Examining cultural frame-switching in a British ethnic minority sample in their everyday lives through Ecological Momentary Analysis

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Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature: 

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Overview

Part one refers to a systematic review of five quantitative studies exploring the positive and negative impact of cultural frame switching (CFS) on wellbeing. The review highlighted an overall negative impact of CFS on wellbeing, elucidating five key findings. Individuals who engaged in CFS exhibited: reduced life satisfaction, higher levels of perceived discrimination, diminished self-esteem, lower levels of authenticity and elevated levels of psychological symptoms.

Part two refers to the empirical project, a joint-project with Eshia Garcha, and examined CFS in a British ethnic minority sample in their everyday lives through ecological momentary analysis. The dynamics and temporal consequences of CFS, anticipating CFS, feelings about CFS and psychological toll were investigated using vector autoregressive analysis. Additionally, we hypothesised that participants would frame-switch more outside of the home environment, and that levels of biculturalism would be lower outside of the home environment.; this was analysed using general linear mixed effects model. Our results showed that the experience of CFS was associated with some psychological toll, and the frequency of CFS specifically did not predict any psychological toll. We also found that CFS and biculturalism were influenced by context.

Part three refers to a critical appraisal of the empirical project. The matters discussed are: my personal experiences and how they informed my research, reflections on using ecological momentary analysis and an expanded discussion considering strengths and weaknesses, implications and future directions of the empirical project.

Impact Statement

There has been limited research exploring the cultural frame switching (CFS) phenomenon. Although CFS has been shown to be associated with positive and negative consequences. there was no existing review of these findings, nor a detailed exploration of the CFS experience.

The review revealed that CFS was associated with a negative impact on wellbeing, with a range of small to large effect sizes. CFS was linked with lowered life satisfaction, perceived discrimination, lowered self-esteem, feeling inauthentic and increased psychological symptoms. These findings add to literature within cultural identity research, and fill a gap in being the first review regarding this topic. However, this review consisted of five quantitative studies, highlighting a need for future research. The findings nevertheless indicate a need to support bi/multicultural individuals. This support could occur within mental health/occupational health support services, wellbeing initiatives in educational institutions and the workplace. The support could be extended to include community support, government schemes and social media awareness. This review was combined with a qualitative version of the same topic and is being considered for publication in the Journal of Cross-Cultural Psychology.

The empirical project explored CFS and psychological toll. It was the first to apply a network perspective to CFS which was beneficial in order to delve deeper into understanding the CFS experience, highlighting the effectiveness of using EMA as a methodology to explore this topic. Considering variables such as context, anticipating CFS, feelings about CFS, self-efficacy and social anxiety was useful in understanding the CFS experience and psychological toll, and indicated a need for future studies to also consider these. Our results

illustrated that the experience of CFS was associated with some psychological toll, and the frequency of CFS specifically did not predict any psychological toll. We also found that CFS and biculturalism were context dependent, and individuals were CFS more during personal appointments. Our findings highlight a need for future research to continue to fill the gap within cultural identity literature, and a consideration for further EMA studies, as well as mixed-methods approaches to provide richer data; these could involve interviews at the start or end of the study to delve deeper into the experience of CFS. Our findings also indicate that wider initiatives and psychoeducation are needed to support bi/multicultural individuals in various contexts (e.g. personal appointments, workplace, university, socialising with friends/family). This support may involve mental health/occupational health services to consider cultural identity in the training and support offered. They could for example use measures or ask questions during assessment that provide an exploration of culture and how it might impact on wellbeing; this is especially important considering that we found a link between anticipating CFS and social anxiety. Furthermore, our results demonstrate a need to consider public health more generally, whereby government campaigns could occur to support bi/multicultural individuals for instance to spread awareness of cultural issues and cultural holidays. Our results also highlight that the experience of CFS can have positive outcomes (e.g. higher frequency of CFS and positive mood), and indicate a need for future research to explore this further.

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Part 1. Literature review

The positive and negative impact of cultural frame switching on wellbeing: A systematic review of quantitative studies

Abstract

Objective: This review critically analysed findings from quantitative studies exploring bicultural individuals' cultural frame switching (CFS), and the positive and negative impact it had on their wellbeing.

Background: CFS is a strategy carried out by biculturals to support them in navigating their everyday lives. It involves switching between cultural frames in response to environmental cues and adjusting cognitions, behaviours and affect.

Method: Five quantitative studies were identified through searches in four electronic databases and were critically reviewed.

Results: The review highlighted that CFS is associated with a negative impact on wellbeing and revealed five main findings that supported this. CFS was associated with: lower satisfaction with life, perceived discrimination, lower self-esteem, lower levels of authenticity and higher levels of psychological symptoms. Effect sizes varied from small to large.

Conclusions: The review highlighted that CFS is associated with a negative impact on wellbeing. Despite this, further research is needed to fill the gap in the literature and to enhance our understanding of the topic.

Keywords: Cultural frame switching, biculturalism, quantitative research, systematic review

Introduction

This review aims to examine the positive and negative impact of cultural frame switching (CFS) on wellbeing. It attempts to combine and report on findings from quantitative research which have specifically explored active CFS and its impact on wellbeing.

Biculturalism is a growing phenomenon worldwide, whereby individuals are exposed to and have self-identified as internalising two cultures (Benet-Martinez, Leu, Lee & Morris, 2002). Biculturals hold at least two cultural schemas which guide behaviours, thoughts and feelings in response to social events or daily interactions (Hong, Benet-Martinez, Chiu, & Morris, 2003). Research on biculturalism illustrates that bicultural individuals differ in the way that they behaviourally and cognitively respond to the same cultural context. These differences are partially explained by individual differences in bicultural identity integration (BII) which refers to biculturals' personal understanding of how both cultural identities that they identify with relate to each other (Mok & Morris, 2013). Those with high levels of BII view their cultural identities as overlapping and compatible, whereas those with low levels of BII view their cultural identities as separated and conflicting (Huynh, Nguyen, & Benet-Martínez, 2011).

CFS is the ability to switch between two or more cultural frames or schemas in response to cultural cues in the social environment to guide daily interactions (Hong, Morris, Chiu, & Benet-Martínez, 2000). CFS involves (but is not limited to) adjusting appearance, expressions, speech, and behaviours using cultural schemas of knowledge, beliefs and values corresponding to a specific culture (d'Andrade, Shweder & Le Vine, 1984). In the literature, CFS may sometimes be referred to as 'alternating' or code-switching. Biculturalism is

considered as identifying with two cultures whereas CFS is the process or strategy used by bi/multicultural individuals to navigate their cultures.

There are various theories and models that support the notion of CFS occurring for bi/multicultural individuals. For example, transformative theory of biculturalism (West, Zhang, Yampolsky & Sasaki, 2017) suggests that the experiences and characteristics of biculturals result from the direct influences of both of their cultures but importantly from the processes used to navigate these cultures. The processes are: hybridising (combining desired aspects of each culture and blending them into a single end product), integrating (linking both cultures whilst retaining their original forms) and CFS. West et al. (2017) argue that these processes can impact cognition (e.g. increased sensitivity to context), motivation (e.g. increased requirement for structure) and sense of self, and that CFS specifically could promote increased self-flexibility (i.e. being able to shift between cultures in response to cultural contexts). The researchers propose that biculturals could subsequently apply this flexibility to different identities and social roles (e.g. sexual orientation) held. Furthermore, they suggest that CFS provides biculturals an easier way of navigating a bicultural identity in daily life in comparison to integrating identities; however, they do acknowledge that CFS can also feel conflicting for the individual.

The acculturation complexity model (ACM; Tadmor & Tetlock, 2006) is one way of understanding the process of CFS and biculturalism. The model proposes that when individuals enter new cultural situations, the usual cultural cues that would typically trigger behaviours are no longer present. The result of this is high levels of ambiguity in relation to how to behave, which subsequently activates greater self-conscious scrutiny of the environment, where an individual is left seeking cues about how to respond to the situation

(Kiesler & Sproull, 1982). The ACM suggests that individuals who are undergoing the process of achieving biculturalism (i.e. self-identifying with and internalising two cultures) experience greater cultural dissonance during their acculturation process compared to individuals becoming assimilated or separated, due to mixed accountability pressures. These pressures require them to justify their actions and behaviours to both cultural groups and therefore concurrent exposure to conflicting cognitions of both cultures and accompanying cultural groups results in high levels of internal conflict. In comparison, separating and assimilating individuals are only held accountable to one cultural frame and group.

The alternation model (LaFromboise, Coleman & Gerton, 1993) puts forward that an individual is able to know, understand and alternate (i.e. CFS) between their dual cultures without sacrificing their cultural identity or needing to select one culture over the other. According to the model, individuals who alternate their behaviours (CFS) in order to fit into their cultures will experience lower levels of stress and anxiety compared to those undergoing assimilation or acculturation processes.

Literature Review

There has been limited research on the positive and negative impact of CFS on wellbeing. Moreover, much of the literature is focused on bilingual participants (e.g. Ramirez-Esparza, Gosling, Benet-Martinez, Potter & Pennebaker, 2006); although bilingualism has been shown to be a carrier of culture and elicits CFS due to switching language frames in response to different cultural cues (West et al., 2017), the focus of this literature review is on behaviour-related CFS. We chose to focus on behaviour-related CFS as language-related CFS is usually explored in relation to attitudes and values (e.g. Benet-Martinez & John, 2000).

The literature has illustrated that individuals who are not bi/multicultural view individuals engaging in CFS more negatively, which could have a negative impact on the person who is frame-switching (e.g. de Freitas et al., 2018). West, Muise and Sasaki (2021) found that White American participants viewed a bicultural as less authentic, trustworthy, competent, warm and likeable if they engaged in CFS than if they did not. This could arguably affect the frame-switching individual's wellbeing in a negative manner. Similar findings have been yielded in a romantic context too; West et al. (2021) found that American women expressed lower levels of romantic interest in, and were unlikely to date, a bicultural person who illustrated CFS in their dating profiles, and viewed them as less authentic. However, this finding may not be generalisable to perceptions outside of heterosexual American women (e.g. other cultures or gender), and as only one bicultural target was used (Mexican/Chinese heritage), the findings may not generalise to other bicultural backgrounds. This is important to consider as it could mean that some minority backgrounds could be viewed more negatively or positively than others, which in turn could have differential knock-on effects on the wellbeing of the person frame switching. This would require further investigation to elucidate.

Other research has demonstrated that CFS individuals also perceive themselves in a negative way. For instance, Verkuyten and Pouliasi (2006) explored the impact of CFS on bicultural individuals themselves. In this study, 211 bicultural Greek participants residing in the Netherlands, 92 monocultural Dutch participants residing in the Netherlands, and 110 monocultural Greek participants residing in Greece were primed to activate either their Dutch or Greek cultural frame through the use of pictures of cultural icons or language. The Dutch participants completed the Dutch prime, the Greek participants completed the Greek prime, whereas the bicultural sample was randomly assigned with either the Greek (Greek-Dutch

group) or Dutch (Dutch-Greek group) prime. The researchers examined participants' self-evaluations, self-descriptions and group identification through self-report. It was found that bicultural participants had a tendency to evaluate their personal identity as less positive and described themselves as 'stereotypical' when their Greek culture was activated as opposed to when their Dutch culture was activated; this suggests that CFS could lead individuals to perceive themselves in a negative way. Furthermore, it was found that compared to the Dutch-Greek group, the Greek-Dutch group had higher levels of Greek identification and lower levels of Dutch identification. This can be understood in relation to group identification being an important psychological mechanism in which CFS is affected by in terms of subsequent behaviours and responses.

Additional research also highlights that biculturals who engage in CFS may experience negative psychological consequences. For instance, Molinsky (2007) argues that CFS may be draining and depleting, resulting in negative emotions and burnout, and threatening the individual's sense of self-efficacy. Iwabuchi (2018) puts forward that biculturals may be especially vulnerable to social anxiety due to incapability of CFS appropriately as a result of misinterpreting social cues. CFS has also been found to be linked with lowered feelings of authenticity (McCluney, Robotham, Lee, Smith & Durkee, 2019), lowered satisfaction with life (SWL), lowered psychological wellbeing and greater identity conflict (Ward, Ng Tsueng-Wong, Szabo, Qumseya & Bhowon, 2018), and family conflict and psychological symptoms (Hooper, 2022).

Despite CFS being linked with a negative impact on wellbeing, some positive effects have been found too. For example, CFS has been found to be related to social benefits, such as satisfying human needs; these needs consist of belonging with each cultural group (Mistry

& Wu, 2010), fitting in with groups (Rincon & Hollis, 2018), and improving social and personal relationships (Bohon, 2016). These social benefits may therefore achieve ingroup membership with both cultural groups. Furthermore, other research has identified CFS to be a helpful skill within the workplace. For example, CFS was linked with being perceived as more professional (McCluney et al., 2021) as well as improving self-confidence (Carmichael, Redlinger-Grosse & Birnbaum, 2022). Research has also illustrated a link between CFS and psychological benefits such as identity consolidation (encompassing various elements of successful identity development, which also includes combining different identities; Stuart & Ward, 2011), increased cognitive complexity (in considering and combining numerous perspectives; Tadmor, Galinsky & Maddux, 2012), and adapting emotional responses to correspond to each cultural group (De Leersnyder, 2017). It is important however to take social desirability bias into account with these results as individuals may have over-reported socially desirable behaviours. Furthermore, some findings are in relation to others' perceptions of CFS rather than individuals who are CFS themselves (e.g. McCluney et al., 2021). Findings that are in the perception of individuals who were CFS are also in relation to one participant's interview (e.g. Carmichael et al., 2022) and therefore not generalisable.

The current review

Current research highlights that CFS is linked with both a positive and negative impact on biculturals' wellbeing. A systematic review of all available and relevant quantitative research was conducted. The aim of the review was to ascertain strength of association between CFS and aspects of wellbeing.

Methods

A protocol was developed and registered prior to the review being carried out (PROSPERO CRD42022352791).

Search strategy

A search of peer-review journals was undertaken using the Ovid platform to explore PsychINFO, EMBASE, MEDLINE and Web of Science databases. Database filters were set such that only studies published in English between 1806 and 2022 in human populations appeared. The following terms, derived from existing research, were entered into full text searches: cultur* switch* and cultur* frame switch* (see Appendix A for full search strategy for each database). Additional articles were identified through an updated search of databases and through grey literature (Google Scholar, ProQuest & reference lists of papers).

Inclusion and Exclusion criteria

In order to be included in the review, studies had to report quantitative findings with either observational or experimental designs. The decision to exclude qualitative findings from the study was based on the collaborative nature of this project with another doctoral student. The focus of this review was quantitative findings whilst the other student captured qualitative findings. The results of both will be combined for publication. Studies also had to be published in English (due to the lack of translation facilities available to researchers). Furthermore, studies had to involve participants culturally frame switching between at least two cultures; this had to have been clearly demonstrated within participant samples. Also, studies had to measure wellbeing (e.g. low mood) in relation to CFS.

For all articles, two reviewers (AQ, EG) independently carried out two screening stages. Firstly, titles and abstracts were screened. Secondly, all remaining full texts were independently screened for eligibility. Any discrepancies were discussed between the two reviewers and if unresolved, a third reviewer (CO or MS) was consulted.

Main outcome measures

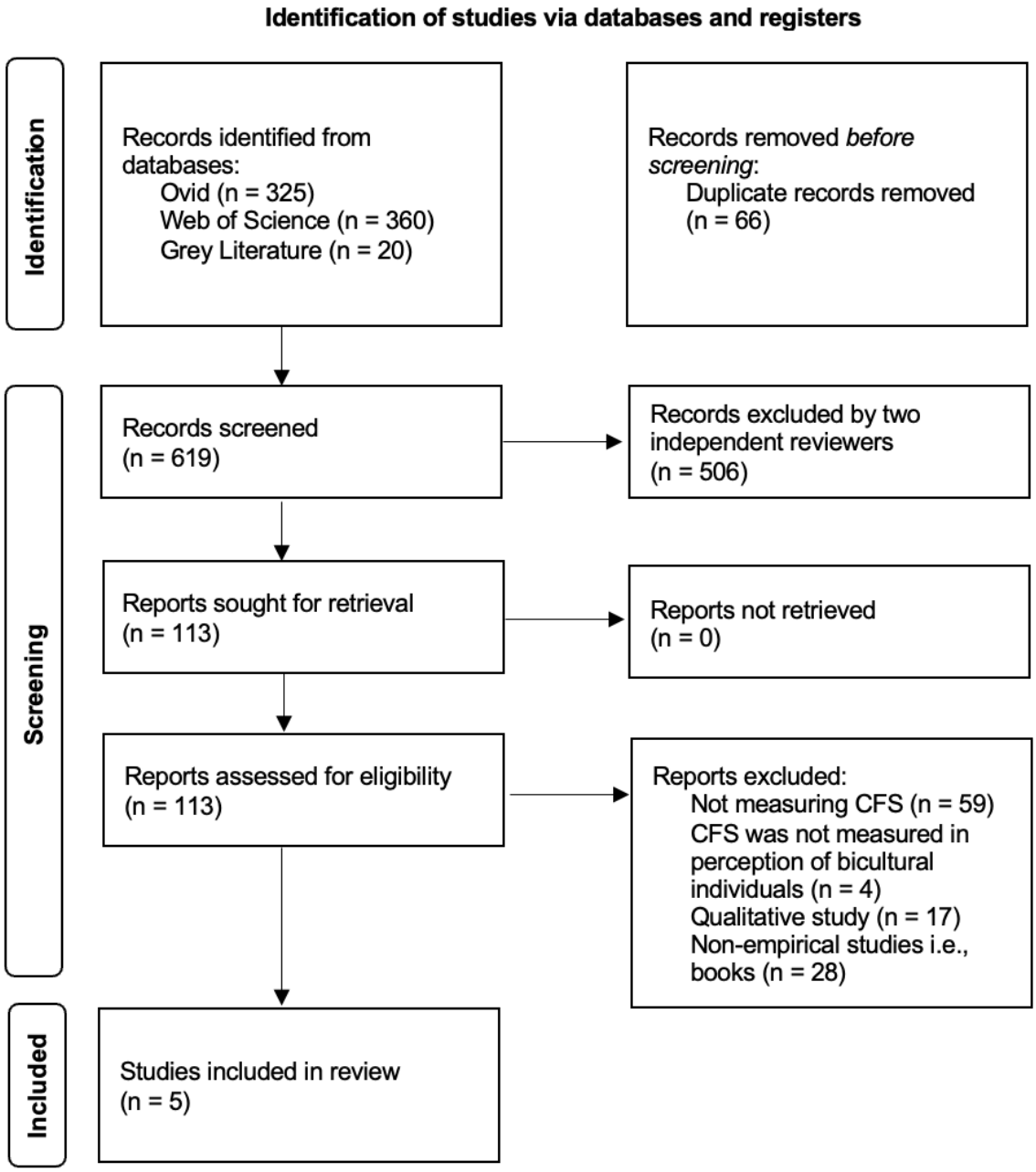
The main outcome measures in this review were measures of wellbeing which consisted of measures of psychological symptoms (e.g. low mood, anxiety) or general psychological wellbeing (e.g. SWL, self-esteem).

