DOI: 10.1111/nyas.15266

ORIGINAL ARTICLE

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES

A systematic review of longitudinal risk and protective factors for loneliness in youth

Susanne Buecker[1] | Kimberly Petersen[2] | Anne Neuber[1] | Yixuan Zheng[3] | Daniel Hayes[4] | Pamela Qualter[3]

[1]School of Psychology and Psychotherapy, Witten/Herdecke University, Witten, Germany

[2]School of Education, University of Leeds, Leeds, UK

[3]Institute of Education, University of Manchester, Manchester, UK

[4]Institute of Epidemiology & Health Care, University College London, London, UK

Correspondence
Susanne Buecker, School of Psychology and Psychotherapy, Witten/Herdecke University, Alfred-Herrhausen-Straße 50, Witten 58455, Germany. Email: susanne.buecker@uni-wh.de

Funding information
The Prudence Trust INSPYRE; Deutsche Forschungsgemeinschaft, Grant/Award Number: 497278260; Kavli Trust Grant

Abstract

To effectively tackle loneliness in youth, prevention and intervention strategies should be based on solid evidence regarding risk and protective factors in this age group. This systematic literature review identifies and narratively synthesizes longitudinal studies of risk and protective factors for loneliness in children and adolescents aged below 25 years. A systematic literature search was conducted in October 2023 using PsycINFO and MEDLINE, resulting in $n = 398$ articles, with $n = 105$ articles meeting the inclusion criteria. The examined factors included demographic (e.g., gender), socioeconomic (e.g., income sufficiency), social (e.g., peer acceptance), mental health (e.g., depression), physical health (e.g., disabilities), health behavior (e.g., sport participation), and psychological factors (e.g., shyness). Additionally, adverse childhood experiences (e.g., child maltreatment) and environmental factors (e.g., neighborhood characteristics) were investigated. Despite the wide range of potential risk and protective factors examined, relatively few studies provided strong evidence for a prospective association with loneliness. Risk factors that were consistently identified across multiple longitudinal studies included low peer acceptance and peer victimization, depression, social anxiety, internalizing symptoms, low self-esteem, shyness, and neuroticism. Additional replication is required to evaluate factors that have shown significant associations with loneliness in only a limited number of longitudinal studies (e.g., aggression).

KEYWORDS
loneliness, longitudinal, protective factor, risk factor, systematic review, youth

INTRODUCTION

Loneliness, a pervasive and distressing feeling of disconnection from others, has increasingly become a significant public health concern, particularly among youth.[1,2] Loneliness is a subjective feeling that should be differentiated from objective social isolation.[3] Thus, individuals may feel lonely even if they have friends or are surrounded by other people. Childhood and adolescence represents a critical developmental period characterized by numerous intense social and emotional changes.[4] During this time, the formation and maintenance of social relationships play a pivotal role in psychological and emotional well-being. However, despite its relatively high prevalence among youth,[5,6]

loneliness remains underexplored in longitudinal research with those age groups. Such work is essential for understanding risk and protective factors for the development of loneliness, which is crucial for creating effective prevention and intervention strategies.

Recent evidence suggests that loneliness in youth is associated with mental and physical health issues, poorer academic performance, and lower overall quality of life.[7,8] However, most of these studies are cross-sectional (e.g., see Ref. 9) and, thus, the temporal ordering of loneliness and other factors remains unclear. Consequently, there is a pressing need to identify and understand the longitudinal risk and protective factors that contribute to loneliness during this critical period. By systematically reviewing the existing longitudinal literature, we provide valuable insights into the positive and negative predictors of loneliness in youth, ultimately informing the development of effective interventions and policies aimed at preventing chronic loneliness. We consider variables as risk factors of later loneliness if they are prospectively and positively associated with loneliness. We consider variables as protective factors (i.e., factors buffering against higher levels of loneliness) if they are prospectively and negatively associated with loneliness.

To provide a comprehensive overview of the longitudinal predictors for loneliness, we explored various dimensions. According to ecological theory,[10] social relationships are nested within multiple layers of the social structure (e.g., characteristics of the individual, proximal relationships, connections with the broader social network, and living environment). Thus, risk and protective factors for loneliness can be examined on these different layers. First, the characteristics of the individual may become risk factors. For example, personality traits such as shyness may make it difficult to find new friends and maintain satisfying social relationships. But also, poverty can be viewed as an individual characteristic—although it has a structural or societal dimension—because it is a condition that the person themself experiences, rather than merely a feature of their environment. It directly hinders youth from participating in social activities and can be considered a barrier to fulfilling the expectations people have for their social relationships, resulting in feelings of loneliness.[11,12] At the level of proximal relationships, characteristics of close family members such as parents may increase the risk of loneliness, for example, if they cannot fulfill their children's social needs due to mental health issues. Moreover, negative social experiences with peers in the broader social network could lead to increased loneliness, for instance, if individuals are bullied or victimized. Finally, on a more distal level, the living environment (e.g., neighborhood safety) may affect the extent to which youth trust each other and consequently build their relationships. However, it has to be noted that some risk factors, such as poverty, neighborhood safety, or adverse childhood experiences (ACEs), may not fit neatly into a single layer of the ecological framework as they have individual, social, and environmental dimensions depending on the context and perspective.

There have been several reviews of loneliness in older adults, including one on longitudinal risk factors.[13] That review identified risk factors for loneliness including not being married/partnered and partner loss, having a limited social network, having a low level of social activity, having poor self-perceived health, as well as having depression/depressed mood. However, risk factors and reasons for loneliness in youth are likely to differ considerably from those in old age due to developmental factors and social environments. For example, old age is often associated with different developmental losses (e.g., health declines[14] and declining friendship networks[15]), but youth is typically associated with developmental gains (e.g., skill development, increases in autonomy, developing friendship networks[16,17]). Moreover, early psychological theories such as the interpersonal theory have emphasized that establishing friendships is a central developmental task in youth.[18] Although there is a growing body of longitudinal research on loneliness in childhood and youth (e.g., see Ref. 2), to date, no systematic review has synthesized the available evidence on longitudinal risk and protective factors in those age groups. Through a rigorous and systematic analysis of the literature, the current review offers a detailed and nuanced understanding of the longitudinal risk and protective factors for loneliness in youth.

METHODS

Preregistration of review protocol

The review protocol was preregistered on the Open Science Framework (OSF): https://osf.io/hytg4. Moreover, we provide the raw data (including the coded information from the included individual studies) used in this systematic review of longitudinal studies: https://osf.io/s5qnd. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards[19] in this systematic review.

Literature search

The systematic literature search was performed in October 2023 using PsycINFO and MEDLINE. These search engines also include certain types of gray literature such as dissertations. We applied the following search terms to the abstract and title: ((young or youth or child* or adolescen*) and (loneliness or lonely) and (longitudinal or prospective or 'panel study' or 'follow*up' or '*year study') and (predictor or 'risk factor*' or influence or 'protective factor*' or determinant* or associate* or correlate*)). After automatically removing duplicate articles from the two search engines, we identified $n = 398$ articles to screen for inclusion.

Exclusion criteria

We applied the following preregistered exclusion criteria. (1) *Population*: We included studies that investigated loneliness among children and adolescents (i.e., sample mean age < 25 years old at the point of loneliness measurement). Studies were excluded if they measured risk or protective factors before the age of 25 years, but loneliness in later adulthood because the review is focused on predictors of child

and adolescent loneliness. (2) *Exposure*: We excluded studies that did not report any variable that could potentially be considered a risk or protective factor for loneliness. For example, studies that used relevant keywords in the abstract but did not examine a prospective relationship between a specific variable and future levels of loneliness were excluded. (3) *Outcome*: We excluded studies if the outcome was not loneliness. We included all studies that conceptualized loneliness as a subjective evaluation of one's social relationships/social connections and excluded studies that focused on objective social isolation. (4) *Study design*: We excluded studies if the study design was not longitudinal. (5) *Publication language*: We excluded studies if the publication language was not English or German because those two languages were understood by members of the author team. However, in the end, no German language articles were included. (6) *Duplicate*: We excluded studies that were already included in the coding sheet with a different ID. This can happen in rare cases when the automatic removal of duplicates between PsycINFO and MEDLINE does not work. (7) *No full text access*: We excluded articles for which we could not retrieve the full text because full texts were required for the final coding of the studies. Only quantitative studies were included.

Study eligibility and data extraction

We determined the study eligibility in a two-step procedure. In Step 1, the titles and abstracts of the studies identified in the systematic literature search were screened according to the inclusion and exclusion criteria. This screening was performed by two trained coders with a bachelor's degree in psychology. The coders double-coded 100 articles and agreed in 87% of cases (kappa = 0.74), indicating substantial agreement between the coders. The coders identified the reasons for divergent coding through discussion with the first author. All studies that were included in Step 1 were revisited in Step 2.

In Step 2, the articles were coded based on the full texts using a standardized coding manual (see https://osf.io/hsm43). Step 2 coding was performed by two junior and three senior researchers, all of whom had previous experience in conducting systematic literature reviews. In total, $n = 105$ articles were included based on Step 2 full text coding.

Findings from the included articles were summarized in a narrative synthesis. All predictive bivariate and/or multivariate associations between a risk or protective factor assessed at one time point (i.e., baseline) and loneliness assessed at a later time point (i.e., follow-up) that were reported in an article are listed online: https://osf.io/s5qnd. We indicate whether the association was significant and positive (high levels of the factor predict high levels of loneliness), significant and negative (high levels of the factor predict low levels of loneliness), or nonsignificant. Because most articles used $p < 0.05$ as the level of significance for a statistical test, we used this level in this systematic review. Therefore, associations of $p \geq 0.05$ are reported as nonsignificant even if described as significant in the article.

Some articles reported multiple longitudinal associations, for example, where multiple data collection waves were included. We report a single result for studies in which associations across waves were consistent or where the form of analysis provided only one association. In cases where there were differences in the association across different waves, we reported those separately. Baseline and follow-up(s) were standardized across studies regardless of the time interval between waves and indicated as: T1 (baseline); T2 (first follow-up); T3 (second follow-up), and so on. If several multivariate models analyzing associations between (sub)sets of risk factors and loneliness were reported, the associations in the final/full model have been reported. Moreover, we prioritized studies that controlled for baseline loneliness when assessing the relationship between a risk factor at T1 and loneliness at T2. Studies that did not control for baseline loneliness were considered less robust because it is unclear whether the observed associations were due to pre-existing levels of loneliness at T1, which tend to persist over time, rather than the influence of risk or protective factors. Therefore, if a study reported multiple associations but only one accounted for baseline loneliness, we included only that association in our synthesis. We indicate in our synthesis when a study controlled for baseline loneliness; if no mention of this control is made, it indicates that the original study authors did not account for baseline loneliness.

Quality assessment

We assessed the quality of the included studies by applying criteria related to aspects of the sampling, measurement, and analysis. Our quality assessment criteria drew on the quality assessment used by Dahlberg and colleagues, who reviewed studies on risk factors for loneliness in old age.[13] For a full overview of the quality assessment criteria used, see https://osf.io/eagn4. Quality assessment was performed by one author and double-checked by another author to ensure consistency. No study was excluded from the synthesis of results in this systematic literature review based on the quality assessment.

