and comparing broad patterns of meaning in large bodies of textual data. Using this I was able to collate and analyse data to describe or compare broad patterns that capture descriptive nature of how SA international students experience CMDs symptoms in context to factors related to studying abroad. Rather than methods focused more on the deep interpretation of individual experience, such as interpretive phenomenological analysis (Eatough & Smith, 2017), or those that focus more on linguistic patterns or analysing the use of language or discourse (Grossoehme,, 2014). While these methods are valuable, use of thematic analysis has achieved a broader description and understanding of CMDs in this group. This may be of more practical use to stakeholders and to building the basic foundation for understanding how CMDs are experienced by this group and how they impact and are impacted by other aspects of international study in the UK.

Semi-structured interviews and thematic analysis allow more detail, flexibility and crucial context around interviewee responses than a fully structured approach, or the use of a positivist frame for conducting ‘small Q’ qualitative research (Grossoehme, 2014). “Small q” qualitative research typically focuses on quantifying textual data though observing the frequency of occurrences of specific data (Grossoehme, 2014. While such a method may adequately achieve a basic description of the nature of CMDs symptoms, by using semi-structured interviews with thematic analysis, I have preserved the context and potential meaning around interviewees experience-based descriptions of CMDs and related factor. Adopting a subtle realist frame provided a basis to describe basic aspects or patterns underpinning a broader reality relating to SA international student’s experiences of CMDs and related factors. While also acknowledging my active

role as the interviewer and analyst in how my experiences and identity shape data collection, analysis and interpretation. Through both the frame I chose, and the reflexive approach taken, I was able to analyse the data in a flexible way to understand links between areas such as CMDs and loneliness, and academic difficulties and CMDs. As well as providing a more detailed and rich understanding of barriers to support than would be achieved by alternative methods. In this way, the use of thematic analysis as opposed to small q research methods was a justified and rational choice based on the topic I aimed to explore, underlying philosophy and utility the approach brought.

The practical focus of this study is a key strength, alongside selection of appropriate methods to provide a consistent and rich descriptive frame. As the use of qualitative interviews and applied thematic analysis supports the practical focus of this study. By giving a basis to inform service improvement and understanding unmet needs by understanding and analysing the experiences of SA international students themselves. This practical focus is further enhanced by taking a descriptive approach to understanding help-seeking for CMDs while at university, as well as barriers to university support services. Additionally, reporting on potential improvements from synthesising this information across my themes strengthens this contribution by providing concrete information to improve SA international student experience and support around CMDs.

Limitations

There are several potential limitations to this study. I will first briefly discuss the fact that I was the sole analyst and interviewer. This is a limitation in terms of potential bias in the analytical process of coding and devising themes. It may be that with more analysts involved, themes and codes would have been shaped differently. Or that more attention would have been drawn to other aspects of the data, such a describing gender differences in a more granular way. Beyond these factors, the nature of a PhD is independent study, so this limitation was anticipated and to some extent unavoidable. While these limitations of using a single analyst for data analysis are pertinent, they are mitigated to some extent by the reflexive and iterative approach taken. In that the

purpose and utility of adopting a subtle relist epistemology is that some aspects of inherent bias are identified and acknowledged in their role in the process of analysis.

There could also be limitations associated with the choice of applied thematic analysis and semi-structured interviews. The first relates to practical and theoretical drawbacks reported in previous qualitative methodological research (Braun & Clarke, 2006; Nowell et al., 2017). Research in this area outlines limitations in terms of less depth compared to more interpretative approaches to draw meaning from language and there being less methodological research to guide research compared to more interpretative approaches (Braun & Clarke, 2006; Nowell et al., 2017). Nowell et al. describe research stating this as a limitation of the flexibility of thematic analysis and there being no one universally valid way to conduct such analyses. With this contributing to lack of consistency in some research using this method (Nowell et al., 2017). Such as not reporting or making explicit the frame for how the method has been applied to produce knowledge, and the philosophical assumptions that have guided this. As well as the aims or approach of the research being at odds with the philosophical assumptions of the method used to investigate them.

Though it may be argued that these limitations may have less applicability to my study given the steps I took to mitigate this and the selection of methods aligning with the broad aims of my research. In terms of the broad aim of analysing patterns in experience to understand CMDs, unmet need and potential improvements. I also made the frame or philosophical assumptions of my approach explicit in terms of what can be known about SA international student experiences of CMDs through a subtle realist position. I sought to further mitigate these limitations by acknowledging my role and position as the researcher in shaping investigation and interpretation of the data in line with reflexivity and the assumptions inherent in a subtle realist approach.

There may be some limitations in the knowledge that may have been gained by using an alternative approach or philosophical frame to understand and explore CMDs related phenomena. For example, using ethnographic methods may have enabled a deeper understanding of CMDs and more unique or individualistic aspects of experiences of CMDs.

While it may have been valuable to seek to extend or confirm existing theory, limited research exists through which to develop a detailed deductive frame to provide support for existing theories or extend them to SA international students. This would require existing research in this population which investigates CMDs, help-seeking, loneliness and executive function collectively, and from a qualitative and quantitative perspective. This prevents detailed and structured deductive investigation of CMDs in SA international students such as to understand whether existing theories about mental health apply to this group. In this way, my study is a first step to this in collectively examining these concepts in relation to SA international students in the UK. Given the limited existing research on this topic, fully inductive methods such as Grounded Theory may have had the benefit of providing a less constrained exploration of experience and underlying meaning. While this is a limitation, I sought to mitigate this by incorporating the benefits of both inductive (in exploring themes and patterns as they arise) and deductive approaches. The deductive frame was based on my findings from study two, incorporated into data collection via topic guide design (as well as in the frame for some of my themes). This was done due to there the lack of existing research with which to focus deduction. An example of the use of study 2 findings to focus deduction or the frame for qualitative interview questions was the finding of a quantitative association between loneliness and CMDs, which provided a basis to focus interview questions to understand how CMDs is linked to wider phenomena.

There are some limitations to using translated data. Direct translation means some loss of context or meaning is inevitable. It may be that analysis of non-translated data may have led to a different frame or context around my findings, though taking such an approach would mean any knowledge gained would be inaccessible to non-Arabic speaking stakeholders.

6.5.3 Meaning of findings

Meaning is discussed in terms of what key findings from across my themes suggest about the extent and nature of CMDs symptoms and related phenomena, and what they mean in terms of understanding the need for support. As well as what findings mean for how best to provide support. The implications further directions from this frame are discussed in subsequent sections.

Quantitative and qualitative research is needed to better understand the risk of adverse mental health and related outcomes, and how these affect (and are affected by) aspects of social, academic and wider life as a SA international student in the UK.

While my study does not take a quantitative positivist perspective (so cautious interpretation is needed as my findings cannot be used to derive empirical statements about a universal objective reality) the wide range of symptoms of CMDs, loneliness and social isolation reported may indicate risk of poorer outcomes in this group. Several interviewees state the importance of these topics in relation to studying abroad as a SA international student, as well as reflecting that some or many of their peers have experienced similar things. These statements from interviewees could mean that CMDs symptoms may be more widely experienced by this group than may be thought. Findings around CMDs severity – in the form of experiences of daily symptoms, symptoms not going away in the long term, and lasting ‘until now’- may mean that there are a sub-set of SA international students who experience more severe CMDs.

Experiences of loneliness or social isolation were prominent in the data and linked to CMDs symptoms. This could indicate unmet social needs have a role in relation to CMDs symptoms. In that SA international students who are unable to build barriers to building sufficient networks for social support and fulfilment may be at risk of CMDs. Separation from family and existing support may worsen this risk alongside living alone, and PhD level study where time to build or benefit from such networks is limited. This could mean that social support and opportunities to build robust social networks could play a role in alleviating poorer outcomes and experiences in relation to loneliness and CMDs.

Taken together, themes converge upon the meaning that a specific set of linked phenomena may underpin poorer experiences for SA international students in relation to CMDs. Including: loneliness and separation from family and existing support, acute and chronic stress, cycles of burnout and academic difficulties. From my perspective as a researcher and my own experiences, this is supported by data which placed importance on CMDs symptoms that lead to or exacerbate loneliness, as well as wider themes around cycles of burnout, CMDs symptoms and perceived impairment of attention or working memory. This may be reflective of the heightened challenges of studying at post-graduate level given the composition of the interview sample. It may also be more reflective of aspects of female SA student experience than male.

Findings around help-seeking may mean that a sub-set of SA international students experiences issues with CMDs and factors related to this but are unable to seek or access help from university or wider support services. Mental health literacy, stigma or fear, and poor knowledge of available support may underpin this, as well as a set of structural or provision-based barriers such as limited opportunities for building social support networks and language barriers. Findings highlight the importance of culturally appropriate and accessible information around available service provision from university support services, as well as engagement, education and support around the stresses of studying in another country and mental health. Which may be absent from current provision, or not well accessed or known about. As well as culturally and linguistically tailored treatment and support for CMDs. Some of my findings point to a further or wider dimension of support which may be needed in terms of CMDs. Specifically, attention and working memory and negative impacts or difficulties attributed to CMDs symptoms. Further, CMDs symptoms and academic stressors were perceived to worsened one another. Collectively, this may mean that there may be value in approaches to mental health and wellbeing support around CMDs that take the role of academic difficulties, and difficulties with attention and memory into account. It may be that chronic and acute stress underpin the link between CMDs and academic difficulties, as well as CMD-related attentional or memory difficulties. Although there were data around stress and burnout in relation to how SA international students experienced

CMDs and their role in academic challenges, there is no way to verify or confirm this without further study.

Looking across my study, the meaning of findings points to the interlocking nature of experiences of CMDs symptoms and loneliness, help-seeking for mental health, and perceived difficulties with attention and working memory. As well as unmet needs in these areas. These factors interlock through several contexts which describe some aspects of life studying in the UK as a SA international student: feeling the differences between SA and the UK in terms of culture, education system, living alone and the need for social support networks (or opportunities to build them), managing independence and new responsibilities with less support. Further meaning from themes may be that cases of poorer outcomes or functioning may be marked cycles of acute and chronic stress, burnout and reduced self-care, and reluctance or inability to access or seek help due to structural, attitude and knowledge barriers. For some, this may be worsened by the perceived impact of CMDs symptoms on attention, working memory and academic life.

6.5.4 Implications of findings

I discuss the main implications of my findings in terms of knowledge about CMDs and related factors for this group, and what they imply for how best to provide support. I report this in the form of broad implications of specific findings (such as the implication of having found that CMDs were commonly reported or played an important role in shaping experiences), leading into suggested improvements to existing support and novel avenues for support gleaned from key themes across my research questions.

These findings have considerable implications for international student mental health policy, pointing to the need for better mental health support in a population with high CMDs, loneliness who may experience burnout and academic challenges. Given that CMDs impacted academic challenges and vice versa, as well as links between CMDs and loneliness, university support services should consider the role of support in areas beyond mental health. As well as how best to ensure culturally and linguistically diverse populations such as SA international students may access appropriate support.