Data extraction

The search was in two parts. The first search was carried out on Ovid and accounted for PsychINFO, MEDLINE and EMBASE, returning 325 studies. The second search was carried out on Web of Science and returned 360 studies. Three sources of grey literature were searched: Google Scholar, ProQuest and reference lists of papers. Following this, an additional 20 studies were identified. The PRISMA flow chart (Figure 1) summarises the process.

Figure 1.

PRISMA flow chart.



Results

Data was extracted from the five studies independently by AQ and EG, using a template designed for the purpose of this review. Data extracted included: participant information, whether the study was quantitative, study design, how CFS was measured,

wellbeing domain, analysis and outcome. See Table 1 for a summary of included studies.

Table 1.

Summary of all included studies.

Study	Aims	CFS sample	Cultures	CFS measure	Wellbeing measure
Barros & Albert (2020)	To examine the methods in which second-generation participants of Portuguese origin juggle an environment with both of their cultures	21	Portuguese and Luxembourgish	Bicultural identity orientation scale-revised (Comănaru, 2009)	Self-esteem (Rosenberg, 1965). 10 items on a 5-point Likert scale (1 = *totally disagree* to 5 = *totally agree*) e.g. *"I think I have a number of good qualities."* SWL (Diener et al., 1985). 5 items rated on a 7-point Likert scale (1 = *do not agree*; 7 = *fully agree)* e.g. *"I am satisfied with my life."*
Firat & Noels (2022)	To explore the cultural interactions and experiences of participants from immigrant backgrounds	1143	Canadian and one of the following: Chinese, Indian, Filipino, Pakistani, Korean, Vietnamese, Nigerian, Lebanese, Ukrainian, British, German or Polish	Bicultural identity orientation scale (Comănaru, Noels & Dewaele, 2018)	Perceived discrimination (Taylor et al., 1990). 7 items on a 6-point Likert scale (1 = *never*, 6 = *always*) *Participants rated the extent to which their ethnic group experienced discrimination by Canadians due to racial characteristics for example.* Depression and Anxiety Stress Scale (Lovibond & Lovibond, 1995). 21 items on a 4-point

					Likert scale (1 = *never*, 4 = *almost always*) e.g. *"I felt that life was meaningless."*
Jack (2018)	To explore two mechanisms used in negotiating cultural identities: hybridising and alternating and how they are related to mental health	870	American and Hispanic	Multicultural Identity Styles Scale (Ward et al., 2018)	Centre for Epidemiologic Studies Depression Scale (Radloff, 1977). 1 item on a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*) e.g. *"I have felt down and unhappy today."*
West et al. (2018)	To explore whether frame switching makes participants feel less authentic and therefore decreasing their wellbeing	43	American or Canadian, and either White, Mixed, Black, East Asian, Latin American, South Asian, Native or other	Participants were instructed to describe a situation where they were with one cultural group but their behaviour would have been different if were with their other cultural group	State authenticity (Lenton et al., 2013). 12 items on 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*) e.g. *"I behaved in accordance with my values and beliefs."*
Qumseya (2018)	To explore hybrid and alternating identity styles and whether these styles have different effects on wellbeing	143	New Zealand and Arab	Multicultural Identity Styles Scale (Ward et al., 2018)	Perceived discrimination (Noh & Kaspar, 2003). 7 items measured on a 5-point Likert scale (1 = *never* to 5 = *very often*) e.g. *"I have been treated disrespectfully."* SWL (Diener al., 1985). 5 items on a 5-point Likert scale (1 = *strongly disagree* to 5 =

					strongly agree) e.g. "*So far I have got the important things I want in life."* Psychological symptoms (Berry et al., 2006). 15 items on a 5-point Likert scale (1 = *never* to 5 = *very often*) e.g. *"I worry a lot of the time."*

Description of studies

The review identified five studies that focused on CFS and wellbeing, and were characterised by quantitative designs only. Dates of publication were not very broad, ranging from recent years of 2018-2022. No review papers or meta-analyses were identified. Two of the identified studies were theses (Jack, 2018; Qumseya, 2018). Three of the studies used cross-sectional designs (Barros & Albert, 2020; Firat & Noels, 2022; Qumseya, 2018), whilst Jack (2018) used a longitudinal design, and West et al. (2018) used a randomised experimental design. Using longitudinal and cross-sectional designs limits causality inferences. None of the studies included a follow-up for the participants.

Measures of CFS

The literature search revealed that there were common measures used in studies to capture CFS. The following measures outlined below were used in the studies being investigated however the focus of the review is only on CFS (or alternating) as opposed to other identity profiles. All of these measures are self-report and therefore where applicable, the reliability and construct validity of each measure is described.

Bicultural Identity Orientation Scale-Revised (Comănaru, 2009) was used. The original scale has five subscales (conflicted, monocultural, flexibility, compatibility and hybridity) with 20 items; however, Barros and Albert (2020) removed several items (i.e. those referring to hybrid identity) to fit their sample and hypotheses better. They utilised three subscales: compatible, conflicted and frame-switching, and the revised scale, therefore resulted in thirteen items altogether. Barros and Albert (2020) found satisfactory reliability for the target population. Comănaru (2009) reported reliability with values ranging from .85 to .91, and found the scale had convergent validity.

Bicultural Identity Orientation Scale (Comănaru, Noels & Dewaele., 2018) has five subscales which evaluate five orientations of bicultural identity: monocultural, hybrid, complementary, alternating and conflicted. Each orientation is measured by using four items resulting in a final scale of twenty items altogether. Firat and Noels (2022) reported internal consistency (Cronbach's alpha) ranging from .72 to .89. Comănaru, Noels and Dewaele (2018) found that the measure had concurrent, discriminant, and convergent validity.

Multicultural Identity Styles Scale (MISS; Ward, Ng Tseung-Wong, Szabo, Qumseya, & Bhowon, 2018) has two subscales: hybrid and alternating, with seven items for each. Ng Tseung-Wong, Dandy and Lane (2022) reported internal consistency (Cronbach's alpha) in their sample of British Australians and non-British Australians (Indian, Filipino, Chinese, Greek and Malaysian) as 0.90 for hybrid and .88 for alternating. The MISS is a newly developed instrument and therefore limited empirical research is available on its construct validity in different cultural groups and different contexts, although Szabo, Ward, Meca and Schwartz (2020) have found evidence for construct validity. The scale was originally developed and validated with cultural groups from Israel (Arab), Mauritius (Muslim, Creole and Hindu) and New Zealand (Greek, Chinese and Arab) (Szabo, Ward, Meca & Schwartz, 2020).

In West et al. (2018) participants were randomly assigned to one of three groups: CFS, no switching control and neutral control. In the CFS group, participants were primed to think about a situation where they had engaged in CFS. No scale was used to measure CFS.

Risk of Bias

Source of bias was assessed using categories in the Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies (JBI; Moola et al., 2017). We deviated from protocol as this tool provided a better approach to assessing risk of bias given the limited studies identified for the review, the cross-sectional nature in most of them and the lack of randomised trials. The JBI checklist included 8 items: a clear inclusion and exclusion criterion, how the sample was selected, whether the sample was sufficient for measuring CFS, whether the measure used for CFS was valid and reliable, any confounding variables and the subsequent strategies to deal with them, whether outcome measures were measured in reliable and valid way, and whether suitable statistical analysis was used. Each category was marked as 'Yes', 'No', 'Unclear' or 'Not Applicable' based on information provided and reported in the study (see Table 2).

Quality Appraisal Results

Four studies clearly stated their inclusion or exclusion criteria for their sample. Jack (2018) had not specified an inclusion criterion, instead described demographic details of participants; it can however be assumed that the inclusion criterion was likely Hispanic and American given the description provided of the sample used. The study sample, setting, demographic details and cultural identity were described in detail for all studies. Objective, standard criteria were used to measure both CFS and wellbeing in four studies. One study did not have a measure of CFS as the researchers primed participants to think about a time when they engaged in CFS (West et al., 2018). All studies identified confounding factors and used appropriate statistical analysis.

Table 2.

Risk of Bias JBI Checklist.

JBI Checklist	Barros & Albert (2020)	Firat & Noels (2022)	Jack (2018)	West et al. (2018) *Study 1*	Qumseya (2018) *Study 1*
Were the criteria for inclusion in the sample clearly defined?	Yes	Yes	No	Yes	Yes
Were the study subjects and the setting described in detail?	Yes	Yes	Yes	Yes	Yes
Was the exposure measured in a valid and reliable way?	N/A	N/A	N/A	N/A	N/A
Were objective, standard criteria used for measurement of the condition?	Yes	Yes	Yes	Yes	Yes
Were confounding factors identified?	Yes	Yes	Yes	Yes	Yes
Were strategies to deal with confounding factors stated?	No	Yes	Yes	Yes	Yes
Were the outcomes measured in a valid and reliable way?	Yes	Yes	Yes	Yes	Yes
Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes	Yes

Due to the heterogeneity of group samples, method and measures, and a lack of responses from authors, a meta-analysis was not considered as appropriate. We therefore conducted a meticulous evaluation of the included studies through a best evidence synthesis, and took into account potential risk of bias to ensure the validity of our conclusions.

Sample Characteristics

Within the five included studies, there was diversity between the samples. For example, Barros and Albert (2020) used a sample from Luxembourg with a Portuguese background. Participants were grouped into identity profiles: blended (combine two cultures without perceiving them as conflicting or different), alternating (aware of CFS but did not perceive it as conflicting), separated (kept two cultures separate and perceived them as incompatible and conflicting, or felt that an individual should only belong to one culture) and ambivalent (had both negative and positive attitudes towards being bicultural and were aware of CFS). Firat and Noels (2022) used a sample from Canada, however, the ethnicities of these participants varied: Chinese, Indian, Filipino, Pakistani, Korean, Vietnamese, Nigerian, Lebanese, Ukrainian, British, German and Polish. Participants rated their agreement for items corresponding to subscales of hybrid (identity is a mix of two cultures), monocultural (wanting to be a part of only cultural group), alternating (switching between two cultures), complementary (feeling that two cultural groups go well with each other) and conflicted (feeling conflicted about the two cultures) orientations. Jack (2018) used a sample from America who were Hispanic. Participants rated their agreement for items corresponding to hybrid (feeling a mixture of American and Hispanic) and alternating (switching between both cultures). Qumseya (2018) used a sample from New Zealand who identified as Arab. Similar to Jack (2018), participants rated their agreement for items in relation to: hybridising (both cultures are intermingled) and alternating (feeling 'very Arab' with family compared to when

with other people) orientations. The current review focused on the alternating (CFS) groups in all studies.

Meanwhile, West et al. (2018) used a sample from Canada or America of whom approximately 38% identified as White and the remaining sample identified as either Mixed, Black, East Asian, Latin American, South Asian, Native or Other. Participants were randomly assigned to one of three groups: CFS (write about a time when they were with one cultural group and their behaviour was different compared to if they were to be with their other cultural group), no switching control (describing a time where individuals were with one cultural group and their behaviour would be the same if they were to be with their other cultural group) vs neutral control (writing about a situation of mundane switching such as completing their morning routine compared to evening routine differently to a 'normal' day). The current review focused on the CFS group for this study. See Table 1 for a breakdown of each study.

Wellbeing

Effect sizes and 95% confidence intervals (CIs) for CFS and wellbeing measures were calculated for all studies apart from West et al. (2018). This is because West et al. (2018) reported a between-group analysis due to the nature of the study design; results of this study are found in the body of text below. All other studies reported a within-group analysis. Where effect sizes were not provided, *r* was calculated using an online effect size calculator (Wilson, n.d.), with the sample size and M(SD) of the CFS group, and the M(SD) of the wellbeing measure. 95% CIs were subsequently calculated using a different online calculator (Statology, 2020) using the effect sizes. Table 3 illustrates these results.

Table 3.

Summary of results.

Study	Wellbeing measure	N	Effect size and 95% CIs
Barros & Albert (2020)	Self-esteem	21	*r* = -.95 95% C.I. = [0.8700, 0.9783]
	SWL		*r* = -.97 95% C.I. = [0.9151, 0.9861
Firat & Noels (2022)	Perceived discrimination	1143	*r* = .20 95% C.I. = [0.1437, 0.2550]
	Low mood		*r* = .17 95% C.I. = [0.1131, 0.2258]
	Anxiety		*r* = .16 95% C.I. = [0.1030, 0.2160]
Jack (2018)	Low mood	870	*r* = .37 95% C.I. = [0.3113, 0.4261]
Qumseya (2018)	Perceived discrimination	143	*r* = .30 95% C.I. = [0.1429, 0.4424]
	SWL		*r* = -.11 95% C.I. = [-0.2693, 0.0551]
	Psychological symptoms (low mood, anxiety & psychosomatic symptoms)		*r* = .23 95% C.I. = [0.0684, 0.3798]

The review illustrated an evidence base regarding positive and negative impact of CFS on wellbeing, but all evidence pointed in the direction of negative impact. Synthesis of results was divided into five main wellbeing, albeit overlapping, areas: satisfaction with life (SWL), perceived discrimination, self-esteem, authenticity and psychological symptoms (referring to low mood, anxiety and psychosomatic symptoms). For Firat and Noels (2022),

Jack (2018) and Qumseya (2018), 'low mood' was considered instead of using the term 'depression', which implies a clinical state.

SWL. With regard to SWL, two papers used Diener, Emmons, Larsen and Griffin (1985) to measure this. Barros and Albert (2020) demonstrate an association between CFS and SWL. Furthermore, Qumseya (2018) found that the alternating identity style was related to SWL.

Perceived Discrimination. Two papers measured and discussed perceived discrimination in relation to CFS. Firat and Noels (2022) used a scale by Taylor et al. (1990) and found that perceived discrimination was associated with CFS. Moreover, Qumseya (2018) used a scale by Noh and Kaspar (2003) and found a positive correlation between perceived discrimination and CFS.

Self-esteem. Although there was limited data exploring self-esteem, it was measured in one paper using Rosenberg's (1965) scale. Barros and Albert (2020) found that CFS participants reported intermediate levels of self-esteem.

State Authenticity. State authenticity is defined as the "subjective sense of being one's authentic self" (Lenton, Bruder, Slabu & Sedikides, 2013) and was measured in one paper using Lenton et al.'s (2013) scale. West et al. (2018) found that those in the CFS condition reported significantly less authenticity ($M = 4.37$, $SD = 1.17$) than control ($M = 5.29$, $SD = 0.94$), and no switching conditions ($M = 4.99$, $SD = 1.23$), and that the control and no switching conditions did not significantly differ on authenticity.

Psychological symptoms. Psychological symptoms was measured in three studies. Firat and Noels (2022) found that CFS was positively correlated with low mood and anxiety. Jack (2018) found a significant positive relationship between increased CFS and low mood, and Qumseya (2018) found that depression, anxiety and psychosomatic symptoms appeared to deteriorate with CFS.

Discussion

This review reported on the positive and negative impact of CFS on wellbeing for bicultural individuals, and aimed to ascertain the strength of association between CFS and aspects of wellbeing. It was carried out in relation to five studies. Overall, the results highlighted that CFS is associated with a negative impact on wellbeing, and revealed five main findings. Those who engaged in CFS also experienced: lower SWL, higher levels of perceived discrimination, lower self-esteem, lower levels of authenticity and higher levels of psychological symptoms (low mood, anxiety and psychosomatic symptoms).

The results of this review illustrate that in addition to impacts on individuals that may arise as a result of being bicultural, the process of CFS can also impact biculturals. Our findings provide support for transformative theory of biculturalism (West et al., 2017), confirming that the process of negotiating two cultures is crucial to an individual's experience. The review identified that CFS was associated with a lowered sense of self in relation to perceived discrimination, self-esteem and authenticity. This is in line with transformative theory of biculturalism which suggests that the processes highlighted in the theory can impact on sense of self. Our results however suggest that CFS is associated with a negative impact on wellbeing, and therefore do not provide support for the notion that CFS can provide bicultural individuals reduced demands in navigating their bicultural identity;

thus, the theory is only partially supported. Firat and Noels (2020) found a small effect between CFS and perceived discrimination, and Qumseya (2018) found a small to medium effect between the two. On the other hand, a large effect was found between CFS and self-esteem (Barros & Albert, 2020). These results suggest that CFS has a negative impact on wellbeing. Although Barros and Albert (2020) found that CFS is associated with low self-esteem, the levels of self-esteem were in the middle range of scores across all participant groups. The blended group reported the highest levels of self-esteem, followed by the alternating group (CFS), then the ambivalent and separated group. This suggests that although CFS may be associated with a negative impact on wellbeing, other identity profiles may be associated with poorer outcomes, highlighting that more research is needed to draw conclusions.

Our findings support the ACM (Tadmor & Tetlock, 2006) which proposes that the process of becoming bicultural, and arguably engaging in CFS, results in the experience of greater cultural dissonance and higher levels of internal conflict. The large effect between CFS and self-esteem (Barros & Albert, 2020) could illustrate conflict and dissonance experienced when CFS. To further add support for this model, West et al. (2018) found that participants in the CFS condition felt significantly less authentic than those in the control groups, thus indicating internal conflict and cultural dissonance.

The alternation model (LaFromboise, Coleman & Gerton, 1993) emphasises that those who alternate their behaviours (CFS) would experience lower levels of stress and anxiety compared to those who are undergoing the process of assimilation and acculturation. Contrary to the alternation model, the review illustrated that increased psychological symptoms (as measured in more than half of the studies) was associated with CFS (Jack,

2018; Qumseya, 2018; Firat & Noels, 2022). However, Firat and Noels (2022) found small effect sizes between CFS and psychological symptoms (measured as low mood, and anxiety, separately) thus indicating a weak association. On the other hand, Qumseya (2018) found a small to medium effect size, and Jack (2018) found a medium effect size, both of which demonstrate stronger evidence that CFS and psychological symptoms are associated.