RESULTS

Article selection

The flow diagram in Figure 1 depicts the standardized literature search and eligibility assessment process. Quality assessment was undertaken on the final 105 articles included in the review, with an overall evaluation of good quality. Of all the included studies, 33% used samples representative of the broader population of interest, about 35% used nonrepresentative samples, and in 32% of the cases, the representativeness could not be determined due to insufficient information in the articles. We tried to examine the response rate of the included samples. However, in 60% of the articles, this information was not included. Furthermore, 18% of the articles reported high response rates (>80%), 11% reported medium response rates (60–79%), and 11% reported low response rates (<60%). Moreover, we examined the attrition rate reported in the articles. More than half of the included articles (53%) reported low attrition (<20% per wave). Another 27%

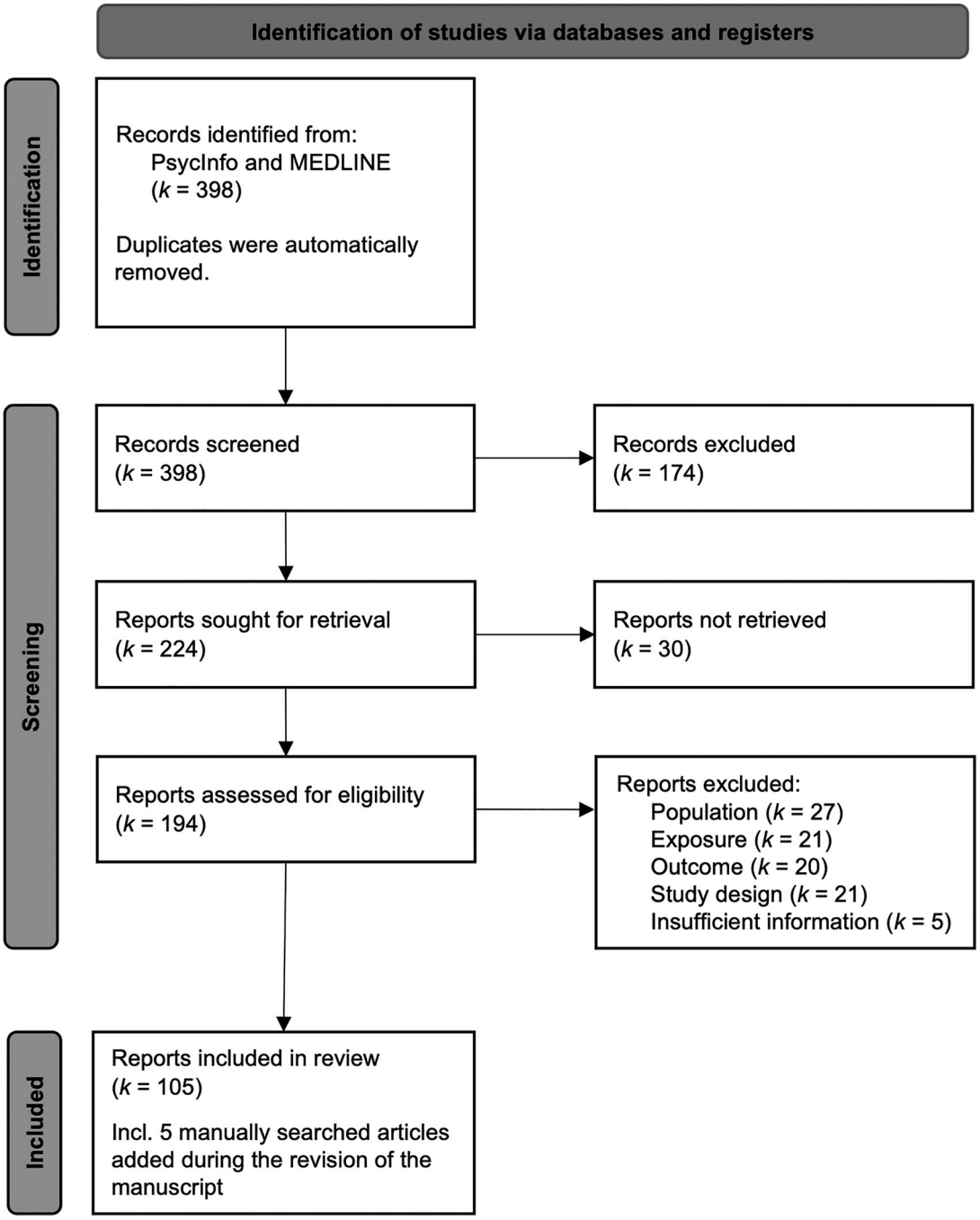

FIGURE 1 Flow diagram visualizing the standardized literature search and eligibility assessment.

reported medium attrition, meaning 20–39% per wave. Only 8% of the included articles reported high attrition rates of >40% per wave. However, 12% of the articles did not provide any information regarding the attrition rate. The large majority (98%) described their materials used sufficiently and in detail and reported reliability of the measurements (81%). In 94% of the articles, at least one of the constructs was measured with a validated scale; in 51% of the articles, both loneliness and the risk or protective factor were measured using a validated scale.

The reviewed studies encompass research from 15 countries, predominantly from the United States (30 articles), followed by China (16 articles), Belgium (11 articles), the United Kingdom (10 articles), and the Netherlands (9 articles). Additionally, one study was conducted in the Netherlands with international students, and two studies included samples from multiple countries: Lithuania and Japan, and the United States and Lithuania. Moreover, 25 articles were based on national studies from Australia, Canada, Denmark, Germany, Indonesia, Japan, Norway, Poland, and Turkey. One article did not specify the country of research. The temporal span of the publications ranged from 1989 to 2023, with more than half of the articles published between 2018 and 2023.

Participants

The included studies reported sample sizes ranging from 36[20] to 17,550.[21] Most samples were described as university or school student samples (62%); others were described as nationally representative samples (15%) and convenience samples (12%). Some studies included clinical outpatient samples (6%; e.g., Ref. 22) and otherwise specific selected samples (e.g., siblings of pediatric cancer patients or children affected by parental HIV [4%]; e.g., Ref. 23). One percent of studies did not specify the sample type used.

Measures of loneliness

Most studies included in this review used multi-item loneliness scales; only nine studies used single-item measures to assess loneliness. The most commonly used scale (34%) was The Children's Loneliness Scale developed by Asher and Wheeler,[24] followed by the University of California Los Angeles (UCLA) Loneliness Scale (31%).[25] The UCLA scale was originally developed to measure loneliness in adults,[25] but the current review shows that the scale is also widely applied in youth samples. Other youth-specific measures such as the Loneliness and Aloneness Scale for Children and Adolescence (LACA)[26] were less commonly used (12%). The De Jong Gierveld Loneliness Scale,[27] which was developed to measure loneliness in older adults, was used in 2% of the included articles. The other articles used different measures, including loneliness items taken from the Child Depression Inventory[28] or ad hoc measures.

Measures of risk factors for loneliness

The studies investigated in this review included a broad range of different risk and protective factors for loneliness. We grouped these factors at different levels, in line with ecological theory.[10] The first level was the individual (i.e., child or adolescent) level, including factors that describe characteristics of the focal children themselves or factors that directly impact the children, of which loneliness levels were predicted. The second level was the parental level, including factors that describe parental and guardian characteristics. Finally, the third level included factors of the (educational) environment, such as neighborhood characteristics or school climate.

On the individual and parental/guardian level, we included demographic factors (e.g., age, gender, ethnicity), socioeconomic factors (e.g., income sufficiency), social factors (e.g., peer acceptance, social support), mental health difficulty factors (e.g., sleep problems, depressive symptoms), physical health difficulty factors (e.g., disabilities, being infected by COVID-19), health behavior factors (e.g., weight status, sport participation), and psychological factors (e.g., shyness, self-esteem). Moreover, on the individual level, we also included ACEs (e.g., child maltreatment).

In total, the included articles examined 99 unique potential risk and protective factors for loneliness, with some articles reporting information on many different factors. To simplify the presentation, we grouped risk factors that occupy a similar conceptual area together. For example, within the main category of socioeconomic factors, the unique risk factors "income sufficiency," "income," and "financial difficulties" were grouped together under the label "financial situation."

Demographic factors

Most included articles reported gender, age, and ethnicity, but not all presented their associations with loneliness. Among studies examining the association between loneliness and gender, multiple studies found no significant predictive effect of gender on later loneliness levels; that was the case when controlling for baseline loneliness[29–31] and without controlling for it.[32] In contrast, Brière et al. found that boys reported lower loneliness levels than girls at the second time point when controlling for baseline loneliness, whereas Tu et al. and Morin found the opposite without controlling for baseline loneliness. Additionally, Kocak et al. reported that gender positively predicted later loneliness, but did not specify the gender coding, complicating interpretation. Overall, gender does not appear to be a consistent longitudinal risk factor for loneliness in youth, especially when baseline loneliness is controlled for.

Regarding age, the association with later loneliness levels remains unclear due to mixed findings. Some studies found no significant relationship between age and loneliness when controlling for baseline loneliness[29] and without such a control[32] (in the left-behind children sample). In these studies, the mean ages at baseline were 11 years[29] with a 1-year follow-up, and 14 years[32] with a 6-month follow-up. Conversely, other studies reported age as a positive predictor (Ref. 20; Ref. 31, in comparison children) or a negative predictor.[33] Again, some studies controlled for baseline loneliness[21] and others did not.[32,33] These studies examined adolescents with mean baseline ages of 12 years[33] and 14 years,[32,35] with follow-ups at 6 months,[32] around 8 months,[33] and 1 year.[35] Thus, the prospective link between age and loneliness varies across studies.

Ethnic minority status was generally not significantly associated with later loneliness levels,[21,29,31,33] independent of whether baseline loneliness was controlled for or not. However, one study found gender-differentiated effects of ethnicity on later levels of loneliness. Compared to Latino boys, all other examined male ethnic groups (Asian, White, Multiethnic, Black) reported higher loneliness levels at a prospective time point.[35] Among girls, Black girls reported lower loneliness levels than Latinas at a prospective time point, while Asian and multiethnic girls reported higher levels. No differences were found between Latinas and White girls.[35] That study did control for baseline levels of loneliness.

Socioeconomic factors

Relatively few studies examined socioeconomic risk factors for loneliness. Those that primarily focused on such factors were grouped under the label "financial situation" that included income sufficiency

and overall income. These studies found no significant associations between the financial situation of children and their parents and later levels of loneliness during adolescence, controlling for baseline loneliness[36] and without such a control.[33] Additionally, one study investigated family adversity, represented by a cumulative index of low parental occupational prestige, low family wealth, low home educational resources, parental educational history, and parental separation. That study also found no significant effect of family adversity on later loneliness when controlling for demographic covariates such as age, gender, ethnicity, and also baseline levels of loneliness.[21] Similarly, parental educational level was not statistically associated with later levels of loneliness.[32] Furthermore, the small positive association between experiences of socioeconomic status marginalization and racial/ethnic marginalization related to parents' occupation and later levels of loneliness in students was not statistically significant.[37]

In sum, the few studies that examined socioeconomic factors and loneliness found no significant associations between financial status, family adversity, or parental educational levels and later loneliness in children, irrespective of whether baseline loneliness was controlled for or not. Additionally, a small positive link between socioeconomic and racial/ethnic marginalization and loneliness was not statistically significant.

Social factors

Parental relationship

One study[38] found a consistent link between high parent–offspring relationship quality and lower loneliness in first-year college students, with those reporting better parent–offspring relationships experiencing a sustained buffer against loneliness 1 and 2 months after baseline. Using linear growth curve modeling, the study explored how loneliness changes over time and how parent–offspring relationship quality influences that trajectory. Although baseline levels of loneliness cannot be directly controlled for in this analytical design, parent–offspring relationship quality still predicted lower loneliness over time, suggesting that parents may provide a stable foundation during the socially unstable transition to college. However, another study found that interparental support (i.e., the support that parents give and receive from each other) as reported by both parents was not significantly associated with changes in loneliness across early adolescence.[39] But the same study found that parental support (i.e., the support that parents provide to their offspring) at T1 as reported by both the child and the parents was significantly related to lower levels of loneliness at T2. That study controlled for previous levels of loneliness in their analyses.

