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A Scoping Review Examining Treatment Components of Classroom and Small Group School-Based Anxiety and Test Anxiety Interventions

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Abstract

The purpose of the present scoping review was to provide a summary of (a) treatment components included in classroom and small group school-based interventions targeting anxiety or test anxiety, and (b) the frequency in which feasibility is considered within these evaluations, based on the framework proposed by Gadke and colleagues (2021). 105 articles were included in the analysis with 80 studies examining school-based anxiety interventions and 25 articles focusing on test anxiety. While cognitive behavioural therapy was the most common type of intervention, a variety of intervention types and treatment components emerged in the analysis. Furthermore, the social validity/acceptability feasibility dimension was frequently evaluated in anxiety and test anxiety intervention evaluations, but other dimensions (i.e., practicality and integration) emerged in a small number of studies. The variance among intervention types and treatment components may be reflective of the variability among within school environments. Information specific to dimensions of feasibility may offer valuable information for researchers and educators implementing and evaluating school-based anxiety and test anxiety interventions. Finally, the present scoping review provides an excellent foundation for future research to continue examining the relative efficacy of school-based anxiety and test anxiety interventions and their individual treatment components.

Keywords: School-Based Intervention, Anxiety, Test Anxiety, Feasibility, Treatment Component

Abstract for Lay Audience

Schools have long been valued as a platform for providing mental health support for children and youth (School Mental Health Ontario, 2023a). As anxiety is the leading mental health concern among children and youth in Canada (Canadian Mental Health Association, 2016), many school-based anxiety interventions have been developed. However, fewer studies have teased apart the specific pieces, or treatment components, that are included in these interventions. This approach can provide insight into the components that have the greatest benefit for students (Erhardt, 2019) and help create targeted training programs for teachers looking to deliver these interventions to their students. Additionally, it is important to consider the *feasibility* of the intervention which involves examining the relevance of the intervention for the people involved (e.g., students, teachers) and whether the intervention can realistically be introduced and maintained in a school setting (Gadke et al., 2021). With this in mind, the present review sought to provide a summary of (a) the treatment components included in classroom and small group school-based anxiety and test anxiety interventions, and (b) explore the frequency in which feasibility is considered within the studies.

Of the 105 articles included in the review, 80 included school-based interventions targeting anxiety while 25 evaluated interventions targeting test anxiety. While some intervention types and treatment components showed up frequently across the studies, there was also a large amount of variability in intervention types and treatment components. Just as every school is made up of a unique population of students, teachers and class settings, this variety of interventions and treatment components may reflect the variety of mental health needs within and between schools. Additionally, many studies included feasibility information with feedback from students and teachers regarding the relevance and usefulness of the intervention. Finally,

the current review provides a strong foundation to support future researchers looking to further evaluate school-based anxiety and test anxiety interventions and their treatment components.

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Introduction

Anxiety is a leading mental health concern among Canadian children and youth (Canadian Mental Health Association [CMHA], 2016). Many dimensions of a child's life can be significantly influenced by their anxiety symptoms including relational (e.g., initiating friendships, relationship with siblings), health-related (e.g., sleep disruption), and academic (e.g., completing tests or homework, giving presentations; Langley et al., 2004). Furthermore, test anxiety, a state-specific form of anxiety in which the individual is being evaluated, such as in an academic context (Zeidner, 1998) has been linked to decreased self-esteem and self-efficacy, greater general and social anxiety, and depression (Robson et al., 2023). Finally, childhood anxiety has longitudinal effects such as contributing to substance use (Kendall et al., 2004) and the decision to leave school before achieving the desired education level (Van Ameringen et al., 2001).

Despite the prevalence of childhood anxiety, a minority of these children receive formal treatment (Chavira et al., 2004). Growing wait times pose a significant barrier to timely mental health access for children and youth. For example, Children's Mental Health Ontario ([CMHO]; 2020a) reported that the average wait time for therapy was over two months, with some families required to wait over two years for mental health care. In addition to extensive wait times, parents also reported cost and uncertainty regarding available services as barriers to seeking help for their child's anxiety (Reardon et al., 2020).

This need is further compounded by the onset of the coronavirus disease (COVID-19). Beginning in the early months of the pandemic, preliminary research demonstrated a global trend where children and youth reported increased mental health concerns (Śniadach et al., 2021). Furthermore, the prevalence of anxiety in children and youth continues to climb, with an

estimated twofold increase in rates of anxiety during the COVID-19 pandemic (Racine et al., 2021).

As wait times for mental health services continue to increase (CMHO, 2020a), it is imperative to consider alternative means of providing mental health support to children and youth. As children spend the majority of their day in the classroom (Jones et al., 2019), schools have long been recognized as a viable platform for mental healthcare delivery (School Mental Health Ontario [SMHO], 2023a). Furthermore, many children and youth may not receive adequate mental health support from professional sources in the community (Weist et al., 2003). For example, while some children in Ontario reported receiving mental health support from physical and mental healthcare clinicians, the primary source of their mental health support was received through their school (Georgiades et al., 2019). Additionally, while teachers can integrate mental health education and promotion into the classroom, they also serve a critical role in identifying students who may require more intensive mental health services (SMHO, 2023a), a need which may otherwise go unnoticed.

As schools provide an excellent opportunity for mental health promotion and intervention (SMHO, 2023a) and the school environment can contribute to the development and maintenance of anxiety symptoms (Ginsburg et al., 2008), several school-based anxiety interventions have been developed. While considerable research has been devoted to examining the overall effectiveness of these interventions, there is a need to examine the precise treatment elements which contribute to these promising outcomes. Identifying these elements will support educators and clinicians in maximizing the utility of interventions by focusing on effective treatment components which will likely reach the greatest number of students (Erhardt, 2019). Therefore, the purpose of the proposed study is to conduct a scoping review to examine and compare the

treatment elements of classroom and small group school-based anxiety and test anxiety interventions.

Literature Review

Anxiety

Nearly one in five Canadian children experience anxiety throughout their life (Anxiety Canada, 2023). Anxiety is defined as "an emotion characterized by feelings of tension, worried thoughts, and physical changes" (American Psychological Association, 2023). However, the presentation of this mental health concern varies considerably among young people. For example, some children may demonstrate overt expressions of anxiety such as voicing worried or anxious thoughts, refusing to leave their caregiver or experiencing disruptions to sleep or eating patterns (National Health Service [NHS], 2020). Conversely, anxious adolescents who present as quiet and well behaved may go undetected by caregivers, school staff or mental health professionals. Children who express their anxiety through externalizing behaviour, such as angry outbursts or other behavioural disruptions may also be blamed for their behaviour or be misdiagnosed (Anxiety Canada, 2023). Though some anxiety is necessary and adaptive, anxious feelings can become intense, frequent and disrupt many facets of a young person's daily life including physical and mental health, relationships and academics (CMHA, 2016; NHS, 2020).

Anxiety and School

School can pose significant challenges for anxious students by interfering with their ability to effectively engage with the information being taught (Anxiety in the Classroom, n.d.). A study conducted by Nail and colleagues (2015) evaluated academic difficulties among youth diagnosed with an anxiety disorder (i.e., generalized anxiety disorder, social anxiety disorder, and social phobia). Difficulty focusing was the most commonly reported challenge across all

samples, regardless of specific anxiety diagnosis or demographic variables. Completing coursework, presenting in front of the class and writing exams were also frequently reported challenges among adolescents. Similarly, Langley and colleagues (2004) found class presentations, exam writing and difficulty focusing to be the most frequently cited academic challenges among a clinical sample of children and adolescents.

The inverse relationship between academic functioning and anxiety (i.e., high anxiety and low academic performance) is not limited to students' current level of anxiety. A study conducted by de Lijster (2019) evaluated anxiety and depression levels among children from infancy to age 10. Furthermore, the authors assessed children's *school functioning* at age 10 by examining performance on four school subjects (i.e., "school performance") and whether the child received in-school accommodations, experienced difficulties in class or was unable to pass a grade (i.e., "school problems") (p. 46). Results revealed the majority of children experienced low levels of anxiety and depression across each timepoint (i.e., "low trajectory") (p. 46). Conversely, some children experienced an increase in symptoms (i.e., "increasing trajectory") while others experienced a decrease in symptoms (i.e., "decreasing trajectory") (p. 46). Furthermore, some children experienced increased anxiety and depression until age six followed by a decline in symptoms (i.e., "preschool-limited trajectory") (p. 46).

In their examination of symptom trajectory in relation to school functioning, the authors found children in the low trajectory experienced greater difficulties in school performance compared to the decreasing trajectory (de Lijster, 2019). Furthermore, children in the increasing and preschool-limited trajectories experienced greater difficulties in both facets of school functioning. Given that children in the preschool-limited trajectory had lower levels of anxiety and depression at the time of the assessment, this finding may indicate a potential residual effect

of anxiety and depression from the child's early years. Collectively, these results clearly highlight the importance of providing mental health support to young children before they reach primary school-age. However, the findings also point to the necessity of continual mental health care irrespective of symptom trajectory as these children may experiences challenges in other areas of life (i.e., school functioning) down the road. Therefore, school-based interventions are critical as they can provide mental health education and support even if the child has not experienced a mental health challenge, or whether their mental health concerns are current or historical.

A child's anxiety may impact their engagement in the classroom, but it may influence their ability to attend (Anxiety in the Classroom, n.d.). A recent systematic scoping review concluded that anxiety, particularly separation anxiety and social anxiety, is a common thread underlying *school refusal* behaviour in children and youth (Tekin & Aydin, 2022). Similarly, researchers have found separation anxiety disorder to be frequently diagnosed among community and clinical samples of children with school refusal behaviour (Egger et al., 2003; Last & Strauss, 1990).

Preliminary research has also found anxiety to be implicated in school reluctance among children. Unlike school refusal where children actively avoid attending school (Kearney & Silverman, 1996), *school reluctance* refers to a "fear-based hesitation" to attend school and, while they will attend, there is a desire to leave once there (p. 212, Jones & Suveg, 2015). Similar to school refusing children, results revealed separation anxiety to be the most frequently diagnosed anxiety disorder in school reluctant children though rates of social anxiety were similar to children who were not school reluctant. However, the anxiety experienced by school reluctant children was significantly more intense compared to non-school reluctant children.

Moreover, the challenges experienced by school refusing and school reluctant children and youth also extend beyond the anxiety symptoms they are directly displaying. For example, school refusing children frequently experienced somatic concerns such as headaches and stomach aches, peer conflict and victimization (Egger et al., 2003). While school reluctant children also experienced somatic concerns, they reported more intense negative emotions and were lonelier compared to non-school reluctant children (Jones & Suveg, 2015). However, the authors noted that difficulties school reluctant children experienced in the social and affective domains were captured exclusively by child-reports and were unrecognized by caregivers and teachers. This is concerning as children may attempt to avoid attending school to escape situations which evoke unpleasant emotions or involve adverse peer interactions thereby creating a pattern of "negative reinforcement" (p. 276, Kearney et al., 2004). Therefore, if multi-faceted difficulties experienced by school reluctant children are not fully understood by the adults in the child's life, the child may not receive appropriate support thereby further dissuading them from attending classes and strengthening the negative reinforcement pattern (Hannesdottir & Ollendick, 2007; Jones & Suveg, 2015). Though means of recognizing school reluctant youth is critical to ensure they receive appropriate individualized support (Jones & Suveg, 2015), school based mental health programs can serve as a preliminary step in providing basic mental health education and anxiety coping skills for school reluctant children who would not otherwise receive this type of support.

Finally, a systematic review conducted by Finning et al. (2019) found low school attendance is associated with anxiety, although they noted a considerable heterogeneity exists between studies and the lack of high quality research specifically examining these constructs. The authors also emphasized a need for further research examining the directional relationship

between anxiety and school absences as poor attendance may offer another indicator to caregivers and school staff in identifying children who require additional mental health support for anxiety.

Test Anxiety in School

While the school environment can represent a variety of anxiety-inducing situations for students (Colognori et al., 2012), anxiety experienced prior to, during or following an examination or other assessment may be particularly relevant (Zeidner, 1998). *Test anxiety* can be conceptualized as "the set of cognitive, affective and behavioural reactions that accompany concern over possible negative consequences contingent upon performance in a test or evaluative situation" (p. 25, Zeidner, 1998). It is important to note that several conceptualizations of the construct exist within the literature. For example, Liebert and Morris (1967) suggested test anxiety was comprised of *worry* and *emotionality*. Conversely, Sarason (1984) further delineated these dimensions into a four-factor model which included *tension, worry, test-irrelevant thinking* and *bodily reactions*. Hodapp and Benson (1997) conducted further testing of the four-factor model which revealed *worry, emotionality, lack of confidence* and *distraction* to best fit the test anxiety construct. However, the authors found the first three dimensions were the most pertinent across all models examined. Consistent across these conceptualizations is the notion that test anxiety (a) exists within a particular *context* and (b) has a *social* component where the person is concerned about how their "performance will be judged or evaluated by other people" (p. 143, Putwain, 2008). Nevertheless, given the numerous test anxiety models, it can be challenging for practitioners to determine the best course of treatment and instruments tend not to capture the variability in test anxiety presentations from students (Zeidner, 2007).

Regardless of how test anxiety is conceptualized, the consequences associated with it can be vast. Often, an initial clue that a child is experiencing test anxiety is their performance on a school test is incongruent with their demonstrated knowledge (Huberty, 2009). Given the significant emphasis placed on testing in educational settings and the gatekeeping role of some exams (e.g., post-secondary entrance exams) (Huberty, 2009; Putwain & von der Embse, 2021), this consequence can be particularly detrimental. Furthermore, a recent meta-analysis found the impact of test anxiety to be far reaching for individuals with this form of anxiety, with difficulties across several school subjects and a decreased self-perception of their ability to perform well academically (Robson et al., 2023). Additionally, self-efficacy and self-esteem have been found to have a strong negative association with test anxiety (Robson et al., 2023; von der Embse et al., 2018). Finally, test anxiety has been linked to other anxiety domains including general and social anxiety (Robson et al., 2023). Though test anxiety may emerge within the context of a particular exam or assessment, the residual impact of these anxious feelings clearly extends well beyond the completion of the test.

School-Based Mental Health Services

Despite anxiety being the leading mental health concern among Canadian children and youth (CMHA, 2016), few children receive appropriate mental healthcare. Extensive wait lists are one of the most frequently cited barriers to children receiving mental health support in the community (Repie, 2005). While some children are required to wait nearly two months for an initial assessment or treatment (Kowalewski et al., 2011), others have waited over two years for therapy in Ontario (CMHO, 2020a). Furthermore, waitlists for intensive or specialized treatment are over a year in many Ontario jurisdictions with some children unable to access such services based on geographic location (CMHO, 2020a). It is important to note that children who require

immediate support, such as young people deemed at high risk of harming themselves or others, experience substantially shorter wait times for service (CMHO, 2020a; Kowalewski et al., 2011). However, most children and youth do not fall within this severe clinical range (Repie, 2005). Consequently, many children and youth will remain on growing waitlists which can exacerbate their mental health symptoms, result in missed opportunities for prevention or early intervention efforts and potential loss of opportunities to access and benefit from child and youth mental health services before reaching adulthood (CMHO, 2020b).

While the lack of timely access to child and youth mental health services is a crucial area of concern, not knowing about available services also prevents children and youth from receiving the mental health support they require. For example, a study conducted by Reardon and colleagues (2020) found parents/caregivers were not certain of the mental health services available for their child who was presenting with anxiety symptoms. Additionally, many parents/caregivers stated they did not know who to contact to begin the process of connecting their child with appropriate supports. Furthermore, perceived stigma may prevent parents/caregivers from seeking help for their child. Specifically, parents/caregivers expressed concern about judgements made by other parents or professionals if they spoke about their child's anxiety (Reardon et al., 2018; Reardon et al., 2020). A study examining youth perspectives in relation to accessing school mental health services also found stigma to be the primary hindrance from seeking mental healthcare followed by uncertainty about the services offered in their school (Bowers et al., 2013).