My findings suggest that there is considerable need for coordinated action from university support services, mental health professionals, academic and departmental staff and a range of other stakeholders. My findings provide more detailed information describing experiences of CMDs and related factors in an under-studied group in UK higher education to inform such action. With relevance and utility for future planning and design of support services, as well as ongoing service improvement efforts around international student mental health.

There may be a need for proactive identification of unmet needs around mental health and the factors in this study in SA international students in the UK. Coordination between academic departments, international student departments and international exchange programme stakeholders, and university mental health services may be needed to do this in an appropriate way. This should take into account the role that loneliness and social isolation plays, practical or logistical factors that add to stress and CMDs (e.g. accommodation) as well as the role of CMDs symptoms in relation to perceived attentional and working memory difficulties.

Findings extend the existing qualitative evidence base on international student mental health and SA students in several ways. First, by showing links between topics that have been traditionally explored separately. Specifically, by showing links between loneliness and CMDs and academic difficulties and CMDs (as well as perceived attentional or working memory difficulties in relation to CMDs symptoms). Secondly, they provide a frame through which to understand subjective or perceived difficulties with attention and working memory in relation to CMDs.

One key implication of overall findings is that SA international students may face a wide array of challenges and detriments to good mental health and wellbeing while in the UK. There may be an ethical rationale for exploring and reporting on findings or results which could inform better support from a variety of stakeholders. Suggested improvements to formal and informal support also play an important role in informing the synthesising findings concerning lived experience of the barriers to mental health support, and the acceptability of different sources and services. Common or key improvements related to barriers are described in Figure 5.

Figure 5. Common or key improvements related to barriers from across help-seeking themes.

6.6.5 Future directions

Comparison across different international student groups and their experiences of CMDs, loneliness, help-seeking and perceived impacts of CMDs on attention and memory may be a valuable area of future research. This might allow us to understand which groups are at the greatest risk of poorer mental health, social and academic outcomes, as well as whether differences in usage of existing support and how best to tailor services to different groups. As well as comparing this to the experiences of different groups of home or UK university students to understand whether these experiences are unique to the international student experience.

While saturation as reached in this study, there may be value in large scale qualitative research with diverse and representative samples of international students. While demanding in terms of resource investment and time, collaboration and funding across UK universities may make this feasible. Such data could act as a central resource to understand common experiences underlying poor mental health and wider risk and protective factors across international student groups. This would be an invaluable resource for service planning and support provision across UK higher education, as well as a foundation for integrated and interdisciplinary research into international student mental health in the UK.

Extending this to SA international students, there could be considerable value in using longitudinal mixed-methods research examining changes CMDs symptoms, what factors underlie increased risk. As well as how SA international students navigate these experiences throughout their time in the UK. This could provide a detailed picture of both the causal factors underlying CMDs, as well as qualitative information to give deeper insight and understanding into causal factors and the role these play experientially. Large scale representative qualitative research could be conducted via collaboration and liaison with stakeholders in SA such as employers and universities, as well as SA organisations who support international students, based in the UK.

This research could also combine retrospective methods to understand CMDs before international study. Alongside follow-up after completion of higher education, this would

provide us with the opportunity to understand how higher education experiences affect mental health beyond time at university.

All of the directions for further study could also be extended to the other areas or topics in this study. Further understanding EF, perceived impacts of CMDs on attention and working memory in relation to academic experiences has value in terms of the limited research in this area. Such as understanding whether my findings are reflected in wider populations of SA international students in the UK. This is important given several interlocking findings of my study. First, given the links between CMDs and perceived difficulties with attention and working memory, and that CMDs increased academic difficulties as academic difficulties increased CMDs symptoms. Second, given the experiences around cycles of burnout, loneliness and CMDs symptoms, and challenges of navigating an unfamiliar education system. Further research could clarify the nature of any potential cycle or pathway to poorer mental health, increased risk of educational, attentional, memory or social difficulties. If my findings are reflected or replicated by further research, this would highlight the importance increased investment in SA international student mental health. In this case, the most impactful direction for long-term investment may be institutional collaboration to build a foundation for large scale representative research to inform national higher education service improvement for international students and SA international students more specifically.

Referring back to figure 4, which outlined seven areas for service improvement, I and present a similar graphic in figure 5 which outlines how some of these improvements might be made or how future research might form a foundation for service improvement and implementation research. I draw on several sources related to student mental health from a UK and international context, applying this to the SA international context highlighted in my study (Callendar et al., 2021; Duffy, 2023). Considering these areas together, international student mental health is a crucial area of improvement for universities. My study suggests this group may have some complex needs which relate to intersecting areas around the wider determinants of mental health and wellbeing which are not currently being met. There is an opportunity in this for universities to redesign and improve mental health, wellbeing and holistic support services available to the growing number of international and SA international students in the UK. One

suggestion given the findings across my thesis is to explore the structure, understanding of issues and workforce needed for university support services not just to provide support to international students, but to help them thrive. A key aspect of this is joining up information and support from different areas of the university the international students will engage with in their time. This is a core reason for suggestion number eight below, which states that services should explore whether it would be useful to explore the creation of a new role or roles within university support services which relate to coordination and pastoral support across university departments. Who make regular contact with students and the departmental structures they interact with regularly.

Figure 6. Suggestions to implement or inform service improvement areas.

1. Focus group research and stakeholder engagement events with SA international students or those from Arabic speaking backgrounds to inform the design of mental health support resources.
2. Working with political, health service and wider education stakeholders to understand what can be done to improve public and private mental health service access and availability for non-UK students.
3. Explore funding for translation services for available university mental health support services; translate available materials to Arabic and assess cultural sensitivity of current support.
4. Conduct focus group and stakeholder research to understand how best to subsidise access to support or alternatively fund private support where it is needed
5. Conduct university stakeholder events with SACB to raise awarness of mental health issues, loneliness and academic challenges and share information about available support.
6. Stakeholder events and further research to undestand what consistency and type of support SA international and wider groups need most before, during and after their course as well as mapping relevant internaitonal student organisations to involve such as SACB.
7. Design information packages for SA international students and wider groups concerning the statutory services they can access while in the UK (NHS, schooling for children).
8. Research to explore creation of a coordinating and pastoral support role in university services- such as an international student liaison role to make regular contact with students and join up support and information across different parts of university infrastructure.

6.5.6 Conclusion

Themes derived from applied thematic analysis of n=18 semi-structured interviews with SA international students expand on what was a limited body of research exploring the experience of SA international students living in the UK. My main findings highlight the experience of CMDs in this group in terms of experiences of symptoms such as withdrawal, negative cycling thoughts, somatic anxiety sensations, providing a broader frame to understand how SA international students perceived or recognised severity or impacts on varied areas of life. My wider findings provide a broader frame through which to understand factors of the international student experience linked to the risk of adverse mental health outcomes in this group.

It is important to understand how my themes link together to as a whole in highlighting the factors that shape and are shaped by SA international student experiences of CMDs while studying in the UK. Loneliness was fundamentally linked to CMDs symptoms, and there was evidence of bi-directional links between CMDs symptoms and academic difficulties and wider references to cycling through burnout and chronic stress. Which may link more widely to difficulties with attention and memory perceived by some SA international students in relation to CMDs symptoms. Social isolation, living alone and separation from family were widely described in relation to CMDs, loneliness and the experience of studying abroad in an unfamiliar country. Collectively, this indicates potential elevated burden of CMDs symptoms in this group, as well as negative impacts on social, academic and wider areas of life. Given that social, cultural and academic factors also shaped CMDs symptoms, these findings highlight the potential importance of mental health support which addresses or accounts for these factors. This was mirrored in findings around the need for more support to build social networks, academic support, and culturally tailored mental health support for SA international students. My findings on usage, acceptability and barriers to formal and informal help-seeking sources, provide a frame in which to understand, further investigate and ultimately address unmet mental health needs in SA international students in the UK.

Chapter 7: Discussion and interpretation of mixed methods findings across thesis

This chapter draws together findings from different areas of my thesis to set out how they address my objectives and aims. I summarise findings briefly to avoid unnecessary repetition, while discussing the meaning and implications of this body of work as a whole. This section concludes by illustrating the implications of my findings for different higher education's stakeholders, stating directions for future research and practice in broad area of international student mental health.

Given the depth and breadth of research conducted across my thesis, I aim to provide a brief discussion as outlined above, rather than a detailed account as this is provided in the respective chapters of my thesis. The purpose of this section is to synthesise and interpret my findings within a mixed-methods approach. This is achieved by briefly looking at the links and implications between the topics of my thesis as a whole, rather than separate parts of topics related to student mental health.

7.1 Summary of findings

7.1.1 Thesis objectives and hypotheses

The objectives and aims of the different chapters of my thesis may be referred back to in full in Chapter 1.2, or in respect to individual thesis sections (Chapters: 3.2.2; 4.2.2, 5.2.2 and 6.2.3).

7.2 Main findings and mixed-methods synthesis

The Mixed methods approach used offered a more comprehensive understanding of complex issues than using quantitative or qualitative approaches alone, because it integrates the strengths of both. Quantitative methods provide breadth, generalizability, and statistical precision, that helps to identify patterns and measure relationships among variables (Creswell & Plano Clark, 2018). In contrast, qualitative methods offer depth, context, and insight into lived experiences (Saudi students in the UK in my study), allowing to explore the why and how behind those patterns (Denzin & Lincoln, 2018). When combined in a mixed methods design, these approaches allow for triangulation (enhancing validity by cross-verifying data), complementarity (exploring different aspects of a phenomenon), and developmental use (using one method to inform the other) (Greene et al., 1989; Fetters et al., 2013).

Rather than producing separate, parallel findings, mixed methods research created an integrated interpretation in which qualitative data can explain or elaborate on quantitative results, or vice versa. For example, in the survey my results indicate high levels of loneliness and interviews explored the personal or cultural meanings behind that loneliness, offering actionable insights that pure statistics may miss. This integration is particularly valuable in health and psychological research, where both measurable outcomes and subjective experiences are critical to understanding behaviour, intervention effectiveness, and policy implications (Creswell & Plano Clark, 2018). Thus, mixed methods approaches are not just additive but synergistic, yielding insights that neither method could achieve alone.

This section outlines my findings concerning mental health, help-seeking and loneliness between the SENSE survey sample (n=2,027) and the sample of Saudi Arabian students recruited for the current study (n=137). Firstly, I undertake a descriptive comparison of measures across the samples of my thesis. I then report the main findings from each chapter. Qualitative findings are incorporated to increase depth of insight for each area in line with the mixed-methods approach described in Chapter 1.1.1. I briefly compare inferential and descriptive statistics findings across the areas

and samples of my thesis to give insight into CMDs and related factors in context to the international student and SA international student experience.