Another study observed that the greatest increase in loneliness scores from before to during the COVID-19 pandemic occurred when paternal and maternal relationship qualities were low, identifying low parent–offspring relationship quality as a risk factor for stronger increases in loneliness from T1 to T2.[40]

Additionally, one study[41] reported no significant association between loneliness and early family environment factors such as maternal warmth, maternal depression, parental antisocial behavior, and domestic violence. However, for girls, a slower decline in father–child relationship closeness was linked to a quicker decline in loneliness.[42] No such associations were found for boys or mother–child relationships. Relationship conflict in both father–child and mother–child dyads did not significantly affect changes in loneliness.[42] Parental facilitation and social coaching were also not significantly related to loneliness when controlling for demographic covariates and baseline loneliness levels.[33] Similarly, parental control and rejection were not significantly related to later loneliness,[43] when controlling for baseline loneliness. In contrast, another study found that perceived parental psychological control positively predicted loneliness over time,[44] when controlling for baseline loneliness. Parental support, however, was negatively related to later loneliness both with and without controlling for previous loneliness levels,[45] although a different study reported nonsignificant negative over-time effects found in a cross-lagged panel model, in which previous loneliness levels were controlled.[44] Both mother–child and father–child attachment were negatively associated with later loneliness.[46] Finally, acculturation-based conflicts with parents, but not conflicts per se, were linked to adolescent loneliness initially and over time.[47]

While early family environment factors showed no significant association with loneliness, we found high parent–offspring relationship quality consistently provided a buffer against loneliness (i.e., acted as a protective factor), whereas low parent–offspring relationship quality predicted increases in loneliness, especially during the COVID-19 pandemic. Specific dynamics like father–child relationship closeness and perceived parental psychological control predicted loneliness over time. Parental support and both mother–child and father–child attachment were negatively associated with later loneliness, while acculturation-based conflicts with parents were positively linked to adolescent loneliness.

Peer relationships

Studies examining friendship quality found that higher friendship quality initially buffered against loneliness in youth transitioning to college, thus functioning as a protective factor, but the effect attenuated over time.[38] Consistently, Tu et al.[33] and Yeh and Lempers[48] also identified a negative association between friendship quality and later loneliness levels. Additionally, having a reciprocal friend at baseline was linked to lower loneliness after 5 months,[49] whereas having a reciprocal best friend during childhood (mean age = 9 years 7 months) did not predict changes in loneliness across an 8-month period.[50] In the study by Rotenberg et al.,[50] previous levels of loneliness were accounted for with the outcome being changes in loneliness from T1 to T2. However, another study found that students' perception of their relationships with other students in early adolescence did not significantly predict loneliness in middle adolescence when controlling for loneliness during early adolescence.[51] Moreover, peer support during adolescence was not associated with loneliness 1 year later when controlling for previous levels of loneliness.[39]

During the COVID-19 pandemic, improved friendship quality compared to prepandemic levels predicted lower loneliness, even when controlling for prepandemic loneliness and other covariates such as changes in the number of friends and sociodemographic variables.[52] However, an increase in the number of friends during the pandemic did not predict lower loneliness,[52] suggesting that the quality of friendships is a more crucial protective factor against loneliness than the quantity.

Conversely, another study found that the number of friends at ages 10–11 years was negatively associated with later loneliness at ages 12–13 years[53]; Rotenberg et al.[50] reported no significant association between the number of friends and later loneliness when controlling for baseline loneliness. Peer acceptance was also negatively associated with later loneliness levels[33,54] when controlling for previous loneliness levels. Moreover, perceived social acceptance and actual acceptance, as measured by peer nominations, were negatively associated with later loneliness when controlling for previous loneliness levels, with higher prospective associations found for perceived social acceptance.[55] Being better liked by more peers during elementary school (ages 6–11 years) was consistently linked to lower loneliness 2 years later, when controlling for baseline loneliness.[56] Similarly, higher peer social preference (i.e., being often nominated by peers as "liked most" and less as "liked least") was significantly related to lower loneliness at T2, when previous loneliness levels were controlled for.[57] However, the same study did not find a significant prospective association between teacher-reported prosocial engagement with peers in the class and later levels of loneliness, when controlling for baseline loneliness. The perceived positivity of sibling relationships was negatively associated with later loneliness levels.[48]

Together, findings from studies show the quality of friendships acts as a protective factor against loneliness. We observed mixed results regarding the number of friends and loneliness, but there were consistent findings that (perceived) peer acceptance plays a significant role in protecting against loneliness.

Peer victimization

Multiple studies included in this systematic review examined face-to-face peer victimization as a potential risk factor for loneliness. Peer victimization at baseline positively predicted loneliness levels 1 year later in Chinese nonmigrants but not significantly in migrants.[58] Controlling for ongoing victimization during adolescence and baseline loneliness, occasional and frequent childhood bullying was significantly associated with later loneliness.[59] Consistently, individuals bullied in childhood were lonelier at age 18 years.[41] Victimization among adolescents aged 14–15 predicted increased loneliness 1 year later, with similar patterns observed in the 15–16 age group.[60] Previous levels of loneliness had been controlled for in that study. Peer victimization at ages 10–11 years also predicted later loneliness,[53] and bullying victimization generally correlated with later loneliness.[33,61,62] Peer victimization in adolescents aged 12–13 years predicted greater loneliness 1 year later in both boys and girls, when controlling for baseline loneliness.[35] However, some studies found that peer victimization was not significantly related to later loneliness when controlling for previous levels of loneliness.[20,31] A similar finding was found for peer-reported victimization, which was not significantly related to later levels of loneliness, when controlling for baseline loneliness.[57]

One study examined coping strategies with peer victimization, finding that revenge-seeking at baseline positively predicted loneliness 1 school-year later, when controlling for baseline loneliness. Conversely, seeking friend assistance at baseline negatively predicted loneliness 1 school-year later.[63]

Studies on cyber victimization show it to be a significant risk factor for later loneliness, even when controlling for baseline loneliness.[31] Cyberbullying was linked to loneliness 6[61] and 12 months later.[62] However, one cross-lagged panel study reported that the over-time path of cyber victimization on later loneliness was not statistically significant when controlling for previous loneliness levels.[60]

Together, we found that peer victimization, whether it was experienced face-to-face or as cyber victimization, is a significant risk factor for later loneliness in youth. Studies consistently showed that victimization in various forms and at different ages predicts increased loneliness over time, although some studies indicated that this relationship might not hold when controlling for previous loneliness levels. However, other studies found significant prospective associations between peer victimization and loneliness also when controlling for baseline loneliness. Coping strategies also played a role, with revenge-seeking predicting higher levels of loneliness (i.e., acting as a risk factor) and seeking friend assistance predicting lower levels of loneliness (i.e., acting as a protective factor). Despite some mixed findings, the overall evidence—especially those including baseline loneliness as a control variable—underscores the lasting impact of peer victimization on youth loneliness.

School-specific factors

Other social risk factors examined include school belongingness, which was prospectively negatively associated with loneliness[31] when controlling for previous loneliness levels; students' perceptions of having supportive relations with their classmates and their sense of belonging to the class was significantly related to later levels of loneliness during upper secondary school.[64] However, another study found that students' sense of school belonging in early adolescence did not significantly predict loneliness in middle adolescence, when controlling for loneliness in early adolescence.[51]

Teacher support and school support were negatively associated with later levels of loneliness.[57] Moreover, another study found that perceived emotional support from teachers at T1 significantly correlated with T2 loneliness.[65] Similarly, both instrumental and emotional teacher support was associated with loneliness about 6 months later in first-year upper secondary school students.[64] Contrastingly, Cavanaugh and Buehler found that perceived teacher support was not associated with changes in loneliness across early adolescence.[39] Moreover, students' perceptions of their relationships

with teachers in early adolescence did not significantly predict loneliness in middle adolescence, when controlling for loneliness in early adolescence.[51]

Having more concerns about the transition from primary to secondary school was associated with higher school-related loneliness in secondary school.[66] Conversely, better parental expectations regarding post-transition adjustment were linked to lower school-related loneliness. Similarly, better primary school teachers' expectations regarding post-transition adjustment correlated with lower school-related loneliness in secondary school.[66] Furthermore, higher levels of teacher-reported student–teacher closeness were not significantly associated with later levels of loneliness, when controlling for previous loneliness levels.[57] The same study also found no significant prospective association between teacher-reported attention problems and later levels of loneliness, when controlling for previous levels of loneliness.

Higher academic achievement was associated with subsequent lower levels of loneliness in some studies[56] but not all.[48] The study by Palmen et al.[56] controlled for previous levels of loneliness, whereas Yeh and Lempers[48] did not control for it. No included study reported the longitudinal association between loneliness and later levels of academic achievement. Early school liking did not significantly predict changes in loneliness, but changes in perceived classmate support did when controlling for previous loneliness levels.[67] However, another study found that the degree of liking school was negatively associated with later levels of loneliness.[57] The intention to quit school at T1 significantly correlated with T2 loneliness.[65]

In sum, we found that school belongingness, school transition concerns, and academic achievement are prospectively associated with feelings of loneliness, emphasizing the importance of supportive relationships and expectations from parents and teachers in mitigating loneliness.

Media use

Another potential risk factor categorized under *social factors* was media use. One study found that social media screen time at baseline was not significantly related to loneliness when controlling for baseline loneliness in 8 out of 10 estimated models.[68] Higher-quality friendships were associated with lower subsequent screen time, and higher screen time was linked to lower subsequent friendship quality in four of five estimated models. Although significant associations were found in both directions, they were modest, with the association between friendships and subsequent screen use being stronger than the reverse.[68] That study controlled for baseline loneliness in their analyses. Moreover, smartphone dependency at baseline predicted loneliness 2½ to 3 months later.[69] Additionally, internet addiction at baseline predicted later loneliness and vice versa.[70] Previous levels of loneliness were controlled for in that study. No significant prospective association was found between television screen time and loneliness, when controlling for baseline loneliness.[68]

Time spent gaming was not related to later loneliness levels when previous levels were controlled for in a cross-lagged panel model,[68,71] suggesting that gaming does not increase loneliness. Another study using the Game Addiction Scale for Adolescents[72] found limited evidence that gaming among "problem gamers" predicted loneliness at certain time points but not for "engaged gamers" or "addicted gamers."[73] That study controlled for baseline loneliness. Pathological gaming predicted loneliness 6 months later and vice versa, when controlling for baseline loneliness.[71]

In addition to overall time spent using technology, a range of psychological and motivational factors related to media use—such as motives, attitudes, and coping mechanisms—play a significant role in understanding loneliness in youth. We included these variables in our coding scheme to capture the nuances of how different types of media use, and the reasons behind them, might affect loneliness over time. For example, self-estimated daily smartphone use was not significantly related to later loneliness.[69] Studies exploring children's motives for going online found that the desire to maintain relationships did not predict later loneliness. However, social skills compensation motives, social inclusion motives, and personal contact motives were positively associated with later loneliness.[74] Entertainment motives for Facebook use predicted increased loneliness, while time spent on Facebook and positive attitudes toward it did not significantly predict loneliness 5 months later.[74] Using Facebook as a coping mechanism to decrease loneliness significantly predicted increased loneliness 5 months later.[74] Interestingly, using the internet to gather information negatively predicted loneliness, controlling for personal characteristics and previous loneliness levels.[75] Another study found no significant relationship between baseline internet communication and follow-up loneliness, although baseline loneliness predicted follow-up instant messaging, not the other way around.[76] A study examining interaction frequency with unique individuals via text messages or phone calls found that girls with long call durations and large Facebook networks experienced increased loneliness (though the effect of Facebook networks was nonsignificant), while comparable boys experienced decreased loneliness.[77] That study controlled for baseline loneliness.

Together, we found that social media screen time did not significantly predict future loneliness, though high-quality friendships were linked to reduced screen time. Gaming had a limited impact on loneliness, and no significant associations were found for television or smartphone use. Motivations like social skills compensation and using Facebook as a coping mechanism increased loneliness, but the study examining this effect did not control for baseline loneliness. Information-gathering online decreased loneliness. Gender differences were observed in how text and phone interactions affected loneliness in one study.