Our results are in line with the body of literature that suggests CFS is linked with negative consequences. For instance, the finding of CFS being linked with lower self-esteem (Barros & Albert, 2020), and lower authenticity (West et al., 2018) supports the findings of Verkuyten and Pouliasi (2006), who found that biculturals evaluated their personal identity as less positive. Our findings also support research from McCluney et al. (2019), who found that CFS was related to lowered feelings of authenticity. West et al. (2018) included comparative groups in their study (both of which had higher levels of authenticity compared to CFS), emphasising that CFS is linked with a negative impact on wellbeing. As we only had one study measuring self-esteem and one measuring authenticity, more research is needed to make clearer conclusions as to the potential negative impact of CFS on these aspects of wellbeing. Furthermore, although our finding that CFS is related to lowered SWL supports findings from Ward et al. (2018), it is noteworthy that Qumseya (2018) found no effect between CFS and SWL. Although Barros and Albert (2020) found a large effect size, as with their self-esteem findings, the CFS group had intermediary levels of SWL compared to other identity profiles. These findings indicate that the relationship between CFS and lower SWL may be weak, with further research needed to disentangle this.

Additionally, our review revealed that CFS is associated with higher levels of psychological symptoms, mirroring findings from Hooper (2022). These findings further

strengthen Iwabuchi's (2018) idea that CFS may result in social anxiety, although no study measured social anxiety specifically. Firat and Noels (2022) measured anxiety as a standalone variable, compared to Qumseya (2018) who measured it alongside low mood and psychosomatic symptoms, but found a small effect. On the other hand, Qumseya (2018) found a small to medium effect. This suggests that although Iwabuchi's (2018) idea is supported, the link between CFS and anxiety may be small, and research is needed to explore the link between CFS and social anxiety specifically. Unfortunately, as no positive impact of CFS on wellbeing was found, our results do not provide support for the body of literature indicating that CFS has a positive impact on wellbeing.

Strengths and limitations

This review was first to assess the positive and negative impact of CFS on wellbeing. The systematic search strategy was carefully designed to achieve a balance between sensitivity and precision, using optimal database combination. To assess the quality of included studies, the Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies. This is a validated and reliable appraisal tool utilised in previous systematic reviews.

A crucial limitation pertained to the lack of studies in this field, as well as differences in definitions of CFS and wellbeing measures used, making comparisons of the result challenging. Barros and Albert (2020) used the Bicultural Identity Orientation Scale-revised (Comănaru, 2009), and Firat and Noels (2022) used a more recent version of the same scale (Comănaru et al., 2018). On the other hand, Jack (2018) and Qumseya (2018) used the MISS (Ward et al., 2018). West et al. (2018) measured CFS using priming due to the nature of the experimental design. Upon doing the literature search, it appeared evident that the most common measures used to capture CFS was the MISS (Ward et al., 2018) and the Bicultural

Identity Integration Scale (BIIS-2; Huynh, Benet-Martinez & Nguyen, 2009). The heterogeneous nature of studies precluded the possibility of conducting a meta-synthesis.

The MISS only refers to two identity styles, hybridising and alternating, therefore only allowing for scores on two identity styles, not accounting for any others such as blended, separated, and complementary, all of which have been well documented. Moreover, the MISS was originally developed and validated with an Arab, Mauritian, New Zealand, Greek and Chinese sample. It could be considered that this sample is not diverse enough to capture CFS in all biculturals and therefore may not be generalised to a sample beyond the one originally used. Ng Tseung-Wong et al. (2022) did however successfully use the MISS in a sample of British Australians and non-British Australians (Indian, Filipino, Chinese, Greek and Malaysian); Treffers-Daller, Ongun, Hofweber and Korenar (2020) with Turkish and Cypriot individuals; and Szabo, Ward, Meca and Schwartz (2020) used it with Hispanic Americans, although it appears that the MISS is yet to be used with other ethno-cultural samples.

Furthermore, the MISS has 14 items. Whilst this is deemed good, as usually a minimum of three items is recommended (Marsh, Hau, Balla & Grayson, 1998), it could be argued that 14 items are not enough to capture the construct of CFS. It is possible that CFS is more of a latent variable, thus one that cannot be observed and instead should be detected by its effects on other variables that are considered as observable (Piasta, 2010). Researchers should in the future consider this dilemma and perhaps conduct a focus group with multiple ethno-cultural groups to ensure a range of different experiences of biculturalism, and establish items that cover the full array of the construct that is generalisable to all groups. These items may include behavioural aspects of CFS (e.g. changing clothes, eating certain foods etc.) as well as the potential cognitions prior, during or after CFS for instance.

The literature illustrates that CFS is mostly operationalised through self-report measures using Likert-type items. Whilst this may be helpful in terms of capturing specific data, it seems that CFS may be difficult to measure quantitatively. Instead, measuring CFS qualitatively may provide a richer picture of the construct. A mixture of quantitative, qualitative and longitudinal methods may be most helpful in capturing a true picture of the construct. Additionally, majority of the studies do not measure CFS in real-time, thus such findings may be subject to further memory biases, in turn affecting reliability and validity. A mixed methods approach may be more helpful, using a methodology which explores CFS in real-time, such as that of Jack's (2018) daily diary approach. Furthermore, wellbeing was measured by self-report items only, which may not provide an accurate view of wellbeing due to potential memory biases.

There is a possibility that these studies might have been influenced by various confounding factors, which could have had an impact on the results obtained. For instance, an individual's social graces (Burnham, 2018; e.g. education and religion) may affect their wellbeing, as well as their CFS experience. Verkuyten and Pouliasi (2002) suggest that cultural differences can sometimes resemble gender differences; that, compared to males, for example, females are found to be more focused on harmony, which may contribute to their cultural identity. It is also thought that social class can have a greater effect on an individual than their culture (Kohn, Naoi, Schoenbach, Schooler & Slomczynski, 1990), and that lower class individuals are likely to have poorer wellbeing than upper class individuals (Zell, Strickhouser & Krizan, 2018). These factors may therefore also contribute to participants' potential CFS experience and wellbeing. The duration of time that a person has engaged with their second culture might also act as a confounding factor. Additionally, it is likely that the impact of CFS on wellbeing may be different depending on the cultures that individuals are

switching between, and how different the two cultures are to each other, potentially causing dissonance. It is also known that within different cultures, people may perceive mental health differently (Gopalkrishnan, 2018). It would be useful for studies to attempt to account for these factors, perhaps by using a demographic questionnaire or a pre-study interview which explores this.

Additionally, due to the cross-sectional design of the studies, it was difficult to ascertain the temporal directions of associations, which is crucial for establishing causal relationships. Furthermore, the differences in within-and-between results made it a challenge to compare results. Lastly, the search was restricted to English language publications. However, no suitable papers in a non-English language were identified during the soft search prior to the systematic search, and therefore we are unlikely to consider this as a significant limitation.

Implications

This review reveals that it is evident that more research is needed to be carried out in this field. It would be helpful for future researchers to consider mixed methods in exploring such a phenomenon, and placing emphasis on participant characteristics such as length of time identifying with culture, previous mental health, and other aspects of identity (e.g. social graces; Burnham, 2018). Additionally, while attempts should be made to improve the reliability of measurement for CFS and wellbeing, studies also need to consider measuring mediators and moderators such as the social graces (Burnham, 2018). The results of this could provide helpful information on the varied experiences of CFS and the impact on wellbeing, but also help inform wellbeing services (in terms of service development and

delivery), occupational health services, cultural competency training, policy making and ultimately enhancing our understanding of identity.

BII is a construct commonly used in the biculturalism literature, however, interestingly was not present in the studies used in this review. Future research should aim to consider BII levels within exploring CFS and wellbeing; this is because it is known that BII is linked with wellbeing (e.g. Ferrari, Rosnati, Manzi & Benet-Martinez, 2015; Manzi, Ferrari, Rosnati & Benet-Martinez, 2014).

Our findings have emphasised that CFS is associated with a negative impact on wellbeing, and therefore it is important to consider this in spaces and situations where bicultural individuals are present. The finding of higher levels of perceived discrimination can be considered in spaces such as the workplace, interviews, and other spaces where it is possible that discrimination may occur. Institutions can be offered diversity and inclusion training with an emphasis on the importance of cultural awareness and sensitivity. Furthermore, services could collaborate and consult with cultural experts to gain knowledge and insight into cultural history. Additionally, services could develop guidelines or policies that promote cultural sensitivity and respect.

The finding of low self-esteem and low authenticity highlights the need for ensuring that cultural identity and culture is being acknowledged and celebrated in these spaces. Ensuring that institutions are aware of cultural history and implementing this within their services for both staff and customers/service-users may serve to help build a better experience for bicultural individuals. This may involve awareness and training about religious days and events to ensure inclusion, being respectful and open to cultural ideas and

traditions (e.g. dietary needs and prayer spaces), participating in community engagement, reaching out to cultural organisations to seek input into events and activities (specifically those that may be related to cultural history), and implementing feedback mechanisms for individuals to provide suggestions and input regarding cultural initiatives.

It is important to note that this review only found a negative impact of CFS on wellbeing. Should future research provide support for positive impact too, the implications of this would also help to develop and improve initiatives within the workplace and school settings, social relationships and personal and professional development for bicultural individuals.

Conclusion

In conclusion, the review illustrates that there is limited literature available in regards to the impact of CFS on wellbeing. Of the literature that does exist, it seems that much of the research shows that there is mainly a negative impact of CFS on wellbeing, albeit with a range of small to large effect sizes, namely impacting SWL, perceived discrimination, self-esteem, authenticity and psychological symptoms. Although this is what currently exists in the field, it is important to note that there are inconsistencies in the way that CFS is measured, and that existing measures may not accurately capture the construct. Future research should aim to take this into account when measuring CFS, and provide a more detailed and accurate way to capture it such as using qualitative measures, and validation of measures in more diverse ethno-cultural samples.

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Part 2: Empirical Paper

Examining cultural frame-switching in a British ethnic minority sample in their everyday lives through Ecological Momentary Analysis

Abstract

Background: Cultural frame switching (CFS), the ability to switch between cultural schemas, has cognitive and affective consequences. We posit a dynamic model of CFS, and hypothesised that CFS and biculturalism would be context dependent.

Method: Fifty-six British minority ethnic participants completed an ecological momentary assessment five times a day for twenty-eight days, recording context, facets of CFS and psychological toll (emotional states & beliefs).

Results: Contemporaneously, the degree of CFS was associated with positive mood but also feeling discriminated against and not being able to balance cultures. Anticipating CFS was associated with feeling socially anxious, discriminated against, not being able to balance cultures, whilst positive feelings about CFS was associated with being able to balance cultures and increased self-esteem. Temporally, the degree of CFS did not predict any psychological toll. Anticipating CFS predicted feeling discriminated against, and positive feelings about CFS predicted being able to balance cultures, positive mood, increased self-esteem and increased self-efficacy. CFS and biculturalism significantly varied by context.

Conclusions: The study highlights the relationship between the experience of CFS and psychological toll. We consider how this experience may differ for different people and be influenced by context. The experience of CFS needs to factor in frequency, valence and anticipation. The implications for wellbeing and support for British minorities are emphasised, with suggestions for interventions to enhance cultural competence.

Keywords: cultural frame switching, CFS, context, psychological toll

Introduction

Bicultural identity (or biculturalism) is the ability to combine and accept two cultures while maintaining a sense of self (Wu, 2011). Biculturalism is a growing phenomenon worldwide, and is defined by demographic characteristics or psychologically specific conceptualisations (e.g. cultural orientations; Nguyen & Benet-Martinez, 2007). Research suggests that those identifying as bicultural feel well-adjusted due to competency in successfully navigating both of their identifying cultures (LaFromboise, Coleman & Gerton, 1993). Biculturalism research highlights that individuals vary in the way that they behaviourally and cognitively respond to the same cultural cues; some completely reject a culture whereas others assimilate to a culture (Mok & Morris, 2009). The variations in this can be partially explained by individual differences in how biculturals perceive and understand the way in which both of their cultural identities relate (bicultural identity integration: BII; Mok & Morris, 2013). Individuals who possess high levels of BII perceive their cultural identities as overlapping and compatible, whereas those with low levels of BII view their cultural identities as distinct and conflicting (Huynh, Nguyen, & Benet-Martínez, 2011). Ethnic minority individuals, because of their mixed cultural identities, may experience difficulties in establishing their identity (Shen & Dumani, 2013), and are considered as more likely to experience self-hatred and self-denial (Nuttgens, 2010) as well as identity conflict (Chavez & Guido-DiBrito, 1999).

Cultural frame-switching (CFS)

CFS is a strategy used to navigate two cultures. It involves adapting behaviours to align themselves with each of their cultural contexts (Hong, Morris, Chiu, & Benet-Martínez, 2000). It is the ability to switch between cultural schemas, behaviours and norms in response to culturally relevant stimuli in the social environment (Hong et al., 2000), and is the

phenomenon of successfully shifting from one particular cultural way of thinking or behaving to another, as a result of exposure to a specific cultural prime (e.g. cultural symbols; No, 2013).

CFS Literature

CFS has been considered to be a beneficial and adaptive skill for those possessing two cultural identities. For example, it can enable bicultural individuals to satisfy their human needs such as belonging, in relation to both of their cultural groups (Mistry & Wu, 2010). Furthermore, negotiating two cultures simultaneously is found to increase cognitive complexity (e.g. an ability to consider and integrate multiple perspectives; Tadmor, Galinsky & Maddux, 2012), and provides an advantage in increased attentional control and working memory (Adesope, Lavin, Thompson & Ungerleider, 2010). However, a vast majority of the CFS literature either considers bilingualism as a sole measure of CFS, or focuses on language as being the cultural prime to activate CFS (Ramirez-Esparza, Gosling, Benet-Martinez, Potter & Pennebaker, 2006).

Highlighting benefits of CFS in an occupational context, McCluney, Durkee, Smith, Robotham and Lee (2021) found that when a fictitious Black colleague engaged in CFS (e.g. adjusting speech, name selection and hairstyle), Black and White participants perceived them as more professional compared to a fictitious colleague who did not engage in CFS. This highlights that in the context of the workplace, CFS may be beneficial for bicultural individuals. This study however is based on the perceptions of individuals observing CFS rather than examining the direct implications of CFS in the first place, an area very limited in research. However, a meta-synthesis highlights the role CFS can play in improving workplace wellbeing and success (Garcha, Qureshi, O'Driscoll & Shaikh, 2023).

CFS has also been shown to benefit individuals in terms of adjustment and cultural identity navigation. For instance, Richardson (2022) found that expatriate participants who were residing in Malaysia self-reported that CFS positively aided their adjustment. Similarly, participants in Stuart and Ward's (2011) research reported that CFS enabled smoother transitioning between cultural contexts for Muslims living in New Zealand. Furthermore, Rincon and Hollis (2020) demonstrated that CFS acted as a strategy to support cultural identity navigation for Chicana/O students residing in Colorado.

CFS is also related to negative outcomes. It has been shown to be linked with internal identity conflict and associated distress for participants (Garcha et al., 2023). Furthermore, Barros and Albert (2020) found that CFS Portuguese and Luxembourg participants reported lower self-esteem and satisfaction with life (SWL) than those describing their two cultures as being blended with one another. Those describing their cultures as separate (and therefore not engaging in CFS) experienced even lower self-esteem and SWL. Similar results have been found by Qumseya (2018) where CFS was linked with lower levels of SWL amongst 143 Arabs in New Zealand. Meanwhile, West et al. (2018) found that participants who were primed to think about a time where they engaged in CFS, reported feeling significantly less authentic than participants who were not primed in this way. Moreover, Firat and Noels (2022) found that university students who identified as CFS, reported higher levels of perceived discrimination and psychological distress (anxiety & depression) compared to those who felt their two cultures were hybrid. Two of these studies included comparative groups to a CFS group (Barros & Albert, 2020; Firat & Noels, 2022). However, all studies were cross sectional and measured CFS retrospectively (through surveys or priming participants to think about a time where they frame-switched), leading to potential recall bias

and demand characteristics. In an attempt to explore causality or temporal consequences, Jack (2018) used a twelve day daily-diary methodology to explore the effects of CFS during the CFS interaction and found a reciprocal relationship between CFS behaviour and increased depression. However, a sample of 870 Hispanic university students in America were used, thus limiting generalisability to other ethno-cultural groups. Furthermore, considering university students as a sample can make it difficult to establish conclusions about identity, especially given that the age range of emerging adulthood is crucial for identity formation (Schwartz, Côté, & Arnett, 2005).

Theories specific to CFS

There are various theories and models that can explain CFS. For example, transformative theory (West, Zhang, Yampolsky & Sasaki, 2017) puts forward that CFS is a process used to negotiate cultures. Transformative theory suggests that the lived experiences and characteristics of bicultural individuals result from the direct influences of both cultures and also from the processes used to navigate these cultures which is significant to the individual's experience. These processes are hybridising (combining both cultures into one end product, which can include high BII), integrating (linking both cultures together whilst retaining them as separate), and CFS (West, Zhang, Yampolsky & Sasaki, 2017). Supporting this theory, Heine, Lehman, Markus and Kitayama (1999) found that Japanese Canadian individuals' self-esteem was intermediate to Japanese and Canadian monocultural levels, and is explained by the amount of investment and exposure these individuals have in each culture.

Meanwhile, the acculturation complexity model (ACM; Tadmor & Tetlock, 2006) is a 5-step model to illustrate the process of biculturalism. Tadmor and Tetlock (2006) argue that when biculturals enter new cultural situations, the typical cultural cues from their first culture

that would usually activate routine behaviours are no longer present. This results in increased ambiguity in terms of how to behave, which subsequently triggers greater self-conscious scrutiny of the environment where an individual is left seeking cues about how to respond to the situation (Kiesler & Sproull, 1982). In other words, when biculturals are exposed to situations related to the second culture, they notice the differences in values between both cultures; this is Step 1 in the ACM. Step 2 is when individuals receive accountability pressures from others to make a choice in acculturation strategies, and refers to the degree to which individuals gravitate towards the values of each culture. Step 3 refers to the level of conflict and dissonance experienced between the two cultures. Step 4 describes the cognitive effort and acculturation-coping responses necessary in order to find a resolution for Step 3. Step 5 is where recurrent exposure to cultural conflict ultimately results in developing automatic coping responses and specific acculturation strategies being eventually achieved. Overall, the ACM highlights that individuals who are undergoing the process of becoming bicultural (thus achieving biculturalism) experience higher cultural dissonance during their acculturation process compared to individuals whose cultural identities are becoming assimilated or separated. This is largely a result of the mixed accountability pressures that bicultural individuals are faced with that involves them justifying their actions and behaviours to both cultural group members. Consequently, concurrent exposure to contradictory cognitions of both cultural groups leads to increased internal conflict. On the other hand, separating and assimilating individuals are only held accountable to one cultural group.