7.2 Brief comparison of descriptive statistics across thesis samples

There are several important points to note before making broad comparisons of quantitative findings from different samples and statistical tests, while drawing in qualitative findings. Likely selection bias in the SENSE sample, in addition to SA international students in my quantitative and qualitative samples means that comparisons should be undertaken with caution. It may not be valid to assume that the comparisons between samples and findings below apply to general populations of university and international students. As those with mental health problems may be over-selected or more likely to participate in this type of research, my findings and the comparisons below may not generalise wider. The comparisons I undertake below are descriptive, qualified by the acknowledgement that no statistical tests were undertaken to formally compare findings from SENSE and the SA international students in my thesis. The comparisons and statements below represent a broad descriptive picture of my findings across the different areas of my thesis.

Given limited evidence of what represents the 'average' level of CMDs or loneliness in SA students studying in the UK to compare the data to, it is useful to use the larger sample of home and international students in study 1 (Chapter 3) as a benchmark to understand levels of CMDs and loneliness in this group. The bar chart below shows higher CMDs in SA international students compared to home and international (EU and international/ overseas) in study 1 (Chapter 3). With interviewees having the highest mean CMDs score, though only by a small amount compared to SA international student who were not interviewed.

Concerning descriptive findings across areas and different samples of my thesis (SENSE= 2,027; Study 2 & 3=137; Study 4: n=18), there were several notable comparisons. CMDs and loneliness scores were similar between the overall sample and those interviewed (n=119, mean CMDs= 20.83, mean loneliness=5.89 ; n=18, mean CMDs=20.88, mean loneliness= 5.55). The figure below shows higher CMDs in SA international students compared to home and international (EU and international/

overseas) in study 1 (Chapter 3). With interviewees having the highest mean CMDs score, though only by a margin compared to SA international student who were not interviewed. Mean loneliness scores were roughly similar across all groups in studies 1 and 2 showing a range between 5.55 to 5.89, though the highest mean scores in this range belonged to SA international students described above. In study 1 (Chapter 3) around 28% of the sample sought help from a MHP, with overseas students having lower rates at around 21%. In contrast, 37.23% of the sample of SA international students reported this outcome. Indicating a high level of mental health help-seeking.

It may be notable that CMDs scores were higher in the SA international student group I surveyed and interviewed, than any of the domicile groups in the SENSE study. While the comparison is caveated and should not be interpreted with any certainty due to the differences in the size of groups, data collection, and basic nature of the comparison,

It should be noted that interviewee recruitment was undertaken opportunistically, rather than pre-selecting those with high scores for interview. This is reflected by similar mean CMDs scores in this group. Though the considerable difference in sample size must be taken into account, higher CMDs scores in SA international students compared to wider groups in study may suggest this group are at greater risk of poor mental health compared to UK or home, international and EU students.

7.3 Findings in context

This section places my findings in context to broad questions about student mental health and what factors may be important to generating a more complete understanding. Highlighting what can be understood about the burden and nature of CMDs in under-researched groups such as SA international students. My findings highlight interdependence or links between CMDs and an array of factors key to the international student experience of studying abroad which have previously been examined in fragmented way (Callendar et al., 2011, updated 2020; Macaskill, 2013; Mitchell et al., 2017; Salaheddin & Mason, 2016). These include social life and loneliness, and aspects such as potential executive function deficits which may impact academic and educational engagement. Against a moderate level of CMDs symptoms, help-seeking behaviour, perception and experience of university support services shape

access to the support for these students. This starts to create a picture as to how to understand the needs of these groups in terms of how relatively common experiences of CMDs align with exposures such as loneliness, aspects of international student which rely on mental faculties such as inhibition and attention, and reluctance or difficulty accessing mental health support.

Firstly, while sample size differences make direct un-caveated comparison difficult, study 1 findings suggest elevated CMDs symptoms those from international domiciles compared to UK students. Mean CMDs scores ranged from 17.56 in the overall sample for SENSE study, to 20.83 and 20.88 in SA international student survey participants and interviewees respectively. This represents a moderate level of CMDs based on cut-offs reported by Kroenke et al. (2016). Prevalence estimates are wide in the available literature as discussed in Chapter 2, and there is limited research for conclusive comparisons to be made. However, my findings align with limited previous evidence in providing evidence to suspect poorer mental health outcomes in international student groups in the UK (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Skromanis et al., 2018; Russell et al., 2010; Sawir, et al., 2007; Smith & Khawaja, 2011). In particular, Callender et al. (updated 2021) suggest international students in the UK may be at risk of depression and anxiety amid a wider crisis in student mental health in higher education. While direct comparison with existing research is difficult due to variation in use of different measures and methodological limitations (as well as the fragmented way in which topics around CMDs have been explored), my findings are mostly consistent with the evidence on mental health outcomes I discussed previously. In that they broadly show elevated levels of CMDs in international student groups, in particular, SA international students. In Callender et al. (2021) the Royal College of Psychiatrists mention that the presentation of CMDs symptoms is influenced by cultural factors, with CMDs presenting more frequently as somatic or physical complaints. My findings provide novel evidence for this in SA international students, as somatic expressions of depression and anxiety or symptoms grounded in bodily sensations were reported by several interviewees. My findings also extend the evidence base in this area by demonstrating the degree to which anxiety and depression were intertwined with one another and with burnout in context to higher education.

One important consideration in interpreting mental health outcomes is that participants who were able and willing to seek help may now report lower levels of psychological distress because they have benefited from effective support. This includes access to therapy, medication, peer support groups, or digital mental health interventions that improved their coping strategies and symptom management (Andrade et al., 2014; Rickwood et al., 2007). Rather than indicating that these individuals were always less affected by mental health issues, their current lower symptom scores may reflect improvement over time due to intervention. This possibility introduces a form of post-intervention bias: help-seeking becomes both a marker of prior distress and a pathway to recovery. As a result, when comparing help-seekers and non-help-seekers, researchers must consider that the former group may have initially experienced significant challenges but now report better outcomes because they accessed support (Gulliver et al., 2010). This dynamic may partially explain findings in which help-seekers appear to have better current mental health, underscoring the importance of interpreting cross-sectional data within a temporal and intervention-sensitive framework (Clement et al., 2015).

The available research from quantitative and qualitative studies has conceptual gaps in terms the lack of studies examining CMDs, loneliness and help-seeking together in terms of student domicile (Forbes-Mewett & Sawyer, 2016; Redfern, 2016; Skromanis et al., 2018; Russell et al., 2010; Sawir, et al., 2007; Smith & Khawaja, 2011). While there is limited comparable literature which measures depression and anxiety as a composite, I put the level of CMDs in my study in context below. For reference, the average score of around 20 is equal to mean scores of clinical samples in validation studies for the measure of CMDs I used by Kroenke et al. (2016). Participants from Kroenke et al. (2016) were drawn from those experiencing chronic pain and those undergoing cancer treatment. Further research is needed for definitive evidence that this generalises to the wider SA international student population, yet it is alarming that the average level of CMDs symptoms in SA international students was comparable to clinical samples of groups known to be at an elevated risk of depression and anxiety. My sample was non-clinical, and the reported level of CMDs may indicate a strong need to intervene or reduce the risk of adverse outcomes in SA international students.

Although it is possible that such experiences are over-represented in my sample of SA international students due to the nature of the research (i.e. those with experience of CMDs or greater symptom severity may be more motivated to take part).

While my findings represent a small proportion of SA international students in the UK (under 2%, based on HESA, 2022 data referred to earlier in my thesis), this provides us information to conduct further research. Specifically, my qualitative findings suggest that SA international students experience a range of psychological and somatic symptoms of depression and anxiety, which tended to be intertwined and interacting with social exposures such as loneliness, academic challenges, and cognitive or mental faculties such as attention and working memory. This suggests a level of links or interdependencies between these factors which are not conveyed by the existing research landscape conducted in general, clinical and university student populations, which does not include international students. In that this research examines CMDs and related concepts such as help-seeking or executive function separately or in silos.

Prior research suggests a strong link between CMDs and loneliness, reflecting bidirectional associations and qualitative (Chen et al., 2020; Clough et al., 2019; Nguyen, Serik, et al., 2019; Russell et al., 2010; Sawir et al., 2011; Qin, 2019). My research supports links between CMDs and loneliness in this population, by providing a more integrated perspective on how CMDs and loneliness relate to one another in context to higher education and available support. My findings from study 1 reflect a possible role for loneliness on pathways between student domicile and CMDs, with greater CMDs in international domicile students. These along with my quantitative and qualitative findings from my thesis align with policy and previous work by researchers in higher education, and the Royal College of Psychiatrists (Callender et al., updated 2021; Frampton et al., 2022; UK Centre for International Student Affairs & University of Sunderland, 2017). These sources of research and policy note international students as a group at risk of poor mental health outcomes, noting that there may be sub-groups with greater levels of risk and contextual factors or exposures which increase stress or isolation. My research provides tentative support for this, while requiring further confirmation in future studies. Importantly, for SA international students in my research, findings of the wider research I refer to earlier are reflected in the finding that loneliness

was strongly associated with CMDs. My qualitative findings support and extend this with evidence that loneliness was directly stated to lead to CMDs symptoms and vice versa, with wider themes pointing to experiences of isolation and the importance of social support to mental health.

My findings around barriers to support services are consistent with literature on culturally and linguistically diverse migrant groups and international students, for whom cultural, attitudinal, structural and informational barriers make it difficult to access the right support for mental health and social issues (Clough et al., 2019; Nguyen, Serik, et al., 2019; Russell et al., 2010. Previous evidence from wider topics (e.g. on the international student or SA student experience overall) has noted cultural difficulties, language barriers, and other contextual factors which might shape help-seeking (Boafo-Arthur & Boafo-Arthur, 2016; Clough et al., 2019; de Mojssac et al., 2020; Nguyen et al., 2019a; Nguyen, Le & Meirmanov, 2019). In the last five years research and policy has acknowledged a possible higher burden of CMDs in international students, which may interact with cultural, attitudinal and informational barriers to mental health services and university support services (Callender et al., updated 2021; Frampton et al., 2022; UK Centre for International Student Affairs & University of Sunderland, 2017). My findings extend this work in providing evidence for specific barriers within a specific cohort of international students. In my research, SA international students were shown to experience barriers to university and wider support services in terms of lack of information or understanding about available support, stigma and fear that no one will understand, and lack of culturally tailored support accessible in Arabic. While there is comparatively less research on help-seeking in UK international student populations (Frampton et al., 2022; UK Centre for International Student Affairs & University of Sunderland, 2017) my research supports calls from the Royal College of Psychiatrists highlighting the need for increased support for international students to improve service availability, cultural sensitivity and accessibility of current support (Callender et al., updated 2021). Specifically, the Royal College of Psychiatrists (Callender et al., updated 2021) highlight international students as experiencing sensitivity to stigma, poorer access and long waiting lists for help, all of which were reflected by my qualitative findings concerning barriers to support. In this way my findings provide novel evidence

by extending this a specific cohort of UK international students. Wider factors mentioned by this report, which impact mental health adversely include studying in non-native language, cultural adjustment, and the high cost of living. These factors were also reflected as shaping international student CMDs symptoms and help-seeking tendencies for mental health in my thesis.