Overall, community mental health services are largely underutilized (Kern et al., 2017) with individuals facing significant obstacles in their attempt to access these supports. Schools represent a valuable opportunity for providing mental healthcare to children and youth who may

not receive it otherwise (SMHO, 2023a). For example, schools can offer interim support to children and youth whose mental health concerns do not meet the clinical severity to warrant immediate mental health support which can lead to waiting several months for external mental healthcare (Repie, 2005). Furthermore, while schools are often the most common source of mental health support for young people, they may also be the only source of support for some students (Burns et al., 1995; Georgiades et al., 2019; Rossen & Cowen, 2015). With schools often dispersed across wide geographic regions (e.g., urban and rural settings), they can also reach a subset of children and youth who are unable to access community supports due to their physical location (Rossen & Cowen, 2015).

Schools can not only increase access to mental healthcare, they can simultaneously address perceptions of seeking support for mental health difficulties. As previously discussed, youth may not access school-based mental health services due to the stigma associated with them (Bowers et al., 2013). However, Herzig-Anderson and colleagues (2012) suggest that providing access to mental healthcare through schools may begin to "normalize" (p. 2) these services and encourage individuals to access them when needed. School staff also have the potential to create an environment which prioritizes mental health and well-being for all students (Kern et al., 2017; SMHO, 2023a). For example, Kern and colleagues (2017) emphasized the importance of establishing and maintaining a "positive school climate" (p. 211) by fostering connections between students, teachers and peers. The authors noted that teachers are also in a position to identify students who may be withdrawing from others which may indicate a need for further support. Furthermore, while parents or caregivers tend to be the primary confidant for students disclosing a mental health concern, students who reached out to their teacher were more likely to receive mental healthcare and experienced a shorter wait time for service (Colognori et al.,

2012). While these results clearly reinforce the necessity of creating positive relationships between students and teachers, the authors suggest this outcome may also be due to teachers having greater familiarity and knowledge of available mental health services as they are regularly connecting students with these supports.

In addition to supporting students following the disclosure of a mental health concern (Colognori et al., 2012), teachers are in an excellent position to promote preventative mental healthcare and identify students who require early intervention (SMHO, 2023a). As the school environment has the potential to induce experiences of anxiety for students, such as academic evaluations or social interactions (Colognori et al., 2012), current mental health challenges experienced by children and youth may be more visible to school staff compared to parents or other adults in the child's life. Despite this, a lack of financial and personnel resources often impede the consistent delivery of school-based mental health interventions (March et al., 2022). While educators recognized their pivotal role in supporting student mental health, many stated they do not have sufficient knowledge or training to adequately do so (Coleman, 2021; Reinke et al., 2011). Furthermore, many teachers voiced a need to clearly define their role in supporting the mental health of students to ensure they are not working outside their professional scope of practice (Coleman, 2021). Therefore, while schools have been identified as an optimal setting for accessible child and youth mental healthcare (SMHO, 2023a), there are practical limitations which can affect the efficacy and sustainability of school-based interventions.

Treatment Components of School-Based Anxiety Interventions

Given the variety of constraints to provide mental health support in schools (e.g., funding; school staff capacity) (March et al., 2022), it is critical to maximize the utility of available resources to reach the greatest number of students. Due to the surge of anxiety

symptoms among children and youth (Racine et al., 2022), a growing body of research has been devoted to examining school-based anxiety interventions. While studies often utilize pre- and post-anxiety outcomes to assess treatment efficacy, these measures do not provide insight regarding the range of targeted treatment elements (i.e., active treatment *ingredients*) that are at the core of the intervention (Chorpita et al., 2005). Although promising results have been found for school-based interventions targeting anxiety, these findings are not consistent (e.g., Caldwell et al., 2019; Neil & Christensen, 2009; Zbukvic et al., 2023). By examining the treatment elements within interventions, this can provide opportunities to disseminate strategies that have the greatest likelihood of supporting a broad range of children and youth (Erhardt, 2019). Moreover, with teachers reporting concerns regarding a lack of time, training, and resources for adequate intervention delivery (Coleman, 2021), focusing on specific treatment elements can facilitate targeted training to bolster teachers' comfort and capability with utilizing these strategies.

Despite these potential benefits, minimal research has systematically delineated the treatment components included in school-based anxiety interventions. While systematic reviews and meta-analyses may report the type of school-based intervention utilized (e.g., Cognitive Behavioural Therapy [CBT], relaxation, psychoeducation), they often provide limited information on the specific treatment elements contained within the interventions (e.g., Caldwell et al., 2019; Neil & Christensen, 2009; Zhang et al., 2023). For example, Neil and Christensen (2009) conducted a systematic review examining the efficacy of school-based interventions which target anxiety. However, Erhardt (2019) noted that Neil and Christensen (2009) found most interventions were rooted in "CBT, or components of it" (p. 211) but they did not report which specific CBT components the intervention was comprised of.

Noting this gap in the literature, a systematic review conducted by Erhardt (2019) sought to extend the findings of Neil and Christensen (2009). While both reviews focused on school-based interventions targeting anxiety, Erhardt (2019) conducted a comprehensive analysis of the intervention composition including coding for the specific CBT treatment elements utilized. Results revealed that most interventions used a combination of CBT strategies with psychoeducation being the most frequently utilized component followed by "somatic management" (p. 29) and cognitive restructuring. It is important to note that the authors found that the combination of CBT components varied across interventions thereby demonstrating the importance of examining each individual treatment component rather than relying on a broad description of the intervention in question. Furthermore, school-based anxiety interventions rooted in an approach outside of CBT (e.g., Acceptance and Commitment Therapy [ACT]) have also demonstrated promising results with several studies published in recent years (e.g., Burckhardt et al., 2016; Petersen et al., 2022). Therefore, while Erhardt (2019) provided an excellent foundation by examining the CBT treatment components school-based anxiety interventions, an updated review of the treatment components of school-based interventions targeting anxiety is a current gap in the literature.

With respect to test anxiety, a systematic review conducted by von der Embse and colleagues (2013) focused on interventions for test anxiety for children and youth. As part of their review, the authors identified the primary purpose and described the treatment elements utilized, where available. While findings revealed all interventions to be cognitive or behavioural informed, the authors found variability in the specific techniques utilized. While this review was restricted to treatment evaluations conducted between 2000 and 2010, a recent systematic review and meta-analysis was conducted by Robson and colleagues (2023). The primary focus of this

review was test anxiety interventions for children between ages five to 13 years over the previous two decades. The study also included a description of the intervention components. These two studies provide valuable insight but given the timeframe and target population of the reviews conducted by von der Embse et al. (2013) and Robson et al. (2023), an investigation which includes recent literature examining the treatment elements of school-based test anxiety interventions across student populations, and other practical elements of these interventions, is warranted.

Feasibility of School-Based Anxiety Interventions

When examining the efficacy of school-based anxiety interventions, critically evaluating whether these interventions can be implemented and sustained in a highly dynamic school setting is crucial. Research examining feasibility studies may offer valuable insight into these important considerations. Fundamentally, feasibility studies are designed to evaluate the practicality and quality of the proposed study processes (e.g., recruitment, data collection, initial participant responses) before conducting a larger scale evaluation (Gadke et al., 2021; Orsmond & Cohn, 2015; Tickle-Degnen, 2013). The multidimensional framework presented by Gadke and colleagues (2021) for conducting feasibility studies within psychology and educational domains includes dimensions that that may be particularly relevant when evaluating school-based interventions, regardless of whether the investigation is intended to be a feasibility study.

Feasibility Framework

Gadke and colleagues (2021) proposed ten dimensions for conducted feasibility research. *Recruitment capability* includes considerations regarding the recruitment of participants from the targeted population and unique barriers that may emerge based on the population of interest. *Data collection procedures* are concerned with factors such as the outcome measure type, who

will be completing the measures and ease of administration (Tickle-Degnen, 2013). Additionally, this dimension considers whether the selected data collection methods are reflective of those administering and participating in the intervention (Orsmond & Cohn, 2015). Relatedly, *design procedures* highlight the process of collecting the data to ensure it accurately reflects the overall research goals and captures data on the variables of interest (Gadke et al., 2021).

The fourth dimension proposed by Gadke and colleagues (2021) is social validity. Adapted from Carter and Wheeler (2019), the authors defined the *social validity* dimension as the "social significance or relevance of intervention goals, the importance of intervention outcomes, and the acceptability of the intervention procedures" (p. 6, Gadke et al., 2021). Embedded in this definition is *acceptability* which refers to the validity of the treatment processes from those participating in the treatment (Kazdin, 1980) and has been described as a "gatekeeper" for implementation as the perception of those involved in the intervention will influence whether it is introduced and sustained (p. 7, Gadke et al., 2021). While acceptability is being increasingly recognized as a vital component in the development and implementation of interventions, its definition and operationalization pose a challenge (Sekhon et al., 2017). Following a systematic review of current healthcare literature and practice, Sekhon and colleagues proposed the following definition of acceptability: "A multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention" (p. 4). Furthermore, Carter (2008) stated that acceptability should also encompass the participants, individuals administering the intervention and the broader context in which the intervention is embedded. It should be noted that while Bowen and colleagues (2009) included satisfaction as a potential outcome associated with social validity, other researchers have argued

that satisfaction is not equated with social validity or acceptability (Gadke et al., 2021; Sekhon et al., 2017).

Practicality examines whether the intervention trial can be administered within the confines of "time, resource availability and practitioner commitment" (p. 7, Gadke et al., 2021; Bowen et al., 2009). *Integration* refers to the ease in which an intervention can be embedded into the environment for which it is intended (e.g., school system) (Gadke et al., 2021). *Adaptability* considers whether the intervention has a level of "flexibility" allowing it to be adjusted to a new context (e.g., different schools) or population without compromising the intended outcomes (p. 4 Gadke et al., 2021; Bowen et al., 2009; Lyon et al., 2019). *Implementation* refers the extent to which the intervention is delivered as designed (Century et al., 2010; Gadke et al., 2021). It involves examining the fidelity of the intervention and can include factors such as treatment *adherence*, treatment *exposure or dosage*, *quality of delivery* by the interventionist and *participant responsiveness* (Dane & Schneider, 1998). *Effectiveness* examines the impact of the intervention on the targeted outcomes (Gadke et al., 2021). Although this dimension may align more with the purpose of a pilot or outcome study, researchers have noted the necessity of considering this when determining whether to proceed with a larger-scale evaluation (Orsmond & Cohn, 2015). Lastly, *generalizability* refers the success of the intervention when implemented in a setting outside of a rigorous empirical investigation (Gadke et al., 2021).

While the dimensions outlined reflect considerations for research teams conducting feasibility studies, select dimensions offer valuable avenues of inquiry when considering challenges associated with implementing and sustaining school-based interventions. For example, while a mental health professional may be employed to deliver the intervention being empirically evaluated, the researcher needs to consider whether the intervention can be

administered by school staff once the study is complete (Herzig-Anderson et al., 2012) which aligns with the *implementation* and *generalizability* dimensions (Gadke et al., 2021). As previously discussed, some teachers shared concerns regarding the delivery of school-based mental health strategies that may be outside their professional role as an educator (Coleman, 2021). With this in mind, educators also expressed increased comfort with utilizing CBT-based strategies if the strategies were adapted for teachers; this aligns with the *adaptability* dimension within the feasibility framework (Gadke et al., 2021). Finally, in their examination of factors which help or hinder the maintenance of mental health interventions in schools, March and colleagues (2022) found "staff engagement" (p. 14) and staff "acceptability" (p. 16) to be frequently cited reasons for sustaining interventions over the long-term which aligns with the *social validity* dimension (Gadke et al., 2021). Therefore, while certain dimensions (e.g., research design, data collection procedures) (Gadke et al., 2021) hold relevance exclusively for feasibility studies, other dimensions (e.g., social validity, implementation) are relevant when evaluating school-based interventions beyond the explicit scope of feasibility research.

As part of their systematic review examining school-based interventions, Erhardt (2019) assessed whether the included articles assessed for social validity. Results revealed a minority of studies included social validity measures with significant variability regarding the individuals who provided feedback on social validity (e.g., teachers, students and/or parents/caregivers). While examining social validity is an excellent starting point, as previously discussed, the dimensions proposed by Gadke and colleagues (2021) may provide additional insight not captured solely within social validity measures. Furthermore, as social validity was not consistently measured across studies included in the review conducted by Erhardt (2019), it is

important to assess the frequency in which feasibility, whether it be assessed via social validity or other dimensions, has been considered within school-based anxiety intervention research.

The Current Research

While considerable research has been devoted to examining the efficacy of school-based anxiety interventions, examining the treatment elements which comprise these interventions is valuable. Synthesizing the intervention components can help inform resource allocation and focus training for school staff towards intervention strategies that are likely to support the greatest number of students (Erhardt, 2019). Furthermore, results of a systematic review conducted by Erhardt (2019) found various combinations of specific CBT treatment elements across interventions which demonstrates the importance of considering the individual components as well as the overarching modality the intervention is built on. Given this finding, in conjunction with the emergence of other promising treatment approaches (e.g., ACT; Burckhardt et al., 2016; Petersen et al., 2022), the first goal of the present research is to conduct a scoping review of treatment elements included in classroom and small group school-based interventions targeting anxiety and test anxiety

As previously discussed, schools are in an excellent position to provide mental health support for children and youth who may not have access to community supports (SMHO, 2023a) or may be required to wait several months before receiving mental healthcare (CMHO, 2020a). As the demand for mental health support for anxiety continues to grow (CMHO, 2020b), it is important to examine interventions which have the potential to be utilized across a broad range of students to maximize limited resources. Therefore, the focus of the present study is to examine Tier 1 (i.e., focused on education and positive mental health promotion for all students) and Tier 2 (i.e., prevention and intervention efforts for students with "mild-to-moderate mental health

problems") interventions (SMHO, 2023b) and will not include interventions targeting specific subpopulations or disorders (e.g., children with asthma, children or youth diagnosed with Autism Spectrum Disorder or Social Anxiety Disorder).

Furthermore, the present scoping review is specifically targeting classroom and small group school-based interventions for anxiety and test anxiety-related challenges among students. As such, this study does not explicitly focus on the large literature base examining social-emotional learning (SEL) that has a broader focus on students' social, emotional, and academic development in Tier 1 programming (Collaborative for Academic, Social, and Emotional Learning, n.d.a; n.d.b). Studies which integrated SEL into their interventions were only included if they were explicitly targeting anxiety or test anxiety (versus self-management or self-regulation more generally).

While examining the mechanisms comprised within a given intervention is crucial, it is important to consider the factors which contribute to the successful delivery and sustainability of the intervention in a dynamic school or classroom environment. As factors including engagement of individuals involved in the intervention (e.g., student participants, teacher facilitators) was found to be a significant contributor to the continuing delivery of school-based interventions (March et al., 2022) and ensuring school staff can administer the intervention following the study's completion (Herzig-Anderson et al., 2012), examining the feasibility of the intervention is vital. However, as feasibility measures, such as social validity, may not be consistently included in intervention evaluations (Erhardt, 2019), the second goal of the current scoping review is to examine the extent to which feasibility is considered within studies examining school-based anxiety interventions.