Another model explaining CFS is the alternation model (LaFromboise, Coleman & Gerton, 1993). This model highlights that biculturals know, understand and assign equal status to both of their cultures without losing their cultural identity. For example, American-

Indian biculturals who prefer to dress in Indian clothes and eat Indian food at home, but dress in American clothes and eat American food outside of the home indicates CFS and assigning equal status to both cultures (Sodowsky & Carey, 1988). Contrary to the ACM (Tadmor & Tetlock, 2006), LaFromboise, Coleman and Gerton (1993) suggest that individuals who engage in CFS will experience lower levels of stress and anxiety than individuals going through the process of assimilation or acculturation.

These models and theories do not emphasise the psychological impact of CFS during the interaction of CFS. Molinsky (2007) put forward the determinants of psychological toll model which emphasises the role of emotional experience during a single CFS interaction. This model highlights three elements that are combined together determining the extent of psychological toll when CFS: contextual and personal variables (complexity of norms for an interaction regarding the second culture, level of discrepancy between the norms for an interaction in the second culture, norms for the exact same situation but within the first culture, and cultural knowledge and personal values), mediating psychological states (e.g. amount of psychological safety in the CFS interaction, how challenging the experience of CFS was in relation to cultural skill and knowledge, and experienced identity conflict/fit), and experienced emotions (embarrassment or pride, performance anxiety or confidence, and guilt, distress and anxiety or contentment and excitement). In sum, for example, an individual may feel that norm complexity is high (i.e. second culture norms are unlike first culture norms), have little knowledge of the second culture (contextual and personal variables), which subsequently leads to experienced performance difficulty (mediating psychological states). This can therefore result in performance anxiety (experienced emotions), thus heightening the degree of psychological toll.

The current study

Previous literature has illustrated that CFS is associated with negative outcomes (e.g. Barros & Albert, 2020), thus highlighting the importance in exploring psychological toll. Mood, self-esteem, authenticity and perceived discrimination have been explored in previous research (e.g. Garcha et al., 2023). Although not explored in relation to CFS, social anxiety has been found to be exhibited in bicultural individuals when perceiving their two cultures as conflicting (Lee & Church, 2017). Hsu et al. (2012) found that when comparing bicultural to monocultural individuals, bicultural individuals reported higher social anxiety. They also found that the relationship between social anxiety and bicultural identity was partially mediated by bicultural individuals' perceptions of lower self-efficacy regarding initiating friendships. These findings suggest that both social anxiety and self-efficacy relate to bicultural identity, thus deeming both as important aspects to measure for psychological toll, alongside mood, self-esteem, authenticity and perceived discrimination.

BII is measured using the BII scale version 1 (Benet-Martinez & Haritatos, 2005) and version 2 (Huynh et al., 2018), and can affect how individuals view their cultural identities (Mok & Morris, 2013). The BII scale has been used to understand cultural identity, establish why individuals may differ in BII levels and inform psychological adjustment (e.g. Cheng & Lee, 2013; Cheng, Lee & Benet-Martinez, 2006). High BII (viewing cultures as compatible and overlapping as opposed to conflicting and separated) has been found to be necessary for higher levels of wellbeing (Ferrari et al., 2015) and also serves as a protective factor in terms of wellbeing (Manzi, Ferrari, Rosnati & Benet-Martinez, 2014). There is limited literature directly examining BII in relation to CFS, but of the little that does exist, participants were primed to frame-switch which lacks mundane realism (Benet-Martinez, Leu, Lee & Morris, 2002; Cheng, Lee & Benet-Martinez, 2006). Given this, BII (named as biculturalism in the

current study) will be a component in measuring psychological toll and is defined as self-efficacy in balancing cultures. Considering biculturalism as a facet of psychological toll can provide an insight into the experience of CFS or cultural identity that emotional states (e.g. social anxiety) cannot. This also enables us to consider biculturalism alongside context.

The current study will specifically refer to CFS as the act of switching between two cultures and extends research outlining the impact of CFS on wellbeing (e.g. Garcha et al., 2023) by exploring additional processes that we believe will be relevant to the CFS experience. This includes participants' anticipation that they would frame-switch in the future (anticipating CFS) and their feelings (valence) about CFS in the future (feelings about CFS). Both of these additional processes provide a novel approach to the literature, and enable us to understand the CFS experience in more detail.

CFS is complex when it occurs outside of the laboratory environment (Fitzsimmons, 2009) however the real-life influence of context has received little attention. CFS occurs in a range of contexts and research is primary focused on the workplace (e.g. Pal & Buzzanell, 2008) and classroom (e.g. Lin, 2008). In the workplace, participants perceived CFS individuals as less authentic however also perceived CFS individuals as more professional (McCluney et al., 2021). CFS has also resulted in increased employment opportunities and fair treatment (Cross Jr, Smith & Payne, 2002) in occupational settings. In the classroom, students (Lin, 2008) and teachers (Cahyani, Courcy & Barnett, 2018) engage in CFS to enable increased engagement in learning. The range of contexts provides a floor for further exploration into experiences of CFS across them.

It is important to consider contemporaneous and temporal consequences whereby we can pay particular attention to multiple events, characteristics and patterns (Ryo, Aguilar-Trigueros, Pinek, Muller & Rillig, 2019). EMA is an approach capable of tracking current or very recent emotions and behaviours in the context of participants' daily lives (Moskowitz & Young, 2006). EMA reduces recall and report bias, improves ecological validity, and allows for random and repeated assessment of participants' behaviours and experiences occurring throughout the day (Shiffman, Stone & Hufford, 2008). Given that CFS is a behaviour that could be considered as unpredictable and arguably difficult to authentically induce in laboratory environments, EMA is most appropriate method to measure our research question. EMA has not been used to explore CFS, nor has there been focus on its use in longitudinal and observational methodology of at least twenty-eight days.

Aims & Hypotheses

There is minimal literature examining the experience of CFS. Further to this, no existing literature has explored anticipating CFS, feelings about CFS, or its impact on social anxiety or self-efficacy. Much of the research tends to be priming participants to frame switch or is reliant on recall of CFS. There is also no research carried out in relation to CFS in a British ethnic minority sample in the UK. The current study therefore aims to fill these gaps and examine CFS in a British ethnic minority sample in their everyday lives through EMA. This research extends on literature outlining consequences of CFS (e.g. Garcha et al., 2023) by exploring additional processes that we hypothesise to be relevant to the CFS experience. This includes one's anticipation that they would frame-switch by the next time point (anticipating CFS) and feelings (valence) about having to frame-switch (feelings about CFS) by the next time point. The dynamics of CFS and psychological toll were investigated. While we expected CFS to have a psychological toll, we did not make specific hypotheses, as

within the statistical model direct associations factor in the influence of all other variables within the model. Previous literature (e.g. McCluney et al., 2021) identifies the occurrence of CFS in various contexts, but lacks understanding on the specific variations in context, frequency, and impact on biculturalism. We hypothesised that participants would frame-switch more outside of the home environment, and that levels of biculturalism would be lower outside of the home environment.

Methods

Design

The current study used a longitudinal (within and between-participants) design to explore the research question and test the hypothesis.

Ethics

Ethical approval was granted by the University College London Research Ethics Committee (21161/001; see Appendix B). This study was a joint project carried out with another doctoral student.

Recruitment

Participants were recruited between June 2022 and December 2022 through poster advertisements (see Appendix C) and snowball sampling. The poster was advertised on social media pages such as Facebook, Twitter and LinkedIn.

Participants were eligible for the study if they (a) identified as British, and from a Black and Minority Ethnic culture; (b) were aged 18 years or above; (c) actively identified as engaging in CFS; (d) were able to read English; (e) owned a smartphone in order to download

the m-Path application. Participants who did not meet the inclusion criteria or did not fulfil the minimum number of EMA measurements (79%; < 110 out of 140 measurements, a cut-off chosen by the research team to ensure sufficient timepoints for analysis) were excluded from the study.

Materials

EMA survey. We constructed an 11-item survey for the current study (see Appendix D). The EMA survey consisted of one item from the following measures: self-efficacy (Schwarzer & Jerusalem, 1995), authenticity scale (Wood, Linley, Maltby, Baliousis & Joseph, 2008), bicultural identity integration scale-2 (BIIS-2; Huynh et al., 2018), self-esteem scale (Rosenberg, 1965), the Warwick-Edinburgh mental wellbeing scale (mood; Stewart-Brown et al., 2011), perceived discrimination (Williams, Jackson & Anderson, 1997), and social anxiety (Connor et al., 2000), all of which have been used in previous research. The specific item used from these scales was chosen on conceptual grounds. It also involved three items specific to the CFS phenomenon (CFS, anticipating CFS, & feelings about CFS (valence)), and one item about context (including response options of: home, exercise, leisure (i.e. shopping, holiday, eating out), other family setting, personal appointment (i.e. therapy, dentist, doctors), place of worship, school, socialising with friends, university and work). The items included Likert-type questions and multiple-choice questions, and all questions were required to be answered. The survey was estimated to take one minute to complete.

Procedure

If individuals met the study's inclusion criteria, they were invited to email one of the primary researchers to express interest. Once expression of interest was received, participants were sent an information sheet (see Appendix E) and consent form (see Appendix F) created

on Qualtrics to complete. After completing the consent form, participants were emailed instructions containing information for the study and were set up on the m-Path app (https://m-path.io/landing/) which allowed us to prompt participants and enabled data collection. At fixed times (approximately three hours apart from each other) chosen by participants, they received prompts on their smartphones to complete an 11-item EMA survey (measuring context, CFS, anticipating CFS, feelings about CFS, and psychological toll) five times daily for twenty-eight days. Participants received either a £15 Amazon voucher or £15 charity donation of their choice for study completion. For this specific project, we did not analyse data from the pre- and post-EMA questionnaires highlighted in Figure 1 below. This is due to this study being a joint-project.

Analysis

Raw data was extracted from Qualtrics and from m-Path. Participants under the 79% completion rate on m-Path had their data removed from final analysis.

Data that has been collected longitudinally and involves multiple daily timepoints can be considered as dense, resulting in a challenge in identifying an analytical method to analyse it (Li, Wood, Ji, Chow & Oravecs, 2022). This data is considered as time-series data as it is obtained through using a method known as experience sampling (Myin-Germeys, Oorschot, Collip, Lataster, Delespaul & Vas Os, 2009) and is usually collected through the use of a short questionnaire on a smartphone application. One way to analyse this type of data is by using vector autoregression (VAR) analysis. A VAR model is the evolution of a set of endogenous variables (i.e. the variables cause and depend on each other) over time, and estimate how well each variable in the model predicts other variables at the next time point (Borsboom & Cramer, 2013). The model involves estimating the relationship between each

variable and its own lagged values, as well as lags of the other variables up to a predetermined maximum lag order (Kilian & Lütkepohl, 2017). VAR analysis is helpful as it can explain relationships between multiple variables over time and can predict observations (Bose, Hravnak & Sereika, 2017). It contains a system of regression equations whereby all variables function as both outcome and predictor variables (Hoekstra, Epskamp & Borsboom, 2022). VAR can also be performed without a prior hypothesis concerning the direction of the association between variables, therefore allowing us to examine our model and numerical EMA data. The multilevel vector autoregressive (mlVAR) model is the advanced version of VAR, allowing for simultaneous analysing of reciprocal networks between individual differences and dynamic processes (Li et al., 2022). In our model, mlVAR refers to a multivariate framework where changes in CFS, anticipating CFS and feelings about CFS are related to the changes of its own lags as well as changes in the psychological toll variables in the model, and the lags of those variables.

Data were analysed using the R package *mlVAR* (Epskamp,Waldorp, Mottus & Borsboom, 2018) that estimates various networks; the contemporaneous network, the temporal network, and the between-subjects network. The contemporaneous network represents associations between variables within the same timeframe, and shows associations that persist after considering all other variables in the network during that timeframe, and after accounting for temporal networks among variables. The temporal network indicates how a variable is predicted by all other variables, including itself, at a previous time frame; this is a 'partial' correlation because it denotes an association after accounting for all other temporal effects. It indicates within-person relationships across time. The between-subjects network illustrates a network of partial correlation coefficients, referring to correlations between mean

levels of variables whilst controlling for all other variables within the network. It is the network that illustrates the means of different participants relating to one another.

To address our hypothesis regarding whether context influences CFS and biculturalism, we analysed data using the package *lme4* (Bates, Machler, Bolker & Walker, 2015) in R. We performed a general linear mixed-effects model which is an extension of the general linear model (i.e. linear regression). General linear mixed-effects models are used for within-participant designs and offer a flexible approach to data analysis that does not rely on limited assumptions (e.g. variance-covariance matrix) and can handle unbalanced designs and missing data (Brown, 2021). General linear mixed-effects models also allow for grouping hierarchies such as multiple nested groups (Magezi, 2015); this is helpful as our context variable was considered as a nested group due to various response options (i.e., home, exercise, leisure, other family setting, personal appointment, place of worship, school, socialising with friends, university and work). A general linear mixed-effects model refers to the relationship between a response variable and other explanatory variables that were attained along with the response variable (Magezi, 2015). General linear mixed-effects models consist of two effect types, 'fixed effect' and 'random effect'. The 'fixed effect' is exclusively fixed factors, whereas the 'random effect' is all terms that include random factors; these could be the interactions between random and fixed factors for instance (Koerner & Zhang, 2017). The explanatory variables should include one categorical variable (Magezi, 2015); in our model, this variable was context and therefore in analysis, context, which includes ten levels, was specified as the 'fixed effect'. The 'random effect' is usually referred to as the grouping variable and in our analysis, this referred to each participant. Trends in time-series analyses can violate the assumption of stationarity. In our analysis, we

employed a detrending procedure, by fitting fixed effects linear regression models to each variable, which regressed out a linear trend.

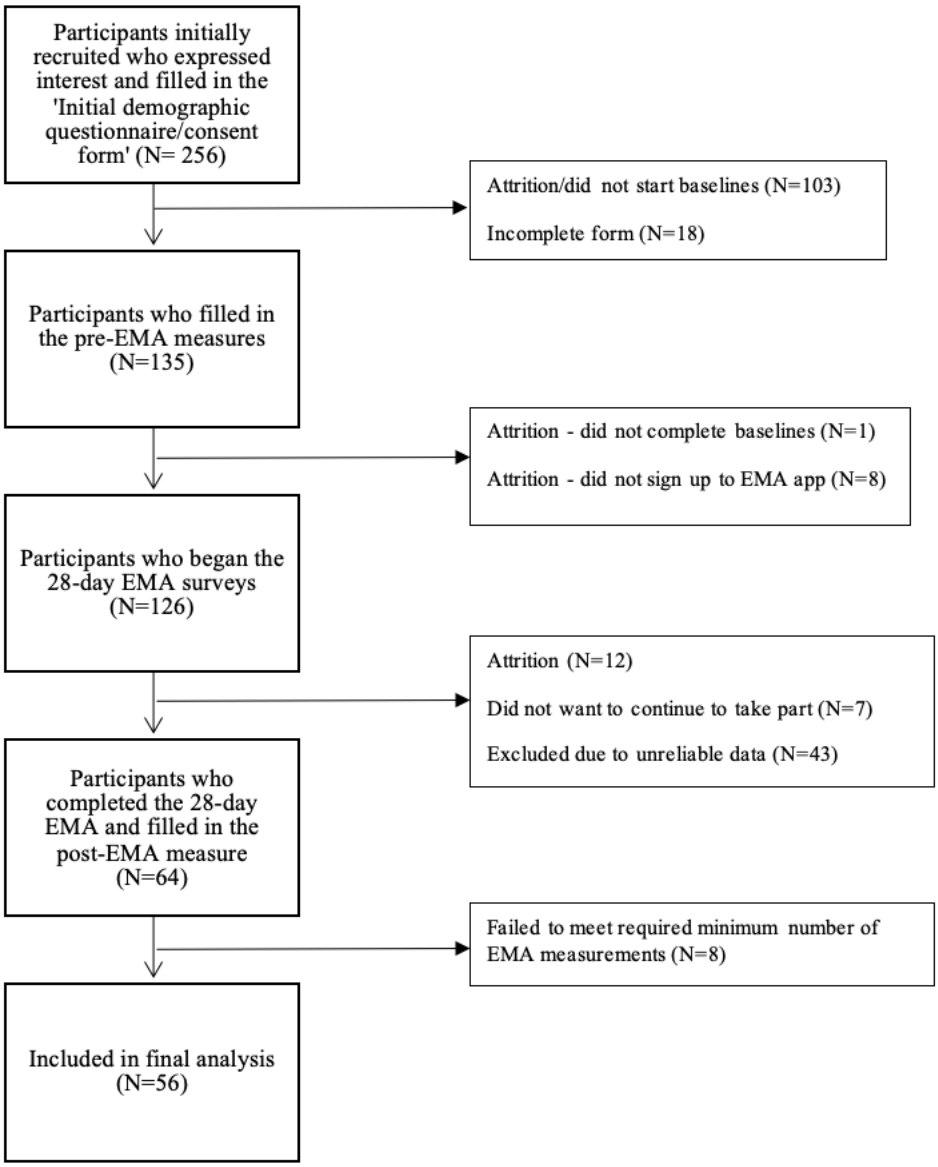
Results

Participants

The final analysis included fifty-six participants (see Figure 1 for participant flow during the study) aged 18 to 53 (M = 28.4; SD = 7.62). Thirty-nine of the participants identified as female, and seventeen identified as male. Half of the sample (n = 28) consisted of individuals who identified as South Asian (e.g. Indian, Punjabi, Bengali, Sri Lankan, Pakistani & Nepalese), one participant identified as West Asian (specifically Iranian), four participants identified as East Asian (Japanese & Chinese), seventeen participants identified as Black African (Nigerian, Somali, Ghanaian, West African & did not specify), four participants identified as Black Caribbean (Jamaican & did not specify), and two participants identified as Arab (Moroccan & did not specify).

Figure 1.

Flow diagram of participant flow throughout the study.



VAR

Descriptive analysis. The within-person means, medians and standard deviations were calculated for all EMA variables that were included in final analysis (see Table 1). Responses for this ranged from 110 to 140 for all variables.

Table 1.