My findings from study 3 (Chapter 5) link higher CMDs scores and poorer inhibitory and to a lesser extent attentional task performance. This is mostly consistent with available research in other populations and settings (Alves et al., 2014; Aronen et al., 2005; Brooks et al., 2013; Doumas et al., 2016; Dulay et al., 2013; Snyder et al., 2015; Roca et al., 2015; Vergara-Lopez et al., 2014; Wagner et al., 2015). Qualitative evidence generated in study 4 (Chapter 6) highlighted that CMDs symptoms were reported as worsening attention and working memory difficulties, precipitating academic difficulties which were reflected as worsening mental health and functioning. These findings create a foundation to extend the limited evidence base in this area to inform future research for improving international student mental health and SA international students more specifically. Beginning to bridge the gap between well-established evidence from earlier reviews and primary research showing executive function deficits or 'executive dysfunction' in clinical samples of those with severe levels of CMDs symptoms (Alves et al., 2014; Roca et al., 2015; Vergara-Lopez et al., 2014). My research suggests a need to further explore if CMDs symptoms impair executive function performance or capabilities in non-clinical samples. On the basis of quantitative and qualitative evidence generated by my study, the possibility that international students such as SA international students in the UK experience a level of CMDs which impairs executive function skills cannot be ruled out. While further research is need to confirm and replicate these findings, this may be an area of unidentified support needs likely to adversely impact educational, social and mental health outcomes in this group. The possible need for improved support to improve the wider determinants of CMDs symptoms is a key implication of my research into international students. With qualitative findings linking my picture of quantitative findings together to suggest that academic support taking into account possible links between CMDs, executive function

skills and loneliness or social needs might form part of future support or higher education support.

7.4 Threats to reliability and validity

In this section I present a brief discussion of the reliability and validity of thesis, having discussed relevant strengths and limitations in detail in each prior chapter.

Firstly, selection bias may apply across all areas of my thesis. It may be that people with CMDs and experience in this area may have been more likely to take part in my research. Each of the samples I analysed was a small proportion of a larger population, as discussed in each study. This means that my findings may not generalise or apply to wider population of SA international students, or university students more broadly for SENSE study analyses. This could lead to over-estimation of how frequent or serious experiences of CMDs are in this population. It may be that links between CMDs, loneliness, help-seeking and executive function in my study were bound to the sample I recruited, with the consequence of the experiences of other groups not being represented.

Limitations that apply to all of my quantitative analyses relate to the drawbacks of cross-sectional research. It may be that if these data were collected again at a later point in time, CMDs symptoms, loneliness levels, executive function and help-seeking behaviour may have been differently associated. Cross-sectional methods mean that we also cannot represent causal pathways from these data. In that we do not know whether CMDs causes or is caused by the exposures in my study. The picture of causation may be complex and bidirectional, or there may be no meaningful evidence of causality. However, there is no way to confirm this with current data.

The foundation for my thesis and the links I sought to explore was informed by a rapid literature review (Moons et al., 2021). I conducted a rapid literature review rather than a systematic review or meta-analysis for several reasons. Firstly, there was lack of sources or perspectives which integrated the research on different topics despite there being evidence for individual links between CMDs and loneliness, help-seeking, executive function in wider populations of non-students. This meant that there was no basis to conduct a systematic review to achieve the purpose of integrating existing

evidence. Rapid reviews are for more pragmatic purposes and research with a more rapid timeline. While this was appropriate to the context of my research and the existing evidence base, there are drawbacks. Systematic literature searches to identify all existing evidence would not have been practical or feasible, but there is a possibility that using a more rigorous approach, evidence I may have identified through a systematic review could have changed my interpretation of how CMDs is related to wider determinants of mental health such as loneliness (Moons et al., 2021). To mitigate this, I did identify and incorporate evidence from existing systematic reviews. Another limitation relates to publication bias and quality appraisal, which systematic reviews and meta-analyses assess and account for in their findings (Winters & Weir, 2017). It is possible that publication bias means that available research is biased towards findings which shows higher CMDs in student, international student and general populations, or studies which show significant findings (in this case, indicating links between CMDs and other factors).

My thesis used self-report methods to collect data, which means that several kinds of bias may be present in the data. Recall bias may be an issue, with respondents' mis-recalling or recalling details about CMDs at interview or in questionnaires inaccurately. It may also be that if those with CMDs were more likely to take part in my research, cognitive biases could affect how individuals attend to and report the frequency of negative experiences. This could also lead to the over-estimation of the importance of loneliness or other factors related to CMDs in my thesis. While resource and cost intensive, use of clinical interview schedules would provide a diagnostically valid and reliable way to measure the level of mental health problems in this population, with this information being less susceptible to measurement bias and bias introduced by self-report methods such as social desirability.

My quantitative analyses sought to control for potential confounding variables which would otherwise change what we observe when examining associations between outcomes and exposures. While I sought to control for consistent confounding across analytic areas of my thesis, this was not possible for several reasons discussed in Chapter 5. As such there is no way to know whether the observed associations are due to the influence of unmeasured sociodemographic variables which could confound-

these include sexual orientation, gender identity, suicidality and self-harm, other non-CMDs mental health diagnoses, disabilities. While residual confounding is a considerable limitation, these data were not collected due to ethical and practical reasons discussed in Chapter 5.

A further limitation of my analyses relates to measurement of CMDs as a composite variable, as opposed to using statistical analyses which permit multiple dependent variables. This means that my analyses would not be able to detect differences between anxiety or depression in how they relate to loneliness, help-seeking or EF. Such as would be the case if clusters of symptoms of each disorder affected and were affected differently in relation to my exposure variables. However, my thesis was not concerned with examining differential effects or examining CMDs in this way, rather with establishing a foundation or baseline for further research. While impossible to rule out definitively, I sought to mitigate this possibility in all of my initial exploration of data to understand how depression and anxiety (as CMDs sub-scales) were associated with one another and with my exposures, with limited evidence of differential effects. It may also be argued that use of a composite scale in my research has more utility than examining differential effects, as there is a paucity of research which examines or accounts for depression and anxiety as being related or intertwined with one another. This interrelatedness was the case in my research, where depression and anxiety were strongly positively associated with one another in initial correlational analysis to explore the pattern of association between variables which would underpin my regression models. As this was also reflected in my qualitative findings (i.e. depression and anxiety are intertwined with one another), examination of depression and anxiety as separate constructs would have masked or failed to identify this.

7.5 Implications of findings

Findings from across the areas of my thesis highlight the importance of taking a holistic or wider approach to understanding the factors which relate to and may shape international student mental health. While these implications are discussed individually in respective discussion sections of my thesis, I collate and reflect on key implications below. Given this, I focus on key implications for improving available support for international students and SA internationals students more specifically.

Collectively, my thesis provides a potential frame for informing better provision of mental health and wellbeing support by better understanding the risk of poorer outcomes for those with the most severe levels of CMDs and loneliness. Including the qualitative aspect in Chapter 6 and secondary quantitative analysis of SENSE study findings in Chapter 3, my thesis as a whole address several limitations of existing research on SA international student experience. The small evidence-base I identified in my literature review (Chapter 2) was mostly qualitative research examining acculturation or aspects of adjustment to international study, with some international quantitative studies on SA student mental health. My study has attempted to fill these gaps by drawing together broad areas of research in a deeper mixed-methods examination of mental health, help-seeking, loneliness and executive function or academic difficulties. This provides a potentially valuable contribution the literature by both describing levels of these variables and evidence of any associations in the overall sample of UK SA international students (n=137) and providing a deeper and more rich description of the role of CMDs, loneliness, help-seeking and 'subjective EF' in relation to academic experiences in n=18 SA international students. However, the limitations of my thesis mean that we cannot know whether this is the case for a significant or large proportion of SA international students, we cannot definitively confirm the role, importance or placement of factors on causal pathways between mental health outcomes and the exposures or factors in my study. A key implication related for future research is the need to use findings of my thesis alongside the fragmented prior literature to create a foundation for mapping and understanding such causal factors in international students and more specific student populations in the UK. This would have considerable value in understanding the wider determinants of poor mental health in these groups and being able to create a stronger

case for investment and action in improving available support, which my thesis seeks to create a foundation for.

A key implication is that universities should further investigate and evaluate whether proactive screening and identification in international students would help to identify unmet need. Given that overseas domicile students had higher CMDs scores than home domicile students. Though this would need to be balanced against the potential cost of such efforts

CMDs may be even higher in specific groups of international students such as SA international students. Research and policy concerning the unmet mental health and wellbeing of higher education students (Callendar, 2020) supports this in outlining international students as an at-risk group. Calling for more proactive efforts to screen and support such groups in their time studying abroad.

Considering the context and detail of my quantitative findings alongside the story told by all of my qualitative themes, the range, severity and impact CMDs symptoms reported by SA international students was concerning. Reported burnout, linked to CMDs, academic struggles and loneliness can be seen against a background of cultural, informational and attitudinal barriers to university support services. With further research, these factors could be used to identify those at higher risk of averse mental health outcomes at different points of the university experience. But my findings suggest that without more culturally sensitive and accessible services, this is unlikely to create the necessary impact to understand the true scale of unmet needs for international student mental health. This points to a pressing need to examine the configuration and design of university support services, as well as pathways to higher education through study abroad. As while usage of MHP support was relatively high in my study (as were usefulness ratings), qualitative findings highlighted negative experiences and unmet needs, such as the need for translated information and linguistically tailored therapies. Some of these unmet needs and factors which worsened CMDs related to loneliness, social life, and preventing cycles of CMDs and burnout, which could compromise attention, working memory mentioned around academic difficulties. Academic difficulties were also said to worsen CMDs, with some responding to this with imposed social

isolation to enhance productivity. Given that loneliness was also said to worsen CMDs (reflected in wider research I refer to in earlier sections), this could point to a series of feedback loops where interdependencies between CMDs and these wider factors contribute to a cycle of deteriorating mental health and wellbeing. With the key implication being that mental health outcomes may be fundamentally linked to these factors, for which there is limited available support that is tailored to this population.

My qualitative research findings support the need for this, while providing information to form more granular service improvement recommendations, highlighted in my discussion in Chapter 6.4.

7.6 Future directions

The directions for future research and practice implications across my thesis as a whole are summarised below. To avoid repetition, I focus on several key directions for future research which apply to multiple areas of my work.

A key direction for future research relates to large scale mixed-methods studies of different international student groups. These could be conducted in parallel to stakeholder engagement informed service design activities such as those outline in Chapter 6.6.4. For example, bringing together international students, university housing, academic and mental health stakeholders could enable researchers to generate or test ideas for better tailoring interventions or support services.