It is important to note the purpose of this scoping review is not to draw conclusions regarding the effectiveness or feasibility of the interventions. Unlike systematic reviews, a scoping review is intended to use a broad lens when synthesizing current literature on a topic while systematic reviews are equipped to address questions regarding intervention efficacy or feasibility, given their inclusion of elements such as quality assessments (Pollock et al., 2023). Therefore, in line with these parameters and the first research question, the methodology presented below will focus on the extraction of treatment elements and will not include data items pertaining to the results of the intervention. Additionally, as reflected in the second research question, data charting will be limited to exploring the frequency in which feasibility is assessed and the dimensions that are considered but the authors will not provide commentary on whether the intervention is perceived to be feasible.

Methods

The present scoping review will address the following research questions: (1) What treatment elements are included in classroom and small group school-based interventions targeting anxiety or test anxiety? (2) To what extent is feasibility included in evaluations of school-based anxiety and test anxiety interventions? The review is based on the Preferred Reporting Items for Systematic reviews and Meta-analyses Extension for Scoping Reviews (PRISMA-ScR) and is pre-registered with Open Science Framework (https://doi.org/10.17605/OSF.IO/W28E7).

Search Strategy

The following search strategy was developed in consultation with a Research and Scholarly Communications Librarian from Western University Library. A search of five electronic databases including APA PsycInfo, Medline, ERIC, Education Database and Cochrane

Library was conducted on June 16, 2023. While the keywords remained consistent, subject headings and proximity operators differed in accordance with each database. Therefore, the search terms for each database are presented in Table 1 (see Appendix A for the search strategy conducted in each database).

Table 1

Database Search Terms

Database	Subject Headings	Keywords
APA PsycInfo	School-based intervention OR school-based mental health services anxiety OR anxiety disorders OR anxiety management	Anxiety OR anxious (school* OR classroom*) adj7 (intervention* OR service* OR treatment* OR program* OR therapy)
Medline	School health services OR psychotherapy, group anxiety OR anxiety disorders	Anxiety OR anxious (school* OR classroom*) adj7 (intervention* OR service* OR treatment* OR program* OR therapy)
ERIC	School health services OR intervention OR prevention OR group therapy Anxiety OR anxiety disorders	Anxiety OR anxious (school* OR classroom*) adj7 (intervention* OR service* OR treatment* OR program* OR therapy)
Education Database	Prevention programs OR wellness programs Anxiety OR anxiety disorders	Anxiety OR anxious (school* OR classroom*) N/7 (intervention* OR service* OR treatment* OR program* OR therapy)
Cochrane Library	School health services OR school mental health services Anxiety OR anxiety disorders	Anxiety OR anxious (school* OR classroom*) Near/7 (intervention* OR service* OR treatment* OR program* OR therapy)

Eligibility Criteria

The focus of the present scoping review was research articles examining classroom or small group school-based interventions targeting anxiety or test anxiety. Sources included empirical studies, graduate dissertations, and clinical trials. Articles that did not present an empirical investigation of an intervention (e.g., meta-analysis, review, commentary, book chapter, etc.) were excluded.

The following inclusion criteria were utilized: (a) written or disseminated in English, (b) intervention took place in a K-12 school setting during a regular school day (note: one study included grade 12 and grade 13 students in the secondary school setting; Brown et al., 2019), (c) the intervention took place in a group or classroom setting, (d) anxiety or test anxiety were the explicit primary targets or primary outcome measures of the intervention (note: anxiety was not required to be the only target of the intervention [e.g., targets anxiety and depression]), (e) the study independently reported anxiety or test anxiety, (f) the study provided a description of the treatment components utilized in the intervention.

The study was excluded if (a) the intervention took place outside a school setting or school hours (e.g., after school), (b) included students not enrolled in K-12 (e.g., post-secondary students), (c) intervention included participants that were not students (e.g., the intervention included a parent component), (d) study was evaluating participants from a selected population (e.g., students with a specific diagnosis or high-risk populations) (note: studies which screened for students who were experiencing anxiety or test anxiety were retained), (e) intervention consisted of a student meeting individually with a professional, (f) information on the treatment components was missing (i.e., only included the name of the intervention).

Literature Selection

The database searches collectively identified 11 801 references which were uploaded to Covidence, an online platform which facilitates literature organization, screening and data extraction for systematic reviews (see Appendix B for PRISMA flowchart). Duplicates were removed through a combination of automatic detection by Covidence and manual identification by the reviewers during the screening process. Following duplicate removal, 9604 references were retained for title and abstract screening.

The first author conducted a title and abstract screening of 100% of the articles and 50% of the articles were independently screened by the second author or trained research assistant. Any disagreements were resolved by discussion between the relevant reviewers. Inter-rater agreement was calculated by dividing the number of agreements by the total number of items which could be agreed upon. Proportional inter-rater agreement between the first and second author was 96.95% ($\kappa = 0.599$) while inter-rater agreement between the first author and research assistant was 77.02% ($\kappa = 0.415$). Prior to commencing title and abstract screening, the first and second author reviewed the inclusion/exclusion criteria, answered questions and discussed criteria which required further clarification. The first author also met with the research assistant to review the inclusion/exclusion criteria and answer questions. Additionally, the first author and research assistant independently screened 25 randomly selected references which were compared to determine if further clarification on the inclusion/exclusion criteria was required before the research assistant began screening.

A full text review of 351 articles were conducted by the first and second authors. The first author independently reviewed 100% of the references and the second author reviewed 30% of the references. Proportional inter-rater agreement was 96.19% between the first and second author ($\kappa = 0.788$). Before commencing with the full text review, the first author developed a

checklist outlining the appropriate exclusion criterion to be selected based on the reason for exclusion (see Appendix C for the checklist). To facilitate a consistent decision-making process, the checklist was organized in the order in which the exclusion criteria should be selected if an article met more than one exclusion criterion. If a new reason for exclusion was required during the screening, the checklist was amended accordingly.

Data extraction was conducted by the first author and the data chart was created as a Microsoft Word document. Adapted from Arksey and O'Malley (2005) and Erhardt (2019), the following data items were collected to provide general information on each study (1) authors (2) publication year (3) number of participants (4) participant ages and/or grade (5) full classroom or small group based intervention (6) whether additional screening for anxiety or test anxiety was utilized (7) number of sessions (8) duration of sessions (9) interventionist type and (10) intervention type.

To address the first research question, the treatment components of each intervention were charted by the first author. Consistent with Erhardt (2019), the CBT treatment components were coded based on the definitions proposed by Velting and colleagues (2004). The six components are as follows: *psychoeducation* involves providing individuals with information to support them in understanding their mental health concern (e.g., anxiety) and the associated therapeutic techniques. *Somatic management* encompasses strategies to manage the physical aspects of anxiety which may include breathing or relaxation techniques. *Cognitive restructuring* targets "unhelpful" thoughts that may exacerbate the child's anxiety and identifying new ways of approaching these thoughts, such as "challenging" the thought or idea (p. 49). *Problem solving* involves breaking down a situation, developing potential ways of approaching the problem, evaluating and utilizing the chosen course of action. *Exposure* involves gradually confronting the

anxiety-provoking situation or person. Finally, *relapse prevention* supports the transition of these new skills from therapy to the real-world environment and reinforces the progress made during treatment. If interventions included CBT components in conjunction with components from other modalities, the CBT elements were coded according to the six definitions and additional components were charted based on the information included in the reference. All other intervention types were charted according to the information provided in the article without utilizing a predetermined coding method.

The second research question was addressed by charting whether the articles included information pertaining to the feasibility dimensions proposed by Gadke and colleagues (2021). As the first three dimensions (i.e., *recruitment capability, data collection, design procedures*) involved designing a feasibility study, they were not included in the chart unless the study explicitly stated the purpose was a feasibility study. Furthermore, as an independent measure of anxiety or test anxiety was required for a reference to be retained, *effectiveness* was presumed to be measured across all studies and will not be included in the present analysis. Finally, as the present review exclusively examined interventions in a school setting, the *generalizability* dimension which focuses on the translation of an intervention into naturalistic settings (e.g., schools) is not relevant. Therefore, given this rationale, in conjunction with previous research discussing challenges to implementing and sustaining school-based interventions, the feasibility dimensions of interest were as follows: *social validity/acceptability, practicality, integration, adaptability* and *implementation*.

Results

The purpose of the present scoping review is to provide a summary of (a) treatment components embedded within classroom and small group school-based interventions targeting

anxiety or test anxiety and (b) the frequency in which feasibility is considered within the evaluations, based on the framework proposed by Gadke and colleagues (2021). Following a full text review, 105 articles were retained for analysis and were comprised of 81 journal articles, 22 graduate dissertations and two reports. Eighty studies focused on anxiety while 25 studies examined school-based interventions targeting test anxiety. Within these articles, a total of 95 school-based anxiety interventions and 34 test anxiety interventions were examined. Publication years for articles examining anxiety ranged from 1984 to 2023 with the majority of studies being published in the last ten years (64, 80%). Conversely, studies examining school-based interventions for test anxiety were disseminated between 1972 and 2022. Fifteen of these studies (60%) were published within the last decade.

Participants

A total of 25 762 participants were included in the analysis with 23 722 and 2040 participants included in studies examining anxiety and test anxiety, respectively. Sample sizes in studies examining anxiety ranged from 10 to 2745 participants while investigations of school-based test anxiety interventions included between 15 and 193 participants. Participant ages ranged from 7 to 19 across studies. School-based anxiety intervention evaluations included participants from grade 1 to grade 13 while test anxiety interventions included participants beginning in grade 3 to grade 12.

Intervention Characteristics

Class versus Group Setting

The majority of interventions targeting anxiety occurred in a class setting (55.56%), while the remainder occurred in a group setting. Conversely, the majority of interventions targeting test anxiety occurred in a group setting with 32% of interventions targeting test anxiety

occurred in a class. It should be noted that one study examining anxiety (1.23%) (Miller et al., 2011a) and test anxiety (4%) (Carsley & Heath, 2019) involved interventions occurring in both a group and classroom setting.

Additional Screening for Anxiety or Test Anxiety

Twenty-one percent of studies examining school-based anxiety-based interventions and 44.12% school-based test anxiety interventions involved additional screening for the presence of anxiety or test anxiety to determine participant eligibility. While most screening criteria was based on scores from anxiety or test anxiety measures, ten studies also utilized teacher, parent and/or counsellor nominations to help identify students who may benefit from the intervention.

Duration and Number of Sessions

The duration of school-based interventions targeting anxiety ranged from one day to one school year while school-based test anxiety interventions ranged from one day to half of the school year (note: 26 studies did not provide specific information on the duration of intervention). Number of sessions ranged from one to 17 for anxiety-targeted interventions while test-anxiety interventions ranged from one to 10 sessions (note: nine studies did not provide the number of sessions). Sessions ranged from five to 120 minutes and 10 to 90 minutes for interventions targeting anxiety and test anxiety, respectively (note: 14 studies did not provide session length).

Intervention Delivery

Twenty-four school-based anxiety interventions involved a teacher or student teacher (25.26%) administering the intervention while twenty three (24.21%) included a member of the research team (e.g., researcher, primary investigator, research assistant) to deliver the intervention. Several interventions involved a mental health professional such as a psychologist

or school psychologist (15, 15.79%), counsellor or guidance counsellor (6, 6.32%), social worker (3, 3.16%), trainee psychiatrist (1, 1.05%) (Jibunoh & Ani, 2021) or other mental health professional (2, 2.11%). Eleven interventions were delivered entirely, or in part, by graduate students (11.58%) and three involved high school graduates (3.16%). Six interventions were delivered online (6.31%) while two used videotapes to administer the intervention (2.11%). Two interventions involved nursing staff (2.11%) while one included a nursing student (1.05%) (Guo et al., 2017). Finally, two interventions were administered by a yoga instructor (2.11%) and two included an occupational therapist (2.11%).

Other interventionist types who facilitated or co-facilitated one intervention included individuals such as a First Nations school support worker (Miller et al., 2011b), autogenic therapist (Atkins & Hayes, 2019) and education welfare officer (O'Callaghan & Cunningham, 2015). For a full list of interventionists, please refer to Table 2.

Interventions targeting test anxiety were administered primarily by members of the research team (20, 58.82%) while four involved graduate students (4, 11.76%). Mental health professionals such as a psychologist or school psychologist (7, 20.59%), graduate level therapist (3, 8.82%) or a school counsellor (1, 2.94%) (Miller et al., 2006) were also utilized. Two interventions were administered by teachers (5.88%). One intervention was administered by a teacher, who was also the researcher (2.94%) (Balkam et al., 2013). Finally, one intervention (2.94%) used audio recordings as the means of delivery (O'Driscoll & McAleese, 2022).

Intervention Type

Cognitive behavioural therapies represented the most common intervention type among school-based interventions targeting anxiety (43, 43.26%). Several interventions were comprised of mindfulness-based interventions (8, 8.42%), wise interventions (i.e., interventions that "focus

on simple psychological concepts rather than behavioral and cognitive skills" and "invoke positive human attributes and principles rather than psychopathology" [p. 830, Osborn et al., 2021]) (6, 6.32%), relaxation (4, 4.21%), ACT (3, 3.16%), stress management (2, 2.11%), anxiety management (2, 2.11%), emotional freedom techniques (2, 2.11%), and yoga interventions (2, 2.11%). Seven interventions (7.37%) were based in one or more modalities such as ACT and positive psychology or CBT and mindfulness. Finally, fifteen intervention types only emerged once in the analysis such as assertiveness training (Eslami et al., 2016), occupational therapy (Tokolahi et al., 2018) and self-compassion (Seekis et al., 2023). Please refer to Table 2 for a full list of intervention types.

Conversely, mindfulness interventions were the frequent intervention type in school-based text anxiety interventions (7, 20.59%) closely followed by cognitive behavioural therapies (6, 17.65%). Four interventions (11.76%) focused on study and test taking skills while vicarious systematic desensitization emerged in three interventions (8.82%) though these interventions were contained in one study (Mann, 1972). Two interventions were comprised of cognitive therapy (6.25%) while two interventions included study skills in conjunction with another intervention type (6.25%). Lastly, eight intervention types were included only once. Examples of these include attention training (Fergus & Limbers, 2019), compassionate mind training (O'Driscoll & McAleese, 2022) and social emotional learning (McLeod & Boyes, 2021). Please refer to Table 3 for a full list of intervention types. One study did not include sufficient information to classify the intervention type (Bass et al., 2002).

Treatment Components

Anxiety

The frequency in which the six core CBT components (as outlined by Velting and colleagues, 2004) occurred in school-based anxiety interventions are as follows: *psychoeducation* (68, 71.58%), *cognitive restructuring* (47, 49.47%), *somatic management* (37, 38.95%), *problem solving* (33, 34.74%), *exposure* (18, 18.95%) and *relapse prevention* (17, 17.89%). It should be noted that one intervention used cognitive skills (1.05%) while another used problem solving skills (1.05%) though these treatment components emerged in an emotion regulation program (Johnstone et al., 2020a) and a wise intervention (Ventruo-Conerly et al., 2022), respectively.

Many interventions included mindfulness (12, 12.63%), breathing techniques (8, 8.42%), relaxation elements (8, 8.42%), yoga (5, 5.26%) and meditation (4, 4.21%). Treatment elements focused on emotion regulation and awareness emerged in five interventions (5.26%) with coping strategies incorporated into three interventions (3.16%). Woven into many interventions were interpersonal elements such as assertiveness skills (6, 6.32%), communication skills (4, 4.21%), interpersonal and social skills (6, 6.32%) conflict resolution skills (1, 1.05%) (Johnstone et al., 2020b) and empathy skills (1, 1.05%) (Ab Ghaffer et al., 2019). Other techniques which were utilized in multiple interventions included experiential activities (5, 5.26%), values based elements (5, 5.26%), growth stories and strategies (4, 4.21%), imagery (3, 3.16%), physical activity (4, 4.21%), gratitude letters (3, 3.16%), BOLD strategy (2, 2.10%), tapping (2, 2.10%) and time management skills (2, 2.10%). Finally, several treatment components were only charted once across the studies retained for analysis such as autogenic training exercises (Atkins & Hayes, 2019), anger management skills (Eslami et al., 2016), distress tolerance skills (Weaver, 2019), and environmental stewardship activities (Mitchem & Wojtiwicz, 1994). Please refer to Table 2 for a comprehensive list of treatment components.