Mental health difficulty factors

The relationship between mental health difficulties and loneliness over time is mixed, with some studies reporting significant

associations and others not. For instance, depressive symptoms were not significantly associated with feelings of isolation, and both positive and negative attitudes toward being alone over time, when controlling for baseline feelings of isolation.[78] Another study found strong correlations between changes in depression and changes in anxiety and well-being scores, but not between changes in depression and changes in loneliness.[79] This finding implies that when anxiety symptoms increase over time, loneliness increased, too, while controlling for previous levels of loneliness. Mental health symptoms at baseline did not predict loneliness 2 weeks later, after controlling for previous loneliness levels and COVID-19–related affective responses.[80] Additionally, no significant association was found between anxiety at 9 years of age and depression and loneliness at 13, 16, and 21 years of age.[81] Also, Lapierre et al. found that depressive symptoms at baseline did not predict later loneliness[69]; instead, loneliness predicted later depression. Moreover, depressive symptoms and stress in early adolescence did not significantly predict loneliness in middle adolescence, when controlling for loneliness in early adolescence.[51]

In contrast, several studies reported significant positive associations between mental health difficulties and later loneliness. In 16- to 21-year-olds, repetitive negative thinking and depressive symptoms predicted loneliness 3 months later.[82] This aligns with findings that previous levels of depression and social anxiety were positively associated with later loneliness.[21,29,35,83,84] However, only a few of those studies included previous loneliness levels as a control variable in their models.[21,29]

Other studies showed that depression accounted for variance in later loneliness.[40,48,60,71,86–88] Again, only a few of those studies controlled for previous levels of loneliness.[41,85] Suicidal ideation also predicted increases in loneliness over time, even when controlling for previous loneliness levels.[85,87] Moreover, bidirectional associations between loneliness and depressive symptoms were observed over time.[88] In that analysis, previous levels of loneliness were controlled for. Internalizing symptoms at baseline predicted later loneliness, when controlling for demographic covariates[29] and when not doing so.[89] Sleep problems and insomnia symptoms did not predict later loneliness when controlling for previous loneliness levels.[22]

While average levels of social anxiety did not predict changes in loneliness over time, changes in social anxiety symptoms did.[90] This means that increases in social anxiety symptoms are associated with increases in loneliness, indicating a longitudinal codevelopment of these internalizing mental health problems. The same study found no association between average depression levels or changes in depression and changes in loneliness. In one of three samples, higher average levels of social anxiety and depression correlated with smaller increases in loneliness.[90] General anxiety, social anxiety, and stress symptoms positively predicted loneliness 6 months later.[61] Similarly, significant positive associations between anxiety and loneliness over time were reported in 14- to 18-year-olds.[47] However, another study found that social anxiety symptoms measured during adolescence did not predict loneliness 24 months later, when controlling for baseline loneliness.[39] Teacher-reported behavioral and learning problems were positively associated with loneliness 1 year later during late childhood.[58] Higher parent-reported mental health difficulties were positively associated with school-related loneliness in secondary school.[66]

No significant association was found between early to middle adolescence eating disorders and loneliness in late adolescence, nor between late adolescence eating disorders and emerging adulthood loneliness. However, disordered eating in late adolescence predicted more loneliness in emerging adulthood for girls.[91] Substance use did not predict later loneliness when controlling for depression and anxiety.[41] Childhood attention-deficit/hyperactivity disorder (ADHD) and conduct disorder did not predict later loneliness when controlling for depression and anxiety.[41]

Psychotic experiences positively predicted later loneliness, but loneliness did not predict later psychotic experiences, suggesting loneliness may not contribute directly to psychosis etiology.[92] That study controlled for baseline loneliness.

Child-level mental health difficulties were not the only factors associated with youth loneliness. Maternal depressive symptoms were positively associated with the child's later loneliness.[34] However, another study found no significant prospective association between maternal depression, parental antisocial behavior, domestic violence, and later loneliness.[41]

In summary, the majority of research suggests that mental health difficulties, specifically depression and anxiety, are a prospective risk factor for loneliness in youth. However, only a few studies summarized in this section controlled for previous levels of loneliness. For other mental health difficulties such as ADHD, eating disorders, and substance abuse, the empirical evidence is very limited. These diagnoses are often comorbid with depression and anxiety, and when controlling for these symptoms, the additional explanatory power in predicting later loneliness is not significant.

Adverse childhood experiences

Few studies have explicitly examined ACEs as prospective predictors of loneliness. One study found that physical maltreatment was not associated with later levels of loneliness after accounting for social isolation and bullying.[41] Another study combined various types of maltreatment (physical abuse, sexual abuse, emotional abuse, and neglect) assessed from birth to 8 years of age, and found no statistically significant direct effect on loneliness measured at age 10 years of age.[93] A different study also combined multiple forms of maltreatment, including emotional abuse, physical abuse, sexual abuse, emotional neglect, domestic violence, and peer victimization (bullying), and found that child maltreatment was associated with a two-fold higher likelihood of 14-year-olds reporting school as a place where they experience loneliness.[94] In that same study, child maltreatment was linked to feelings of peer group loneliness (feeling misunderstood by friends) in boys, but not girls. For girls, there was weak evidence of an association between child maltreatment and overall loneliness in the past 2 weeks at age 13 years, an association not observed in boys. These associations remained unchanged after adjusting for covariates.[94] However,

previous levels of loneliness were not controlled for in those studies on ACEs as potential risk factors of later loneliness.

Physical health difficulties and health behaviors

Various physical health difficulties have been examined in relation to loneliness in longitudinal studies, with most showing no significant prospective associations. Baseline respiratory sinus arrhythmia in young adolescents did not significantly predict loneliness 6 months later, when controlling for baseline loneliness.[29] One study found that, while weight status at 10 years of age did not predict loneliness at 12 years of age, weight status at 12 years of age did predict loneliness at 13 years of age.[36] In that study, previous levels of loneliness were controlled for. Being infected with COVID-19 was not significantly associated with the loneliness trajectory, when controlling for previous levels of loneliness.[95] Furthermore, no significant over-time paths from DNA methylation to loneliness were found in cross-lagged panel models that controlled for previous levels of loneliness.[44]

Research on health behaviors as longitudinal risk factors for loneliness has yielded mixed results. Sport participation modestly predicted lower loneliness 1 year later, when controlling for previous loneliness levels.[21] Athletic competence at baseline was associated with lower loneliness levels approximately 32 weeks later.[96] That study also controlled for baseline loneliness. Older adolescents' loneliness at the second time point was not related to their engagement in penetrative or nonpenetrative sex over the preceding semester, when controlling for baseline loneliness.[97] No clear associations were found between smartphone-interrupted sleep and changes in perceived stress, loneliness, and life satisfaction over an average 4-month follow-up period, when controlling for baseline loneliness.[77] Sleep duration did not predict next-day loneliness.[98] Additionally, there was no significant association between alcohol misuse at baseline and later loneliness.[99]

Together, we found that various physical health difficulties generally showed no significant prospective associations with loneliness in longitudinal studies. However, a limited number of physical health difficulties were examined in the included studies. We also found that sport participation/physical activity may serve as protective factors against loneliness in youth.

Psychological factors

Impact of COVID-19

One study examined how loneliness changed in response to school closures and reopenings during the COVID-19 pandemic, with a significant increase in feelings of isolation after schools reopened (T4), but not during the school closure (T3).[78] Another study found that COVID-19 affective responses predicted loneliness 2 weeks later, after controlling for previous loneliness levels and mental health symptoms. The reverse effect of initial loneliness on subsequent COVID-19 affective responses was not significant, indicating a more robust temporal effect of affective response on loneliness than vice versa.[80] In that study, previous levels of loneliness were controlled for.

Fear of negative evaluations, rejection sensitivity, self-esteem, and life satisfaction

Fear of negative evaluations from others positively predicted loneliness 1 year later.[100] Rejection sensitivity predicted an increase in loneliness when controlling for previous loneliness levels, but not vice versa.[86] Self-esteem negatively predicted loneliness at various time points: 6 months later,[61,71,75,101,102] 1 year later,[47,48,100] and over longer periods.[81,103] Of those studies, few controlled for previous levels of loneliness.[75,101] Perceived self-worth at baseline also negatively predicted loneliness 1 year later, when controlling for previous loneliness levels.[58] Loneliness and self-esteem reciprocally affected each other over time, with low self-esteem leading to increases in loneliness and vice versa.[55] In that study by Vanhalst and colleagues, previous levels of loneliness were controlled for.[55] In the Chinese internal migrant population, self-esteem negatively predicted loneliness 6 months later. Loneliness was also negatively predicted by social support seeking, but positively predicted by acculturative stress.[104] Angry and anxious expectations of rejection significantly predicted loneliness 4 months later when controlling for baseline loneliness, indicating that the shared aspect of defensive expectations predicts loneliness.[105]

Life satisfaction and social and emotional skills predicted lower levels of loneliness 6 months later.[71] Peer-related loneliness—loneliness experiences with regard to their relationships to peers—in adolescence was positively related to later parent-related loneliness (i.e., loneliness experiences with regard to relationships to parents), when controlling for previous levels of peer-related loneliness.[106]

Personality traits

Shyness was positively associated with loneliness 1 year later,[70,107] with one study reporting a pathway from shyness to loneliness mediated by popularity in fifth graders aged about 11 years.[96] In this study by Zhang et al., previous levels of loneliness were controlled for. Being viewed as shy by peers was related to higher loneliness 5 months later,[49] though another study found no significant prospective association between shyness and loneliness when controlling for previous loneliness levels.[108] Similarly, childhood social withdrawal at ages 5, 9, and 12 years positively predicted feelings of loneliness at ages 13, 16, and 21 years, also controlling for previous loneliness levels.[109] However, overall social withdrawal in kindergarten did not significantly predict later levels of loneliness at ages 9–10 years.[110]

Higher levels of neuroticism at 12 years of age predicted loneliness at 18 years of age, even when controlling for other personality

traits, depression, anxiety, and bullying experiences.[41] Consistent findings were also found with neuroticism predicting later loneliness in 11- to 16-year-olds,[83] where higher neuroticism levels were generally associated with increased loneliness when controlling for baseline loneliness.[111] Extraversion did not predict changes in loneliness when controlling for baseline loneliness.[111] Contrasting this finding, another study found that extraversion positively predicted changes in loneliness from baseline from 9 to 21 months later.[112] Overcontrollers (low extraversion and emotional stability, high conscientiousness and agreeableness) showed higher loneliness levels 9 months later than undercontrollers (low agreeableness and conscientiousness) and resilients, who scored relatively high on all Big Five traits.[113] Sense of coherence negatively predicted later loneliness.[114]

Other psychological factors

Unpopularity, but not attractiveness or athleticism, predicted later loneliness.[99] Aggression predicted loneliness during fifth grade (ages 10–11 years old), when controlling for baseline loneliness.[96] Similarly, teacher-reported aggression significantly predicted later levels of loneliness when controlling for previous loneliness.[57] IQ and theory of mind at 5 years of age were negatively associated with loneliness in young adulthood in univariate analyses, but these associations became nonsignificant when controlling for other covariates.[41] Educational identity commitment contributed to lower loneliness, while reconsideration of commitment increased loneliness over time.[115] In that analysis, previous levels of loneliness were controlled for. Coping efficacy was related to lower loneliness levels 1 year later.[116]

Self-perceived gender typicality at 12 years of age negatively predicted loneliness at 13 years of age for both boys and girls, when controlling for baseline loneliness.[35] In that study, gender typicality was conceptualized as a dimension of gender identity, representing the extent to which individuals perceive themselves as aligning with or conforming to societal gender norms. In an Indonesian sample, Islamic religiousness at 15 years of age did not predict loneliness at 16 years of age when controlling for previous levels of loneliness, but positive religious coping predicted lower loneliness.[30]

A study on rural-to-urban migration in China found that the duration of parental migration was not significantly related to children's loneliness. Children's certainty about positive future outcomes and hopefulness negatively predicted later loneliness, while perceived control over the future did not.[32]

Environmental factors

Few studies examined other risk factors such as neighborhood characteristics. Those characteristics that have been examined include physical decay, physical disorder, street safety, neighborhood safety, neighborhood disorder, and collective efficacy. Those characteristics were measured during adolescence (13–16 years), but none prospectively predicted loneliness at 18 years of age.[117]

DISCUSSION

Main findings

Our systematic review identified several statistically significant longitudinal risk and protective factors for loneliness in youth. However, relatively few factors consistently predicted later levels of loneliness across multiple studies. That may reflect a lack of primary studies, especially for those risk factors that were only assessed in one or two studies, rather than an actual lack of a prospective association. Inconsistent findings across studies regarding the statistical significance of a prospective association may be due to differences in the sample characteristics of different studies, varying time lags between prospective assessments, or the fact that some studies lack power due to small sample sizes.