Large scale longitudinal or prospective research with quantitative methods could enable us to disentangle causal pathways between mental health, social and academic factors. As a limitation of my study relates to use of cross-sectional design. By using research design and analytic method which enable causal inference, this would enable researchers to answer a range of questions pertinent to the intersecting areas of my thesis. Including whether there are bi-directional associations between CMDs and loneliness, as well as other factors. There could be a series of feedback loops leading to and sustaining greater levels of CMDs symptoms and declining functioning. This needs to be clarified by further research. Considering the pattern of my qualitative findings, if CMDs contribute to executive function deficits and loneliness, and poorer executive function leading to academic difficulties and greater loneliness cause greater CMDs,

this would indicate a considerable need to intervene in this repeating cycle. This research could also combine assessments for CMDs before international study. Alongside follow-up after completion of higher education. As a future research direction, this would provide us with the opportunity to understand how higher education experiences affect mental health and vice versa, before and beyond an international student's time at university.

Qualitative research and stakeholder events could also be used as a basis to test different theories about the links between factors which may shape international student mental health. Recruitment of international students and stakeholder participants across UK universities as a network would be time and resource intensive, but worthwhile in terms of the knowledge this could generate to enhance student support.

Future observational research could also seek to address limitations and measurement bias of self-report questionnaire-based tools for mental health conditions. For example, while resource intensive, the use of a range of validated psychometric scales for mental health conditions alongside clinical interviewing could be used to provide robust prevalence estimates for a range of mental health conditions in international student groups. This is an important direction for future research as it would provide definitive evidence of whether greater levels of CMDs in international students are clinically meaningful reaching the threshold for formal diagnosis and support.

Across my thesis, higher education students as well as specific international student groups may have more complex needs than previously thought. This may be due to intersecting areas around the wider determinants of mental health and wellbeing, such as loneliness, academic difficulties and the cost of living, which are not currently being met. Future longitudinal and mixed-methods research should clarify if these factors persist over time, their impact on later life, as well as seeking to co-design culturally appropriate and accessible mental health and wellbeing support for those studying in a foreign country (Callendar et al., updated 2021; Duffy, 2023). This also informs a key practice implication. Specifically, my qualitative findings highlighted a range of wider factors as being linked to CMDs, such as housing insecurity, financial stress, academic difficulties, negative social experiences and loneliness, isolation from family mental.

Suggesting that a focus on these wider determinants of mental health and wellbeing may be necessary to prevent adverse outcomes in this potentially at-risk population. This is the final and most important direction for future research and practice implicated by my research findings. That the factors demonstrated to link to CMDs symptoms and severity in my study should form a focus of future mental health promotion, prevention and treatment efforts. As my study pointed to the importance of loneliness and social life, academic difficulties and executive function deficits, cultural adjustment, financial difficulties and housing as being linked to international student mental health policy. The service improvement recommendations and ways to explore these I outlined in Chapter 6.4 highlight ways to improve current provision with these links in mind. Future research should address a key gap by testing these ideas further with a wide array of higher education stakeholders, and by involving international students meaningfully and consistently in these efforts, as outlined above.

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Appendices

Appendix 1: Letter of ethical approval

UCL RESEARCH ETHICS COMMITTEE
OFFICE FOR THE VICE PROVOST RESEARCH, INNOVATION AND GLOBAL ENGAGEMENT

20th February 2023

Professor Glyn Lewis
Faculty of Brain Sciences
UCL

Cc: Amna Alshammary

Dear Professor Lewis

Notification of Ethics Approval
Project ID: 24237.001
Title: Cross-sectional investigation into the relationship between common mental health disorders, domains of executive functioning and help seeking attitudes in Saudi Arabian students in the UK.

I am pleased to confirm that your study has been ethically approved by the UCL Research Ethics Committee until **20th February 2024.**

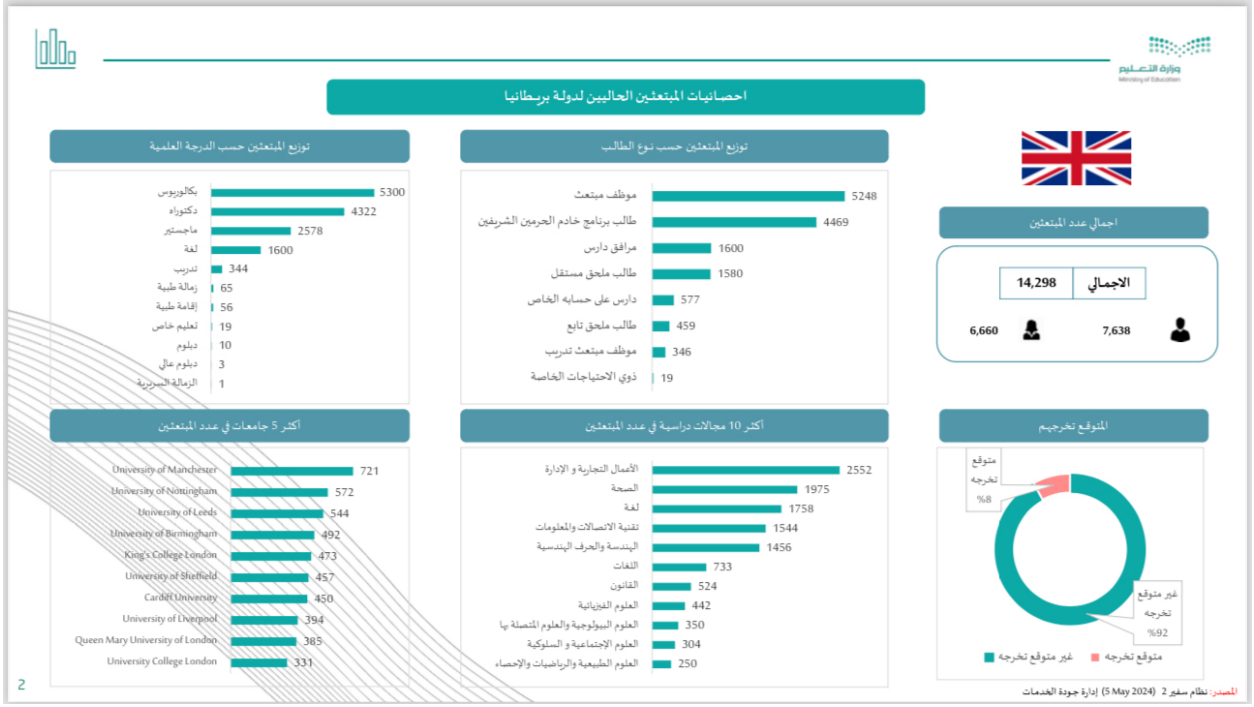
Ethical approval is subject to the following conditions:

Notification of Amendments to the Research
You must seek Chair's approval for proposed amendments (to include extensions to the duration of the project) to the research for which this approval has been given. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing an 'Amendment Approval Request Form' - https://www.ucl.ac.uk/research-ethics/responsibilities-after-approval

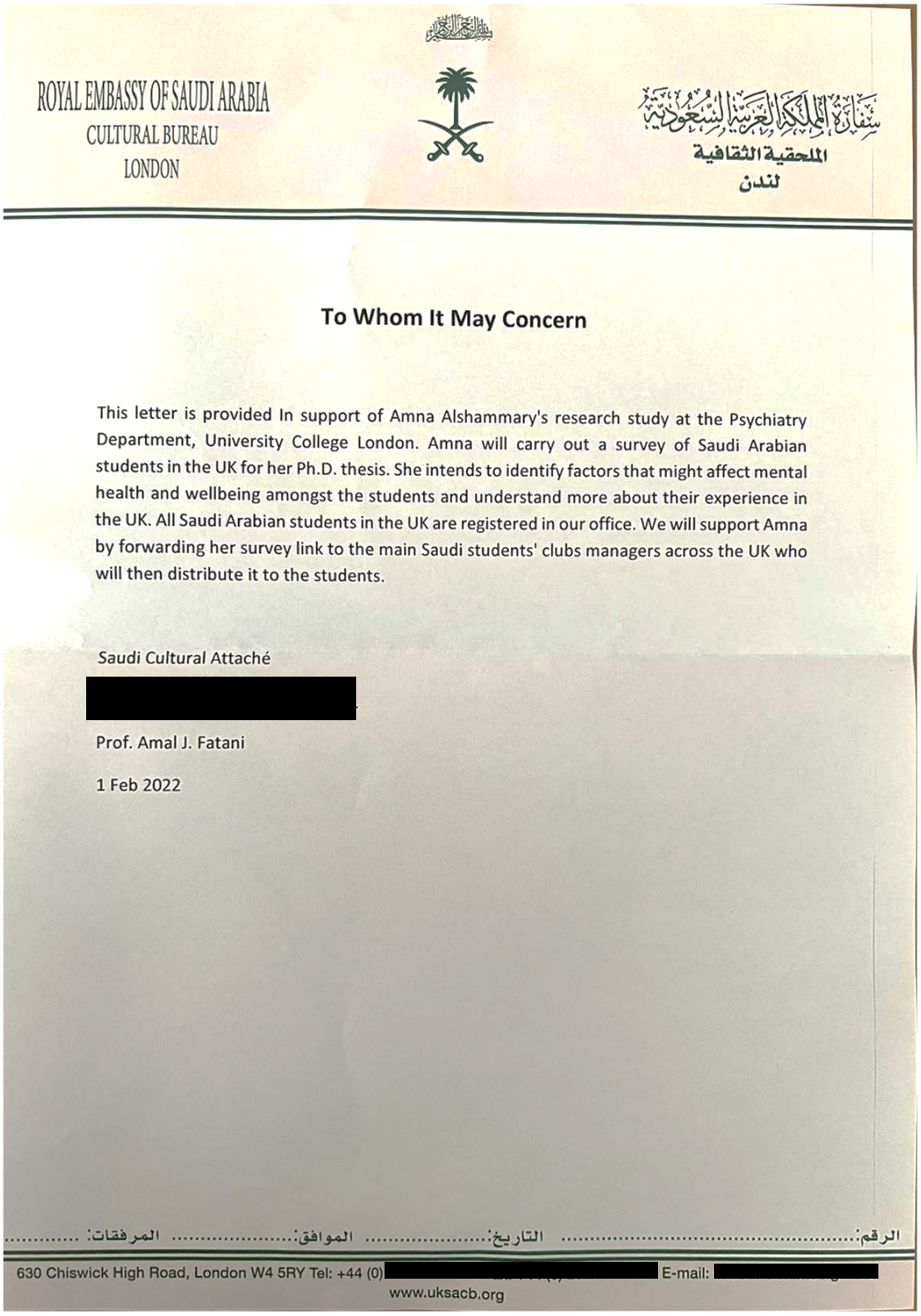
Adverse Event Reporting – Serious and Non-Serious
It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator (ethics@ucl.ac.uk) immediately the incident occurs. Where the adverse incident is unexpected and serious, the Joint Chairs will decide whether the study should be terminated pending the opinion of an independent expert. For non-serious adverse events the Joint Chairs of the Ethics Committee should again be notified via the Ethics Committee Administrator within ten days of the incident

Office of the Vice Provost Research, Innovation, and Global Engagement
2 Taviton Street
University College London
Email: ethics@ucl.ac.uk
http://ethics.grad.ucl.ac.uk/

Appendix 2: Saudi students in the UK statistics



Appendix 3. Letter of support from the Saudi Arabian cultural burau



بسم الله الرحمن الرحيم

ROYAL EMBASSY OF SAUDI ARABIA
CULTURAL BUREAU
LONDON

سفارة المملكة العربية السعودية
الملحقية الثقافية
لندن

To Whom It May Concern

This letter is provided In support of Amna Alshammary's research study at the Psychiatry Department, University College London. Amna will carry out a survey of Saudi Arabian students in the UK for her Ph.D. thesis. She intends to identify factors that might affect mental health and wellbeing amongst the students and understand more about their experience in the UK. All Saudi Arabian students in the UK are registered in our office. We will support Amna by forwarding her survey link to the main Saudi students' clubs managers across the UK who will then distribute it to the students.