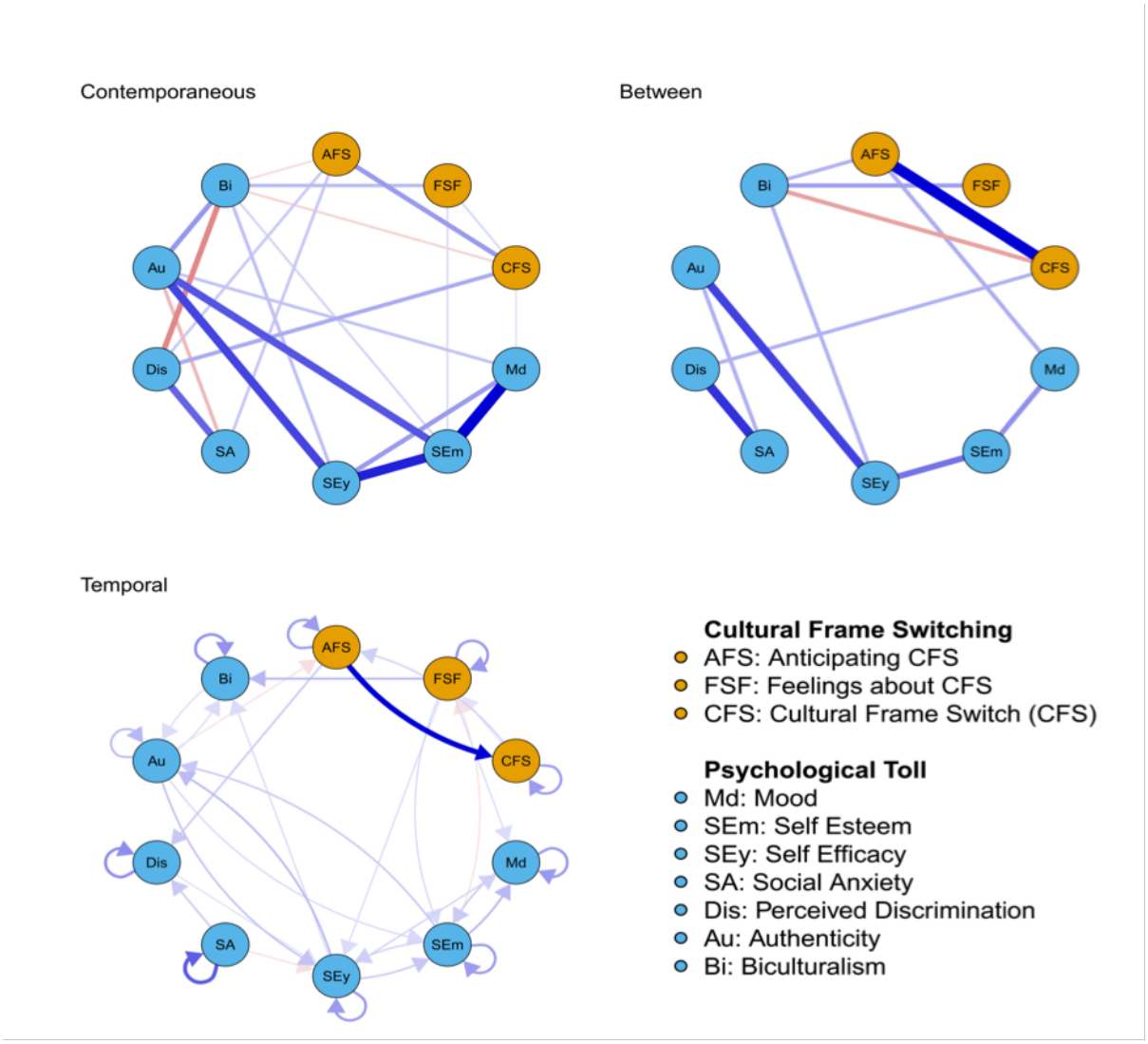
Means, medians and standard deviations of within-person means, medians and standard deviations for all variables

Variables	Means	Standard Deviations	Medians
CFS	4.30	2.23	4.20
Anticipating CFS	4.57	2.12	4.43
Feelings about CFS	6.22	1.40	6.38
Mood	6.81	1.04	6.89
Self-esteem	6.86	1.28	7.02
Self-efficacy	6.92	1.31	7.13
Social anxiety	2.90	1.77	2.51
Perceived discrimination	2.75	1.64	2.49
Authenticity	6.81	1.41	7.05
Biculturalism	7.12	1.60	7.55

Contemporaneous. The contemporaneous network in Figure 2 illustrates the direct correlations between variables within the same timeframe. CFS was positively associated with anticipating CFS (r = .14), feelings about CFS (r = .05), perceived discrimination (r = .11), and with mood (r = .03), but negatively associated with biculturalism (r = -.06). Anticipating CFS was not associated with feelings about CFS, but was positively associated with social anxiety (r = .07) and perceived discrimination (r = .07), and negatively associated with biculturalism (r = -.05). Feelings about CFS was positively associated with biculturalism (r = .09) and self-esteem (r = .04). See Appendix G for covariance matrices.

Figure 2.

Partial contemporaneous correlation network, temporal network and between-subjects correlations network of the model. Blue lines depict positive partial correlations. Red lines depict negative partial correlations. Thicker lines depict stronger partial correlations. For the temporal network, an arrow from one variable to another variable represents partial temporal correlations between one variable at t-1 and the other variable at t.



Temporal. The temporal network in Figure 2 illustrates the variables predicting themselves or others at the next time point. All variables positively predicted themselves at the next timepoint, with social anxiety having the strongest autocorrelation (r = .19). CFS did

not predict any psychological toll variables, but it did positively predict feelings about CFS (r = .03) and anticipating CFS (r = .06). Anticipating CFS and feelings about CFS did not predict one another. Anticipating CFS positively predicted perceived discrimination (r = .06). Feelings about CFS positively predicted mood (r = .04), self-esteem (r = .04), self-efficacy (r = .04), and biculturalism (r = .09). See Appendix G for covariance matrices.

Between-subjects. The between subjects' network in Figure 2 illustrates the association between individual means of variables in the model. Mean levels of CFS correlated positively with mean levels of perceived discrimination, and correlated negatively with mean levels of biculturalism. Mean levels of anticipating CFS correlated positively with mean levels of CFS, and also with mean levels of mood and biculturalism. Mean levels of feelings about CFS correlated positively with mean levels of biculturalism.

Overall, there was similarity between contemporaneous and between-subjects networks, but we did find one difference. In the contemporaneous network, we found a negative association between anticipating CFS and biculturalism; however, in the between-subjects network, we found a positive association between the two. This illustrates that individuals who found it easy to balance their cultures more than their average, were likely to concurrently hold lower anticipation that they would frame-switch in the future (contemporaneous network). Meanwhile, on average, those who found it easy to balance their cultures were more likely to anticipate that they would frame-switch in the future (between-subjects network).

General linear mixed-effects model

We used a general linear mixed-effects model to investigate the relationship between context (with home as the reference category), CFS and biculturalism (as dependent variables in the general linear mixed-effects model). The model included participants as the random effects variable, context as the fixed effects variable and CFS and biculturalism as the dependent variables. Significance was calculated by applying Sattherwaite's method which estimated degrees of freedom and generated *p*-values for the general linear mixed-effects model. Two models were estimated for each of the dependent variables (CFS & biculturalism). Fixed effects and estimated marginal means (EMM) for CFS and biculturalism can be found in Appendix H.

CFS. There was a significant effect of context on CFS (F (9,9651) = 31.34, $p < .001$). In the context of home, participants reported significantly lower levels of CFS than during exercise, leisure, other family setting, personal appointment, place of worship, socialising with friends, university and work. In comparison to home (*EMM* = 4.07), the differences were particularly large between personal appointment (*EMM = 6.04)* and leisure (*EMM* = 5.43). There was no significant difference between school and home.

Biculturalism. There was a significant effect of context on biculturalism (F (9,9651) = 12.85, $p < .001$). In the context of home, participants reported significantly higher levels of biculturalism than during leisure, personal appointment, university and work. The difference between home (*EMM* = 7.24) and university (*EMM* = 6.54) was particularly large. There was no significant difference between home and exercise, other family setting, place of worship, school and socialising with friends.

Discussion

This study explored the dynamics and consequences of CFS in a British minority ethnic sample, focusing on CFS, anticipating CFS, feelings about CFS, psychological toll, and the contextual influence of CFS and biculturalism. We posit a dynamic model illustrating how the experience of CFS may have a psychological toll. Temporally, while the degree to which participants frame-switched did not directly predict psychological toll, the anticipation of having to frame-switch in the future positively predicted perceived discrimination at the next timepoint. Meanwhile, feelings about CFS positively predicted biculturalism, mood, self-esteem and self-efficacy. In the moment (contemporaneously), while a greater degree of CFS was linked with positive mood, it was also linked to feeling judged because of one's culture, and an inability to balance cultures. Furthermore, anticipating CFS was linked to feeling socially anxious, discriminated against, and an inability to balance cultures. Feelings about CFS was positively associated with biculturalism and self-esteem, indicating a psychological toll. As hypothesised, CFS and biculturalism were context dependent; on average, participants frame-switched significantly more during personal appointments compared to when they were at home. Meanwhile, those attending university felt significantly less able to balance cultures.

CFS, anticipating CFS and feelings about CFS

The more frequently participants engaged in CFS since the last time point, the more they anticipated that they would frame-switch before the next time point, and the more positively they felt about the prospect of CFS before the next time point. Individuals who frame-switched continued a pattern of anticipating more CFS throughout the day, and felt positive about it (although this finding could also be understood as less CFS predicting less anticipation of CFS, as well as feeling negatively about it). These results highlight the

importance of considering different facets of the CFS experience. These interpretations suggest that positive reinforcement plays a role in individuals' engagement with CFS. On the one hand, exposure to CFS may provide external positive outcomes, further reinforcing individuals' positive feelings and expectation of similar outcomes in the future. On the other hand, those engaging in less CFS felt more negatively about having to CFS in future. CFS can enhance both personal and social relationships (Bohon, 2016), as well as environmental adjustment (Qumseya, 2018); this motivates participants to continually seek its positive benefits. Participants engaging more in CFS may also have increased mastery of CFS, leading to heightened anticipation and a positive outlook on future CFS experiences. Indeed, research has demonstrated that individuals with high mastery report positive affective experiences and greater satisfaction with life (Werkuyten & Nekuee, 1999). Werkuyten and Nekuee (1999) found in a sample of Iranians living in the Netherlands, that sense of mastery (the extent to which participants felt to be in control of important circumstances in their lives) was strongly related to ethnic identification (Werkuyten & Nekuee, 1999). Although the study did not explore CFS directly, the findings highlight that CFS could potentially be associated with greater mastery and subsequent positive experiences, such as increased ethnic identification. Within the temporal network, feelings about CFS predicted biculturalism and self-efficacy at the next time point, highlighting the association with mastery.

Mood

Overall, the experience of CFS can have a demonstrated psychological toll. A clear link exists between the degree of CFS and mood, suggesting that in the moment, positive mood aligns with frame-switching, while negative mood corresponds to less frame-switching. However, whereas the degree of CFS at T1 did not predict mood (or any other psychological toll variables at T2), feelings about CFS did. This finding appears to contradict the existing

literature suggesting a relationship between CFS and low mood (Firat & Noels, 2022; Jack, 2018). However, as noted above, this may highlight different experiences for different people. For example, those frame-switching more frequently had lower levels of biculturalism, which was associated with experiencing greater psychological toll, and participants' negative feelings about frame-switching in the upcoming time period predicted subsequent negative mood. Our results do support the alternation model (LaFromboise, Coleman & Gerton, 1993) where individuals engaging in CFS are less stressed and anxious. Our findings draw parallels with this, supporting the models' historical validity for such findings thirty years later and in application to British ethnic minority individuals in the UK. Our results may also be explained by extraneous variables such as workplace success and positive personal relationships, which may influence mood (e.g. Garcha et al., 2023). Although previous research has not explored attitudes towards CFS, our temporal network results emphasise that feelings about CFS might be a more critical indicator of the CFS experience than the degree of CFS itself.

Self-esteem and self-efficacy

Feelings about CFS (in the upcoming time period) was positively associated with self-esteem in the moment, and also positively predicted self-efficacy and self-esteem at the next timepoint. This suggests that when participants felt positive about CFS in the upcoming time period, they simultaneously felt good about themselves, and feeling positive about CFS in the upcoming time period predicted increased self-efficacy and self-esteem. Understanding the CFS experience through feelings about CFS suggests that CFS is linked with increased self-efficacy and increased self-esteem. For example, CFS was associated with feeling positive about CFS, which was associated with feeling good about oneself. Also, increased CFS predicted positive feelings about CFS, which predicted feeling confident in coping with

whatever participants had faced at the subsequent time point, as well as feeling good about themselves at this subsequent time point. These findings do not align with Barros and Albert (2020), who found CFS participants to report low self-esteem. However, it is possible our participants would describe their cultures as blended, consequently contributing to high levels of self-esteem as found in Barros and Albert's (2020) research. Indeed, describing cultures as blended may have resulted in anticipating more positive feelings about CFS before the next time point. Overall, these results not only highlight that self-efficacy and self-esteem were important variables to explore in the current research, but also suggest that feelings about CFS are crucial to understanding the CFS experience.

Social Anxiety

We found that anticipating CFS was positively associated with social anxiety. That is, when participants anticipated that they would frame-switch in the period of time before the next survey, they concurrently felt anxious about social situations. Despite absent research exploring anticipating CFS and social anxiety, our findings extend Firat and Noels' (2022) findings of a relationship between CFS and psychological distress (depression and anxiety), extending it to social anxiety specifically. Meanwhile, our findings are inconsistent with the alternation model (LaFromboise, Coleman & Gerton, 1993), which proposes that CFS individuals are less anxious. These results highlight the importance of exploring anticipating CFS alongside CFS to obtain a richer picture of the experience of CFS and psychological toll.

Perceived Discrimination

We also found that CFS and anticipating CFS were positively associated with perceived discrimination. That is when participants were CFS or anticipated that they would frame-switch before the next time point, they simultaneously felt judged by others because of

their culture. Furthermore, the temporal network illustrated that anticipating CFS predicting perceived discrimination, highlighting that when individuals anticipated that they would frame-switch in the next time period, they felt that they would be judged for their culture at the next time point. These results shed light on the experience of CFS being linked with feeling discriminated against, thus supporting previous research illustrating CFS participants reporting perceived discrimination (Firat & Noels, 2022). The current study provides further validity to such findings by showing similar results but in a British sample and using real-time self-report measures. These measures reduce the risk of unreliable retrospective reporting and social desirability biases, especially relevant for sensitive issues such as discrimination.

Biculturalism

The contemporaneous network also showed that CFS and anticipating CFS were both negatively associated with biculturalism (i.e. self-efficacy in balancing cultures); these findings can be interpreted in two ways. One is that when participants felt they could balance their cultures, they concurrently did not frame-switch, and concurrently did not anticipate CFS**.** On the other hand, participants who could not balance their cultures, concurrently experienced CFS, and concurrently anticipated CFS. A possible explanation for the latter interpretation may be that participants experienced identity conflict due to feeling unable to balance both cultures, resulting in CFS; this supports previous research demonstrating identity conflict is linked with CFS (Garcha et al., 2023). Furthermore, the ACM (Tadmor & Tetlock, 2006) describes that individuals who undergo the process of achieving biculturalism (accepting and successfully navigating both cultures) experience higher conflict and dissonance; it is therefore possible that our participants may have frame-switched as a coping response due to cognitive dissonance, or conflict experienced as a result of not feeling able to

balance cultures. This interpretation would provide support for research from Rincon and Hollis (2020) who found that CFS supported cultural identity navigation. Our findings thus illustrate that an individual's perception of their ability to balance their cultures, impacts on frequency of CFS and anticipation of CFS. Meanwhile, positive associations found between feelings about CFS and biculturalism implies that when participants felt unable to balance both of their cultures, they also felt negative about CFS in the time before the next time point. Moreover, the temporal network illustrated that feelings about CFS positively predicted biculturalism at the next time point, suggesting that feeling negatively about CFS predicts feeling unable to balance cultures. These results may be explained by Cheng and Lee (2013), who found that negative cultural experiences lead to lower bicultural identity integration, potentially similar to our participants.

There was one key difference between our contemporaneous network and between-subjects network. The contemporaneous network showed a negative association between anticipating CFS and biculturalism, while the between-subjects network showed a positive association. The difference may be explained by the negative association between anticipating CFS and biculturalism in the contemporaneous network, which was also negatively associated with perceived discrimination. Participants who anticipated CFS in the future felt they could not balance their cultures, and experienced discrimination. The inclusion of feeling discriminated against may explain why participants anticipated CFS in the future, due to increased cultural dissonance (ACM; Tadmor & Tetlock, 2006). On the other hand, on average, when participants anticipated that they would frame-switch in the near future, they felt that they could balance their cultures, which may be explained by CFS improving cultural identity navigation (Garcha et al., 2023).

Context

Changes in context were significantly associated with changes in CFS. Participants reported significantly lower levels of CFS at home than during exercise, leisure, other family settings, personal appointments, places of worship, socialising with friends, university, or the workplace. It is important to note however that the majority of the EMA prompts may have taken place outside of an individual's home, thus potentially influencing the finding that participants reported significantly lower levels of CFS at home. Despite this, our findings are in line with research demonstrating that CFS occurs within the workplace (Cross Jr, Smith & Payne, 2002) and classroom (Lin, 2008).

We also found that the degree of CFS was particularly higher at personal appointments (e.g. therapy, dentist, and doctors) than at home. This could be explained by the fact that such appointments may elicit negative emotions, alongside the notion that code-switching (alternating between languages) may indeed occur more frequently when feeling negatively emotionally aroused (Williams, Srinivasan, Liu, Lee & Zhou, 2020). Furthermore, Wu (2011) proposes that biculturalism involves accepting two cultures whilst maintaining a 'sense of self', and it has been suggested that mental health conditions can impact on the 'sense of self' (e.g. Williams, King & Fox, 2016). It is therefore possible that if a bicultural individual was in a personal appointment regarding their mental health (or ultimately to explore parts of themselves), this may influence their engagement in CFS. These findings nevertheless highlight a need for future research to explore further the experience of CFS when in these contexts; this could be achieved using qualitative analysis (e.g. interviews including open ended questions) to further understand the specific influence of context.

We also found that changes in context were significantly associated with changes in biculturalism. Participants reported feeling less able to balance their cultures during leisure,

personal appointments, university, and work, than at home. This may be explained as mentioned above by the majority of EMA prompts occurring outside of the home. Furthermore, living circumstances could help to explain our results. It is possible, for example, that participants' home arrangements facilitated them to feel better able to balance their cultures, such as living with individuals also identifying with the same cultures (e.g. family), or living alone.