The most consistently identified risk factors included low peer acceptance, peer victimization, depression, social anxiety, internalizing symptoms, low self-esteem, shyness, and neuroticism. Compared to reviews in older adults,[13] we identified some similarities and differences in longitudinal risk factors associated with youth loneliness that are discussed below in more detail. Also, a recent review reported that female gender, quality of social contacts, low competence, socioeconomic status, and chronic medical conditions were significant risk factors of loneliness in adults.[118] Some of those risk factors, such as low quality of social relationships, have also been identified for youth and will be discussed below. We discuss the risk and protective factors along the layers of the social structure, starting with the characteristics of the individual followed by proximal relationships, connections with the broader social network, and the living environment. Moreover, we call for further research on and a more comprehensive assessment of these factors to gain a clearer understanding of their potential roles in mitigating or exacerbating loneliness in youth.

Personality and behavioral traits

Low self-esteem and shyness were repeatedly linked to higher loneliness, supporting the idea that low self-esteem is a key maintaining and exacerbating factor of loneliness perhaps because it provides a foundation for the belief that loneliness cannot be remedied.[119] Neuroticism was a significant predictor, with higher levels leading to greater loneliness. This finding is especially important because it supports research showing that loneliness and neuroticism share a common genetic basis (for a review, see Ref. 120). Mund et al.,[120] indeed, argue that such findings might indicate that neuroticism reflects the overall propensity of individuals to experience negative affect, whereas loneliness reflects the tendency to experience negative affect, particularly in social situations. Interestingly, higher extraversion at baseline predicted a higher increase in loneliness over time.[112] This finding partly contradicts findings on (negative) associations between extraversion and loneliness across adulthood.[121] Findings were less robust for the other examined personality traits because the total number of studies examining those risk factors was low.

Mental health

Depression, social anxiety, and other internalizing symptoms were strongly associated with loneliness, reflecting findings in older populations.[13] Other mental health difficulties such as psychotic experiences, internet addiction, sleep problems, and ADHD were less frequently studied during research with children and youth samples. Psychotic experiences[92] and internet addiction[70] were significantly related to loneliness, whereas sleep problems[98] and ADHD were not.[41] Future research should expand beyond the commonly studied internalizing disorders like depression and anxiety to include a wider range of mental health issues. Specifically, more studies should investigate the connections between loneliness and psychotic experiences, internet addiction, sleep problems, and ADHD among youth. This broader focus will help build a comprehensive understanding of how loneliness interacts with various mental health conditions.

Physical health and health behaviors

Research on physical health factors as risk factors for loneliness in childhood and youth was limited. Potential risk factors such as DNA methylation,[44] body weight,[36] and respiratory sinus arrhythmia[29] were each examined in only one study, with no consistent significant prospective associations found. While physical activity has shown some protective effects against loneliness, other health behaviors, such as diet, sleep patterns, and substance use, should be examined more thoroughly and more extensively to understand the unique associations each of these factors play. Many other potential risk factors such as immobility, chronic illnesses, or disabilities in youth were not longitudinally examined. To better understand the role of physical health in the emergence and development of loneliness in children and adolescents, future longitudinal studies on these topics are essential. This is particularly important as robust prospective associations between physical health and loneliness have already been well-documented in other populations, such as older adults.[13] Comparing these findings with younger age groups will be an important avenue for future research.

Social media use

Despite various longitudinal studies examining social media use, there was little consensus on its association with loneliness. The amount of time spent on social media did not consistently predict loneliness. This finding aligns with other reviews emphasizing that the manner in which media is used is more important than the frequency of media use.[122]

Academic and school-related factors

Concerns about school transitions and lower parental and teacher expectations regarding post-transition adjustment were linked to increased school-related loneliness. Academic achievement and attitudes toward school showed mixed results, with some studies indicating a protective effect against loneliness.

Family and social environment

Parental relationship quality was a significant factor predicting later loneliness (e.g., Refs. 38 and 39). Low parental relationship quality was associated with higher loneliness levels, while social support–seeking negatively predicted loneliness. This finding might imply that a stable and harmonious parental relationship provides children with a sense of security and emotional support, which are crucial for their social development and their transition into adolescence. Additionally, children who actively seek social support are likely to develop stronger social networks and coping strategies, which can buffer against feelings of loneliness. Regarding child maltreatment, some longitudinal studies in our systematic review found significant associations with later loneliness,[94] but others did not find such prospective associations.[93] A recently published meta-analysis on cross-sectional studies found that individuals with maltreatment histories during childhood, on average, feel lonelier than individuals without such maltreatment histories.[123] However, asking individuals retrospectively about their maltreatment history might lead to different results than prospectively assessing maltreatment experiences and following those individuals longitudinally over time. Moreover, it is important to keep in mind that, although loneliness can change across the lifespan, it is a relatively stable, trait-like characteristic.[13,120] This feature of loneliness implies that while certain factors are cross-sectionally related to loneliness (e.g., child maltreatment and poverty), this does not necessarily mean that those factors predict changes in loneliness over time. However, those factors may still be relevant for understanding loneliness or the prevention of loneliness, as the (social) environment in which children grow up may influence their baseline loneliness, which may then remain relatively stable over time.

Peer relationships

Low peer acceptance and peer victimization were robust predictors of increased loneliness (e.g., Refs. 33 and 35). Studies consistently showed that both face-to-face and cyber peer victimization predicted higher levels of loneliness over time.[31]

Cultural, neighborhood, and sociodemographic factors

Cultural and sociodemographic factors, including gender typicality, religious coping, and rural-to-urban migration, had varied impacts on loneliness. Positive religious coping and hopefulness about the future were protective against loneliness, whereas the duration of parental migration did not significantly influence children's loneliness. This

former result may be due to the close-knit associations and shared values of individuals that are part of religious communities.[124] Moreover, neighborhood characteristics were not prospectively related to loneliness.[117] Surprisingly, the financial situation of a family did not prospectively predict loneliness in the studies examined in this review.[33,36] However, the sample composition in the studies on this effect was not representative for the population of interest and thus it remains unclear whether very low-income families were included. Future research should further examine this prospective association capturing the whole range of family incomes.

In summary, our review indicates that mental health difficulties, particularly depression and anxiety, are significant prospective risk factors for loneliness in youth. Peer relationships, self-esteem, and personality traits (e.g., shyness, social withdrawal) also play crucial roles in predicting loneliness. However, evidence for physical health and media use as predictors of loneliness remains limited and inconclusive. Further research is needed to explore these areas and develop targeted, upstream interventions aimed at mitigating loneliness in youth before it becomes a chronic or enduring issue. Many existing interventions, as reviewed by Eccles and Qualter and Osborn et al., focus on enhancing social and emotional skills.[125,126] Those interventions can be particularly effective in preventing the negative consequences of prolonged peer victimization by empowering youth to report and address harmful behaviors and by boosting self-esteem, which our systematic review identified as a key protective factor.

Research gaps

The number of longitudinal studies examining loneliness and potential risk and protective factors in youth has increased in the last decade. Interestingly, the number of studies included in this systematic review of longitudinal studies is substantially higher than those in a recent review on longitudinal risk factors for loneliness in old age.[13] Our review presents a wide range of risk and protective factors that have been examined. Most studies examined factors at the individual level; more distal factors such as social determinants of loneliness were less often examined. Moreover, many of these factors were considered in only a few studies, and some in just one, or focus only on specific age groups, making it difficult to evaluate the robustness of these findings. To illustrate the evidence gaps in the literature on longitudinal risk and protective factors for loneliness in youth, we created an evidence gap table. Due to its size, the table is included only in the online Supplementary Material at OSF: https://osf.io/jnt2b.

Our analysis of the evidence gaps reveals significant disparities in the frequency and developmental timing of predictor and outcome measurements across existing studies. Specifically, while middle childhood (6–11 years of age) and early adolescence (11–16 years of age) are common focus periods, research in earlier developmental stages is notably sparse. For instance, few studies examine the impact of predictors occurring during the prenatal phase, infancy, or early childhood (up to 6 years of age) on later loneliness outcomes. This lack of early-stage data points is a critical research gap, as early experiences may significantly shape loneliness trajectories over time.

A second major gap emerges in the consistency of measurements across developmental stages. Although loneliness outcomes are assessed at various age points, most studies do not systematically track both predictors and outcomes across the full span of childhood and adolescence. This inconsistency limits our understanding of how risk factors evolve and exert influence longitudinally. Longitudinal designs that capture both predictor variables and loneliness outcomes across multiple developmental periods would enhance our ability to identify and understand causal pathways and temporal changes in loneliness risk.

Finally, while certain predictors, such as bullying and victimization (13 studies) and depression (22 studies), are frequently investigated, other potential predictors receive comparatively limited attention. This imbalance highlights areas of research that should be expanded. That is particularly the case in underexplored domains like socioenvironmental influences, ACEs, and personality traits, which could yield a more comprehensive understanding of loneliness determinants. Importantly, even more proximal factors typically associated with loneliness in cross-sectional studies, such as the number of friends, were only examined in a few longitudinal studies. That gap is particularly notable given the theoretical assumptions about the protective role of friendships.[1] To address this significant oversight, more longitudinal research is needed to provide empirical support for these assumptions.

In sum, our findings show key gaps in the existing literature on loneliness risk factors in youth, underscoring the need for studies that adopt a more inclusive, longitudinal approach across diverse developmental periods. Addressing these gaps could lead to a deeper, developmentally nuanced understanding of loneliness onset and persistence, informing prevention and intervention strategies tailored to the needs of children and adolescents.

We identified several studies that longitudinally examined loneliness and certain risk or protective factors. However, not all of them reported associations between a risk or protective factor measured at T1 and later levels of loneliness while controlling for previous loneliness levels—sometimes because loneliness was not measured at all time points. Failing to account for prior levels of the outcome may lead to biased estimates of the associations between potential predictors and future loneliness, as earlier experiences of loneliness could confound the observed relationships. By controlling for initial loneliness, studies can more accurately assess the true longitudinal effects of risk and protective factors, thus enhancing the validity of their findings. This approach is essential for identifying factors that genuinely influence changes in loneliness over time, rather than merely reflecting stability in the outcome. Thus, future longitudinal research on loneliness should consider accounting for previous loneliness levels when examining risk and protective factors.

An additional notable issue is that most studies examined overall loneliness and did not distinguish between different facets of loneliness, such as peer- versus parent-related or social versus emotional loneliness. Different risk factors and the inability to cope with these factors can result in specific forms of loneliness.[4] Future longitudinal

research should conceptualize loneliness as a multifaceted construct to better understand which factors lead to specific types of social deficits.

Furthermore, studies rarely used cut-off scores to identify chronic loneliness and looked at mean scores instead. Thus, this systematic literature review includes some studies where there are few children and adolescents whose loneliness is chronically high and other studies that included significant numbers of those youths with chronically high loneliness scores. To better differentiate risk and protective factors for different forms of loneliness, especially for chronically high loneliness, future studies need to measure loneliness more accurately and report cut-offs used.