Saudi Cultural Attaché

[redacted]

Prof. Amal J. Fatani

1 Feb 2022

الرقم:..... التاريخ:..... الموافق:..... المرفقات: .....

630 Chiswick High Road, London W4 5RY Tel: +44 (0)[redacted] E-mail: [redacted]
www.uksacb.org

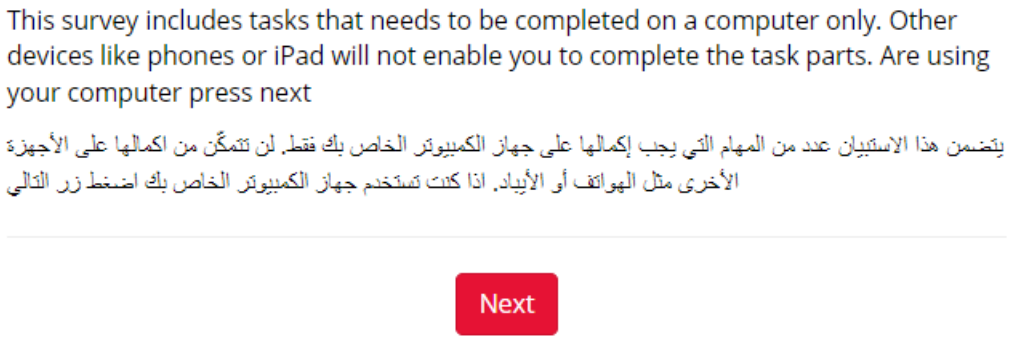
Appendix 4. Invitation letter sent to participants

السلام عليكم يتضمن الجزء الاخير من بحثي جمع بيانات عينه من الطلبة السعوديين فقط. دراستي تنظر الى العلاقة ما بين الصحة النفسية ومجالات الاداء العصبي التنفيذي مع النظر الى سلوكيات الدعم النفسي لدى الطلبة في المملكة المتحدة . الاستبيان يتضمن تطبيقات تعمل فقط على اجهزة الكمبيوتر، لذا ارجو نسخ الرابط لجهازك او مراسلتي في حال اردت ارساله لك عبر البريد الإلكتروني **uctvals@ucl.ac.uk.** مشاركتكم ستكون سبب لإتمام دراستي، شاكرة وممتنه لتعاونكم. اتمنى لكم التوفيق في مسيرة ابتعاثكم. تحياتي رابط الدراسة : **https://research.sc/participant/login/dynamic/926DE727-FAF3-4151-856A-F80983154FA7**	**Hello** **The final part of my research includes collecting data from a sample of Saudi students only. My study looks at the relationship between mental health and areas of executive functioning, while investigating psychological support behaviors among students in the United Kingdom.** **The questionnaire includes applications that work only on computers, so please copy the link to your device or email me if you want me to send it to you via e-mail:** [redacted]. **Your participation will be a reason for me to complete my studies. I am grateful for your cooperation. I wish you success in your scholarship journey.** **My regards** **Study link:** **https://research.sc/participant/login/dynamic/926DE727-FAF3-4151-856A-F80983154FA7**

Appendix 5: Survey content

First page of study participation after following study hyperlink to Gorilla platform.

First page :



Participant information sheet :

Participant Information Sheet

You are invited to participate in research being conducted by Amna Alshammary studying for a PhD at University College London on investigation into the relationship between Common mental health disorders and domains of executive functioning in Saudi Arabian students in the united kingdom This sheet provides you with information about the research and what you will be required to do. You should read this sheet in full, and ask any questions you have, before consenting to participate.

What is the purpose of the research?

This study aims to gain better understanding about the relationship between common mental health issues such as depression and anxiety, help seeking and domains of executive functioning represented in attention, memory and inhibition so that it could aid in providing better future experiences for Saudi students in UK. We may also ask to retain some of your contact details to ask if you want to participate in an interview related to this topic later on.

Why have I been chosen to participate in the research?

You have been invited to participate because you are a Saudi Arabian student (undergraduate, postgraduate) in the UK.

What are the benefits of participating in the research?

By participating in the research, you will be assisting Amna Alshammary and University College London in understanding the relationship between common mental health disorders and domains of executive functioning. The results will provide information that could inform policy about mental health and mental health care in Saudi students in the UK.

What are the risks associated with my participation?

There are no significant risks associated with participating in this research. The research has been reviewed and approved by university college London (UCL) ethics process.

Is my participation voluntary?

Your participation in the research is entirely voluntary. The data may be used in the production of research reports, conference presentations, or academic papers. Please only consent to participate if you are happy to do so. On the informed consent form, you will create a code. You will need this to contact the researcher if you decide to withdraw your data. You can withdraw your data by contacting the researcher using [redacted] up until December 2022 when all data will be anonymised and no personal information will be linked to the data.

What will participation in the research involve?

This survey includes questionnaires and experimental tasks to be completed

Is my data protected?

Your data will be used in accordance with the General Data Protection Regulation 2016 (GDPR) and the Data Protection Act 2018. All data will be treated confidentially until it is anonymised. If consent has been given to record your participation, all recordings will be destroyed once transcribed. Your data will only be accessible to the researcher Amna Alshammary and her supervisors. All electronic data will be stored on a password protected computer. Consent to participate will be kept separately to the data. All data will be destroyed on or before August 2024.

What will happen to the results from the research?

The results of the research will be used to write up a dissertation/journal article as part of the researcher's assessment for PhD at UCL. The findings may also be shared through academic papers and at conference events.

What do I do if I have concerns with the research or want to make a complaint?

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk. If you have concerns regarding the research, please contact the researcher at [redacted]. If your concern/complaint is not resolved, please contact the researcher's supervisor a[redacted]. In your email please provide the research title, the researcher's name, and an outline of you concerns/complaint.

Thank you for taking the time to read this participation information sheet

Next

Consent form:

Study Title:

Cross-sectional investigation into the relationship between common mental disorders and domains of executive functioning in Saudi Arabian students in the UK.

You are invited to participate in this study investigating the relationship between mental health and wellbeing and different domains of executive functioning- or the different cognitive skills related to concepts such as attention and memory. This document aims to provide you with the necessary information to make an informed choice as to whether to participate. You have been contacted about this study via email or social media by a representative from the Saudi Arabian Cultural Bureau (SACB) because you are a Saudi Arabian student (undergraduate, postgraduate) who is studying in the UK and is registered with the SACB.

This study aims to gain better understanding about the relationship between common mental health issues such as symptoms of depression and anxiety, and different domains of executive functioning including attention, memory and inhibition in order to improve future experiences for Saudi students studying in the UK.

Focusing on the experiences of Saudi Arabian students in the UK, this survey will form part of the researcher's (Amnah Alshammary) PhD study under the supervision of Professor Glyn Lewis and Dr. Francesca Solmi at University College London (UCL).

Your participation in this study is voluntary and you may stop or withdraw from participation at any point before sending your final responses.

There are no risks or benefits associated with participation in this study. If you agree to participate in this study, you will be completing the survey which takes around 15 minutes to finish. After providing consent you will be asked several questions about yourself (e.g. your age), and your experiences of mental health; giving ratings on symptoms and experiences related to depression, anxiety, help seeking and loneliness. As well as rating the usefulness of different sources of support you have sought help from.

You will then be asked to complete a questionnaire which asks you to reflect and give ratings on statements describing attention, memory and inhibition skills in relation to yourself. There are no right or wrong answers or responses.

At the end you will be asked if you would like to participate in an interview that will take place later on in the year and if you agree to provide your contact details. If you are selected for this further interview you will be sent another consent form with more detailed information about the interview.

Your participation and data will be securely stored, processed and in due course deleted, in line with Global Data Protection Regulation and Data Protection Act standards. All responses or data will be stored at UCL and only the researcher and their supervisors will have access to it. Personal information will only be asked if you agree to be contacted for a further interview. Participants may contact the researcher if they wish to be kept informed as to the results of this study; provide your email at the end of the survey and it will be stored separately from the form. We will retain this information to contact you about participation in a further interview about this topic if you consent to this. Your email will be deleted once you are informed about the study results.

The results of this survey will form part of the researcher's PhD thesis, and may leave to published academic research.

By signing in you agree that you have read the information above and willing to participate in the survey

Please create a four-digit number which you can recall to the researcher if you want to withdraw from the study.

☐ I confirm that I am over 18 years of age and consent to participate in this research.

Next

Sociodemographic information:

What is your current level of study

- [ ] Undergraduates
- [ ] Postgraduate taught
- [ ] postgraduate research

What is you gender

- [ ] Male
- [ ] Female

What your age group

- [ ] 18 - 30
- [ ] 30 - 40
- [ ] 40 - 50
- [ ] 50+

How well you are financially theses days

- [ ] Living comfortably
- [ ] Doing alright
- [ ] Just about getting by
- [ ] Finding it quit difficult
- [ ] Find it very difficult

Next

Phq9 depression scale:

Same measure also used in the SENSE study

Over the last 2 weeks, how often have you been bothered by any of the following problems?

1. Little interest or pleasure in doing things

Not at all	Several days	More than half the days	Nearly every day

2. Feeling down, depressed, or hopeless

Not at all	Several days	More than half the days	Nearly every day

3. Trouble falling or staying asleep, or sleeping too much?

Not at all	Several days	More than half the days	Nearly every day

4. Feeling tired or having little energy?

Not at all	Several days	More than half the days	Nearly every day

5. Poor appetite or overeating?

Not at all	Several days	More than half the days	Nearly every day

6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down?

Not at all	Several days	More than half the days	Nearly every day

7. Trouble concentrating on things, such as reading the newspaper or watching television?

Not at all	Several days	More than half the days	Nearly every day

8. Moving or speaking so slowly that other people could have noticed? Or so fidgety or restless that you have been moving a lot more than usual?