Test Anxiety

Similar to the school-based interventions targeting anxiety, the six core CBT components (Velting et al., 2004) emerged in a subset of the test anxiety interventions retained for analysis. The components are listed in order of frequency in which they emerged: *cognitive restructuring* (9, 26.47%), *somatic management* (8, 23.52%), *psychoeducation* (6, 17.65%), *problem solving* (2, 5.88%), *exposure* (2, 5.88%), and *relapse prevention* (1, 2.94%) (Tenenbaum, 2011).

Test taking and study skills treatment components were common among interventions with twelve interventions using test taking skills (35.29%) and eleven interventions including study skills (35.29%). On a similar vein, time management techniques (2.94%) (D'Elia, 1998) and goal setting (2.94%) (Putwain & Pescod, 2018) were each incorporated into one specific intervention.

Relaxation treatment components were utilized in six interventions (17.64%), mandala colouring appeared in six interventions (17.64%), breathing exercises were utilized in four interventions (11.76%) and mindfulness was charted in three interventions (8.82%). Vicarious systematic desensitization was examined in three interventions in one study (8.82%) (Mann, 1972). Compassionate imagery techniques (1, 2.94%) (O'Driscoll & McAleese, 2022), guided imagery (1, 2.94%) (Miller et al., 2006) and visualization (1, 2.94%) (Nauheim, 1981) were also used.

Some treatment components were only charted in one intervention. Examples of these elements include attention training technique (Fergus & Limbers, 2019), educational kinesiology exercises (Donato, 2010), negative practice technique (Nauheim, 1981) and tense-release-anxiety containment sequences (Miller et al., 2006). Please refer to Table 3 for a comprehensive list of treatment components.

Feasibility Dimensions

Anxiety

To address the second research question, the frequency with which these studies provided information on dimensions of the feasibility of the intervention (as proposed by Gadke and colleagues, 2021) were charted. As previously discussed, the subset of dimensions which are of particular interest included social validity/acceptability, practicality, integration, adaptability and implementation. Fifty-one studies (63.75%) integrated elements that fell within the *implementation* dimension. Examples of this included information pertaining to treatment adherence and fidelity, treatment dosage, interventionist training and participant responsiveness. *Social validity/acceptability* emerged in 39 studies (48.75%) which was comprised of feedback requested from students, teachers, interventionists and/or parents. *Adaptability* was evident in twenty articles (21.05%) which primarily involved information on adjustments applied to the intervention structure to accommodate the school schedule with some studies discussing adjustments made to intervention materials to align with the specific population of students (e.g., Burkhardt et al., 2017). Information provided in 11 references (13.75%) was related to *practicality* (e.g., student and teacher feedback [Weaver, 2019], time constraints [Miller et al., 2011b], personnel constraints [Johnson & Wade, 2021]). Four articles (5%) considered elements related to *integration* which included feedback provided by students and teachers (e.g., Weaver, 2019). Finally, one feasibility study incorporated *recruitment capability* (1.25%), *data collection* (1.25%) and *design procedures* (1.25%) (Brown et al., 2019).

Test Anxiety

Of the feasibility dimensions proposed by Gadke et al., 2021, *social validity/acceptability* was the most common among school-based test anxiety interventions consisting of student,

teacher and facilitator feedback, with ten studies (40%) providing evidence of this dimension. This was followed by *adaptability* which included eight studies (32%) and was primarily comprised of information regarding adjusting the intervention schedule to accommodate the school schedule. However, one study (Tenenbaum, 2011) included a facilitator feedback form requesting insight into changes that should be made to align with the student population. *Implementation* emerged in seven studies (28%) which mainly included treatment fidelity and adherence and interventionist training. *Integration* emerged in one study (4%) which included feedback from teachers regarding the "ease of implementation" (p. 200, Donato, 2010). Information relevant to the *practicality* dimension was not present in any study.

Discussion

The purpose of the present scoping review was to (a) synthesize the treatment components of classroom and small group school-based interventions targeting anxiety or test anxiety among primary and/or second school students and (b) explore the extent to which feasibility is considered in studies examining school-based anxiety or test anxiety interventions. Following a screening of 9603 articles, 105 references were retained for analysis with 80 articles (95 interventions) focusing on anxiety and 25 studies (34 interventions) examining school-based test anxiety interventions. A detailed discussion of the central findings is presented below.

School-Based Interventions Targeting Anxiety

Intervention Type and Interventionist Type

The results of the present scoping review revealed considerable variability among school-based interventions targeting anxiety and their corresponding treatment elements. While certain intervention types (e.g., CBT, mindfulness) were a recurring pattern, many other forms of intervention emerged once or twice in the analysis. Some of these intervention types, such as

self-compassion (Seekis et al., 2023) or emotional freedom techniques (Lambert, 2022; Lambert et al., 2022), were contained in articles published only within the last two years which may indicate an increasing interest in examining other treatment approaches for addressing anxiety in schools. More broadly, it is possible that this variation may simply be reflective of variations across school environments. Researchers have emphasized an essential ingredient to implementation is the ability of school-based interventions to adapt to the unique environment in which they are embedded (Herzig-Anderson et al., 2012; Rossen & Cowan, 2015). As each school represents a unique population of participants, interventionists and settings, it cannot be expected that a narrow selection of intervention types will satisfy the needs of all schools looking to implement mental health programming into their curriculum.

With this in mind, CBT interventions accounted for less than half of the interventions included in the analysis, despite the considerable body of evidence demonstrating the effectiveness of this modality for school-based anxiety interventions (e.g., Zhang et al., 2023). One possible explanation is the delivery of CBT-based interventions in school environments may pose a challenge. Researchers evaluating CBT interventions in the present review noted financial and personnel limitations can impede schools from implementing or sustaining CBT interventions (Skryabina et al., 2016; Waters et al., 2015a). For example, some CBT interventions included in the analysis involved ten or more sessions with a teacher serving as a facilitator or co-facilitator (e.g., Ahlen et al., 2018; Cheng et al., 2018). As *staff capacity* is a common hindrance to intervention delivery (March et al., 2022), some schools may be unable to adopt multi-session CBT interventions that require significant time and energy from teachers, regardless of whether the treatment is likely to be effective.

Another important finding is a minority of interventions included a teacher as an interventionist or co-interventionist. Conversely, a member of the study team or a mental health professional were commonly utilized. This is similar to Neil and Christensen (2009) who only found one quarter of interventions included a teacher in the treatment delivery with many administered solely by mental health professionals. Notably, some literature has found the efficacy of teacher-delivered CBT interventions to be superior (Neil & Christensen, 2009) while others have found decreased effectiveness for teacher-delivered CBT interventions (Zhang et al., 2023) which may indicate that certain interventions require a mental health professional for optimal delivery. However, teachers are in a front-line position to observe behaviour patterns that may need further attention, develop positive relationships with students and promote overall positive mental health in the classroom (SMHO, 2023a). Furthermore, it may not be financially feasible for schools to sustain an intervention administered by a mental health clinician (Herzig-Anderson et al., 2012). Consequently, teachers may be in the best position to sustain the mental health interventions longitudinally, particularly in the classroom. However, as the majority of interventions retained in the analysis did not include a teacher as a member of the treatment delivery team, this points to a critical need for investigators to consider the individual who will be primarily responsible for delivering the intervention over the long term. If the intervention is likely to be delivered by an educator following study completion, then examining the efficacy of this intervention as a teacher-delivered treatment must be considered as part of the investigation (Urao et al., 2018).

Treatment Components

When examining the specific treatment components that school-based anxiety interventions are comprised of, several findings warrant further consideration. First, similar to

results from Erhardt (2019), numerous CBT interventions incorporated several core components though many did not utilize all six components. As seen in Erhardt (2019), the present review found psychoeducation to emerge as the most common treatment element. One study included in the analysis emphasized the importance of psychoeducation to support students in developing a foundational knowledge base of mental health which can assist in understanding their experience and reducing the stigma associated with their mental health concerns (Chonthannathi et al., 2022). As perceived stigma was a common barrier to youth seeking school-based mental healthcare (Bowers et al., 2013), this finding may indicate the necessity of including this component in school-based mental health interventions.

Contrary to Erhardt (2019) who found somatic management to be the second most frequent component (followed by cognitive restructuring), cognitive restructuring was the second most common element in the present analysis (followed by somatic management). It also important to consider the infrequency in which exposure was utilized across interventions in the current review and in the analysis conducted by Erhardt (2019). As this component involves gradually exposing the child to "his or her feared situation or stimulus" (p. 50, Velting et al., 2004), it may be argued that this treatment element is impractical for use in the classroom where the exposure trajectory would differ for each child. However, of the 20 interventions which utilized exposure in the present review, 12 occurred in a class setting. As research has found exposure to be critical in creating meaningful change for children and youth engaging in CBT for anxiety (Whiteside et al., 2020) and given the majority of interventions included in the review were class-based, examining how exposure was specifically integrated into these 12 interventions may be valuable.

A final noteworthy result is the frequency in which interpersonal elements emerged in the analysis including assertiveness skills training (e.g., Barnes et al., 2012), communication skills (e.g., Guo et al., 2017), interpersonal skills (Etherington & Costello, 2019) and conflict resolution (Johnstone et al., 2020b). As previously discussed, some anxious children may attempt to avoid school in fear of being confronted with a challenging situation involving peer interactions (Kearney et al., 2004). Furthermore, in their discussion of school-based social anxiety interventions, Ryan and Warner (2012) noted that schools present several "real-world" (p. 106) situations for children to apply the skills learned in treatment. Therefore, the present findings may indicate the utility of integrating interpersonal skill training into school-based anxiety interventions.

School-Based Interventions Targeting Test Anxiety

Intervention Types and Interventionist Types

Unlike those targeting anxiety, the present scoping review found mindfulness to be the most frequent intervention type followed by CBT. However, it should be noted that many of the mindfulness interventions included were variations of a mandala colouring activity (e.g., mandala colouring vs. mandala colouring with an audio recording of a mindfulness meditation; Rose & Lomas, 2020). Additionally, as there was a difference of one between the mindfulness and CBT intervention-type frequencies, this finding should be interpreted with caution.

As with the school-based anxiety interventions, very few interventions were administered by teachers. As some of the interventions were highly specific (e.g., deep breathing [Khng, 2017], mandala colouring activities [Carsley & Heath, 2018; Carsley & Heath, 2019; Carsley et al., 2015]), perhaps these intervention-types were intended to be integrated into an established protocol utilized by teachers. However, as with school-based anxiety interventions delivered by

individuals who are not educators, this does not negate the need for researchers to examine whether the intervention in question can be successfully delivered by teachers (Urao et al., 2018).

Treatment Components

Of particular note is the distribution of treatment components among school-based test anxiety interventions. Unlike school-based interventions targeting anxiety, the most frequent CBT treatment components were cognitive restructuring and somatic management. This aligns with proposed theories of test anxiety which find the construct to include *worry* and *emotionality* (Liebert & Morris, 1967) or *worry, emotionality* and a *lack of confidence* (Hodapp & Benson, 1997). Specifically, as worry and emotionality are concerned with the "cognitive" and "autonomic" aspects of the constructs, respectively, (p. 975, Liebert & Morris, 1967), cognitive restructuring may address the worry component while somatic management may support individuals navigating the emotionality aspect of test anxiety. However, while five interventions retained in the review included both cognitive restructuring and somatic management (e.g., Brown, 2020), two interventions included cognitive restructuring without somatic management (e.g., Fields, 2007). Conversely, two interventions included somatic management but not cognitive restructuring (e.g., Yeo et al., 2016). Given the theories underpinning test anxiety, utilization of both core components would likely be of greater value than each alone in supporting students with test anxiety.

Unsurprisingly, test taking skills and study skills were common treatment elements embodied among many interventions. As students with test anxiety may demonstrate poor study habits (Sarason & Sarason, 1990), integrating this treatment element into test anxiety interventions is crucial. However, Sarason and Sarason (1990) emphasized that helping students

learn test taking/study skills is necessary, but not sufficient. Without supporting students in navigating the thoughts and worries underlying their test anxiety, teaching them new ways of approaching exams has limited utility. With this in mind, the findings of the present review revealed the majority of school-based test anxiety interventions rooted in CBT included a combination of core CBT components and test taking and/or study skills. Consequently, the results of the present analysis may be reflective of a comprehensive approach to addressing test anxiety in schools.

Feasibility

The second research question aimed to investigate the extent to which feasibility is considered within school-based anxiety and test anxiety intervention evaluations, as guided by the feasibility study framework presented by Gadke et al. (2021). As previously discussed, feasibility studies are process-oriented though researchers have acknowledged the need to analyzing preliminary outcomes as part of the investigation (Gadke et al., 2021; Orsmond & Cohn, 2015). When considering the challenges associated with implementing and sustaining school-based interventions (e.g., teacher engagement and capacity, financial resources, adequate training, comfort with the materials) (Coleman, 2021; March et al., 2022) many of these are associated with the process of delivering the intervention in schools. Therefore, select feasibility dimensions (Gadke et al., 2021) hold promise for providing nuanced information to support researchers and educators in conducting interventions that are likely to be sustained in a dynamic school environment.

Of the dimensions presented by Gadke and colleagues (2021), social validity/acceptability recurred frequently throughout the school-based anxiety and test anxiety interventions. Similar to Erhardt (2019), the majority of studies did not include a social

validity/acceptability measure with 48.75% of the anxiety interventions and 40% of the test anxiety interventions including information related to this dimension. Interestingly, over half of the school-based anxiety interventions (63.75%) included information pertaining to implementation (Gadke et al., 2021). Though adaptability was the second most common dimension among test anxiety articles (32%), it was closely followed by the implementation dimension (28%) with a difference in one between the frequencies. Conversely, adaptability emerged in a less than one quarter of the articles targeting anxiety (21.05%) with a small number of studies including information pertaining to integration across all studies. Notably, there was no evidence of the practicality dimension in school-based test anxiety intervention articles.

This difference among the frequencies may be due to the method by which the feasibility dimensions (Gadke et al., 2021) can be assessed. For example, most studies included in the review evaluated implementation by assessing fidelity and adherence to the treatment protocol through the use of checklists (e.g., Brown et al., 2019; Collins et al., 2014) or reviewing recordings of sessions (e.g., Barnes et al., 2012; Burckhardt et al., 2016). Furthermore, many interventions examining social validity/acceptability (Gadke et al., 2021) relied on feedback garnered from students, teachers, facilitators and/or parents. Additionally, a small number of studies (e.g., Brown, 2013; Weaver, 2019) included in the present review requested student and teacher feedback using questions related to the practicality, adaptability and integration (Gadke et al., 2021). Collectively, these patterns illustrate that feedback questionnaires or interviews conducted with relevant individuals involved in the intervention can be a viable means of collecting information concerning feasibility.

It should be noted that much of the information pertaining to integration, practicality and adaptability (Gadke et al., 2021) was reliant on the level of detail presented by the authors,

particularly in the methods section of the articles. This may indicate a lack of standardized procedures for examining these dimensions which can be easily incorporated into school-based intervention evaluations. Alternatively, it is possible that these dimensions cannot be delineated into a set of items that are applicable across all studies wishing to incorporate feasibility into their investigations. For instance, Gadke and colleagues (2021) presented their definition of each dimension and synthesized literature illustrating that various elements can fall into each dimension. Furthermore, Orsmond and Cohn (2015) presented five objectives for conducting feasibility studies with a comprehensive list of questions corresponding to each objective that researchers should consider. Similarly, Tickle-Degen (2013) outlined a series of assessments that are important for feasibility research including a list of questions for each assessment that investigators should address. Taken together, the use of questions to guide researchers and the range of possible components within each feasibility dimension might indicate the conceptualization and focus of the dimension may differ based on the study in question.