Generalizability of the findings

In the present review, significant variability was observed in the representativeness of the samples, with only 31% of studies utilizing samples representative of the broader population of interest. This variability raises concerns about the generalizability of the findings. While 52% of studies reported low attrition rates, which is reassuring, the absence of attrition data in 13% of the studies poses challenges for interpreting the robustness of the findings.

To address these limitations, future research should aim to enhance the standards of recruitment to ensure that study samples are more representative of the target populations. It is also crucial that researchers consistently report response and attrition rates, as these metrics are vital for evaluating the reliability and generalizability of the results.

We also recommend that research funders prioritize and provide dedicated funding to support the development of more robust recruitment and retention strategies. This funding could facilitate greater participant engagement and adherence to high methodological standards, ultimately leading to more reliable and impactful research outcomes. Ensuring adequate resources for such efforts is essential for advancing the quality and credibility of research in this field.

Strengths and limitations

This review provides the first systematic overview of longitudinal risk and protective factors for loneliness in youth. A significant strength of this review is its broad scope, encompassing all available variables examined for their predictive associations with loneliness. However, the wide variety of different risk and protective factors also limits our ability to present detailed associations for each factor. More detailed information regarding the measurement of each risk factor, the sample examined, and the methods used for the longitudinal analyses are available in the full dataset of all included studies on OSF: https://osf.io/s5qnd.

This review focused on the significance versus nonsignificance of longitudinal risk factors, using $p < 0.05$ as the criterion for significance. Although many of the longitudinal studies included were well-powered, we note that statistical significance is highly dependent on sample size, and a nonsignificant finding does not necessarily indicate the absence of an association in the population. While some included studies discussed the effect sizes of their associations, most did not, which is a limitation of the single studies included in this review. We provide the strengths of each association, whenever available, in the dataset on OSF.

Our review was limited to articles and dissertations published in English, as we did not find any relevant German work. As with all systematic reviews, there is a risk that we may have missed some relevant articles due to our search strategy and the databases used. Additionally, because we did not conduct a backward and forward search within the articles, it is possible that some studies were not captured by our search terms. However, by including the two major databases in the field (PsycINFO and MEDLINE) and using a general search string, we are confident that our review is as comprehensive as possible given these limitations.

CONCLUSIONS

This systematic review provides a comprehensive overview of longitudinal risk and protective factors for loneliness in youth, highlighting key predictors such as low peer acceptance, peer victimization, depression, social anxiety, internalizing symptoms, low self-esteem, shyness, and neuroticism. Despite the growing number of studies, many risk and protective factors have been examined in only a few studies, necessitating further replication to confirm these findings. The review also identifies significant gaps in research, particularly regarding physical health factors, digital media use, and specific personality traits. Future research should adopt a multifaceted approach to loneliness, distinguishing between different types and exploring novel risk factors and interventions—ideally in representative samples. Addressing these gaps will be crucial in developing effective strategies to reduce loneliness among youth.

AUTHOR CONTRIBUTIONS

Conceptualizing the research idea and formulating the overarching research goals: S.B., K.P., and P.Q. Development of methodology: S.B., K.P., and P.Q. Coding of included single studies: S.B., K.P., P.Q., A.N., and Y.Z. Quality assessment of included single studies: D.H. Writing the initial draft: S.B. Critical review and commentary of the draft: K.P., P.Q., D.H., A.N., and Y.Z. Supervision: S.B. and P.Q. Project administration: S.B.

ACKNOWLEDGMENTS

This work was supported by the German Research Foundation (DFG) Grant 497278260 to Susanne Buecker, the Kavli Trust Grant Kavli2023-0000000064 to Daniel Hayes and Pamela Qualter, and The Prudence Trust INSPYRE, PT-0040 which Daniel Hayes is a coapplicant.

We thank Theresa Kern for her assistance in preparing the revision of this manuscript.

Open access funding enabled and organized by Projekt DEAL.

COMPETING INTERESTS

The authors declare that they have no competing interests.

ORCID

Susanne Buecker https://orcid.org/0000-0003-3443-5400
Pamela Qualter https://orcid.org/0000-0001-6114-3820

PEER REVIEW

The peer review history for this article is available at: https://publons.com/publon/10.1111/nyas.15266

REFERENCES

1. Alam, I., Khayri, E., Podger, T. A. B., Aspinall, C., Fuhrmann, D., & Lau, J. Y. F. (2023). A call for better research and resources for understanding and combatting youth loneliness: Integrating the perspectives of young people and researchers. *European Child & Adolescent Psychiatry*, *32*(3), 371–374.
2. Hang, S., Jost, G. M., Guyer, A. E., Robins, R. W., Hastings, P. D., & Hostinar, C. E. (2024). Understanding the development of chronic loneliness in youth. *Child Development Perspectives*, *18*(1), 44–53.
3. Peplau, L. A., & Perlman, D. (1982). *Loneliness: A sourcebook of current theory, research and therapy*. Wiley.
4. Danneel, S., Maes, M., Vanhalst, J., Bijttebier, P., & Goossens, L. (2018). Developmental change in loneliness and attitudes toward aloneness in adolescence. *Journal of Youth and Adolescence*, *47*(1), 148–61.
5. Qualter, P., Hennessey, A., Yang, K., Chester, K. L., Klemera, E., & Brooks, F. (2021). Prevalence and social inequality in youth loneliness in the UK. *International Journal of Environmental Research and Public Health*, *18*(19), 10420.
6. Schütz, R., & Bilz, L. (2023). Einsamkeit im Kindes- und Jugendalter. Zur Verbreitung eines Risikofaktors für die psychische Gesundheit unter 11- bis 15-jährigen deutschen Schülerinnen und Schülern. *Bundesgesundheitsbl*, *66*(7), 794–802.
7. Christiansen, J., Qualter, P., Friis, K., Pedersen, S., Lund, R., Andersen, C., Bekker-Jeppesen, M., & Lasgaard, M. (2021). Associations of loneliness and social isolation with physical and mental health among adolescents and young adults. *Perspectives in Public Health*, *141*(4), 226–36.
8. Jefferson, R., Barreto, M., Verity, L., & Qualter, P. (2023). Loneliness during the school years: How it affects learning and how schools can help. *Journal of School Health*, *93*(5), 428–35.
9. Bayat, N., Fokkema, T., Mujakovic, S., & Ruiter, R. A. C. (2021). Contextual correlates of loneliness in adolescents. *Children and Youth Services Review*, *127*, 106083.
10. Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard University Press.
11. Akhter-Khan, S. C., Van Es, W., Prina, M., Lawrence, V., Piri, I., Rokach, A., Heu, L. C., & Mayston, R. (2024). Experiences of loneliness in lower- and middle-income countries: A systematic review of qualitative studies. *Social Science & Medicine*, *340*, 116438.
12. Hjalmarsson, S., & Mood, C. (2015). Do poorer youth have fewer friends? The role of household and child economic resources in adolescent school-class friendships. *Children and Youth Services Review*, *57*, 201–11.
13. Dahlberg, L., McKee, K. J., Frank, A., & Naseer, M. (2022). A systematic review of longitudinal risk factors for loneliness in older adults. *Aging & Mental Health*, *26*(2), 225–49.
14. Ferreira-Alves, J., Magalhães, P., Viola, L., & Simoes, R. (2014). Loneliness in middle and old age: Demographics, perceived health, and social satisfaction as predictors. *Archives of Gerontology and Geriatrics*, *59*(3), 613–23.
15. Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin*, *139*(1), 53–80.
16. Wray-Lake, L., Crouter, A. C., & McHale, S. M. (2010). Developmental patterns in decision-making autonomy across middle childhood and adolescence: European American parents' perspectives. *Child Development*, *81*(2), 636–51.
17. Felmlee, D. H., McMillan, C., Inara Rodis, P., & Osgood, D. W. (2018). The evolution of youth friendship networks from 6th to 12th grade: School transitions, popularity and centrality. In D. F. Alwin, D. H. Felmlee, & D. A. Kreager (Eds.), *Social networks and the life course* (pp. 161–184). Springer International Publishing.
18. Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. WW. Norton & Company.
19. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *PLoS Medicine*, *18*(3), e1003583.
20. Devine, K. A., Storch, E. A., Geffken, G. R., Freddo, M., Humphrey, J. L., & Silverstein, J. H. (2008). Prospective study of peer victimization and social-psychological adjustment in children with endocrine disorders. *Journal of Child Health Care*, *12*(1), 76–86.
21. Brière, F. N., Yale-Soulière, G., Gonzalez-Sicilia, D., Harbec, M. J., Morizot, J., Janosz, M., & Pagani, L. S. (2018). Prospective associations between sport participation and psychological adjustment in adolescents. *Journal of Epidemiology and Community Health*, *72*(7), 575–81.
22. Hom, M. A., Hames, J. L., Bodell, L. P., Buchman-Schmitt, J. M., Chu, C., Rogers, M. L., Chiurliza, B., Michaels, M. S., Ribeiro, J. D., Nadorff, M. R., Winer, E. S., Lim, I. C., Rudd, M. D., & Joiner, T. E. (2017). Investigating insomnia as a cross-sectional and longitudinal predictor of loneliness: Findings from six samples. *Psychiatry Research*, *253*, 116–28.
23. Houtzager, B. A., Oort, F. J., Hoekstra-Weebers, J., Caron, H. N., Grootenhuis, M. A., & Last, B. F. (2004). Coping and family functioning predict longitudinal psychological adaptation of siblings of childhood cancer patients. *Journal of Pediatric Psychology*, *29*(8), 591–605.
24. Asher, S. R., & Wheeler, V. A. (1985). Children's loneliness: A comparison of rejected and neglected peer status. *Journal of Consulting and Clinical Psychology*, *53*(4), 500–5.
25. Russell, D. W., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA loneliness scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, *39*(3), 472–80.
26. Marcoen, A., Goossens, L., & Caes, P. (1987). Loneliness in pre-through late adolescence: Exploring the contributions of a multidimensional approach. *Journal of Youth and Adolescence*, *16*(6), 561–77.
27. De, J., Gierveld, J., & Kamphuis, F. (1985). The development of a Rasch-type loneliness scale. *Applied Psychological Measurement*, *9*(3), 289–99.
28. Kovacs, M.. (1978). Children's Depression Inventory. https://doi.apa.org/doi/10.1037/t19482-000
29. Cai, T., & Tu, K. M. (2020). Linking parental monitoring and psychological control with internalizing symptoms in early adolescence: The moderating role of vagal tone. *Journal of Abnormal Child Psychology*, *48*(6), 809–21.
30. French, D. C., Purwono, U., & Shen, M. (2022). Religiosity and positive religious coping as predictors of Indonesian Muslim adolescents' externalizing behavior and loneliness. *Psychology of Religion and Spirituality*, *14*(2), 189–99.
31. Wright, M. F., & Wachs, S. (2019). Adolescents' psychological consequences and cyber victimization: The moderation of school-belongingness and ethnicity. *International Journal of Environmental Research and Public Health*, *16*(14), 2493.