A particularly large difference was found between home and university compared to home and other contexts, perhaps because university is a context eliciting particularly high levels of CFS (as demonstrated by our CFS and context findings), and thus feelings of inability to balance cultures. Indeed, Lin (2008) demonstrated that the classroom elicits switching between languages, and thus a context whereby low levels of biculturalism may be seen. It is important to note however that this finding would only be applicable to those in our sample who attended university. These results taken together with our CFS and context findings illustrate that in particular, personal appointments, leisure, university, and work are contexts that can negatively affect bicultural individuals.

Strengths and limitations

The current study has filled gaps in the literature in various ways. For example, this study is the first to apply a network perspective to the link between the experience of CFS and psychological toll. It has provided a novel addition to understanding the CFS experience by additionally examining anticipating CFS and feelings about CFS. It used novel statistical analyses (mlVAR and general linear mixed model) to examine our aim and hypotheses. The study also examined facets of psychological toll that have not previously been explored such

as self-efficacy and social anxiety, and considered a British ethnic minority sample that was not limited to any specific ethno-cultural groups, in relation to CFS.

We extended on Jack's (2018) research where she used a daily-diary methodology by collecting data using EMA over twenty-eight days. EMA enabled data collection in real-time as opposed to priming participants to frame-switch or relying on recall. EMA is considered an approach that holds high ecological validity given that it observes people in their daily lives (Shiffman, Stone & Hufford, 2008). Using an app-based design enabled increased participant recruitment, but also meant that participants required battery life, Wi-Fi or mobile data on their smartphone in order to receive notifications.

Our study has several limitations. For instance, EMA can lead to changes in behaviour through self-monitoring (Scott, Dennis & Gustafson, 2017), although no such trends were observed. Furthermore, although using single items to measure CFS and psychological toll variables reduced participant burden and yielded converging results with studies that have used full measures, the use of the single items used in the EMA survey could limit construct validity. For instance, single item measures for CFS "since the last survey, I have switched between my cultural identities" may not have been accurately measuring CFS. Future studies should consider validating a CFS EMA measure. Moreover, the contemporaneous model presented is that of a hypothetical average participant, with each participant having their own dynamic model of the experience of CFS. While idiographic models were estimated, they have not been presented. However, further studies could explore heterogeneity between individual profiles, and/or personalised interventions/feedback may be designed to assist people, where the experience of CFS is demonstrated to be associated with, and predict, psychological toll.

Also of note is that half of our sample were from South Asian backgrounds, and more than half of our sample were female, thus producing sampling bias. Future research should aim to recruit a larger, more even sample size. We also specified in the inclusion criteria that an individual should engage in CFS; this was reliant on self-identifying, and ruled out opportunities to compare to individuals who do not identify as CFS. Future studies should consider comparative groups to explore the dynamics and temporal consequences of the CFS experience, as well as considering context. Furthermore, in our context variable, we collated similar options into categories to allow sufficient data for analysis. For instance, we collated various responses together to cover personal appointments and leisure. This subsequently resulted in difficulty disentangling exactly what in this context was associated with CFS, and with biculturalism. Future studies should consider various context options to cover the wide range of contexts individuals may come across in day-to-day lives, which will help to reduce ambiguity and enhance clarity in the findings.

Finally, the current study used quantitative data. To provide a richer picture of the experience of CFS, it would be helpful to consider a mixed-methods approach. This could include open-ended questions within the EMA survey to allow participants to explain their answers (e.g. why they anticipate that they will CFS).

Implications & future directions

The current study provides an important basis in understanding the experience of CFS overall, highlighting both an impact on psychological toll. This implies that further research into the overall CFS experience is needed to establish a clearer understanding of psychological toll. Additionally, utilising qualitative methodology and analysis will be helpful to provide a richer understanding of this experience.

Future research should consider the fact that BII principles are not solely restricted to cultural identity and can also apply to any other category of dual identity (Huynh, Nguyen & Benet-Martinez, 2011). For instance, Fingerhut, Peplau and Ghavami (2005**)** explored sexual identity in lesbian women and specifically examined their identification with lesbian culture and with heterosexual culture. Huynh, Nguyen and Benet-Martinez (2011) propose that BII ideas could be incorporated in such research by asking participants if they perceive conflict or harmony between both identities for example. BII principles could also be considered for dual identities from two different categories such as culture and religion. Verkuyten and Yildiz (2007), for example, explored Turkish-Dutch Muslims' identification with their dominant (Dutch), ethnic (Turkish), and religious (Muslim) culture. It would be useful to capture the degree of compatibility or conflicting identities here as suggested by Huynh, Nguyen and Benet-Martinez (2011). Similarly, BII could also be used to explore the degree of compatibility or conflict perceived between religious and sexual identity of Jewish gay men (Coyle & Rafalin, 2000) and Muslim gay men (Jaspal & Cinnirella, 2010).

Future research should also incorporate BII ideas beyond cultural identity, such as those identities found in social graces (Burnham, 2018) literature, especially given that it is known that BII (in terms of cultural identity) affects wellbeing (Ferrari et al., 2015). Furthermore, future research should consider the concept of intersectionality, which is defined as a unique experience that is associated with possessing multiple types of oppression and multiple identities (Cole, 2009). This is especially important given that individuals who hold multiple intersecting identities (e.g. African American lesbian women) may face unique dilemmas such as intersectional invisibility (Purdie-Vaughns & Eibach, 2008), which means that they are not recognised as 'traditional' group members in any of their groups. It is likely that such other dual identities that bicultural individuals may hold, could also contribute to

their experience of CFS and subsequent psychological toll. Thus, research into CFS and psychological toll can be advanced by the inclusion of different categories of dual identity, in conjunction with one another.

Our findings illustrated a negative impact of the experience of CFS on psychological toll, in relation to perceived discrimination, not being able to balance cultures, and social anxiety. With this in mind, bi/multicultural individuals could engage in strategies to improve their 'sense of self' or sense of bicultural identity. This could be achieved through journaling for example, which can be helpful to gain a clearer sense of self through organising and clarifying thoughts (Moon, 2013), and allowing for thoughtful review on past experiences (Bolton, 2010). In order to buffer against CFS individuals who feel discriminated against, the current study highlights how society should strive to increase awareness and educate ourselves about various cultures. This could be via resources such as documentaries, films and books, participating in cultural traditions, events and activities, or simply connecting with bi/multicultural individuals by sharing traditional meals.

It is also important to consider our findings in wellbeing and associated support services. For instance, it would be helpful for mental health services to review assessment, treatment and evaluation resources to ensure they are culturally sensitive; using the BII scale may be helpful during assessment and evaluation. This is especially important as considering culture within therapy has been found to improve therapy outcomes (Hwang, 2006). Often, individuals from minority backgrounds are considered as "hard to reach groups" (Kovandžić et al., 2010); services should instead address this by considering how to make their support more accessible for minority ethnic individuals.

The current study's findings also indicate the importance of support for British minorities in both university and workplace contexts, but also more generally in order to help individuals to feel more competent in balancing their cultures outside of their home. This could take the form of a nationwide government campaign with direct advice, as well as interventions promoting biculturalism and providing access to groups where individuals can find comfort in speaking to others experiencing the same struggles, and a safe space to discuss and aid any potential identity issues they may be battling. It would also be beneficial for future research to investigate the impact of CFS on psychological toll (i.e. mental health) directly across various contexts, in order to further our understanding of how interventions can best target individuals in these different contexts. Moreover, such research could explore these variables in a sequential cohort design in order to investigate any age-related differences in individuals' experience of CFS; this could also yield interesting patterns on how this may change with age by being able to snapshot the bigger picture in this way. In line with this idea, it could also be fruitful to examine using a more longitudinal design in order to find whether for example certain life events may impact on individuals' experience of CFS. Moreover, being able to explore anticipation of CFS over a longer time-scale could provide insights into how these variables may interact differently. Such research would have helpful implications for how British minorities can be best supported according to different contexts, age, and other relevant demographic factors that may be identified.

Measuring biculturalism as a facet of psychological toll helps us to understand the experience of CFS and cultural identity more generally. We found that lower levels of biculturalism (not being able to balance cultures) and increased CFS occurred during personal appointments, leisure, university and work. CFS occurred mostly during personal appointments, which included therapy. Therapists should consider this when working with

individuals from bi/multicultural backgrounds. Universities should also consider this in relation to enrolment and teaching, as well as ensuring sufficient mental health support for individuals from bi/multicultural backgrounds. Cultural competency training would also be helpful, and workplaces could consider this during all stages of employment, starting with the interview stage, training, policy domains, holiday entitlements as well as the experience of the individual at work. These are factors to especially consider in contexts where CFS and low biculturalism occur, as we found that the experience of CFS is linked with psychological toll.

Whilst we found a link between the experience of CFS and psychological toll, it is important to emphasise that the experience of CFS was also linked with positive outcomes. For instance, our results demonstrated that bicultural individuals' feelings towards CFS is an important factor contributing to their experience of CFS (i.e. feeling positive about CFS was associated with feeling able to balance cultures and predicted positive mood, ability to balance cultures, and increased self-esteem and self-efficacy). It would be fruitful to explore this further to understand the positive aspects of the CFS experience, and understand techniques/strategies that may help bicultural individuals who may be struggling to have a more positive experience.

Conclusion

The current study extends on previous research by demonstrating that CFS can influence psychological toll (and vice versa). It also fills a gap in the field by being the first to explore context, anticipating CFS, feelings about CFS, social anxiety and self-efficacy. The study is the first of its kind to apply a network perspective and utilise ecological momentary analysis, and to recruit a British minority ethnic sample in the UK in this field of research.

Overall, our findings illustrate the experience of CFS and psychological toll. The contemporaneous network illustrated that the degree of CFS was correlated with feeling more positive about CFS, anticipating CFS and positive mood but also feeling discriminated against and not being able to balance cultures. Anticipating CFS was associated with feeling socially anxious, discriminated against, not being able to balance cultures. Positive feelings about CFS was associated with being able to balance cultures and increased self-esteem. The temporal network illustrated that the degree of CFS did not predict any psychological toll. However, anticipating CFS predicted feeling discriminated against, and positive feelings about CFS predicted being able to balance cultures, positive mood, increased self-esteem and increased self-efficacy. Our findings also demonstrated that CFS and biculturalism are context dependent.

Taken together, our findings contribute to the understanding of the CFS phenomenon. However, it would be helpful to apply a mixed-methods approach in future research to explicitly explore the experience of CFS in more detail. Nevertheless, the findings of the current study provide a useful foundation for future research to build upon in the area of CFS. They also have important implications for real-life application, for example considering culture in all its aspects in schools, universities, and the workplace.

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Part Three: Critical Appraisal

Introduction

The critical appraisal is focused on the empirical paper outlined in part two of this thesis. To initiate the critical appraisal, I will commence by discussing my personal experiences and how these informed my particular choice of research in exploring cultural frame switching (CFS). Following this, I will then discuss using ecological momentary analysis (EMA) as a methodology, and reflect on the methodological and practical challenges of attempting to explore CFS in participants' daily lives. Furthermore, I will include an expanded discussion of the overall strengths and weaknesses of the empirical project, its implications and future directions for research. Finally, I will end with a summary regarding my discussions.

Personal experiences

Being from a minority ethnic culture myself, born and raised in the UK, I have found myself in several situations where I have experienced cultural identity conflict. This conflict is usually in relation to the demands of my daily life that result in me being exposed to each of my frequently conflicting cultural backgrounds. The environmental and contextual cues in my daily life have forced me to make a decision in CFS between my two cultural frames and as a result, I have found it difficult to navigate day to day interactions.

For me personally, the outcome of engaging in CFS has been both positive and negative, which is in line with previous research suggesting that CFS can result in both positive and negative outcomes (Garcha et al., 2023). On one hand I feel that my ability to frame switch between my cultural frames provides me with increased flexibility and choice in how I respond to situations that arise in my daily life; I consider this as an advantage of some sort in terms of increasing my cognitive complexity in decision making and multi-tasking for

example. Furthermore, I have used my bicultural identity and experience of CFS to inform reflective and insightful discussions at university and work. CFS has also served as a strategy to help me navigate different environments such as the workplace, university and being with friends and family. Also, I feel that CFS enables me to feel more in touch with my cultures and 'fit in', especially if socialising with people of the same culture. However, on the other hand, CFS has also resulted in negative outcomes for me. For example, although sometimes CFS helps me feel as if I 'fit in', I also sometimes feel that my cultural identity with a particular culture is 'not good enough' which then subsequently results in me feeling that I in fact do not 'fit in'; this would be the same feeling despite having engaged in CFS or not. When I do frame switch in order to 'fit in', I tend to feel less authentic or as if I am being 'fake'. Further to this, I have a tendency to question my decision about having frame switched in a given moment and subsequently spend a long time ruminating on whether it was the right thing to do at that time and what I could have done differently. This rumination often results in me catastrophising, thinking that others may have judged me for how I responded or behaved in a given situation. Despite having positive outcomes that can result from CFS, the negative outcomes can lead to me feeling deflated, overwhelmed and exhausted, and the uncertainty of how I would feel after CFS leaves me feeling anxious.

My primary supervisor had illustrated an interest in cultural identity. This interest was demonstrated through the teaching she delivered where she touched upon cultural issues, as well as through the initial empirical project topic being offered (exploring psychosis in South Asians). Although I was interested in the initial empirical project topic, I was delighted when my supervisor suggested designing a new project from scratch to explore cultural identity more broadly. Being someone who has always enjoyed doing research, it was exciting to be given the opportunity to fully embed myself in the research cycle and gain experience in

designing a project. I feel that having this experience also enabled me and my supervisor to build excellent rapport due to designing a project from scratch, not having knowledge on such a niche topic, and the novelty of the methodology that was used; this also felt as if it reduced any power dynamics. My thesis partner also identified with a minority ethnic background and was born and raised in the UK too. Together, with our supervisor, we were able to brainstorm our own experiences to design our project to explore CFS in participants' daily lives. Combined with our passion for the topic and the lack of research in this field, we immediately acknowledged that exploring CFS in participants' daily lives would be an interesting and beneficial topic to examine with the potential of highlighting significant implications for real-life application. Designing this from scratch and having limited knowledge in the area required frequent discussions with the research team which felt empowering and improved our supervisor-supervisee relationship.

Using EMA methodology

Carrying out this study made me realise how helpful using EMA to explore our aim of examining CFS in British minority ethnic participants' everyday lives was. As EMA involved collecting data that tracked current or recently experienced behaviours and emotions in the context of the sample's daily life (Moskowitz & Young, 2006), we were able to appropriately explore our research aim. Our research aim being achieved was brought to light when the final data emerged and I could witness the temporal and contemporaneous patterns (Ryo et al., 2019) of CFS and psychological toll for participants. Often research that examines emotions or behaviours tends to use outcome measures which rely on participant recall, however EMA reduced report and recall bias (Shiffman, Stone & Hufford, 2008) providing a strength of using EMA in this context. On reflection, it seems difficult to have explored our

research aim in any other way other than EMA, and the rich amount of data collected from EMA has encouraged me to consider this analysis again in future research.

Although it was a helpful learning experience to achieve the entire research cycle, it initially felt difficult to design and practically carry out a doctoral project using EMA. What made this especially difficult is that neither my thesis partner nor I were familiar with using EMA. We however spent a significant amount of time reading about the ideas underpinning EMA, reading existing literature that used EMA as their methodology, and reading articles that explained the process of EMA and how to analyse such large amounts of data. Our project involved us needing to design an EMA survey that participants were answering five times a day across twenty-eight days. We hoped to retain the EMA survey as short (i.e. one minute to answer) in order to encourage regular responses from participants. Existing literature on cultural identity was extremely helpful in supporting us to decide what constructs and measures (e.g. authenticity) we wanted to explore in the EMA survey however deciding on what specific item to use from these measures was difficult. We decided to only use item from each outcome measure as a sole item to explore that particular construct (e.g. one item from the self-esteem scale (Rosenberg, 1965) to represent self-esteem) to keep the EMA survey short. Being given free range on deciding what would go in to this EMA survey was hard as we were not sure on how many items to include and what was most important to measure. Despite this struggle, achieving the final EMA survey was an extremely rewarding feeling.

My thesis partner and I enjoyed experimenting with the m-Path application which was used to create the EMA survey and to send daily notifications to participants regarding the survey. Piloting the EMA survey between us was helpful to truly understand and delve in to

the EMA methodology as well as gain an understanding of what it would be like for participants who are recruited in to the project therefore helping us to troubleshoot and problem solve. We learnt that in order to receive notifications, participants firstly needed to amend their settings in the m-Path application, and settings on their smartphone. This was especially helpful to be aware of as it allowed us to amend our instructions guide that we send to participants just before they start the study. Furthermore, there was a day where I was in a location that had weak signal and we realised that I was not receiving notifications because of this. This made us aware that it was crucial to have mobile data or Wi-Fi connection available in order to receive notifications, which helped us assist participants during the course of the project who emailed the researchers regarding not receiving notifications. Our pilot also helped us to consider the number of daily notifications for the EMA survey; we felt that five daily surveys was achievable. This also would give us sufficient data for analysis, even if participants did not achieve 100% completion but were close to the 79% or above completion rate.

Data analysis for EMA was the most challenging part of the research project for me. It was initially extremely difficult to understand the data file, especially given that the file was large with multiple data entries for each participant. Having my supervisors' support to clean the data file was helpful. Collecting the data for the context variable categorically became an issue, especially given that participants were able to choose multiple response options and had an optional text box in the EMA survey item corresponding to context. My supervisor and I spent a significant amount of time figuring out how to best sort data for analysis. We decided on me manually going through all data entries for participants and where multiple options were selected for context, I was required to duplicate the entire row of data to correspond to the number of options chosen. This resulted in each duplicated row being only

one entry for context (as opposed to multiple entries) in order to be able to include the data for analysis. For instance, if a participant for one survey (timepoint) had chosen that they had been at home, work and university then I duplicated this row another two times so that there was a row solely for home, for work and for university. Where participants had filled out the 'other' text box, I used initiative to decide whether the answer fitted best with the existing answer options (e.g. socialising with friends) or with enough similar entries, I created a new category such as personal appointment which encompassed various appointments such as doctors, dentist and therapy. Upon reflection, it would have been useful to previously pilot the number of different contexts that people may be CFS in and subsequently expand the variety of context options available. This may then result in participants choosing less options in one timepoint, or at least provide further variety, removing the need for the 'other' textbox option. It may also have been better to consider the context variable qualitatively rather than quantitatively. Qualitative research can provide rich data (Schultze & Avital, 2011) and may be more insightful for such a variable. Despite this issue, once data cleaning was achieved, the analysis for this specific data (general linear mixed effects model) was easier to digest than the other (vector autoregressive model). Using *R* to perform the analyses was also challenging as it was a programme that I was not extremely familiar with. I was also not familiar with either of my analyses, providing a further challenge. I however found various tutorials on YouTube and online to support me with *R* and analysis and once I became more confident with *R* I started to enjoy using it. Interpreting the results for the vector autoregressive model was particularly hard because of the large number of different paths in the three networks (contemporaneous, temporal and between subjects network). Although it felt empowering to be given the decision on what paths in the networks felt most appropriate to discuss in the empirical paper, I would have preferred to have had the word count to have discussed all paths in order to not lose any data interpretation, and to make sense of the

networks as a complete whole to inform my findings. Despite the various challenges I had with data cleaning, data analysis and understanding my analysis and results, finally getting my head around this all was an incredible feeling. It was amazing to observe the rich data and findings that EMA and these two analyses provided.