Alternatively, it is possible that the that the frequency and breadth in which certain feasibility dimensions (Gadke et al., 2021) were considered was simply underreported given the primary source material was based on the level of detail presented by the authors. This is concerning as information that holds incredible value for educators and researchers could be omitted. For example, several studies (e.g., Bothe et al., 2014; Kriley Holloway, 2021) included in the present review provided details on the training required for facilitators thus corresponding to the implementation dimension (Gadke et al., 2021). This information is important for educational institutions as it illustrates whether an intervention can be learned through independent review of a manual or requires additional time and financial resources to conduct specialized training. If the information was not included, this creates a significant gap in

knowledge regarding the commitment required to introduce the intervention in a school. Therefore, if studies are evaluating school-based interventions for anxiety or test anxiety, documentation of information relevant to the feasibility dimensions is crucial.

The Template for Intervention Description and Replication (TIDieR) checklist (Hoffman et al., 2014) may serve as useful tool for assisting researchers in reporting information that is relevant to feasibility. Though this checklist is not explicitly designed for feasibility research, it includes items which correspond to the feasibility dimensions (Gadke et al., 2021) such as *tailoring* (Item 9) which relates to adaptability and *How well (planned)* (Item 11) is concerned with fidelity measures which corresponds to the implementation dimension. The authors also noted that this checklist should be utilized in conjunction with the Consolidated Standards of Report Trials (CONSORT) statement for reporting randomized controlled trials (Schulz et al., 2010). In 2016, CONSORT released an extension to this statement for pilot and feasibility trials (Elridge et al., 2016). However, the authors noted the checklist is intended specifically for randomized feasibility research though acknowledged the potential for adapting the checklist to non-randomized feasibility studies. Therefore, the TIDieR (Hoffman et al., 2014) may be a more suitable starting point for researchers reporting information relevant to feasibility in their evaluation of school-based interventions.

Limitations

While the present scoping provides important insight into the breadth of treatment components utilized in school-based anxiety and test anxiety interventions, it does not come without its limitations. First, the present review excluded school-based anxiety and test anxiety interventions which were targeted to selected populations. For example, several studies included in the initial reference pool examined school-based anxiety interventions for children and youth

with Autism Spectrum Disorder though they were screened out of the analysis. As a growing body of research has been devoted to examining school-based anxiety interventions for this population, (e.g., Hillman et al., 2020) and the present review excluded studies pertaining to interventions targeting specific anxiety disorders (e.g., social anxiety disorder), it is important to acknowledge this exclusion criterion as a limitation to the current review.

Similarly, the current review did not include interventions which integrated a parent/caregiver component. Oftentimes, articles screened out of the analysis due to parental/caregiver involvement consisted of a session where parents/caregivers learned about the strategies being taught in the classroom and avenues for supporting their child in practicing the strategies outside of the classroom. As there is a crucial need for parent engagement even when the child is receiving mental healthcare at school (Tokolahi et al., 2018), the current review may have overlooked a subset of interventions which include an integral component for providing school-based mental health support.

Thirdly, the present review did not include a quality assessment of the included studies nor extracted data pertaining to anxiety symptom change. Therefore, conclusions regarding the efficacy of the interventions or their associated treatment components cannot be drawn. As the focus of the present scoping review was to examine the treatment components of school-based anxiety and test anxiety interventions, extracting information related to the study results was beyond the scope of the present analysis particularly as a quality assessment was not to be conducted. However, while this presents a limitation, the data collected from the selected articles sets the foundation for future research to begin examining the relative efficacy of these components in fostering meaningful change for children or youth experiencing anxiety.

Finally, it is important to acknowledge the challenges associated with applying a framework (Gadke et al., 2021) that does not include precise, standardized means of assessing the dimensions embedded in it. With this in mind, the first author engaged in strategies such as extracting definitions for each dimension included in the feasibility framework prior to data charting, referenced the framework consistently throughout the data charting process, and documented the evidence of each dimension presented in the given article. While this aspect of the analysis may contain a level of bias not apparent with more standardized measures, using the current information available to investigate whether feasibility is being considered in school-based anxiety and test anxiety interventions is a necessary first step. As the findings suggest feasibility is being considered along multiple dimensions, future research can further examine means of clearly reporting these dimensions when conducting intervention evaluations.

Implications and Future Directions

As scoping reviews are intended to synthesize current literature surrounding a specific topic thus paving the way for future investigations, such as systematic reviews (Pollock et al., 2023) the implications and suggestions for future research will be presented concurrently in the following section. As evidenced by the number of articles returned from the preliminary database review, there is an abundance of research related to school-based anxiety and test anxiety interventions. While this clearly indicates the relevance of this topic, the volume and variance in interventions can be overwhelming without a clear illustration of the trends emerging in the literature. Therefore, the current scoping offers a comprehensive overview of school-based interventions targeting anxiety and test anxiety thereby providing a rich foundation which future research can build upon. Given the variety of treatment components identified in the current review, a viable next step would be for future research to examine the relative efficacy of these

treatment components, particularly of school-based interventions which have begun to receive empirical evaluation in recent years.

Secondly, the current findings suggest that facets of feasibility (Gadke et al., 2021) is being considered within studies examining school-based anxiety and test anxiety interventions, particularly social validity/acceptability and implementation. Given the relative consistency regarding the methods of investigating these dimension (i.e., feedback forms and/or interviews and fidelity measures), this suggests that some dimensions can be readily integrated into empirical investigations. Furthermore, as acceptability has been described as a "gatekeeper" for implementation (p. 7, Gadke et al., 2021), it would be interesting for future research to stratify the relative acceptability of individual treatment components across different intervention types. While some studies in the present review assessed the perceived utility of CBT components (e.g., Chonthannathi et al., 2022; Yeo et al., 2016), expanding this investigation to other interventions can provide important insight into the key elements that students and teachers perceive to be useful, thereby increasing the potential for these interventions to be sustained over the long term.

Finally, by beginning to delineate school-based anxiety and test anxiety interventions into the relevant treatment components, this can help teachers focus on specific elements perceived to be beneficial for their unique class or to supplement the current mental health curriculum. Organizations, such as School Mental Health Ontario (SMHO, 2023c), provide an extensive list of resources for educators to draw upon. However, understanding the components of larger interventions may assist teachers with resource selection based on the treatment component of interest and selection of strategies which remain within the scope of their professional role and knowledge. It is important to note that a quality assessment of the interventions should be conducted first, as this is a limitation of the current review.

Conclusion

As the demand for mental healthcare for children and youth continues to climb (CMHO, 2020a), schools provide an excellent avenue to reach a broader range of young people who may not otherwise receive mental health support (SMHO, 2023a). However, as Rossen and Cowan (2015) eloquently stated "schools are not merely clinics with chalkboards" (p. 12). Each school represents a unique subset of students, educators and settings that must be accounted for. This is reflected in the present review which demonstrated considerable heterogeneity across intervention types and the treatment components they are comprised of. While CBT emerged frequently, other intervention types are being evaluated which may be indicative of the diverse needs between and within schools.

The present findings also suggest that examining feasibility of school-based anxiety and test anxiety interventions is viable with many studies incorporating information relevant to the feasibility dimensions presented by Gadke et al. (2021). However, as some dimensions emerged relatively infrequently and were based on the level of detail provided by the authors, this could point to a lack of adequate reporting of these dimensions. Therefore, as resource constraints and teacher acceptability are common barriers to intervention sustainability (March et al., 2022), not only is it important to consider feasibility within intervention evaluations, the information relevant to these components must be clearly communicated to inform future researchers and educators.

As anxiety remains pervasive among Canadian children and youth, with a jump in rates following COVID-19 (Racine et al., 2021), the need for accessible mental healthcare is greater than ever. While an extensive body of research has been devoted to examining school-based anxiety and test anxiety interventions, the present scoping review synthesizes these findings

thereby providing valuable information for researchers committed to supporting the mental health of children and youth.

Table 2

School-Based Anxiety Interventions Included in Scoping Review (asterisk denotes funded research)

Author	Sample size and participant ages/grades	Additional screening for anxiety or test anxiety?	Group-based or class-based	Intervention type and name	Duration of intervention	Number of sessions	Time per session (minutes)	Interventionist type	Treatment components	Feasibility evaluated?
Ab Ghaffer et al., 2019*	N = 193 (intervention) N = 268 (control) Age 10-11	No	Class	Information-Motivation-Behavioural Skills-Based Anxiety Prevention Program	Weekly	4	60	Research Assistant	Psychoeducation Empathy skills Emotion regulation skills	
Ahlen et al., 2018	N = 695 Grade 3-4 Age 9-10	No	Class	CBT (FRIENDS for Life) (Barrett, 2010a)	10 weeks	10	60	Teacher	Psychoeducation Somatic management Cognitive restructuring Problem solving Relapse prevention	Social Validity/ Acceptability Implementation Practicality
Atkins & Hayes, 2019	N = 66 Age 14-15	No	Group	Autogenic Training	Weekly	6	30	Autogenic Therapist	Psychoeducation Modelling Autogenic training exercises	
Barnes et al., 2012*	N = 135 (intervention) N = 123 (control) Grade 9	No	Group	Williams LifeSkills Intervention (Williams & Williams, 1997)	3 months	12	50	Teacher	Cognitive restructuring Deflection skills Relaxation and meditation Problem solving Assertiveness skills	Implementation Adaptability
Bazzano et al, 2022	N = 88 Age 11-14	No	Group	Yoga and Mindfulness Program	8 weeks	8	45	Yoga Teacher	Breathing exercises Yoga postures Games Relaxation	
Bleasdale et al., 2020	N = 59	No	Class	Quiet Time Stress	4 months	Daily	15	Transcendental	Transcendental meditation	Practicality

	Grade 9-12 Age 14-18			Management program (Wendt et al., 2015)				Meditation Instructor Teacher		
Bothe et al., 2014*	N = 15 (intervention) N = 13 (control) Grade 3 Age 8	No	Class	Stress Management Technique	4 months	Daily	10	Researcher (taught technique) Teacher	Deep breathing Movement Guided imagery	Social Validity/Acceptability Implementation Adaptability Integration
Brown, 2013	N = 120 Grade 4-5 Ages 8-12	No	Class	CBT	4-5 weeks	8	30-45 minutes	Researcher	Psychoeducation Somatic management Cognitive restructuring Relapse prevention	Social Validity/Acceptability Implementation Practicality
Brown et al, 2019* (feasibility study)	N = 155 Grade 12-13 Age 16-19	No	Group	CBT (DISCOVER 'How to Handle Stress') (Adapted from Brown et al., 1999)	1 day	1	Not specified	Clinical Psychologist	Psychoeducation Somatic management Cognitive restructuring Problem solving Exposure Sleep hygiene Time management	Recruitment Capability Data Collection Design Procedures Implementation
Burckhardt et al., 2017*	N = 63 (intervention) N = 61 (control) Grade 10 Age 14-16	No	Group	ACT (Strong Minds II)	7 weeks	Not specified	25	Registered Psychologist Teacher	Psychoeducation Experiential exercises	Social Validity/Acceptability Adaptability
Burckhardt et al., 2016	N = 267 Grade 10-11	No	Group	ACT and Positive Psychology (Strong Minds)	3 months	16	60	Registered Psychologist	Psychoeducation Experiential exercises	Implementation
Calear et al., 2016a*	N = 427 (school method) N = 562 (health service method) N = 778 (control) Grade 9-11	No	Class	CBT (e-couch Anxiety and Worry Program) (Calear et al., 2013a) (School method)	6 weeks	6	30-40	Online	Psychoeducation Somatic management Cognitive restructuring Physical activity strategies	Implementation

	Age 12-18	No		CBT (Health service method)				Online	Psychoeducation Somatic management Cognitive restructuring Physical activity strategies	
Calear et al., 2016b*	N = 225 Grade 8-12 Age 13-17	No	Class	CBT (e-couch Anxiety and Worry Program) (Calear et al., 2013a)	6 weeks	6	30-40	Online	Psychoeducation Somatic management Cognitive restructuring Physical activity strategies	Social Validity/Acceptability Implementation
Calear et al., 2013b* (Intervention details retrieved from Calear et al., 2009)	N = 1477 Grade 9-11 Ages 12-17	No	Class	CBT (MoodGYM)	5 weeks	5	20-40	Online (Teacher Supervising)	Somatic management Cognitive restructuring Problem solving	Implementation
Calear et al., 2009*	N = 1477 Grade 9-11 Age 12-17	No	Class	CBT (MoodGYM)	5 weeks	5	20-40	Online (Teacher Supervising)	Somatic management Cognitive restructuring Problem solving	Implementation Adaptability
Cheng et al, 2018*	N = 347 (intervention) N = 155 (control) Grade 4-5 Age 9-11	No	Class	CBT (Aussie Optimism Positive Thinking Skills Program) (Rooney et al., 2000)	10 weeks	10	60	Teacher	Psychoeducation Cognitive restructuring	Implementation
Chonthannathi et al., 2022*	N = 23 (intervention) N = 24 (control) Grade 7-9	Yes	Group	Group-CBT (Corey, 2011)	4 weeks	8	120	Researcher	Psychoeducation Somatic management Cognitive restructuring Exposure Relapse prevention	Adaptability
Collins et al., 2014	N = 103 (psychologist led intervention) N = 79 (teacher-led intervention) N = 135 (control)	No	Class	CBT (Psychologist-led)	Not specified	10	Not specified	Psychologist	Psychoeducation Somatic management Cognitive restructuring Problem solving	Implementation

									Relapse prevention	
		No		CBT (Teacher-led)				Teacher	Psychoeducation Somatic management Cognitive restructuring Problem solving Relapse prevention	
Eslami et al., 2016*	N = 63 (intervention) N = 63 (control) Female high school students	No	Group	Assertiveness training program (Turner et al, 2008)	Not specified	8	45	Researcher	Anger management skills Assertiveness skills	
Etherington & Costello, 2019	N = 46 (universal group) N = 20 (targeted group) Grade 5-6	Yes	Group	Mindfulness (Triple R) (Bannirchelvam et al., 2017; Dove & Costello, 2017; McCabe et al., 2017) (Universal group)	16 weeks	8	60	Mental Health Professionals	Psychoeducation Mindfulness activities Interpersonal skills Problem solving Coping strategies	Social Validity/Acceptability
		No		Mindfulness (Targeted group)				Mental Health Professionals	Psychoeducation Mindfulness activities Interpersonal skills Problem solving Coping strategies	
Galvez Tan & Alampay, 2022	N = 87 (intervention) N = 99 (control) Grade 1-12	No	Group	Mindfulness (Kamalayan) (Alampay et al., 2020)	Not specified	8	90-120	Guidance Counsellor School Teacher	Mindfulness activities	Implementation
García-Escalera et al., 2019*	N = 28 Grade 9	No	Group	CBT (Transdiagnostic Treatment of Emotional Disorders in Adolescents [Adapted]) (Ehrenreich-May et al, 2018)	Not specified	9	55	Graduate Student (Clinical Psychology, Doctoral)	Psychoeducation Somatic management Cognitive restructuring	Social Validity/Acceptability Implementation Practicality