32. Su, S., Li, X., Lin, D., & Zhu, M. (2017). Future orientation, social support, and psychological adjustment among left-behind children in rural China: A longitudinal study. *Frontiers in Psychology*, *8*, 1309.
33. Tu, K. M., Gregson, K. D., Erath, S. A., & Pettit, G. S. (2017). Custom-fit parenting: How low- and well-accepted young adolescents benefit from peer-related parenting. *Parenting: Science and Practice*, *17*(3), 157–76.
34. Kocak, A., Mouratidis, A., Sayil, M., Kindap-Tepe, Y., & Ucanok, Z. (2017). Interparental conflict and adolescents' relational aggression and loneliness: The mediating role of maternal psychological control. *Journal of Child and Family Studies*, *26*(12), 3546–58.
35. Smith, D. S., Schacter, H. L., Enders, C., & Juvonen, J. (2018). Gender norm salience across middle schools: Contextual variations in associations between gender typicality and socioemotional distress. *Journal of Youth and Adolescence*, *47*(5), 947–60.
36. Qualter, P., Hurley, R., Eccles, A., Abbott, J., Boivin, M., & Tremblay, R. (2018). Reciprocal prospective relationships between loneliness and weight status in late childhood and early adolescence. *Journal of Youth and Adolescence*, *47*(7), 1385–97.
37. Benner, A. D., & Wang, Y. (2014). Demographic marginalization, social integration, and adolescents' educational success. *Journal of Youth and Adolescence*, *43*(10), 1611–27.
38. Calderon Leon, M. D., Guassi Moreira, J. F., Saragosa-Harris, N. M., Waizman, Y. H., Sedykin, A., Peris, T. S., & Silvers, J. A. (2022). Parent and friend relationship quality and links to trajectories of loneliness during the first year of college. *Child Psychiatry and Human Development*, *55*(3), 680–694.
39. Cavanaugh, A. M., & Buehler, C. (2016). Adolescent loneliness and social anxiety: The role of multiple sources of support. *Journal of Social and Personal Relationships*, *33*(2), 149–70.
40. Janssens, J. J., Achterhof, R., Lafit, G., Bamps, E., Hagemann, N., Hiekkaranta, A. P., Hermans, K. S. F. M., Lecei, A., Myin-Germeys, I., & Kirtley, O. J. (2021). The impact of COVID-19 on adolescents' daily lives: The role of parent–child relationship quality. *Journal of Research on Adolescence*, *31*(3), 623–44.
41. Matthews, T., Danese, A., Caspi, A., Fisher, H. L., Goldman-Mellor, S., Kepa, A., Moffitt, T. E., Odgers, C. L., & Arseneault, L. (2019). Lonely young adults in modern Britain: Findings from an epidemiological cohort study. *Psychological Medicine*, *49*(2), 268–77.
42. Yan, J., Feng, X., & Schoppe-Sullivan, S. J. (2018). Longitudinal associations between parent–child relationships in middle childhood and child-perceived loneliness. *Journal of Family Psychology*, *32*(6), 841–7.
43. Rowe, S. L., Gembeck, M. J. Z., Rudolph, J., & Nesdale, D. (2015). A longitudinal study of rejecting and autonomy-restrictive parenting, rejection sensitivity, and socioemotional symptoms in early adolescents. *Journal of Abnormal Child Psychology*, *43*(6), 1107–18.
44. Koopmans, Y., Nelemans, S. A., Bosmans, G., Van Den Noortgate, W., Van Leeuwen, K., & Goossens, L. (2023). Perceived parental support and psychological control, DNA methylation, and loneliness: Longitudinal associations across early adolescence. *Journal of Youth and Adolescence*, *52*(10), 1995–2011.
45. Luyckx, K., Goossens, E., Rassart, J., Apers, S., Vanhalst, J., & Moons, P. (2014). Parental support, internalizing symptoms, perceived health status, and quality of life in adolescents with congenital heart disease: Influences and reciprocal effects. *Journal of Behavioral Medicine*, *37*(1), 145–55.
46. Tan, D., Xie, R., Song, S., Ding, W., Wu, W., & Li, W. (2023). How does parent–child attachment influence left-behind children's loneliness and depression: The mediating roles of peer attachment and teacher–student relationship. *Child: Care, Health and Development*, *49*(6), 1076–1086.
47. Juang, L. P., Syed, M., & Cookston, J. T. (2012). Acculturation-based and everyday parent-adolescent conflict among Chinese American adolescents: Longitudinal trajectories and implications for mental health. *Journal of Family Psychology*, *26*(6), 916–26.
48. Yeh, H. C., & Lempers, J. D. (2004). Perceived sibling relationships and adolescent development. *Journal of Youth and Adolescence*, *33*(2), 133–47.
49. Bowker, J. C., & Etkin, R. G. (2016). Evaluating the psychological concomitants of other-sex crush experiences during early adolescence. *Journal of Youth and Adolescence*, *45*(5), 846–57.
50. Rotenberg, K. J., McDougall, P., Boulton, M. J., Vaillancourt, T., Fox, C., & Hymel, S. (2004). Cross-sectional and longitudinal relations among peer-reported trustworthiness, social relationships, and psychological adjustment in children and early adolescents from the United Kingdom and Canada. *Journal of Experimental Child Psychology*, *88*(1), 46–67.
51. Lätsch, A. (2018). The interplay of emotional instability and socio-environmental aspects of schools during adolescence. *European Journal of Educational Research*, *7*(2), 281–93.
52. Juvonen, J., Lessard, L. M., Kline, N. G., & Graham, S. (2022). Young adult adaptability to the social challenges of the COVID-19 pandemic: The protective role of friendships. *Journal of Youth and Adolescence*, *51*(3), 585–97.
53. Pedersen, S., Vitaro, F., Barker, E. D., & Borge, A. I. H. (2007). The timing of middle-childhood peer rejection and friendship: Linking early behavior to early-adolescent adjustment. *Child Development*, *78*(4), 1037–51.
54. Nishimura, T., Murakami, T., & Sakurai, S. (2018). Do not overlook lonely children: Additional evidence from two longitudinal studies. *Journal of Social and Personal Relationships*, *35*(7), 956–76.
55. Vanhalst, J., Luyckx, K., Scholte, R. H. J., Engels, R., & Goossens, L. (2013). Low self-esteem as a risk factor for loneliness in adolescence: Perceived—but not actual—social acceptance as an underlying mechanism. *Journal of Abnormal Child Psychology*, *41*(7), 1067–81.
56. Palmen, H., Vermande, M. M., Dekovic, M., & van Aken, M. A. G. (2011). Competence, problem behavior, and the effects of having no friends, aggressive friends, or nonaggressive friends: A four-year longitudinal study. *Merrill-Palmer Quarterly*, *57*(2), 186–213.
57. Gest, S. D., Welsh, J. A., & Domitrovich, C. E. (2005). Behavioral predictors of changes in social relatedness and liking school in elementary school. *Journal of School Psychology*, *43*(4), 281–301.
58. Zhao, S., Chen, X., Liu, J., Li, D., & Cui, L. (2021). Maternal encouragement of sociability and adjustment in nonmigrant and migrant children in urban China. *Journal of Family Psychology*, *35*(6), 822–32.
59. Matthews, T., Caspi, A., Danese, A., Fisher, H. L., Moffitt, T. E., & Arseneault, L. (2020). A longitudinal twin study of victimization and loneliness from childhood to young adulthood. *Development and Psychopathology*, *34*(1), 367–377.
60. Espinoza, G., Schacter, H. L., & Juvonen, J. (2020). School and cybervictimization across high school: Normative developmental trajectories and bidirectional links with loneliness. *Journal of Research on Adolescence*, *30*(3), 787–99.
61. Chu, X. W., Fan, C. Y., Lian, S. L., & Zhou, Z. K. (2019). Does bullying victimization really influence adolescents' psychosocial problems? A three-wave longitudinal study in China. *Journal of Affective Disorders*, *246*, 603–10.
62. Wright, M. F. (2016). The buffering effect of parental mediation in the relationship between adolescents' cyberbullying victimisation and adjustment difficulties. *Child Abuse Review*, *25*(5), 345–58.
63. Polasky, S. A. (2011). Coping with school bullying: An examination of longitudinal effects of coping on peer victimization and adjustment. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *72*(1-A), 76.
64. Morin, A. H. (2020). Teacher support and the social classroom environment as predictors of student loneliness. *Social Psychology of Education*, *23*(6), 1687–707.
65. Tvedt, M. S., Bru, E., Idsoe, T., & Niemiec, C. P. (2021). Intentions to quit, emotional support from teachers, and loneliness among peers:

Developmental trajectories and longitudinal associations in upper secondary school. *Educational Psychology*, *41*(8), 967–84.
66. Rice, F., Ng-Knight, T., Riglin, L., Powell, V., Moore, G. F., McManus, I. C., Shelton, K. H., & Frederickson, N. (2021). Pupil mental health, concerns and expectations about secondary school as predictors of adjustment across the transition to secondary school: A longitudinal multi-informant study. *School Mental Health: A Multidisciplinary Research and Practice Journal*, *13*(2), 279–98.
67. Ladd, G. W., & Coleman, C. C. (1997). Children's classroom peer relationships and early school attitudes: Concurrent and longitudinal associations. *Early Education and Development*, *8*(1), 51–66.
68. Lawrence, D., Hunter, S. C., Cunneen, R., Houghton, S. J., Zadow, C., Rosenberg, M., Wood, L., & Shilton, T. (2022). Reciprocal relationships between trajectories of loneliness and screen media use during adolescence. *Journal of Child Family Studies*, *31*(5), 1306–17.
69. Lapierre, M. A., Zhao, P., & Custer, B. E. (2019). Short-term longitudinal relationships between smartphone use/dependency and psychological well-being among late adolescents. *Journal of Adolescent Health*, *65*(5), 607–12.
70. Tian, Y., Qin, N., Cao, S., & Gao, F. (2021). Reciprocal associations between shyness, self-esteem, loneliness, depression and internet addiction in Chinese adolescents. *Addiction Research & Theory*, *29*(2), 98–110.
71. Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2011). Psychosocial causes and consequences of pathological gaming. *Computers in Human Behavior*, *27*(1), 144–52.
72. Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology*, *12*(1), 77–95.
73. Krossbakken, E., Pallesen, S., Mentzoni, R. A., King, D. L., Molde, H., Finseras, T. R., & Torsheim, T. (2018). A cross-lagged study of developmental trajectories of video game engagement, addiction, and mental health. *Frontiers in Psychology*, *9*, 2239.
74. Teppers, E., Luyckx, K., Klimstra, T. A., & Goossens, L. (2014). Loneliness and Facebook motives in adolescence: A longitudinal inquiry into directionality of effect. *Journal of Adolescence*, *37*(5), 691–9.
75. Liu, R. D., Shen, C. X., Xu, L., & Gao, Q. (2013). Children's internet information seeking, life satisfaction, and loneliness: The mediating and moderating role of self-esteem. *Computers & Education*, *68*, 21–8.
76. van den Eijnden, R., Meerkerk, G. J., Vermulst, A. A., Spijkerman, R., & Engels, R. (2008). Online communication, compulsive internet use, and psychosocial well-being among adolescents: A longitudinal study. *Developmental Psychology*, *44*(3), 655–65.
77. Dissing, A. S., Andersen, T. O., Jensen, A. K., Lund, R., & Rod, N. H. (2022). Nighttime smartphone use and changes in mental health and wellbeing among young adults: A longitudinal study based on high-resolution tracking data. *Scientific Reports*, *12*(1), 8013.
78. Houghton, S., Kyron, M., Hunter, S. C., Lawrence, D., Hattie, J., Carroll, A., & Zadow, C. (2022). Adolescents' longitudinal trajectories of mental health and loneliness: The impact of COVID-19 school closures. *Journal of Adolescence*, *94*(2), 191–205.
79. Evans, S., Alkan, E., Bhangoo, J. K., Tenenbaum, H., & Ng-Knight, T. (2021). Effects of the COVID-19 lockdown on mental health, wellbeing, sleep, and alcohol use in a UK student sample. *Psychiatry Research*, *298*, 113819.
80. Okruszek, L., Aniszewska-Stanczuk, A., Piejka, A., Wisniewska, M., & Zurek, K. (2020). Safe but lonely? Loneliness, anxiety, and depression symptoms and COVID-19. *Frontiers in Psychology*, *11*, 579181.
81. Hutten, E., Jongen, E. M. M., Verboon, P., Bos, A. E. R., Smeekens, S., & Cillessen, A. H. N. (2021). Trajectories of loneliness and psychosocial functioning. *Frontiers in Psychology*, *12*, 689913.
82. Raes, F., Bastin, M., Pede, T., Belmans, E., Goossens, L., & Vanhalst, J. (2020). Repetitive negative thinking outperforms loneliness and lack of social connectedness as a predictor of prospective depressive symptoms in adolescents. *Scandinavian Journal of Child and Adolescent Psychiatry and Psychology*, *8*, 149–56.
83. Guarneri-White, M. E. (2018). Making a bad situation worse: Co-rumination and peer victimization in two adolescent samples. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *78*(11), 123.
84. Meng, J., Wang, X., Wei, D., & Qiu, J. (2020). State loneliness is associated with emotional hypervigilance in daily life: A network analysis. *Personality and Individual Differences*, *165*, 110154.
85. Kristensen, S. M., Urke, H. B., Larsen, T. B., & Danielsen, A. G. (2023). Hello darkness, my old friend: Moderating a random intercept cross-lagged panel model of loneliness and symptoms of anxiety and depression. *Research on Child and Adolescent Psychopathology*, *51*(3), 383–97.
86. Zhou, J., Li, X., Tian, L., & Huebner, E. S. (2020). Longitudinal association between low self-esteem and depression in early adolescents: The role of rejection sensitivity and loneliness. *Psychology and Psychotherapy: Theory, Research and Practice*, *93*(1), 54–71.
87. Frijns, T., & Finkenauer, C. (2009). Longitudinal associations between keeping a secret and psychosocial adjustment in adolescence. *International Journal of Behavioral Development*, *33*(2), 145–54.
88. Vanhalst, J., Klimstra, T. A., Luyckx, K., Scholte, R. H. J., Engels, R., & Goossens, L. (2012). The interplay of loneliness and depressive symptoms across adolescence: Exploring the role of personality traits. *Journal of Youth and Adolescence*, *41*(6), 776–87.
89. Qualter, P., Brown, S. L., Munn, P., & Rotenberg, K. J. (2010). Childhood loneliness as a predictor of adolescent depressive symptoms: An 8-year longitudinal study. *European Child & Adolescent Psychiatry*, *19*(6), 493–501.
90. Danneel, S., Geukens, F., Maes, M., Bastin, M., Bijttebier, P., Colpin, H., Verschueren, K., & Goossens, L. (2020). Loneliness, social anxiety symptoms, and depressive symptoms in adolescence: Longitudinal distinctiveness and correlated change. *Journal of Youth and Adolescence*, *49*(11), 2246–64.
91. Cortes-Garcia, L., Rodriguez-Cano, R., & von Soest, T. (2022). Prospective associations between loneliness and disordered eating from early adolescence to adulthood. *International Journal of Eating Disorders*, *55*(12), 1678–89.
92. Endo, K., Yamasaki, S., Nakanishi, M., DeVylder, J., Usami, S., Morimoto, Y., Stanyon, D., Suzuki, K., Miyashita, M., Arai, M., Fujikawa, S., Kanata, S., Ando, S., Hiraiwa-Hasegawa, M., Kasai, K., & Nishida, A. (2022). Psychotic experiences predict subsequent loneliness among adolescents: A population-based birth cohort study. *Schizophrenia Research*, *239*, 123–7.
93. Pelaez Merrick, M. T. (2008). Pathways from child maltreatment to juvenile delinquency: Sexualized behaviors and loneliness. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *69*(3-B), 1966.
94. Barnes, M., Szilassy, E., Herbert, A., Heron, J., Feder, G., Fraser, A., Howe, L. D., & Barter, C. (2022). Being silenced, loneliness and being heard: Understanding pathways to intimate partner violence & abuse in young adults. A mixed-methods study. *BMC Public Health*, *22*(1), 1562.
95. Gouin, J. P., de la Torre-Luque, A., Sanchez-Carro, Y., Geoffroy, M. C., & Essau, C. (2023). Heterogeneity in the trajectories of psychological distress among late adolescents during the covid-19 pandemic. *JCPP Advances*, *3*(4), e12195.
96. Zhang, K., Duan, J., Gest, S., Chen, X., Liu, J., Li, D., & French, D. C. (2024). Peer relationships mediate the pathways from behavioral qualities to United States and Chinese children's loneliness. *Child Development*, *95*(1), e21–e34.
97. Owen, J., Fincham, F. D., & Moore, J. (2011). Short-term prospective study of hooking up among college students. *Archives of Sexual Behavior*, *40*(2), 331–41.