Not at all	Several days	More than half the days	Nearly every day

9. Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?

Not at all	Several days	More than half the days	Nearly every day

Next

GAD7 anxiety scale:

Same measure also used in the SENSE study

Over the last two weeks, how often have you been bothered by the following problems?

1. Feeling nervous, anxious, or on edge

Not at all	Several days	More than half the days	Nearly every day

2. Not being able to stop or control worrying

Not at all	Several days	More than half the days	Nearly every day

3. Worrying too much about different things

Not at all	Several days	More than half the days	Nearly every day

4. Trouble relaxing

Not at all	Several days	More than half the days	Nearly every day

5. Being so restless that it is hard to sit still

Not at all	Several days	More than half the days	Nearly every day

6. Becoming easily annoyed or irritable

Not at all	Several days	More than half the days	Nearly every day

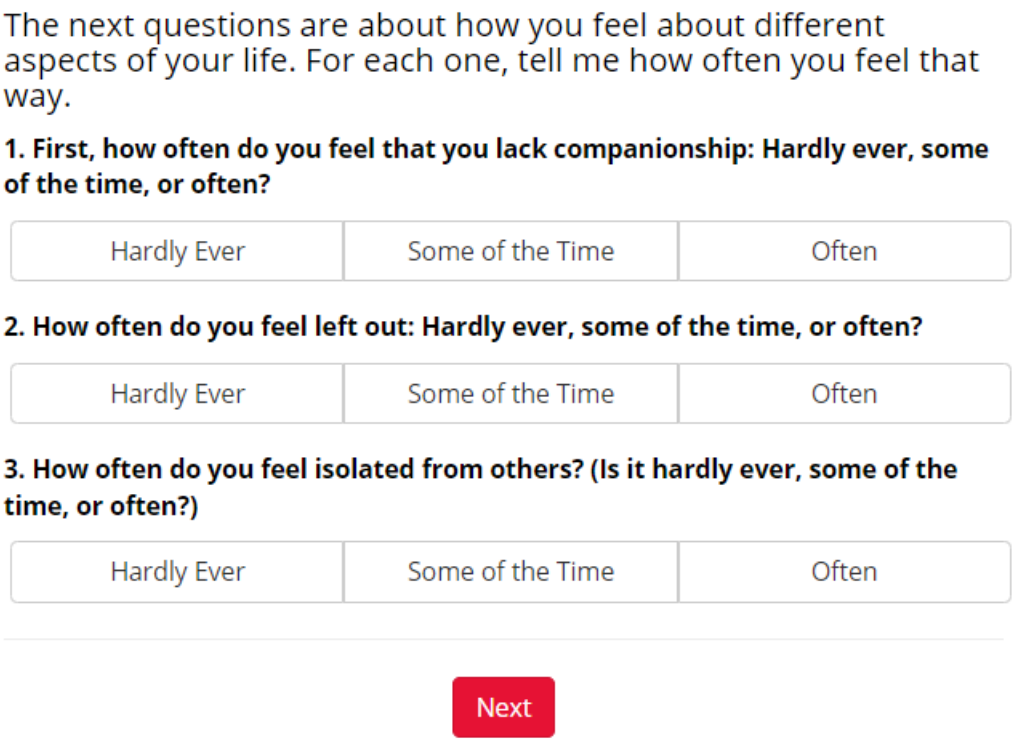
7. Feeling afraid, as if something awful might happen

Not at all	Several days	More than half the days	Nearly every day

Next

UCLA loneliness scale:

Same measure also used in the SENSE study



Help-seeking questionnaire:

Same measure also used in the SENSE study

While in the UK, which of the following help-seeking approaches you would consider use to deal with a mental health issue?

- [ ] Professional mental health provider
- [ ] Family
- [ ] Friends
- [ ] Peer support
- [ ] General practitioner (GP) or Doctor
- [ ] personal tutor/ Academic mentor
- [ ] Acadimic sftaff/lecturer
- [ ] Member of University supoort staff
- [ ] telephonn-based supoprt (e.g nightline/Samaritans)
- [ ] The internet/Other online support
- [ ] Religious leader
- [ ] Other
- [ ] Never seeked help

While in the UK, which of the following help-seeking approaches did you use to deal with a mental health issue?

- [ ] Professional mental health provider
- [ ] Family
- [ ] Friends
- [ ] Peer support
- [ ] General practitioner (GP) or Doctor
- [ ] personal tutor/ Academic mentor
- [ ] Acadimic sftaff/lecturer
- [ ] Member of University supoort staff
- [ ] telephonn-based supoprt (e.g nightline/Samaritans)
- [ ] The internet/Other online support
- [ ] Religious leader
- [ ] Other
- [ ] Never seeked help

If you have had a mental health issue, and have not used the university support services, indicate what the main barriers wear.

- [ ] I have not had a problem
- [ ] Lack of time
- [ ] Lack of confidentiality
- [ ] concern that no one will understand my problom
- [ ] I didt know where to find help
- [ ] Stigma oif mental health care
- [ ] Fear of unwanted intervention
- [ ] Fear of documentation on academic record
- [ ] Difficulty
- [ ] with access to care
- [ ] Lack of Available services
- [ ] Other.

Alongside each support sorces you have used during your time at university, please indicate how useful this source was

1. Professional mental health provider

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

2. Family

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

3. Friends

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

4. Peer support

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

5. General practitioner (GP) or Doctor

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

6. Personal tutor/ Academic mentor

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

7. Academic staff/lecturer

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

8. Member of University support staff

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

9. Telephone-based support (e.g. nightline/Samaritans),

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

10. The internet/Other online support

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

11. Religious leader

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

12. Other

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

13. Never sleeked help

Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful

Next

Executive function tasks section:

In the last section of the survey, you are required to complete three exercises aimed at measuring three aspects of executive functions which are : inhibition, memory and attention.

في القسم الأخير من الاستبيان المطلوب منك اكمال ثلاثة تمارين تهدف الى قياس ثلاث وظائف تنفيذية عصبية لديك و هي التثبيط , التذكر و الانتباه

اضغط التالي للبدء

Next

Task 1

في التمرين التالي , ستظهر لك عدد من الكلمات , المطلوب منك الانتباه للون الكلمة الظاهرة و ليس معناها

عندما يظهر لك اللون الأحمر اضغط

Q

عندما يظهر لك اللون الأصفر اضغط

W

عندما يظهر لك اللون الأزرق اضغط

O

عندما يظهر لك اللون الأخضر اضغط

P

ستظهر لك التعليمات مجددا باللغة الإنجليزية يتبعها محاولتين تجريبيه و من ثم التمرين الأساسي و الذي يطلب منك ثلاثة عشر استجابة

اضغط زر التالي

Next

Press the text colour of the word on the screen. Do not press the meaning of the word

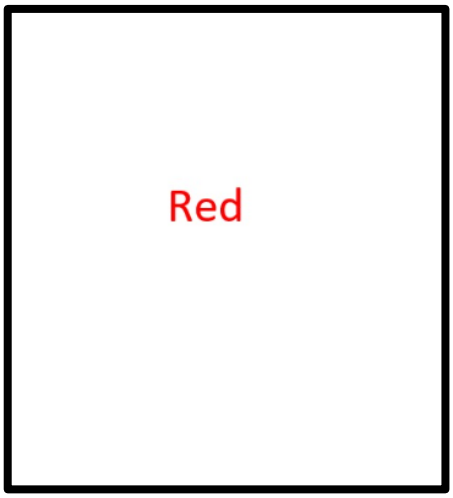
Press **Q** for **red**

Press **W** for **yellow**

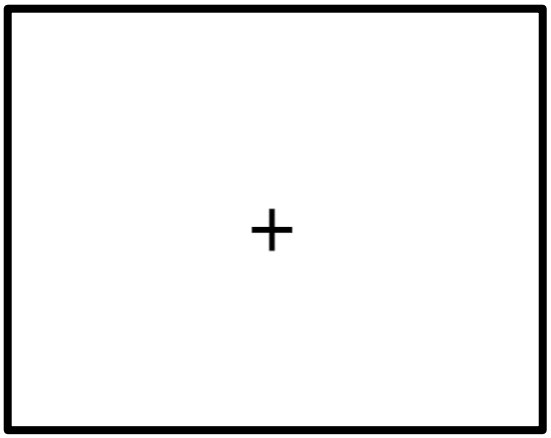
Press **O** for **blue**

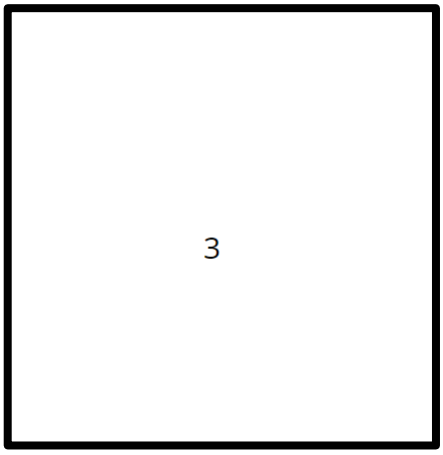
Press **P** for **green**

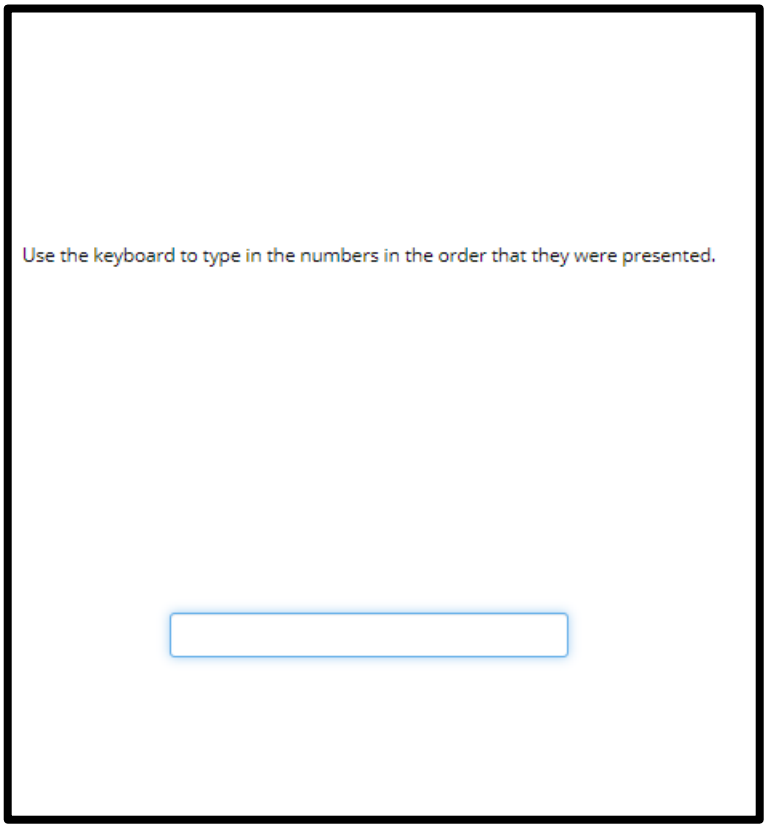
Press Space to begin the practise rounds