									Problem solving Exposure Relapse prevention	
Guo et al., 2017*	N = 100 Grade 3-4	No	Class	CBT (Emotional Health Curriculum)	8 weeks	8	45	Licensed Registered Nurse Nursing Student	Psychoeducation Somatic management Cognitive restructuring Problem solving Communication skills	Social Validity/Acceptability Implementation Adaptability
Jibunoh & Ani, 2021	N = 20 (intervention) N = 20 (control) Age 13-16	Yes	Group	Psychoeducational intervention	3 weeks	3	90	Trainee Psychiatrist	Psychoeducation Relaxation techniques	
Johnson et al., 2016*	N = 132 (intervention) N = 176 (control) Grade 7-8	No	Class	Mindfulness (.b) (Kuyken et al., 2013)	Not specified	8	35-60	Researcher (Mindfulness Practitioner)	Mindfulness practices	Social Validity/Acceptability Adaptability
Johnson & Wade, 2021*	N = 217 (intervention) N = 217 (control) Grade 8, 10	No	Class	Mindfulness (Mindfulness Training for Teens) (Dewulf, 2013)	8 weeks	Not specified	65-75	Researcher (Mindfulness Practitioner)	Psychoeducation Mindfulness practices	Social Validity/Acceptability Practicality Adaptability Implementation
Johnstone et al., 2020a	N = 295 Age 8-13	No	Class	Emotion Regulation program (Based on Southam-Gerow, 2013)	8 weeks	8	50	Provisional Psychologist Research Assistant	Psychoeducation Emotion awareness skills Emotion understanding skills Cognitive skills Prevention skills	Implementation
		No		Behavioural Activation program (Based on Chen et al., 2013)				Provisional Psychologist Research Assistant	Psychoeducation Steps to gaining control over worry Active coping behaviours	

Johnstone et al., 2020b*	N = 67 (mindfulness intervention) N = 47 (wellness intervention) N = 168 (control) Grade 10 Age 14-16	No	Class	MBSR and ACT (Mindfulness intervention) (Based on Ciarrochi et al., 2012; The Hawn Foundation, 2011)	8 weeks	8	Not specified	Psychologist Resident	Psychoeducation Mindfulness skills ACT experiential activities	Social Validity/Acceptability Implementation Practicality
		No		Time Management and Conflict Resolution (Wellness intervention) (Based on Covey, 2014)				Psychologist Resident	Time management skills Conflict resolution skills	
Kato & Shimizu, 2017*	N = 37 (intervention) N = 37 (control) Grade 3 Age 8-9	No	Class	CBT (fun Friends [modified]) (Barrett, 2007a; 2007b)	Not specified	10	45	Researcher (School Psychologist)	Psychoeducation Cognitive restructuring Problem solving Exposure	Social Validity/Acceptability
Khalid et al., 2022* (feasibility study)	N = 28 (intervention) N = 28 (control) Grade 8	No	Class	CBT (Living Life to the Full) (Based on Williams et al., 2018)	8 weeks	8	Not specified	Research Assistant	Cognitive restructuring Problem solving	Social Validity/Acceptability Implementation
Kiselica, 1989	N = 48 Grade 9	Yes	Group	Anxiety Management Training program	9-10 weeks	8	59	Guidance Counsellor Researcher (Doctoral Counselling Psychology Student)	Psychoeducation Relaxation exercises Cognitive restructuring Assertiveness coping skills Relapse Prevention	Social Validity/Acceptability Adaptability
Kriley Holloway, 2020	N = 15 Grade 9 Age 13-15	Yes	Group	CBT (MATCH-ADTC) (Chorpita & Weisz, 2009)	9 weeks	Not specified	Not specified	Graduate Student (Doctoral)	Psychoeducation Cognitive restructuring Exposure Relapse prevention	Social Validity/Acceptability Implementation
Kul & Hamamci, 2021	N = 6 (intervention) N = 6 (control) Grade 4	Yes	Group	CBT (Anxiety-Coping Program for Children Based on Cognitive	4 weeks	8	60	School Psychological Counsellor Researcher	Psychoeducation Somatic management Cognitive restructuring	Social Validity/Acceptability Implementation

				Behavioural Therapy)						
Lambert, 2022	N = 138 Grade 5-6	No	Class	Emotional Freedom Techniques (The Tapping Project)	8 weeks	3x daily	5	Teacher	Tapping	Social Validity/Acceptability Implementation Integration Adaptability
Lambert et al., 2022	N = 138 Grade 5-6	No	Class	Emotional Freedom Techniques (The Tapping Project)	8 weeks	3x daily	5	Teacher	Tapping	Social Validity/Acceptability Implementation Integration
Lance, 2011	N = 11 (intervention) N = 7 (control) Grade 2-3	No	Group	Yoga practice	8 weeks	Weekly	20	Researcher (Certified Yoga Instructor)	Guided imagery Breathing techniques Yoga poses	
Maalouf et al., 2020*	N = 144 (intervention) N = 133 (control) Grade 6 Age 11-13	No	Class	CBT (My FRIENDS Youth [Adapted]) as cited in Maalouf et al., 2020)	Not specified	10	45-50	Researcher (Mental Health Professional) Researcher (Mental Health Trainee)	Psychoeducation Somatic management Cognitive restructuring Problem solving Interpersonal skills	Social Validity/Acceptability Implementation
Malboeuf-Hurtubise et al., 2021*	N = 37 (intervention) N = 16 (control) Grade 1-3 Age 7-14	No	Class	Philosophy for Children (Based on Lipman, 1985)	5 weeks	Weekly	60	Researcher	Philosophical dialogue based on existential primers	Social Validity/Acceptability Implementation
Matsumoto & Shimizu, 2016*	N = 154 Grade 6 Age 11-12	No	Class	CBT (FRIENDS for Life for Children) (Barrett, 2010b)	Not specified	10	45	School Psychologist	Somatic management Cognitive restructuring Problem solving Exposure	Implementation
Mazurek Melnyk et al., 2014	N = 16 Age 14-17	Yes	Group	CBT (Creating Opportunities for Personal Empowerment) (Melnyk, 1990; Melnyk et al., 2009)	Not specified	7	50	Pediatric Nurse Practitioner	Psychoeducation Somatic management Cognitive restructuring Problem solving Communication strategies	Social Validity/Acceptability Implementation

Miller et al., 2011a	N = 191 (targeted intervention) N = 253 (universal intervention) Grade 4-6	Yes	Class and Group	CBT (FRIENDS) (Barrett et al., 2000a) (Targeted intervention)	Not specified	9	60	Teacher Graduate student	Psychoeducation Somatic management Cognitive restructuring Problem solving Relapse prevention	Implementation
		No		(Universal intervention)				Teacher Graduate student	Psychoeducation Somatic management Cognitive restructuring Problem solving Relapse prevention	
Miller et al., 2011b	N = 269 (intervention) N = 264 (control) Grade 4-6	No	Class	CBT (FRIENDS for Life [Adapted]) (Barrett, 2004a; Barrett et al., 2000b)	Not specified	9	Not specified	Teacher School Counsellor First Nations School Support Worker	Psychoeducation Somatic management Cognitive restructuring Problem solving	Implementation Practicality Adaptability
Miller et al., 2010*	N = 73 (intervention) N = 43 (control) Grade 3-7 Age 7-12	No	Class	CBT (Taming Worry Dragons) (Garland & Clark, 2000)	8 weeks	Not specified	Not specified	Teacher	Psychoeducation Somatic management Cognitive restructuring Exposure	Social Validity/Acceptability Implementation Practicality
Mims, 2015	N = 66 Grade 10 Age 14-15	No	Class	CBT (FRIENDS for Youth) (Barrett, 2004b)	Not specified	10	45	Researcher Clinical Social Worker	Psychoeducation Somatic management Cognitive restructuring Problem solving Exposure Relapse prevention	
Mitchem & Wojtiwicz, 1994	N = 113 Grade 4	No	Class	Project SESAME (Student Environmental Stewardship Anxiety Management Exercises)	6 weeks	2x a week	30-45	Physical Education Specialist	Environmental stewardship activities Exercise	

Muris et al., 2009	N = 45 Ages 9-12	Yes	Group	CBT (Coping Koala) (Heard et al., 1991)	6 weeks	12	60	Graduate Student (Clinical Psychology Masters)	Psychoeducation Somatic Management Cognitive Restructuring Problem solving Exposure	Implementation
Nkongho, 2016	N = 358 Age 10-19	No	Group	CBT (Growing up with KELY [GUWK])	Not specified	13	Not specified	Not specified	Psychoeducation	Social Validity/Acceptability Adaptability
		Yes	Group	CBT and Mindfulness (Talk2Me [small group therapy which is part of GUWK])	10 weeks	Not specified	60		Psychoeducation Somatic management	
O'Callaghan & Cunningham, 2015	N = 9 Age 8-11	Yes	Group	CBT (Cool Connections) (Seiler, 2008)	10 weeks	10	90-120	Teacher Education Welfare Officer Classroom Assistant	Psychoeducation Cognitive restructuring Problem solving	Social Validity/Acceptability Implementation
Ohira et al., 2019	N = 149 (intervention) N = 89 (control) Ages 12-14	No	Class	CBT (Journey of the Brave) (Urao et al., 2016)	3 months	7	50	Teacher	Psychoeducation Somatic management Cognitive restructuring Exposure Assertiveness skills	Social Validity/Acceptability Implementation
Osborn et al., 2021*	N = 205 (intervention) N = 208 (control) Ages 13-18	Yes	Group	Wise intervention (Shamiri)	4 weeks	4	60	High School Graduate	Psychoeducation Personal growth activity Strategies for overcoming challenges Gratitude letter Value selection	Social Validity/Acceptability Implementation
Osborn et al., 2020a*	N = 103 Age 13-18	No	Group	Wise intervention (Shamiri-Digital)	N/A	1	60	Online	Psychoeducation Growth stories Good things exercise Values to guide life decision exercise	Social Validity/Acceptability

Osborn et al., 2020b*	N = 28 (intervention) N = 24 (control) Age 12-19	Yes	Group	Wise intervention (Shamiri)	Not specified	4	60	High School Graduate	Psychoeducation Personal growth stories Growth strategies Gratitude letter Value selection	Social Validity/Acceptability Implementation
Peter et al., 2022	N = 36 (intervention) N = 32 (control) Ages 10-14	Yes	Group	Mindfulness-based Cognitive Therapy	12 weeks	12	90	Clinical Psychologist	Psychoeducation Mindfulness exercises	
Petersen et al., 2023	N = 13 (intervention) N = 13 (control)	Yes	Group	ACT (DNA-V) (Adapted from Hayes & Ciarrochi, 2015)	8 weeks	8	Not specified	Graduate Student (Clinical Psychology, Doctoral)	Psychoeducation Mindfulness exercises Conversation card exercise Writing activities Personal behaviour commitment Experiential activities Strength spotting exercise BOLD strategy	Social Validity/Acceptability Practicality Adaptability
Potek, 2012	N = 40 Grade 9-12	No	Group	Mindfulness (Learning to Breathe)	7 weeks	6	50	Principal Investigator	Psychoeducation Mindfulness exercises Role play exercises	Social Validity/Acceptability
Quach, 2016	N = 61 (sitting meditation intervention) N = 68 (hatha yoga intervention) N = 57 (control) Grade 7-9	No No	Group	MBSR (Sitting meditation) (Based on Kabat-Zinn, 1990) MBSR (Hatha yoga) (Wills, 2009 as cited in Quach, 2016)	4 weeks	4	45	Mindfulness Sitting Meditation Instructor Certified Yoga Instructor	Breathing techniques Meditation Breathing techniques Yoga poses	Social Validity/Acceptability Implementation Adaptability

Rasid & Parish, 1998	N = 18 (behavioural relaxation training) N = 20 (progressive muscle relaxation training) N = 17 (control) High school	No No	Group	Behavioural relaxation training Progressive muscle relaxation training	2 weeks	4	20	Videotape Videotape	Behavioural relaxation technique Progressive muscle relaxation technique	s
Rice, 2008	N = 7 (CBT intervention) N = 7 (relaxation training intervention N = 6 (control) Grade 5-12 Age 10-18	Yes Yes	Group	CBT (Cognitive Behavioural Treatment for Anxious Adolescents) (Kendall et al., 2002) Relaxation training	One school year	16	30-40	Graduate Student (School Psychology, Doctoral) Graduate Student (School Psychology, Doctoral)	Psychoeducation Somatic management Cognitive restructuring Problem solving Exposure Psychoeducation Relaxation procedures	
Rodrigues et al., 2021	N = 34 (intervention) N = 70 (control groups) Grade 7-10 Age 13-18	No	Group	Qigong	6 weeks	7-8	15-20	Traditional Chinese Medicine Qigong Therapist-Instructor	Qigong exercises	Practicality
Rooney et al., 2013*	N = 467 (intervention) N = 443 (control) Grade 4	No	Class	CBT (Aussie Optimism: Positive Thinking Skills Program) (Rooney et al., 2000)	10 week	10	60	Teacher	Psychoeducation Somatic management Cognitive restructuring Problem solving	Implementation
Rose et al. 2009	N = 26 (intervention) N = 26 (control) Grade 4 Ages 8-9	No	Class	CBT (FRIENDS for Life) (Barrett, 2004c, 2004d)	2 months	8	60	Teacher	Psychoeducation Somatic management Cognitive restructuring Problem solving Exposure	Social Validity/Acceptability Implementation
Saelid et al., 2022*	N = 1673 First year high school	No	Class	CBT (MindPower)	8 weeks	8	90	Teacher	Psychoeducation Cognitive restructuring	Implementation Adaptability

	Age 15-16								Problem solving Relapse prevention	
Savoy, 1997	N = 72 Grades 6-8	Yes	Group	CBT (Coping Cat) (Adapted from Kendall et al., 1991)	10 weeks	10	60	Counsellor Social Worker	Psychoeducation Somatic management Cognitive restructuring Problem solving Exposure	Implementation Adaptability Practicality
Seekis et al., 2023*	N = 18 Grade 7-8 Age 12-14	No	Class	Self-Compassion (Adapted from Bluth, 2017)	4 weeks	Weekly	70	Researcher	Psychoeducation Mindfulness and common humanity exercises Soothing touch exercise Self-compassion art activity	Social Validity/Acceptability Implementation
Shum et al., 2019*	N = 264 (intervention) N = 195 (control) Grade 4-5 Age 8-14	No	Class	CBT (The Adventures of DoReMiFa)	Not specified	8	45-80	Graduate Student (Counselling and Clinical Psychology) Teacher	Psychoeducation Cognitive restructuring Problem solving Social skills Communication skills	Implementation
Skrybina et al., 2016*	N = 478 (health-led condition) N = 467 (school-led condition) N = 442 (control) Age 9-10	No No	Class	CBT FRIENDS) (Barrett, 2004c) (Health-led) CBT (School-led)	9 weeks	9	60	External Health Leader Teacher Special Educational Needs Co-ordinator Learning Support Assistant	Psychoeducation Somatic management Cognitive restructuring Problem solving Psychoeducation Somatic management Cognitive restructuring Problem solving	Implementation
Smith et al., 2020	N = 10 Grade 7-9 Age 13-15	Yes	Group	ACT (Based on Ciarrochi et al., 2012)	6 weeks	6	60	Psychologist	BOLD Warrior skills Experiential exercises	Implementation Adaptability