98. Master, L., Nahmod, N. G., Mathew, G. M., Hale, L., Chang, A. M., & Buxton, O. M. (2023). Why so slangry (sleepy and angry)? Shorter sleep duration and lower sleep efficiency predict worse next-day mood in adolescents. *Journal of Adolescence*, *95*(6), 1140–51.
99. Leggett-James, M. P., Faur, S., Kaniusonyte, G., Zukauskiene, R., & Laursen, B. (2023). The perils of not being attractive or athletic: Pathways to adolescent adjustment difficulties through escalating unpopularity. *Journal of Youth and Adolescence*, *52*(11), 2231–42.
100. Geukens, F., Spithoven, A., Pouwels, J. L., Danneel, S., Cillessen, A. H. N., van den Berg, Y. H. M., & Goossens, L. (2022). Changes in adolescent loneliness and concomitant changes in fear of negative evaluation and self-esteem. *International Journal of Behavioral Development*, *46*(1), 10–7.
101. Du, H., Li, X., Chi, P., Zhao, S., & Zhao, J. (2019). Loneliness and self-esteem in children and adolescents affected by parental HIV: A 3-year longitudinal study. *Applied Psychology: Health and Well-Being*, *11*(1), 3–19.
102. Xiong, M., Liu, R., & Ye, Y. (2021). Reciprocal relations between relative deprivation and psychological adjustment among single-parent children in China: A longitudinal study. *Acta Psychologica Sinica*, *53*(1), 67–80.
103. Strauss, R. S. (2000). Childhood obesity and self-esteem. *Pediatrics*, *105*(1), e15–e15.
104. Kuo, B. C. H., Huang, S., Li, X., & Lin, D. (2021). Self-esteem, resilience, social support, and acculturative stress as predictors of loneliness in Chinese internal migrant children: A model-testing longitudinal study. *Journal of Psychology: Interdisciplinary and Applied*, *155*(4), 387–405.
105. London, B., Downey, G., Bonica, C., & Paltin, I. (2007). Social causes and consequences of rejection sensitivity. *Journal of Research on Adolescence*, *17*(3), 481–506.
106. Geukens, F., Spithoven, A., Bastin, M., Vanhalst, J., & Maes, M. (2022). Lonely in different relationships: Bidirectional effects between parent- and peer-related loneliness in adolescence. *International Journal of Environmental Research and Public Health*, *19*(12), 7014.
107. Yang, P., Xu, G., Zhao, S., Li, D., Liu, J., & Chen, X. (2021). Shyness and psychological maladjustment in Chinese adolescents: Selection and influence processes in friendship networks. *Journal of Youth and Adolescence*, *50*(10), 2108–21.
108. Chung, J. (2010). The social functioning of the peer group: Contextual effects on social, school, and psychological adjustment in Chinese children. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *70*(8-B), 5204.
109. Verhagen, M., Derks, M., Roelofs, K., & Maciejewski, D. (2023). Behavioral inhibition, negative parenting, and social withdrawal: Longitudinal associations with loneliness during early, middle, and late adolescence. *Child Development*, *94*(2), 512–28.
110. Rubin, K. H., Both, L., & Wilkinson, M. (1990). The Waterloo Longitudinal Project: Correlates and consequences of social withdrawal in childhood. *Infancia y Aprendizaje: Journal for the Study of Education and Development*, *49*, 73–90.
111. Wieczorek, L. L., Humberg, S., Gerstorf, D., & Wagner, J. (2021). Understanding loneliness in adolescence: A test of competing hypotheses on the interplay of extraversion and neuroticism. *International Journal of Environmental Research and Public Health*, *18*(23), 12412.
112. Alt, P., Reim, J., & Walper, S. (2021). Fall from grace: Increased loneliness and depressiveness among extraverted youth during the German COVID-19 lockdown. *Journal of Research on Adolescence*, *31*(3), 678–91.
113. Rassart, J., Luyckx, K., Goossens, E., Oris, L., Apers, S., & Moons, P. (2016). A Big Five personality typology in adolescents with congenital heart disease: Prospective associations with psychosocial functioning and perceived health. *International Journal of Behavioral Medicine*, *23*(3), 310–8.
114. Apers, S., Luyckx, K., Goossens, E., Rassart, J., Budts, W., & Moons, P. (2015). Sense of coherence in young people with congenital heart disease. *Journal of Developmental and Behavioral Pediatrics*, *36*(4), 267–76.
115. Kaniusonyte, G., Truskauskaite-Kuneviciene, I., Zukauskiene, R., & Crocetti, E. (2019). Knowing who you are for not feeling lonely? A longitudinal study on identity and loneliness. *Child Development*, *90*(5), 1579–88.
116. Drake, E. C., Sladek, M. R., & Doane, L. D. (2016). Daily cortisol activity, loneliness, and coping efficacy in late adolescence: A longitudinal study of the transition to college. *International Journal of Behavioral Development*, *40*(4), 334–45.
117. Matthews, T., Odgers, C. L., Danese, A., Fisher, H. L., Newbury, J. B., Caspi, A., Moffitt, T. E., & Arseneault, L. (2019). Loneliness and neighborhood characteristics: A multi-informant, nationally representative study of young adults. *Psychological Science*, *30*(5), 765–75.
118. Solmi, M., Veronese, N., Galvano, D., Favaro, A., Ostinelli, E. G., Noventa, V., Favaretto, E., Tudor, F., Finessi, M., Shin, J. I., Smith, L., Koyanagi, A., Cester, A., Bolzetta, F., Cotroneo, A., Maggi, S., Demurtas, J., De Leo, D., & Trabucchi, M. (2020). Factors associated with loneliness: An umbrella review of observational studies. *Journal of Affective Disorders*, *271*, 131–8.
119. Qualter, P., Vanhalst, J., Harris, R., Van Roekel, E., Lodder, G., Bangee, M., Maes, M., & Verhagen, M. (2015). Loneliness across the life span. *Perspectives on Psychological Science*, *10*(2), 250–64.
120. Mund, M., Freuding, M. M., Möbius, K., Horn, N., & Neyer, F. J. (2020). The stability and change of loneliness across the life span: A meta-analysis of longitudinal studies. *Personality and Social Psychology Review*, *1*(24), 24–52.
121. Buecker, S., Maes, M., Denissen, J. J. A., & Luhmann, M. (2020). Loneliness and the Big Five personality traits: A meta-analysis. *European Journal of Personality*, *34*(1), 8–28.
122. Nowland, R., Necka, E. A., & Cacioppo, J. T. (2017). Loneliness and social internet use: Pathways to reconnection in a digital world ? *Perspectives on Psychological Science*, *1*(13), 70–87.
123. De Heer, C., Bi, S., Finkenauer, C., Alink, L., & Maes, M. (2024). The association between child maltreatment and loneliness across the lifespan: A systematic review and multilevel meta-analysis. *Child Maltreatment*, *29*(2), 388–404.
124. Yıldırım, M., Kızılgeçit, M., Seçer, İ., Karabulut, F., Angın, Y., Dağcı, A., Vural, M. E., Bayram, N. N., & Çinici, M. (2021). Meaning in life, religious coping, and loneliness during the Coronavirus health crisis in Turkey. *Journal of Religion and Health*, *60*(4), 2371–85.
125. Eccles, A. M., & Qualter, P. (2021). Review: Alleviating loneliness in young people – A meta-analysis of interventions. *Child and Adolescent Mental Health*, *26*(1), 17–33.
126. Osborn, T., Weatherburn, P., & French, R. S. (2021). Interventions to address loneliness and social isolation in young people: A systematic review of the evidence on acceptability and effectiveness. *Journal of Adolescence*, *93*, 53–79.

How to cite this article: Buecker, S., Petersen, K., Neuber, A., Zheng, Y., Hayes, D., & Qualter, P. (2024). A systematic review of longitudinal risk and protective factors for loneliness in youth. *Ann NY Acad Sci.*, 1–18.
https://doi.org/10.1111/nyas.15266