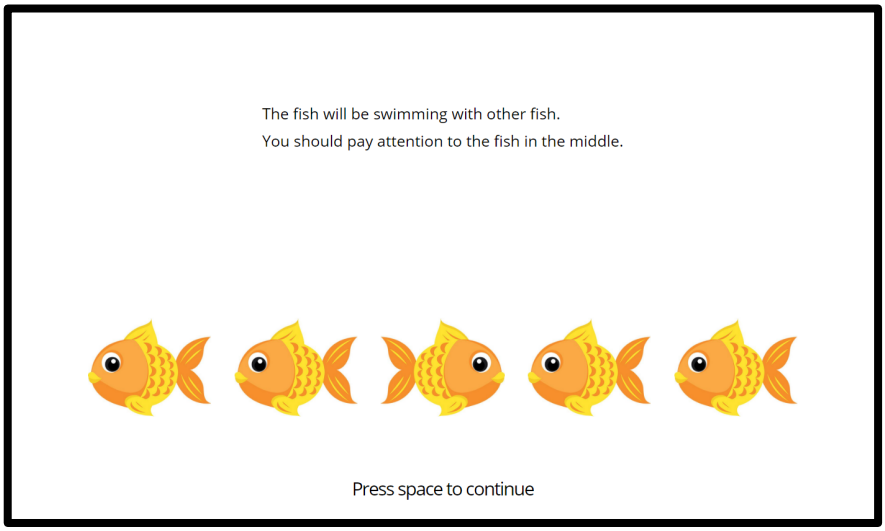
Task 2

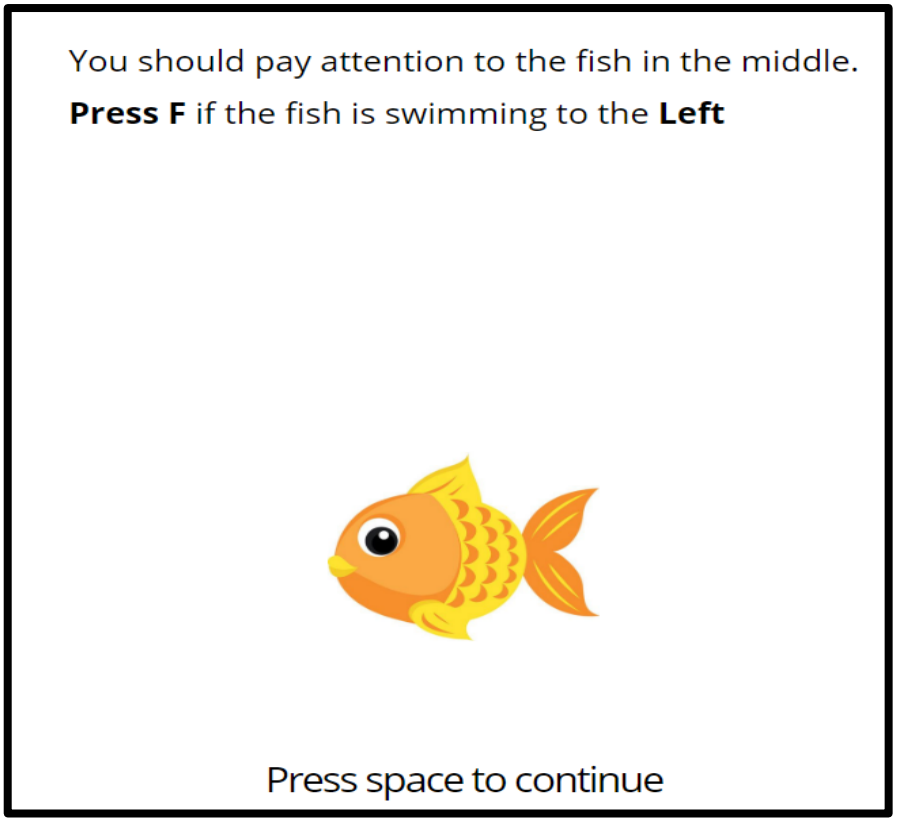



3


Use the keyboard to type in the numbers in the order that they were presented.

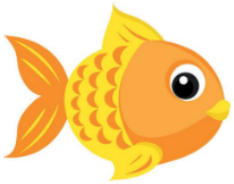
Task 3


The fish will be swimming with other fish.
You should pay attention to the fish in the middle.
Press space to continue


You should pay attention to the fish in the middle.
Press F if the fish is swimming to the Left
Press space to continue

You should pay attention to the fish in the middle.

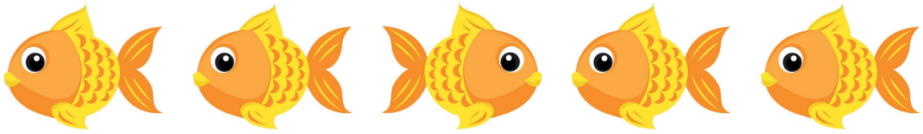
Press J if the fish is swimming to the **Right**



Press space to continue

Press **F** for Left

Press **J** for Right



Press the matching key

Qualitative participation request:

Do you agree to be contacted for a follow-up interview of 5 to 10 minutes in length?

- ◯ Yes
- ◯ No

If so, please include your phone number here

Next

Debrief sheet:

Thank you for participating in the research.

The information you provided will assist in developing an understanding of mental health and executive function and will contribute to Amna Alshammary assessment for PhD award .

The research may also be presented at conferences and in academic journals.

Next

Appendix 6: Topic guide with interview questions and prompts.

1) Please describe your broad reasons and motivations for studying in the UK?
    i. [PROMPT- Why the UK?; What is different compared to Saudi Arabia?; How long have you been studying in the UK?]
2) What was life like for you before studying in the UK? How has life changed since becoming an international student?
3) What has been your experience of meeting people and making friends while studying in the UK?
    i. [PROMPT- Are they positive or negative? Probe further if any indicators of social isolation or loneliness.]
4) How has your experience of international study been influenced by mental health and/or well-being? / What aspects of life as a SA international student influence this?
    i. [PROMPT- Inquire about specific aspects of international study: academic experiences, social experiences.]
5) If you have experienced symptoms of anxiety or depression previously, how have these impacted your experience of socialising with other students and engaging with your course?
    i. [PROMPT- Inquire about social experience; academic experiences.]
6) Has experiencing symptoms of anxiety and depression influenced aspects of your experience of academic work? For example, how has your ability to focus your attention, retain information and control impulses been impacted in context to assignments and lectures?
7) What are the challenges that you face around anxiety and depression in relation to academic and social functioning when studying in the UK?
8) Have you sought or received support from friends, family or university services in relation to anxiety and depression?
    i. [PROMPT- If not, what were the barriers to doing so? And, if yes, how helpful was this and why? Have you sought support or advice from other people or institutions?]

ii. [If you have problems with anxiety or depression] did you feel comfortable talking about your problems with ….. Did you wait for some time before approaching people? How long? What were the reasons why you delayed contacting people?

iii. [If the respondent answers no for any particular sources Uni, GP, family, friends] What were the reasons for not contacting them?

Appendix 7: missing data versus complete data

T-test model outputs using binary variables which represents cases with missing data versus complete data on: CMDs, loneliness, age.

Age:

Two-sample t test with unequal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf.	interval]
0	2,027	24.90035	.1628647	7.332529	24.58095	25.21975
1	446	24.59417	.3625511	7.656611	23.88165	25.3067
Combined	2,473	24.84513	.1486325	7.391384	24.55367	25.13658
diff		.3061749	.3974521		-.4742997	1.08665

diff = mean(0) - mean(1) t = 0.7703
H0: diff = 0 Satterthwaite's degrees of freedom = 637.023

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.7793 Pr(|T| > |t|) = 0.4414 Pr(T > t) = 0.2207

CMDs

Two-sample t test with unequal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf.	interval]
0	2,027	17.56241	.2578208	11.60766	17.05679	18.06803
1	468	19.38462	.5490741	11.87829	18.30565	20.46358
Combined	2,495	17.90421	.2337977	11.67819	17.44575	18.36267
diff		-1.822208	.606592		-3.013202	-.631214

diff = mean(0) - mean(1) t = -3.0040
H0: diff = 0 Satterthwaite's degrees of freedom = 687.924

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0014 Pr(|T| > |t|) = 0.0028 Pr(T > t) = 0.9986

Loneliness

Two-sample t test with unequal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf.	interval]
0	2,027	5.773557	.041985	1.89026	5.691219	5.855895
1	357	6.019608	.1027914	1.942186	5.817453	6.221763
Combined	2,384	5.810403	.0389083	1.899743	5.734105	5.8867
diff		-.2460509	.1110352		-.4642233	-.0278784

diff = mean(0) - mean(1) t = -2.2160
H0: diff = 0 Satterthwaite's degrees of freedom = 482.333

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0136 Pr(|T| > |t|) = 0.0272 Pr(T > t) = 0.9864

Frequencies and proportions of sociodemographic variables, help-seeking by “missvar” (no missing data: missvar=0; missing data on any measure: missvar=1).

Sex

sex	missvar 0	1	Total
Male	543 80.80	129 19.20	672 100.00
Female	1,482 82.29	319 17.71	1,801 100.00
Other	2 66.67	1 33.33	3 100.00
Total	2,027 81.87	449 18.13	2,476 100.00

Level of study

level	missvar 0	1	Total
UG	961 80.55	232 19.45	1,193 100.00
PGT	603 82.72	126 17.28	729 100.00
PGR	463 81.80	103 18.20	566 100.00
Total	2,027 81.47	461 18.53	2,488 100.00

Financial difficulties

fin_manag	missvar 0	1	Total
Living comfortably	522 77.79	149 22.21	671 100.00
Doing alright	865 76.89	260 23.11	1,125 100.00
Just about getting by	399 76.88	120 23.12	519 100.00
Finding it quite diff	158 73.49	57 26.51	215 100.00
Finding it very diffi	83 85.57	14 14.43	97 100.00
Total	2,027 77.16	600 22.84	2,627 100.00

Help-seeking

helpseek_m hprofess	missvar 0	1	Total
no	997 84.35	185 15.65	1,182 100.00
yes	1,029 85.04	181 14.96	1,210 100.00
Total	2,026 84.70	366 15.30	2,392 100.00

Sexual orientation

sexort2	missvar 0	1	Total
eterosexual	1,620 93.21	118 6.79	1,738 100.00
LGBTQ+	407 93.14	30 6.86	437 100.00
Total	2,027 93.20	148 6.80	2,175 100.00