Stapp & Lambert, 2020	N = 58 Grade 5 Age 10-12	No	Class	Mindfulness Based Yoga	3 months	3x daily	5	Student Teacher	Guided breathing exercises Light yoga stretches Guided meditation	Social Validity/Acceptability
Tokolahi et al., 2018*	N = 142 Grade 7-8 Age 11-13	Yes	Group	Occupational Therapy (Kia Piki te Hauora) (Tokolahi et al., 2016)	8 weeks	Weekly	60	Occupational Therapist	Engagement in developmentally appropriate activities Strategies for overcoming difficult emotions	
Tomba et al., 2010*	N = 82 (intervention) N = 80 (control) Middle School	No	Class	Well-being Therapy	Not specified	6	120	Clinical Psychologist	Psychoeducation Cognitive restructuring Interpersonal skills Relapse prevention	Implementation
		No		Anxiety Management				Clinical Psychologist	Psychoeducation Relaxation Cognitive restructuring Guided self-talk Communication skills Relapse prevention	
Urao et al., 2022*	N = 31 (intervention) N = 61 (control) Grade 5 Age 10-11	No	Class	CBT (Journey of the Brave) (Urao et al., 2016)	Not specified	14	45	Graduate Student (Nurse Teacher) Teacher	Psychoeducation Somatic management Cognitive restructuring Exposure	Social Validity/Acceptability Implementation Adaptability
Urao et al., 2021*	N = 1622 (intervention) N = 1123 (control) Grade 5-6 Age 10-12	No	Class	CBT (Journey of the Brave) (Urao et al., 2016)	6 months	10	45	Teacher	Psychoeducation Somatic management Cognitive restructuring Exposure Assertiveness skills	Implementation Adaptability
Urao et al., 2018*	N = 41 (intervention)	No	Class	CBT (Journey of the Brave)	6 months	10	45	Researcher	Psychoeducation	

	N = 31 (control) Grade 5 Age 10-11			(Urao et al., 2016)					Somatic management Cognitive restructuring Exposure Assertiveness skills	
Van der Gutch et al., 2018* (intervention information retrieved from Raes et al., 2014)	N = 201 (intervention) N = 207 (control) Grade 9-12 Age 14-17	No	Class	MBSR and Mindfulness Based Cognitive Therapy (Mindfulness Intervention) (Kabat-Zinn, 1990; Segal et al., 2002)	8 weeks	8	100	Certified Mindfulness Trainer (Clinical Psychologist, Medical Doctor)	Psychoeducation Guided experiential mindfulness exercises	
Venturo-Conerly et al., 2022*	N = 240 (growth intervention) N = 221 (gratitude intervention) N = 244 (value affirmation intervention)	No	Class	Wise intervention (Growth intervention)	N/A	1	40	High School Graduate	Psychoeducation Testimonial reading activity Problem solving skills Saying is believing exercise	Social Validity/Acceptability Implementation
	N = 190 (control) High school	No		Wise intervention (Gratitude intervention)					Psychoeducation Gratitude letter activity	
	Ages 14-18	No		Wise intervention (Value Affirmation intervention)					Psychoeducation Value selection Value integration activity	
Walker & Wright, 2017	N = 65 Grade 3-4	No	Class	CBT (SNAP for Schools) (Augimeri et al., 2006)	13 weeks	Not specified	45	Teacher Social Worker Guidance Counsellor	Psychoeducation Somatic management Cognitive restructuring Problem solving Relapse prevention	Implementation
Waters et al., 2019*	N = 116 (Positive search training) N = 127 (CBT) N = 60 (control) Grade 3-5 Age 7-11	No	Class	Positive Search Training (Waters et al., 2015b; Waters et al., 2016)	4 weeks	8	30	Research Assistant and Computer Program	Positive Search Training	Social Validity/Acceptability Implementation Adaptability
		No		CBT (Take Action Program) (Waters et al., 2008)				Clinical Psychologist	Psychoeducation Somatic management	

									Cognitive restructuring Problem solving Exposure Social skills training Relapse prevention	
Waters et al., 2015a	N = 74 (intervention) N = 77 (control) Grade 5	No	Class	CBT (Take Action Program) (Waters et al., 2008)	Not specified	8	60	Clinical Psychologist Graduate Student (Clinical Psychology)	Psychoeducation Somatic management Cognitive restructuring Problem solving Exposure Social skills training Relapse prevention	Implementation
Weaver, 2019	N = 9 (intervention) N = 10 (control) Grade 6-8	Yes	Group	Yoga (Move-Into-Learning for Anxiety) (Adapted from Klatt, 2008 as cited in Weaver, 2019)	8 weeks	8	45	Pediatric Mental Health Occupational Therapist	Yoga postures Controlled breathing activities Supine meditation Cognitive-based emotion regulation Mindfulness Distress tolerance skills	Social Validity/Acceptability Integration Practicality
Zaichkowsky & Zaichkowsky, 1984*	N = 24 (intervention) N = 19 (control) Grade 4	No	Class	Relaxation Training Program (Based on Bernstein & Borkovec, 1973; Frederick, 1967; 1979; Marshall & Beach, 1976; Stroebel et al., 1980)	6 weeks	17	10	Experimenter	Psychoeducation Breathing techniques Progressive muscle relaxation exercises Mental imagery	Social Validity/Acceptability

Table 3

School-Based Test Anxiety Interventions Included in Scoping Review (asterisk denotes funded research)

Author	Sample Size and Participant Ages/Grades	Additional Screening for Anxiety or Test Anxiety?	Group-based or Class-based	Intervention Type and Name	Duration of Intervention	Number of Sessions	Time Per Session (minutes)	Interventionist Type	Treatment Components	Feasibility evaluated?
Balkam et al., 2013	N = 66 Grade 5-7	No	Class	Collaborative Testing	12 weeks	Not specified	Not specified	Teacher-Researcher	Test taking strategies Collaborative testing Differentiated tests	Social Validity/Acceptability Implementation
Bass et al., 2002	N = 68 Grades 7-9	No	Class	Not specified	18 weeks	Not specified	Not specified	Teacher Researcher	Study skills Test taking skills Relaxation techniques	Social Validity/Acceptability
Bosse, 1987	N = 38 Grades 9-12	Yes	Group	Relaxation and Cognitive Counselling [RCC] (Adapted from Sank & Shaffer, 1984)	Not specified	6	90	Graduate level therapist	Somatic management Cognitive restructuring	Social Validity/Acceptability Adaptability
		Yes		Study Skills Counselling [SSC] (Adapted from Gibbs, 1981)				Graduate level therapist	Study skills Test taking skills	
		Yes		Combined RCC and SSC)				Graduate level therapist	Somatic management Cognitive restructuring Study skills Test taking skills	
Brown, 2020	N = 15 Grade 11	Yes	Group	CBT (Every Little Helps)	6 weeks	6	60	Researcher (with teacher collaboration)	Psychoeducation Somatic management Cognitive restructuring Study skills	Social Validity/Acceptability Implementation
Carsley & Heath, 2019	N = 76 (intervention) N = 76 (control) Grade 4-6	No	Class and Group	Mindfulness	Not specified	1	15	Researcher	Mandala colouring activity	

Carsley & Heath, 2018	N = 97 (intervention) N = 96 (control) Grade 8	No	Class	Mindfulness	Not specified	1	15	Researcher	Mandala colouring activity	
Carsley et al., 2015	N = 26 (intervention) N = 26 (control) Grade 4-6	No	Group	Mindfulness	Not specified	1	15	Researcher	Mandala colouring activity	
D'Elia, 1998	N = 49 (intervention) N = 50 (control) High School	No	Class	CBT (Relax, Take Control, Be Prepared)	5 days	5	Not specified	Researcher (School Psychologist)	Psychoeducation Somatic management Cognitive restructuring Problem solving Time management techniques Study skills techniques	
Donato, 2010	N = 62 (intervention) N = 62 (control) Grade 4 Age 9-10	No	Class	TestEdge Program (Goelitz et al., 2003)	8	8	30	Teacher	Test-wiseness skills Emotional management strategies Behavioural strategies Emotional-psychophysiological-based training strategies Educational kinesiology exercises	Social Validity/Acceptability Implementation Integration Adaptability
Fergus & Limbers, 2019	N = 39 (intervention) N = 34 (control) Grade 8	No	Group	Attention Training Technique (Wells, 1990)	1 week	5	12	Research Assistant	Attention training technique	
Fields, 2007	N = 41 Grade 6-8 Age 11-14	No	Group	Cognitive-based intervention	1 day	1	60	Researcher	Cognitive restructuring	Social Validity/Acceptability Implementation
		No		Skills-based intervention				Researcher	Study and test taking skills	
Khng, 2017*	N = 122 Grade 5	Yes	Group	Deep breathing	1 day	1	Not specified	Experimenter	Deep breathing	
Larson et al., 2010*	N = 117 Grade 3 Ages 8-10	No	Class	Relaxation Training (Based on Teel, 2005a; Teel, 2005b	5 weeks	10	13-15	Researcher	Deep breathing exercises	

				as cited in Larson et al., 2010))					Progressive muscle relaxation	
Mann, 1972	N = 80 Grade 7-8	Yes	Group	Vicarious systematic desensitization (Counter-conditioning	Not specified	6	45	Experimenter	Vicarious systematic desensitization (via videotape)	Adaptability
		Yes		Vicarious systematic desensitization (Vicarious counter-conditioning)				Experimenter	Vicarious systematic desensitization (via videotape) Relaxation	
		Yes		Vicarious systematic desensitization (Vicarious extinction through modeling)				Experimenter	Vicarious systematic desensitization (via videotape) Relaxation	
Markus, 2017	N = 62 High school	No	Group	CBT	Not specified	Not specified	Not specified	Researcher	Somatic management Test taking skills	
McLeod & Boyes, 2021	N = 105 Grade 9-12, Age 14-17	No	Class	Social Emotional Learning and Study Skills Program	5 months	8	50	Researcher	Heart focused breathing using biofeedback Social emotional learning strategies Study skills	Social Validity/Acceptability
Miller et al., 2006	N = 22 (intervention) N = 14 (control) Grade 5	Yes	Group	Accelerated Desensitization and Adaptative Attitudes	Half of school year	5	31	School Counsellor	Tense-release anxiety-containment sequences Guided imagery Exposure	
Morrell, 2019	N = 43 Grade 6-8 Age 12-14	No	Group	Mindfulness	N/A	1	10	Researcher	Guided mindfulness exercises	
		No		Mindfulness				Research Assistant	Mandala colouring	
Nauheim, 1981	N = 8 (anxiety management training) N = 8 (negative practice) N = 8 (cognitive therapy)	Yes	Group	Anxiety Management Training (AMT) (Streim, 1979)	Not specified	6	45	School Psychologist Graduate Student (Doctoral)	Relaxation Visualization	Social Validity/Acceptability Adaptability Implementation
		Yes		Negative Practice (O'Brien, 1976)				School Psychologist	Negative practice technique	

								Graduate Student (Doctoral)		
		Yes		Cognitive Therapy (Kaplan et al., 1979)				School Psychologist Graduate Student (Doctoral)	Cognitive restructuring Problem solving	
O'Driscoll & McAleese, 2022* (feasibility study)	N = 22 (intervention) N = 25 (control) Age 16-17	No	Group	Compassionate Mind Training	3 months	8	35	Audio Recordings (Interventionist Not Otherwise Specified)	Psychoeducation Breathing exercises Compassionate imagery techniques	Implementation
Putwain & von der Embse, 2021*	N = 75 (intervention) N = 71 (control) Grade 10-11	Yes	Group	CBT (Strategies to Tackle Exam Pressure and Stress (Putwain et al., 2014)	6 weeks	6	45	Assistant Psychologist	Psychoeducation Somatic management Cognitive restructuring Study skills Test taking skills	Adaptability
Putwain & Pescod, 2018	N = 25 (intervention) N = 31 (control) Grade 10-11	Yes	Group	CBT (Strategies to Tackle Exam Pressure and Stress) (Putwain et al., 2014)	Not specified	6	40	Assistant Psychologist	Psychoeducation Somatic management Cognitive restructuring Study and test taking skills Goal setting	Adaptability
Rose & Lomas, 2020*	N = 50 (mandala colouring condition) N = 50 (mandala colouring and mindfulness) N = 50 (control) Age 17-18	No	Group	Mindfulness (Mandala colouring activity)	N/A	1	12	Researcher	Mandala colouring activity	Social Validity/Acceptability
		No		Mindfulness (Mandala colouring and mindfulness)				Researcher	Mandala colouring activity Audio recorded guided mindfulness	
Tenenbaum, 2011	N = 16 Grade 3 Age 8-10	Yes	Group	The Test Stress Intervention (Tenenbaum et al., 2010)	6 weeks	8	30	Graduate student	Relaxation exercises Mindfulness Cognitive restructuring Test taking strategies Study skills	Social Validity/Acceptability Implementation Adaptability

									Relapse prevention	
Yeo et al., 2016	N = 58 (intervention) N = 57 (control) Grade 4 Age 9-12	No	Class	CBT (Based on Kendall, 2012; Nichols, 1999)	4 weeks	4	30	Psychologist	Psychoeducation Somatic management Exposure Study skills	Adaptability

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*asterisk denotes reference included in scoping review

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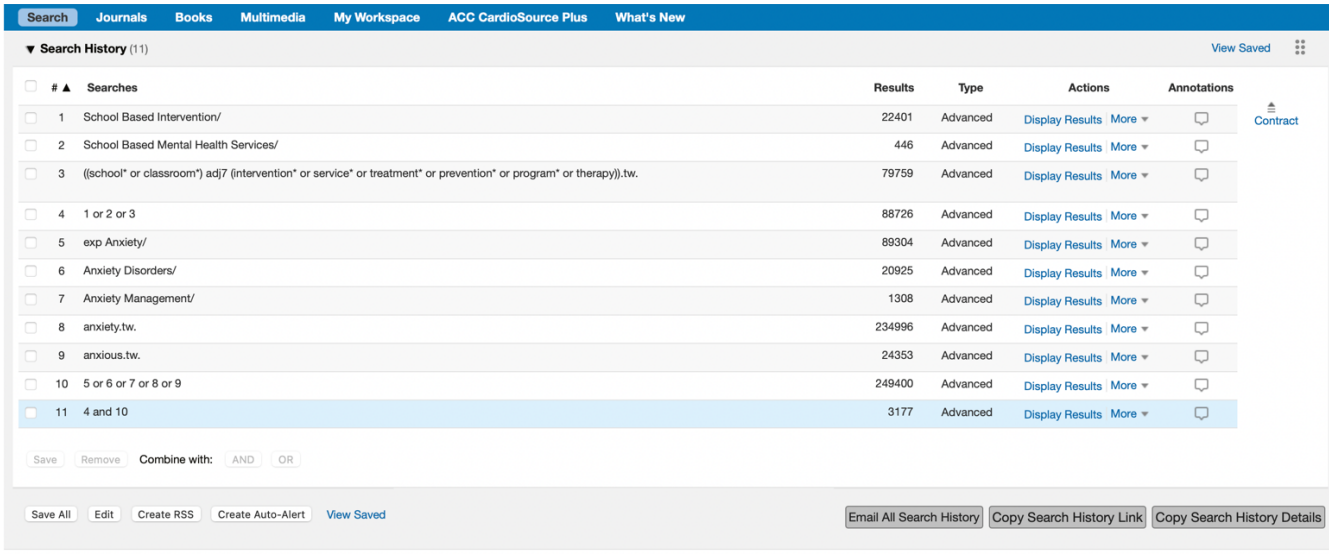
Appendix A. Database Search Strategies

APA PsycInfo



Search | Journals | Books | Multimedia | My Workspace | ACC CardioSource Plus | What's New

▼ Search History (11) — View Saved

# ▲	Searches	Results	Type	Actions	Annotations
1	School Based Intervention/	22401	Advanced	Display Results More	
2	School Based Mental Health Services/	446	Advanced	Display Results More	
3	((school* or classroom*) adj7 (intervention* or service* or treatment* or prevention* or program* or therapy)).tw.	79759	Advanced	Display Results More	
4	1 or 2 or 3	88726	Advanced	Display Results More	
5	exp Anxiety/	89304	Advanced	Display Results More	
6	Anxiety Disorders/	20925	Advanced	Display Results More	
7	Anxiety Management/	1308	Advanced	Display Results More	
8	anxiety.tw.	234996	Advanced	Display Results More	
9	anxious.tw.	24353	Advanced	Display Results More	
10	5 or 6 or 7 or 8 or 9	249400	Advanced	Display Results More	
11	4 and 10	3177	Advanced	Display Results More	