Expanded discussion

Our empirical project has made significant contributions to the existing literature in several ways. Firstly, it is the first study to adopt a network perspective in examining the relationship between the experience of CFS and psychological toll. The network perspective illuminates the interconnectedness of various factors (e.g. indirect pathways of CFS, anticipating CFS, feelings about CFS and psychological toll) and sheds new light on the dynamics of CFS, providing a more comprehensive understanding of CFS and psychological toll overall. Moreover, the study stands out for considering a British minority ethnic sample that encompasses various ethnic backgrounds, rather than focusing on specific ethno-cultural groups. This inclusive approach broadens the applicability of the findings and promotes a more comprehensive understanding of CFS within diverse populations. However, the sample did exhibit sampling bias, with half of the participants being from South Asian backgrounds and majority of the sample being female. Future research should aim for a larger and more diverse sample to mitigate this bias and enhance generalisability.

Furthermore, the study was the first to examine various contexts, anticipating CFS, feelings about CFS, self-efficacy and social anxiety. By considering these factors, the study delves deeper into the multifaceted nature of CFS, uncovering valuable insights that contribute to a better understanding of CFS. The exploration of context, anticipating CFS and feelings about CFS adds richness and depth to the existing knowledge base surrounding the

CFS process and decision making. Exploring facets of psychological toll that have not been extensively examined before (e.g. self-efficacy and social anxiety) fills gaps in the literature and enhances our understanding of the psychological impact of CFS. This is especially important considering that we found a correlation between anticipating CFS and feeling socially anxious.

We had several issues with carrying out an 'online study'. For example, we could not guarantee our sample was an accurate representation of our project's aim. This is because participants self-identified as being eligible for the research and following this were enrolled on to the study. We also had an issue with consistent bots becoming involved in our project, scoring 100% completion rate on the EMA survey. We recognised this when the emails we were receiving for expression of interest were written almost identically to one another, and the email addresses used had a similar pattern of surnames followed by first name and a random string of three numbers. What confirmed that we had the issue of bots was that we also received an email from the developers at m-Path who mentioned suspicious activity from several participants. Following this, we were able to rectify the issue by withdrawing these bots and after this we did not have any further problems with bots. We believe this issue may have arisen from our method of recruitment. We heavily relied on social media to recruit, often by posting on various different groups that we deemed as relevant to our study such as minority ethnic groups, psychology groups and research groups on Facebook. Using online methods of recruitment may result in larger exposure to bots (Pozzer et al., 2020). Given that we had an incentive of a £15 Amazon voucher, we feel that multiple bots signed in order to receive this. Despite this issue, I am happy that as a research team we were able to identify the issue early on and resolve it ahead of final data extraction from m-Path. On reflection of these issues, it may have been helpful to have explained the m-Path instructions through a

video call. This would have helped us to confirm that participants met eligibility criteria (i.e. British and minority ethnic, aged above 18, can read English etc.), deterred bots from participating and ensuring email addresses are valid. In future, I would not advertise in various social media groups at one time. It would have been more beneficial to have advertised in one social media group at a time to help us identify where bots may have come from to prevent us from advertising in that particular group again. This would also have aided in spreading out recruitment numbers and subsequently given researchers spaced out workload in terms of setting participants up on m-Path, sending out weekly progress emails and arranging vouchers and writing up end of study reports for participants achieving above 79% completion rate on the EMA survey.

Although we did find a link between CFS and psychological toll, it is difficult to determine whether existing mental health problems may have influenced the study's results (i.e. participants previously struggling with social anxiety outside of CFS). Future research should consider refining a clearer inclusion-exclusion criterion, potentially excluding participants with existing mental health conditions if appropriate, to better understand the relationship between CFS and psychological toll. Additionally, the inclusion criteria relied on self-identification of engaging with CFS, which therefore restricted opportunities for comparison with individuals who do not identify as CFS. Future studies should consider including comparative groups to explore the dynamics of CFS. Another inclusion criteria was that participants needed to have been aged above eighteen. Future studies should consider the variables used in this study with a younger age group to understand a developmental perspective in relation to CFS. Needing a smartphone to engage in the study acted as a limitation as it ruled out potential participants without smartphones. Future research should

consider an alternative arm of the study for participants without smartphones; this may result in a laboratory-based study.

To provide a more comprehensive understanding of the CFS experience, future studies could adopt a mixed-methods approach. This may include open-ended questions within the EMA survey to provide participants with the opportunity to offer detailed explanations for their responses, shedding light on the underlying reasons and nuances related to the CFS experience. Furthermore, it may be helpful to include an exit interview of some sort. This could help to clarify answers for participants, and explore other aspects of the CFS experience that the EMA survey did not capture, such as: cognitive choices in decision-making, other facets of psychological toll and type of CFS (e.g. code-switching, clothes etc.) for example. This integration of qualitative data would enrich the overall findings and offer a more nuanced portrayal of the complexities surrounding CFS.

We found a negative impact of the CFS experience on psychological toll, particularly in relation to perceived discrimination, difficulties in balancing cultures, and social anxiety. These findings have important implications. For instance, wellbeing and mental health support services should consider CFS/bicultural identity when working with patients for social anxiety, providing a wider, culturally-informed understanding of their presentation. This is especially important as we also found that CFS occurred mostly during personal appointments (e.g. therapy). Furthermore, such services should consider that bicultural individuals may feel discriminated against and have difficulty in balancing their cultures and therefore should strive to create a safe and contained environment, as well as considering these issues as part of assessment, formulation and treatment. Integrating cultural considerations within therapy has been shown to improve therapy outcomes, highlighting the

importance of culturally sensitive approaches (Hwang, 2006). Considering these findings within the workplace is also important. Workplace initiatives and polices should take into account that bi/multicultural colleagues do engage in CFS at work, which may subsequently result in psychological toll. Staff support, acknowledgement of culture (e.g. cultural holidays, foods), and providing spaces to engage in cultural requirements (e.g. prayer) may facilitate a healthier and improved work environment. The same should be considered for educational institutions.

Conclusion

The reflections included in this critical appraisal are in relation to the experience of conducting my empirical project which examined CFS in a British minority ethnic sample in their everyday life through EMA, in fulfilment of the Doctorate in Clinical Psychology. My reflections have considered my individual encounters with CFS and how this personal experience shaped my decision to delve in to the research on CFS. They have also considered my experience of utilising EMA as a methodology, including the methodological and practical obstacles I encountered while investigating CFS within participants' day to day lives. Lastly, my reflections touched upon strengths and weaknesses of the empirical project, along with implications and potential avenues for future research.

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Appendix

Appendix A.

Search terms

Ovid:

Database: Embase <1980 to 2022 Week 27>, Ovid MEDLINE(R) ALL <1946 to July 14, 2022>, APA PsycInfo <1806 to July Week 2 2022>

Search Strategy:

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1 cultur* switch*.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, ui, sy, tc, id, tm] (77)

2 cultur* frame switch*.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, ui, sy, tc, id, tm] (47)

3 (cultur* and frame and switch*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, ui, sy, tc, id, tm] (306)

4 1 or 2 or 3 (383)

5 (cultur* adj2 switch*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, ui, sy, tc, id, tm] (593)

6 (cultur* adj2 (frame and switch*)).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, ui, sy, tc, id, tm] (103)

7 1 or 2 or 3 or 5 or 6 (847)

8 7 not cell.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, ui, sy, tc, id, tm] (325)

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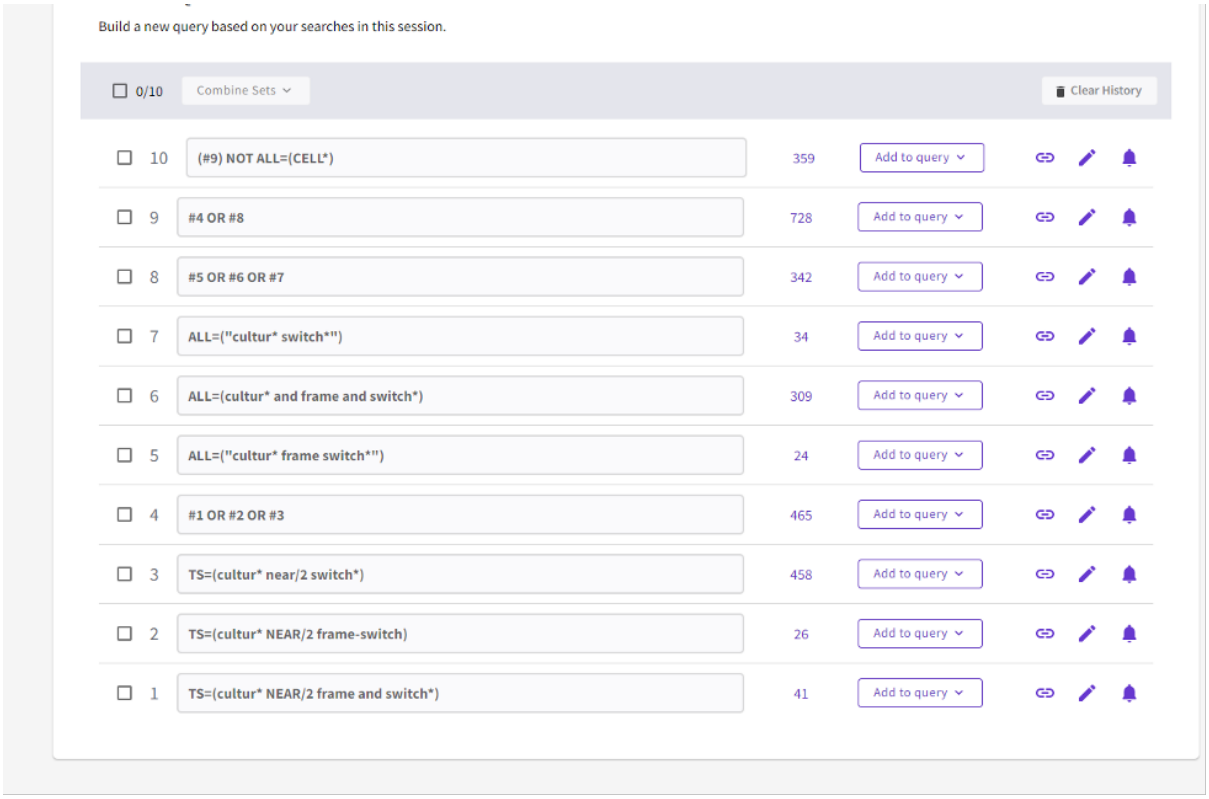
Web of Science:


Build a new query based on your searches in this session.
0/10
Combine Sets
Clear History
10 (#9) NOT ALL=(CELL*) 359 Add to query
9 #4 OR #8 728 Add to query
8 #5 OR #6 OR #7 342 Add to query
7 ALL=("cultur* switch*") 34 Add to query
6 ALL=(cultur* and frame and switch*) 309 Add to query
5 ALL=("cultur* frame switch*") 24 Add to query
4 #1 OR #2 OR #3 465 Add to query
3 TS=(cultur* near/2 switch*) 458 Add to query
2 TS=(cultur* NEAR/2 frame-switch) 26 Add to query
1 TS=(cultur* NEAR/2 frame and switch*) 41 Add to query

Appendix B.

UCL Ethics Approval

UCL RESEARCH ETHICS COMMITTEE
OFFICE FOR THE VICE PROVOST RESEARCH

26/04/2022

Dr Madiha Shaikh
Clinical, Educational and Health Psychology
Faculty of Brain Sciences
UCL

Cc: Eshia Garcha & Amber Qureshi

Dear Dr Shaikh,

Notification of Ethics Approval
Project ID/Title: 21161/001: An ecological momentary assessment study investigating cultural frame switching in British bicultural adults in the UK.

Further to your satisfactory responses to the reviewer's comments, I am pleased to confirm in my capacity as Chair of the UCL Research Ethics Committee (REC) that your study has been ethically approved by the UCL REC until **26/04/2023.**

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'
http://ethics.grad.ucl.ac.uk/responsibilities.php

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 occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Joint Chairs will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Office of the Vice Provost Research, 2 Taviton Street
University College London
Tel: +44 (0)20 7679 8717
Email: ethics@ucl.ac.uk
http://ethics.grad.ucl.ac.uk/

Final Report
At the end of the data collection element of your research we ask that you submit a very brief report (1-2 paragraphs will suffice) which includes in particular issues relating to the ethical implications of the research i.e. issues obtaining consent, participants withdrawing from the research, confidentiality, protection of participants from physical and mental harm etc.

In addition, please:

- ensure that you follow all relevant guidance as laid out in UCL's Code of Conduct for Research: www.ucl.ac.uk/srs/governance-and-committees/research-governance
- note that you are required to adhere to all research data/records management and storage procedures agreed as part of your application. This will be expected even after completion of the study.

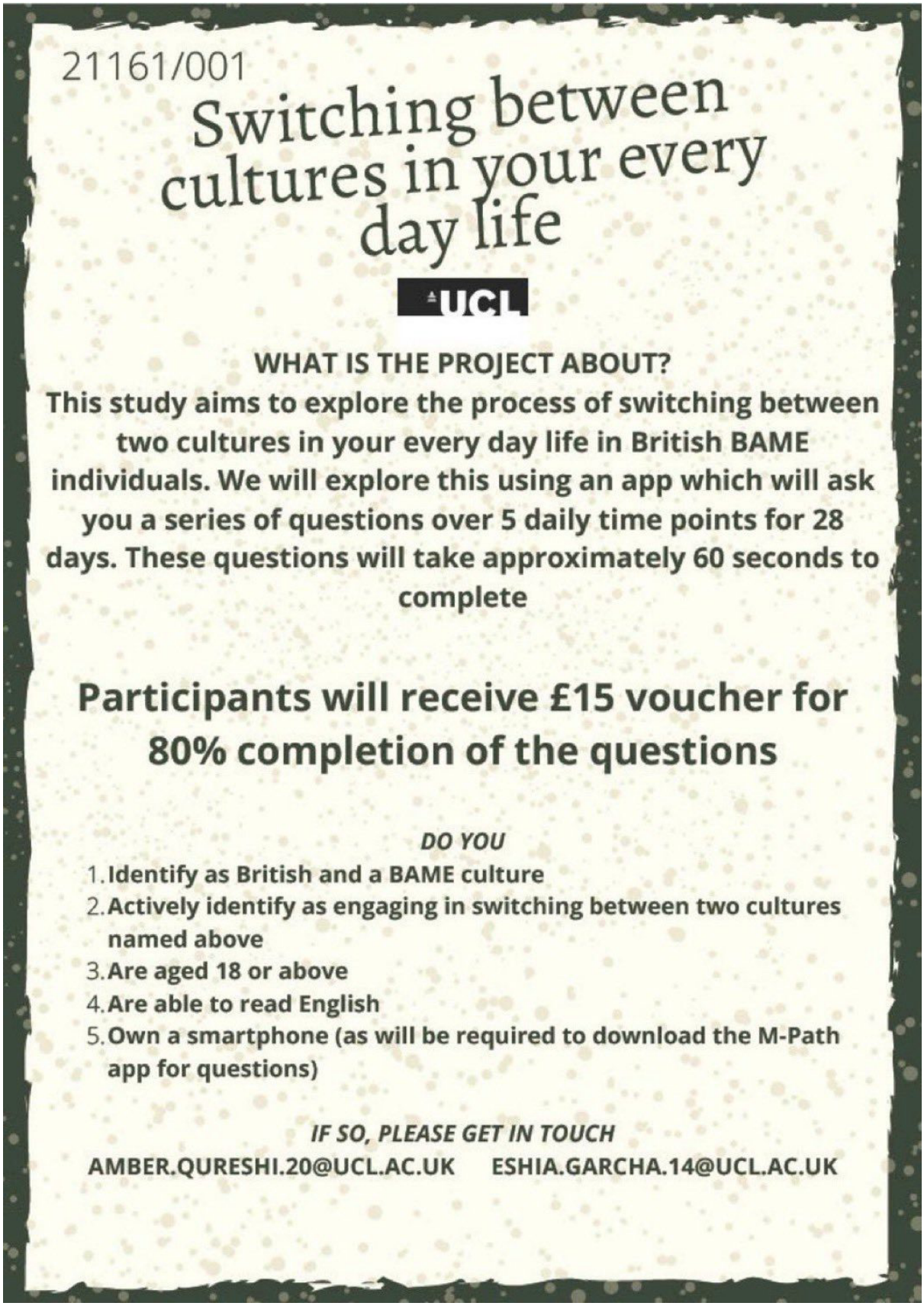
With best wishes for the research.

Yours sincerely

Professor Michael Heinrich
Joint Chair, UCL Research Ethics Committee

Appendix C.

Poster advertisement



Appendix D.

EMA survey items.

Construct	**Item**	**Scoring**
Mood	Right now, I feel	0-100 visual scale (animated sad face to happy face)
Self-esteem	Right now, I feel good about myself	0-10 (not at all – completely)
Self-efficacy	Right now, I feel confident that I have coped well with whatever has come my way	0-10 (not at all – completely)
Authenticity	Right now, I feel in touch with the real me	0-10 (not at all – completely)
Social anxiety	Right now, I feel anxious about social situations	0-10 (not at all – completely)
Perceived discrimination	Right now, I feel judged by others because of my culture	0-10 (not at all – completely)
Biculturalism	Right now, I find it easy to balance both of my cultures	0-10 (not at all – completely)
CFS	Since the last survey, I have switched between my cultural identities	0-10 (not at all – the whole time)
Anticipating CFS	Between now and the next survey, I believe that I will have to frame-switch	0-10 (not at all – completely)
Feelings about CFS	How do you feel about having to CFS in the time before the next survey?	0-10 (negative – positive)

Context	Since the last survey, which setting have you been in (including when you frame-switched)?	Multiple choice or free text (including home, exercise, leisure (i.e. shopping, holiday, eating out), other family setting, personal appointment (i.e. therapy, dentist, doctors), place of worship, school, socialising with friends, university and work). Can choose more than one option.