Contract

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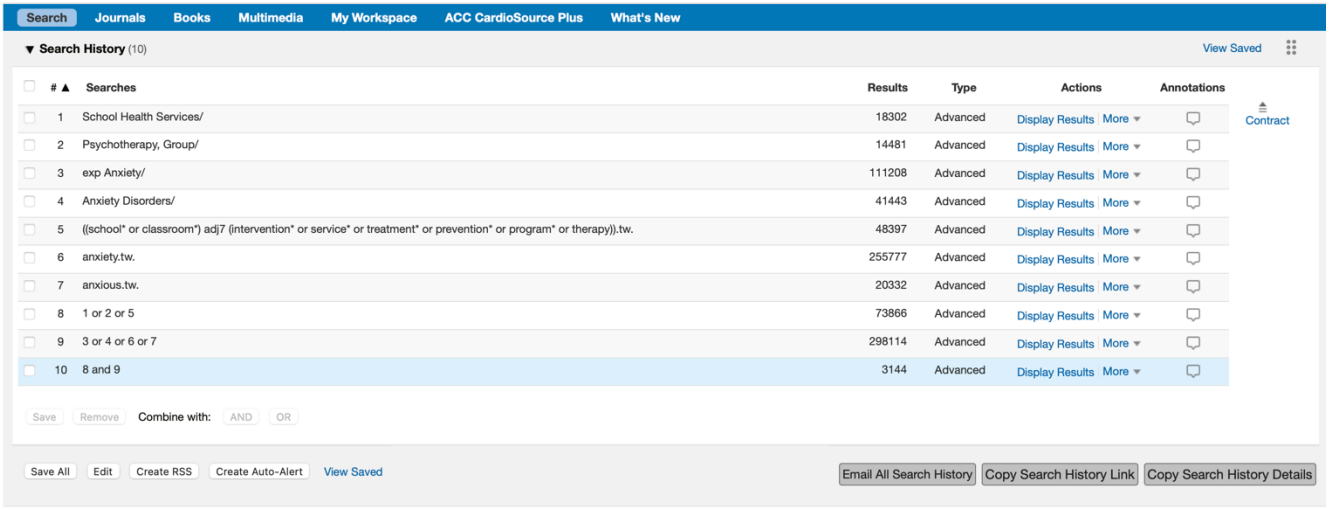
Email All Search History | Copy Search History Link | Copy Search History Details

Medline



Search | Journals | Books | Multimedia | My Workspace | ACC CardioSource Plus | What's New

▼ Search History (10) — View Saved

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2	Psychotherapy, Group/	14481	Advanced	Display Results More	
3	exp Anxiety/	111208	Advanced	Display Results More	
4	Anxiety Disorders/	41443	Advanced	Display Results More	
5	((school* or classroom*) adj7 (intervention* or service* or treatment* or prevention* or program* or therapy)).tw.	48397	Advanced	Display Results More	
6	anxiety.tw.	255777	Advanced	Display Results More	
7	anxious.tw.	20332	Advanced	Display Results More	
8	1 or 2 or 5	73866	Advanced	Display Results More	
9	3 or 4 or 6 or 7	298114	Advanced	Display Results More	
10	8 and 9	3144	Advanced	Display Results More	

Contract

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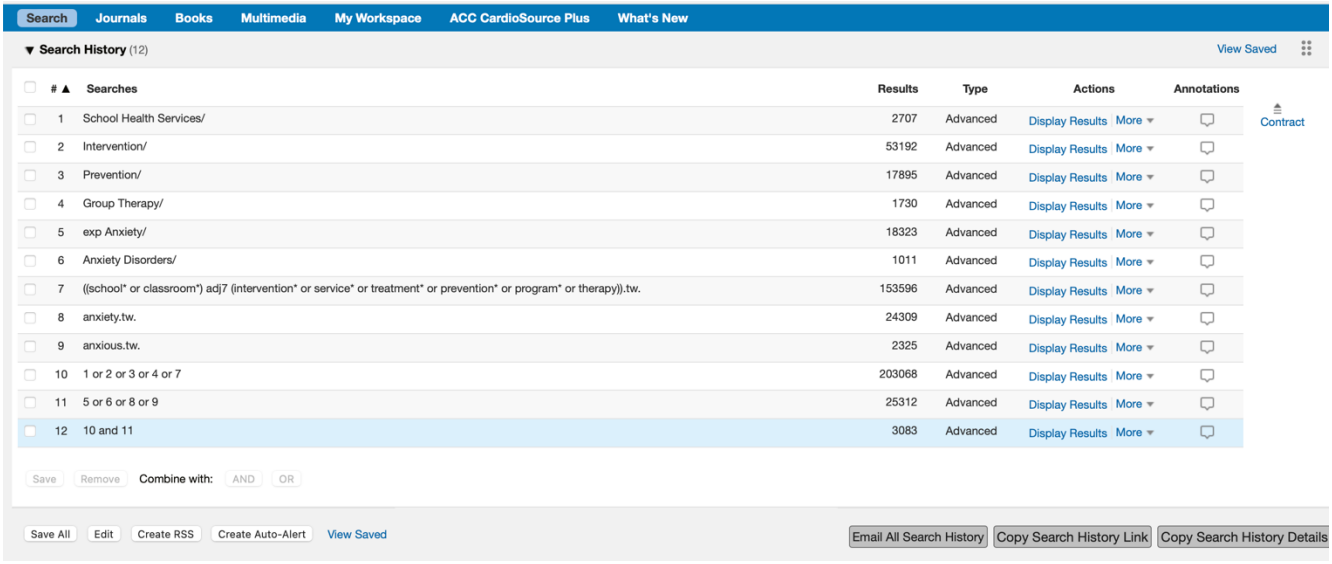
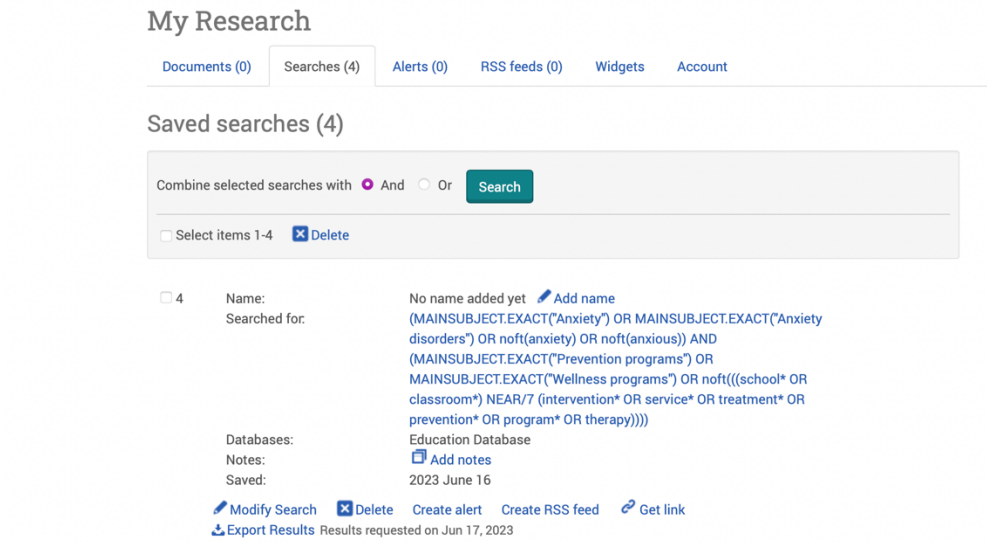
Email All Search History | Copy Search History Link | Copy Search History Details

ERIC



Education Database



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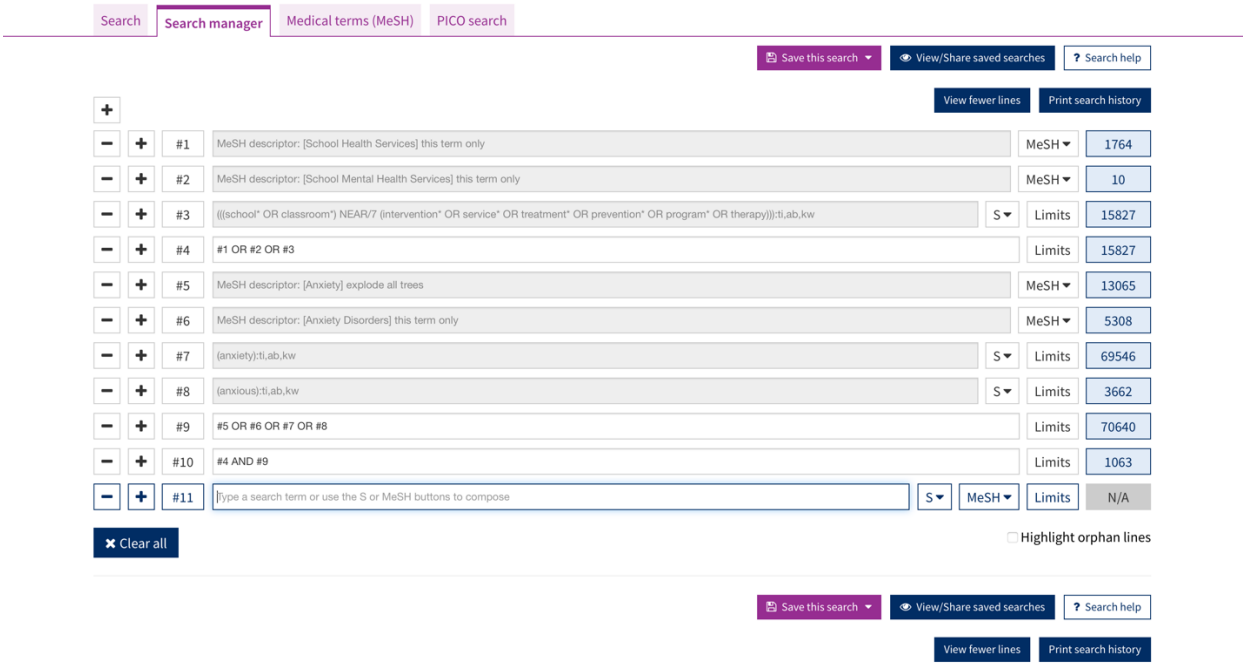
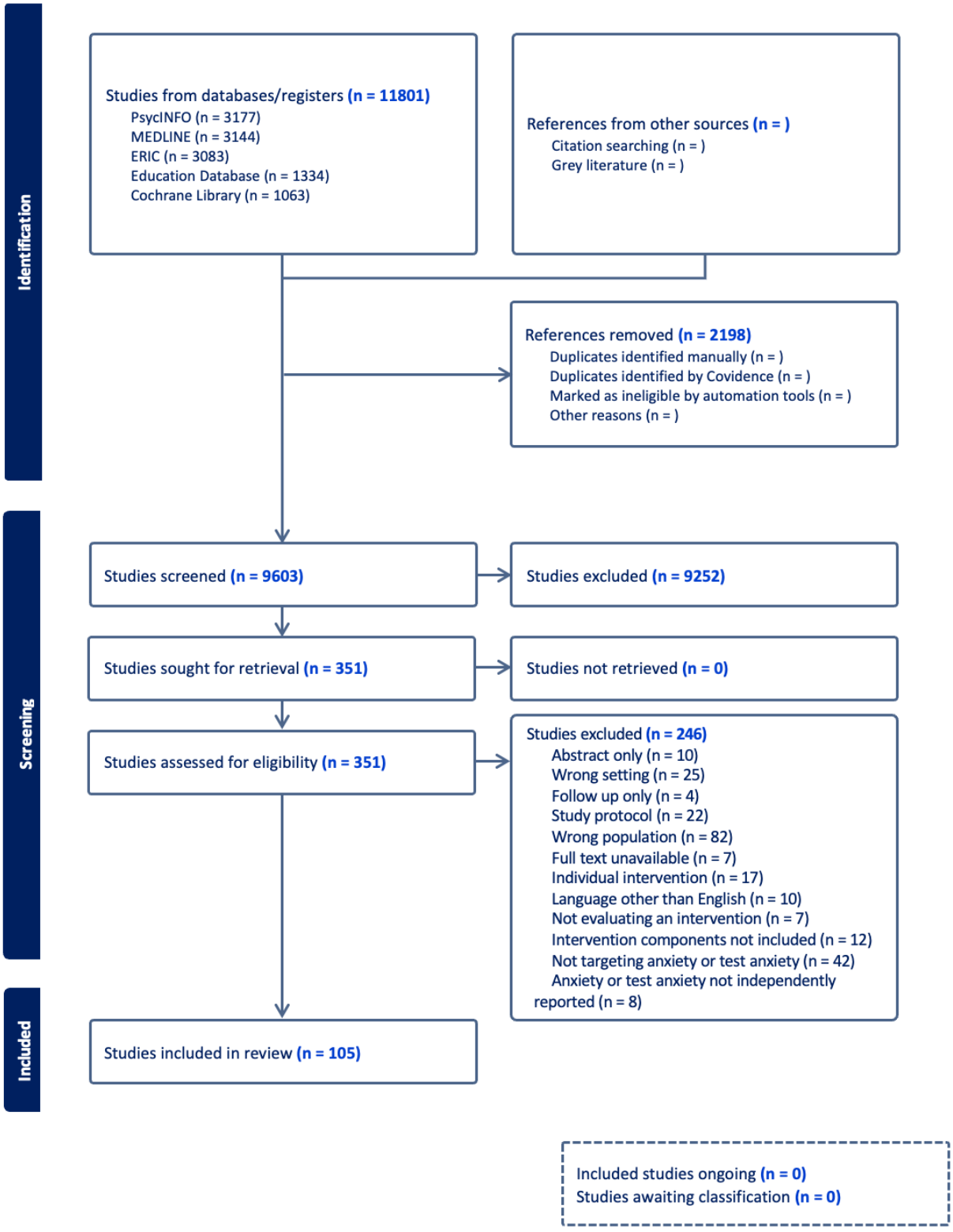


Appendix B. PRISMA Flowchart



*Retrieved from Covidence

Appendix C. Full Text Review Checklist

Checklist Item	Exclusion Criterion
1. Is the study in a language other than English?	If yes, select: Language other than English
2. Is the study a protocol only?	Select: Study protocol
3. Is the study abstract available only (e.g., conference abstract)?	Select: Abstract only
4. Is the full text available?	If no, select: Full text unavailable
5. Is the study evaluating an intervention (or is it a commentary, review, etc.)	If no, select: Not evaluating an intervention
6. Is the study a follow up only?	Select: Follow up only
7. Does the intervention take place outside a classroom or school setting or outside school hours (e.g., after school program?)	Select: Wrong setting
8. Does the intervention include students outside K-12 (e.g., undergraduate, adults)?	Select: Wrong population
9. Is the intervention targeting individuals outside of students (i.e., teachers, parent component) or special population (e.g., ASD, asthma, ADHD)?	Select: Wrong population
10. Is the intervention an individual meeting with a professional and student (i.e., not group or classroom based)?	Select: Individual intervention
11. Does the intervention target anxiety or test anxiety (or anxiety and another outcome [e.g., depression, stress, etc.])? 12. Is it targeting general test anxiety (e.g., not math anxiety)?	If no, select: Not targeting anxiety or test anxiety
13. Does the intervention include an independent measure of test anxiety or anxiety?	If no, select: Anxiety or test anxiety not independently reported
14. Does the article include a description of the components included in the intervention (i.e., only provides the name of the intervention without further information)?	If no, select: Intervention components not included

Curriculum Vitae

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