Appendix E.

Participant Information Sheet

RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL AND HEALTH PSYCHOLOGY

Participant Information Sheet
Title of project: Switching between cultures in your every day life
Research Department of Clinical, Educational and Health Psychology

UCL Research Ethics Committee Approval ID Number: 21161/001

Name and Contact Details of the Researchers: Amber Qureshi amber.qureshi.20@ucl.ac.uk Eshia Garcha eshia.garcha.14@ucl.ac.uk

Principal Researcher: Dr Madiha Shaikh madiha.shaikh@ucl.ac.uk

Name and Contact Details of the UCL Data Protection Officer: Alexandra Potts data-protection@ucl.ac.uk

It is important for you to understand why this project is being carried out and what participation will involve. Please take your time to read the following information, discuss with others if you wish and get in touch with the researchers if you have any queries or would like more information. Thank you.

1. What is the project's purpose?
This project is a clinical psychology doctoral research project. We are aiming to explore British Black and Asian Minority Ethnic (BAME) individuals' experience of switching between their BAME and British cultures in their everyday life. In this project, we will examine individuals' experiences through asking a series of questions during 5 daily timepoints using an app over a 28-day period.

2. Can I participate?
If you meet all of the following criteria then you are eligible to voluntarily participate.
1. You identify as bicultural i.e. British and BAME (all ethnic groups except white ethnicities. White ethnicities consist of White British, White Irish, Gypsy, Irish Traveller and White other) culture
2. You actively identify as switching between your two cultures (BAME culture and British culture)
3. You are aged 18 or above
4. You are able to read English
5. You own a smartphone with internet access (as will be required to download the M-Path app for the project)

If you meet the following criteria then you will be unable to participate.
1. You are multicultural (i.e. 3 or more mixed cultures)
2. You are unable to read English
3. You are aged below 18 years

4. You do not own a smartphone

3. Do I have to take part?
Taking part in this study is entirely voluntary, it is up to you to decide whether or not to take part, and you can choose not to participate. You may discontinue participation at any time without penalty, without giving a reason and without it affecting any benefits you may be entitled to. If you decide to discontinue participation you will be asked what you wish to happen with the data you have provided up until the point of your withdrawal. If you do not respond to contact about what you wish to happen to your data within 1 month of discontinuation, we will keep any data you have already submitted, as you consented to this, at the time the data was collected, and we have not heard from you to assume otherwise. If you wish, you will be able to withdraw your data up to 1 month after completion of the study if you can provide us with your unique identifier code. If you are unable to tell us your unique identifier code, we may be unable to withdraw data you have already provided, as we will not be able to identify which data is yours, however you are still able to withdraw yourself from taking part in the remainder of the study.

4. What will happen to me if I take part?
Before taking part, you will be required to read this online information sheet and consent form and provide consent to taking part in this study, then online on Qualtrics fill in the demographic survey asking age, gender, ethnicity, generation, identifying as bicultural and which cultures you frame-switch between. This demographic questionnaire is part of the project and the information is used both for both project data and ensuring you meet the inclusion criteria. You will be provided with a unique identifier code which you should note down as it will be required at various points for the rest of the study, to ensure your answers are pseudonymised. The survey will take approximately 5 minutes to complete and will be done virtually.

If you have consented to the project and meet the requirements above to participate, an online baseline questionnaire on Qualtrics will be sent to you to complete, the link for this will be sent by email. This will take approximately 15 minutes to complete.

You will then be asked to download the M-Path mobile app on to your smartphone. After downloading the app, you will be prompted to input the code and for 28 days you will receive 5 daily prompts of short questions which will take you no longer than 60 seconds to complete. You will also need to have internet access on your phone to receive and answer prompts. An example question is ‘right now, I feel…’ and is measured by a 10-point scale ranging from happy to sad. You will have a 1-hour time frame to respond after each prompt (you will receive a reminder notification after 15 minutes), this is to ensure that there is enough time between each prompts.

It is important that you are able to answer at least 80% of the prompts, if you feel this will be difficult for you due to work or other commitments, it may not be appropriate for you to complete this study – please contact the researchers on the above email addresses to discuss further.

After the 28-day period, you will receive an email to complete an online post-study questionnaire via Qualtrics which will also take approximately 15 minutes to complete. Following completion of the study you will be provided with a debrief statement, providing you with more information on the purpose, aims, and potential importance of the findings of this study

5. What are the possible disadvantages and risks of taking part?
There are no immediate possible disadvantages or risks of taking part in this project. The project however does require a time commitment in regards to the recruitment demographic survey (approximately 5 minutes), pre and post study questionnaire (approximately 15 minutes each), and the 5 daily timepoints of questions (each time point taking approximately 60 seconds) for 28 consecutive days.

It is unlikely that this project will cause you distress however it may appear to make you more conscious of your thoughts and feelings. If you find that you are distressed at any point, you can raise concerns with the researchers, or withdraw from the project.

6. What are the possible benefits of taking part?

Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will serve to continuously improve research in to understanding bicultural identities and mental wellbeing of those from a BAME background, and inform institutions in supporting those with bicultural identities and the challenges that they may face.

You will also be offered a personalised report outlining your results of the study should you wish to receive one. This report will demonstrate any patterns or relationship between the questions you have answered. Please note completion of at least 80% of all questions across the project is necessary in order to compile a report. Furthermore, for 80% completion rate you will be offered a £15 Amazon voucher; you can also decide to give this money to charity should you wish.

7. What if something goes wrong?
If you wish to raise a complaint, you can do so by contacting Madiha Shaikh, the principal researcher (madiha.shaikh@ucl.ac.uk). If you are dissatisfied with this and feel that your complaint has not been handled, you can contact the Chair of the UCL Research Ethics Committee (ethics@ucl.ac.uk)

8. Will my taking part in this project be kept confidential?
All the information that we collect about you during the project will be kept strictly confidential. Information such as your name, email address and phone number, will be used for the sole purpose of contact regarding the project, support with the project and providing you with your personal report after the study. This information will be kept strictly confidential within the research team. We will use web-based survey tool Qualtrics and a phone application m-Path, both of which are GDPR compliant and store data within the EU. Using such web-based methods, there is a risk of intended or unintended breaches of confidentiality and therefore to mitigate this risk as much as possible, we will pseudonymise your data (which means that your name will be replaced with a unique identifier code). Upon completing the pre-study questionnaire, the information provided from that point onwards will be collected and stored using the unique identifier code. You will not be able to be identified in any ensuing data analysation, summaries, reports or publications.

9. Limits to confidentiality
Confidentiality will be respected subject to legal constraints and professional guidelines.

10. What will happen to the results of the research project?
Data collected will be analysed and written up by July 2023. Personal data will be deleted after this date. Participants will not be identified during any parts of the project. We may circulate the outcome of this project to a wider audience through a research paper or conference.

11. Privacy Notice
We respect your privacy and are committed to protecting your personal data. The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the ‘local’ and ‘general’ privacy notices.

This ‘local’ privacy notice below sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our ‘general’ privacy notice: https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice

The controller for this project, for purposes of data protection law, will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk

Personal data means any information about an individual from which they can be identified. It does not include data where the identity has been removed (anonymous data). We may collect, use, store and transfer personal data about you. This may include:
Your name and contact details
‘Special Category’ data about you – including details about your ethnicity, age, and gender.

We will only use your personal data when the law allows us to. The lawful basis that will be used to process your personal data are: ‘Public task’ for personal data and’ Research purposes’ for special category data.

Your personal data will be processed so long as it is required for the research project. If we are able to anonymise or pseudonymise the personal data you provide we will undertake this and will endeavour to minimise the processing of personal data wherever possible.

As the processing is based on your consent, you have the right to withdraw your consent at any time by contacting us at the details above. Please not this will not affect the lawfulness of processing based on consent before its withdrawal.

Your personal data will be collected and processing by the research team for this project at UCL. (Access to your personal information is limited to staff who have a legitimate need to see it for the purpose of carrying out their job at UCL.) We do not transfer your data outside the European Economic Area.

We have put in place appropriate security measures to prevent your personal data from being accidentally lost, used or accessed in an unauthorised way, altered or disclosed. We have established procedures to deal with any suspected personal data breach and will notify you and any applicable regulator of a breach where we are legally required to do so.

We will only retain your personal data for as long as necessary to fulfil the purposes we collected it for, including for the purposes of satisfying any legal, accounting, or reporting requirements. 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. or by writing to: University College London, Gower Street, London WC1E 6BT.

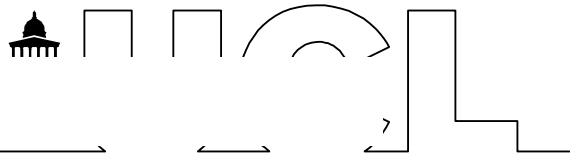
If you wish to complain about our use of personal data, please send an email with the details of your complaint to the Data Protection Officer so that we can look into the issue and respond to you. You also have the right to lodge a complaint with the Information Commissioner's Office (ICO) (the UK data protection regulator). For further information on your rights and how to complain to the ICO, please refer to the ICO website

Thank you for reading this information sheet and for considering to take part in this research study.

Appendix F.

Study consent form

RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL AND HEALTH PSYCHOLOGY



Consent Form

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.
Department: Research Department of Clinical, Educational and Health Psychology
Name and Contact Details of the Researcher(s): Amber Qureshi amber.qureshi.20@ucl.ac.uk Eshia Garcha Eshia.garcha.14@ucl.ac.uk
Name and Contact Details of the Principal Researcher: Dr Madiha Shaikh madiha.shaikh@ucl.ac.uk
Name and Contact Details of the UCL Data Protection Officer: Alexandra Potts data-protection@ucl.ac.uk
This study has been approved by the UCL Research Ethics Committee: Project ID number: 21161/001
Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.
If you wish to take part, please consent to all the following questions. I confirm that I understand that by choosing 'I consent' below I am consenting to this element of the study. I understand that it will be assumed that if I choose 'I do not consent' that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for the study.
I consent
I do not consent
I confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction.
I consent
I do not consent

I understand that I can discontinue this study at any time, if I wish, without reason. If I decide to discontinue participation, I will be asked what I would like to happen with the data I have provided up until the point of withdrawal. I will be given 1 month to respond to this and if I do not respond to contact about what you wish to happen to this data, it will be kept to be used in the analysis, as I consented at the time of collection and have not indicated otherwise. I can withdraw by contacting the researchers or principal investigator by email.
I consent
I do not consent

I consent to participate in the study. I understand that my personal information (email address, phone number, age, ethnicity) will be used for the purposes explained to me. I understand that

according to data protection legislation, ‘public task’ will be the lawful basis for processing, and ‘research purposes’ will be the lawful basis for processing special category data.
I consent
I do not consent

Use of the information for this project only- I understand that confidentiality will be respected subject to legal constraints and professional guidelines I understand that my data gathered in this study will be stored securely. It will not be possible to identify me in any reports or publications. I understand that all platforms that collect information are based in the EU and GDPR compliant. I understand that using web-based methods, there is a risk or unintended breaches of information and therefore your data will be pseudonymised (your name will be replaced with a unique identifier code).
I consent
I do not consent

I understand that my information may be subject to review by responsible individuals from the University for monitoring and audit purposes.
I consent
I do not consent

I understand that my participation is voluntary and that I am free to withdraw at any time during the study without giving a reason. I understand that I can withdraw my data up to 1 month following completion of the study if I wish. I can withdraw by contacting the researchers or principal investigator by email.
I consent
I do not consent

I understand the potential risks of participating and the support that will be available to me should I become distressed during the course of the research.
I consent
I do not consent

I understand the direct/indirect benefits of participating.
I consent
I do not consent

I understand that the data will not be made available to any commercial organisations but is solely the responsibility of the researcher(s) undertaking this study.
I consent
I do not consent

I understand that I will be compensated with a £15 Amazon voucher if 80% of the prompts are answered throughout the study.
I consent
I do not consent

I agree that my anonymised research data may be used by others for future research. [No one will be able to identify you when this data is shared.]
I consent
I do not consent

I understand that the information I have submitted will be published as a report and I wish to receive a copy of it.
I consent and wish to receive a copy
I consent and do not wish to receive a copy
I do not consent

I hereby confirm that I understand the inclusion criteria as detailed in the Information Sheet and explained to me by the researcher.
I consent
I do not consent

I hereby confirm that: (a) I understand the exclusion criteria as detailed in the Information Sheet ; and (b) I do not fall under the exclusion criteria.
I consent
I do not consent

I am aware of who I should contact if I wish to lodge a complaint.
I consent
I do not consent

I voluntarily agree to take part in this study.
I consent
I do not consent

Use of information for this project and beyond I would be happy for the anonymized data I provide to be archived at UCL's Research Data Storage Service for up to 20 years. I understand that other authenticated researchers will have access to my pseudonymised data.
I consent
I do not consent

Appendix G.

Covariance matrices for temporal and contemporaneous network.

Temporal.

	Anticipating CFS	Feelings about CFS	CFS	Mood	Self-esteem	Self-efficacy	Social anxiety	Perceived discrimination	Authenticity	Biculturalism
Anticipating CFS	0.11638347	0	0.30175559	0	0	0	0	0.06457948	0	0
Feelings about CFS	0	0.11922874	0	0.0414696	0.04428278	0.04199485	0	0	0	0.08586058
CFS	0.05611961	0.03317345	0.11612052	0	0	0	0	0	0	0
Mood	0	0	0	0.12103388	0.06110598	0	0	0	0	0
Self-esteem	0	-0.0351146	0	0.08245083	0.11637349	0.0552944	0	0	0.064995	0
Self-efficacy	0	0	0	0.05269209	0.06482583	0.11890323	0	0	0.08017863	0.04219605
Social anxiety	0	0	0	0	0	-0.0382905	0.19214566	0.06346994	0	0
Perceived discrimination	0	0	0	0	0	0.03760813	0	0.13503637	0	0
Authenticity	-0.0374822	0	0	0	0.04614862	0.07052246	0	0	0.08370138	0.04115979
Biculturalism	0	0	0	0	0	0	0	0	0.04003173	0.12838743

Contemporaneous.

	Anticipating CFS	Feelings about CFS	CFS	Mood	Self-esteem	Self-efficacy	Social anxiety	Perceived discrimination	Authenticity	Biculturalism
Anticipating CFS	0	0	0.13538736	0	0	0	0.07236276	0.07029774	0	-0.0460712
Feelings about CFS	0	0	0.04719262	0	0.04137718	0	0	0	0	0.09456933
CFS	0.13538736	0.04719262	0	0.03472704	0	0	0	0.11305652	0	-0.0552043
Mood	0	0	0.03472704	0	0.34205036	0.13411694	0	0	0.07932778	0
Self-esteem	0	0.04137718	0	0.34205036	0	0.29779519	0	0	0.22821911	0.05298564
Self-efficacy	0	0	0	0.13411694	0.29779519	0	0	0	0.25024654	0.08360697
Social anxiety	0.07236276	0	0	0	0	0	0	0.20812975	-0.0918862	0
Perceived discrimination	0.07029774	0	0.11305652	0	0	0	0.20812975	0	0	-0.1585052
Authenticity	0	0	0	0.07932778	0.22821911	0.25024654	-0.0918862	0	0	0.14088931
Biculturalism	-0.0460712	0.09456933	-0.0552043	0	0.05298564	0.08360697	0	-0.1585052	0.14088931	0

Appendix H.

Fixed effects and estimated marginal means for CFS and biculturalism

CFS

Estimated Marginal Means			95% CI		Fixed Effects				
Context	**Estimate**	**SE**	**Lower**	**Upper**	**Estimate**	**SE**	**df**	**t**	**p**
Home (reference)	4.07	0.28	3.53	4.62	4.08	0.28	55.92	14.76	< .001
Exercise	4.66	0.36	3.96	5.36	0.59	0.23	9644	2.54	< .05
Leisure	5.43	0.31	4.82	6.04	1.36	0.15	9645	8.79	< .001
Other family setting	4.80	0.29	4.24	5.36	0.73	0.09	9652	-0.95	<.001
Personal appointment	6.04	0.40	5.26	6.82	1.97	0.22	9640	6.72	< .001
Place of worship	4.58	0.34	3.92	5.25	0.51	0.20	9643	2.55	<.05
School	4.76	0.48	3.81	5.71	0.69	0.40	9641	1.72	0.09
Socialising with friends	4.62	0.28	4.07	5.17	0.55	0.08	9650	7.06	< .001
University	4.81	0.32	4.19	5.43	0.74	0.16	9685	4.50	< .001
Work	4.87	0.28	4.33	5.42	0.80	0.06	9658	12.32	< .001

Biculturalism

Estimated Marginal Means			95% CI		Fixed Effects				
Context	**Estimate**	**SE**	**Lower**	**Upper**	**Estimate**	**SE**	**df**	**t**	**p**
Home (reference)	7.24	0.20	6.85	7.64	7.24	0.20	55.91	36.06	< .001
Exercise	7.44	0.26	6.93	7.95	0.20	0.17	9644.27	1.14	0.26
Leisure	6.69	0.23	6.24	7.14	-0.56	0.11	9644.85	-4.86	< .001
Other family setting	7.18	0.21	6.77	7.59	-0.07	0.07	9652.15	-0.95	0.35
Personal appointment	6.82	0.29	6.24	7.39	-0.43	0.22	9639.62	-1.97	< .05
Place of worship	7.21	0.25	6.73	7.70	-0.03	0.15	9642.72	-0.22	0.83
School	6.93	0.36	6.23	7.70	-0.31	0.30	9640.80	-1.05	0.29

Socialising with friends	7.17	0.21	6.77	7.57	-0.07	0.06	9650.47	-1.27	0.20
University	6.54	0.23	6.09	6.99	-0.70	0.12	9682.54	-5.80	< .001
Work	6.85	0.20	6.45	7.24	-0.40	0.05	9658.65	-8.28	< .001

Appendix I.

Paragraph on joint work

The empirical project was conducted jointly with Eshia Garcha (trainee clinical psychologist). We both had equal involvement in advertisement, participant recruitment, and liaising with participants during the course of the study (including sending information sheets, consent forms, setting up on m-Path, weekly updates, troubleshooting and computing and disseminating end of study reports). This enabled us to achieve the desired number of participants needed for our project. Although we collected data together, our projects differed in relation to research aims, hypotheses, subsequent analyses and write up. Eshia's project was mainly hypothesis driven, and she included aspects of the study that I did not include, such as additional measures collected before, and after the EMA survey. My project on the other hand was exploratory with one hypothesis, and I solely used data from the EMA portion of the study.