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Parent-child Congruency on the Screen for Child Anxiety-Related Emotional Disorders

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Abstract
Anxiety is a frequently experienced mental health issue among children and youth, particularly among children with attention deficit hyperactivity disorder (ADHD) due to their adverse experiences in social and school settings. Child anxiety often remains unnoticed or misinterpreted, and this leads to delayed diagnosis and treatment of children's anxiety issues. Educators and professionals also face difficulties in diagnosing the anxiety of children due to the lack of valid and reliable instruments for screening and diagnostics of children's anxiety. This study applied the SCARED scale for children and parents, which is a proven screening instrument for the identification of children's anxiety to examine parents' perception and awareness of the anxiety experienced by their children diagnosed with ADHD. The scale was translated and administered to 11 to 13-year-old children and their parents. Based on responses from 65 parent-child dyads, this study found that the translated and modified scoring procedure of the SCARED scale used in this study effectively identified higher anxiety levels in children with clinically diagnosed ADHD compared to children with no such condition. This was so for both the child and the parent versions of the SCARED. The study also identified high levels of correlation between the children's self-ratings and their parents' ratings of these same children, but children's self-reported scores were significantly higher than the level of anxiety perceived by their parents. Overall, the study found that the translated and modified SCARED scale could be used to screen children's anxiety. However, a large-scale analysis is necessary to precisely confirm the metric characteristics of the SCARED scale.

Keywords: children's anxiety, attention deficit hyperactivity disorder, screening, SCARED scale, parent-child dyads.

1. Introduction

Anxiety as a subjective sensation of a real or perceived threat (Joshi et al., 2013) is highly prevalent in children, ranging between 5.7% and 12.8% (Ramsawh et al., 2011). Although research shows that mild anxiety can be beneficial (Brahmbhatt et al., 2021), when anxiety increases above an optimal level of intensity, it prevents students from fulfilling their usual daily and school activities (Monga & Benoit, 2018). Research shows that anxiety disorders negatively impact students' educational achievement, social adaptation, and development and often extend into adulthood (Costello et al., 2003; Kitchener et al., 2018; Rapee et al., 2009). Anxiety disorders include a variety of forms, such as phobias, separation anxiety, social anxiety, generalised anxiety, panic disorders, and agoraphobia (Kaajalaakso et al., 2020). The DSM-5-TR (American Psychiatric Association, 2022) classification of anxiety disorders recognises 11 anxiety disorders, including generalised anxiety disorder, panic disorder, selective mutism, separation anxiety disorder, social anxiety disorder, and specific phobia. Anxiety disorders are among the most common mental health issues affecting secondary school students (Allen et al., 2020; Tramonte & Willms, 2010; Putwain & Daly, 2014; Tang et al., 2019), and female students tend to experience anxiety disorders more frequently than their male counterparts (Hill et al., 2016; OECD, 2017; Putwain & Daly, 2014; Tang et al., 2019; Tramonte & Willms, 2010).

In addition to anxiety disorders, attention deficit hyperactivity disorder (ADHD) is also a highly prevalent and clinically heterogeneous disorder (Biederman, 2005; Gokce et al., 2015). It is one of the most common neurobehavioral disorders with psychiatric comorbidity and impairments in adaptive functioning (Barkley, 2002). According to self-report measures of symptoms (Willcutt, 2012), about 6% to 7% of children and adolescents have ADHD. ADHD increases individuals' and their families' proneness to stress, usually resulting in adverse academic and vocational outcomes (Biederman, 2005). Children with ADHD and their families are at risk of several comorbid clinical conditions, including anxiety disorders (Pliszka, 2007; Souza et al., 2005; Koyuncu et al., 2015).

Research also shows (Hartman et al., 2004) that children with ADHD who have sluggish cognitive tempo experience more anxiety and depression than children with the combined subtype of ADHD. Children with comorbid ADHD and anxiety disorders also have severe anxiety symptoms, sometimes

combined with additional psychiatric conditions (Katzman et al., 2017). According to Bowen et al. (2008), about half of children with ADHD are likely to have an anxiety disorder. Despite the high prevalence of ADHD comorbidity with anxiety disorders, the number of studies in this field is surprisingly low, and this area of inquiry would benefit from some studies about the association between these two conditions (Gokce et al., 2015).

Research shows that anxiety among secondary school students often remains undiagnosed (Tomb & Hunter, 2004) or misunderstood, leading to severe individual and social consequences (La Vonne et al., 2012). Therefore, the early identification and treatment of anxiety disorders in youth are crucial for timely intervention and students' well-being (Mychailyszyn et al., 2011). However, prevention and screening of anxiety among adolescents are rarely practised. Clinical diagnostic procedures are reliable but costly and difficult to use for larg-scale assesements. When there is concern about a child's emotional well-being, one way of efficiently addressing this need is to use supervised or self-administered rating scales. These scales can contribute to the identification of children at risk of anxiety disorders (Vasey & Lonigan, 2000; Kendall & Flannery-Schroeder, 1998; Chisholm et al., 2016) that, if needed, can be followed by a full professional assessment required for proper diagnosis and the development of a treatment plan (Bruhn et al., 2014). Such reliable clinical diagnostic procedures will eliminate false-positive cases at minimal cost (Kendall & Flannery-Schroeder, 1998; Phillips et al., 2002; Vasey & Lonigan, 2000).

There are well-established, valid and reliable diagnostic tests (Freidl et al., 2017), but, as described above, screening for adolescent anxiety using clinical procedures is time-consuming and costly. On the other hand, using self-completing scales is the feasible and economical procedure for identifying psychopathology, while the confirmatory clinical diagnosis will identify the treatment approach (Weitcamp et al., 2010). One such questionnaire developed on the basis of the DSM-IV classification of anxiety disorders (Runyon, Chesnut, & Burley, 2018) is the Screen for Child Anxiety-Related Emotional Disorders (SCARED) (Birmaher et al., 1997), which is an instrument that examines child anxiety and parent's perceptions of their children's anxiety (Weitkamp et al., 2010). Although the SCARED scale was initially developed as a screening tool for use in clinical settings, this scale is often used in community settings (Rapaport et al., 2017). At the time of the publication of the SCARED instrument, the DSM-IV (American Psychiatric Association, 1994)

classification of anxiety disorders recognised the following constructs in children's and adolescents' anxiety disorders: separation anxiety disorder, generalized anxiety disorder, panic disorder, social phobia, specific phobia, obsessive-compulsive disorder, and posttraumatic stress disorder (Muris et al. 2002). SCARED was developed by Birmaher et al. (1997), reflecting the following five specific anxiety disorders: somatic/panic, generalized anxiety, separation anxiety, social phobia, and school phobia. Four of these subscales measure anxiety disorder symptoms as conceptualised in the DSM-IV-TR (American Psychiatric Association, 1994) and the fifth subscale, school anxiety, represents a common anxiety problem in childhood and adolescence.

2. Methods

2.1 *Measure and indicator of anxiety*

The SCARED scale is one of the most commonly used self-report scales for assessing anxiety in young people (Birmaher et al., 1997). The entire scale has high internal consistency, as do most of the five constituent subscales. The 41-item SCARED version (Birmaher et al., 1999) has excellent internal consistency (.90) and test-retest reliability (Runyon et al., 2018). Subsequent evaluations of the SCARED scale also reported good validity, reliability, and sensitivity to change (Behrens et al., 2019; Early Intervention Foundation, 2020) and the 41-item version (Birmaher et al., 1999) is the widely recommended version for use in research (Hale et al., 2011). This scale has been used widely in at least fourteen countries. The scale was translated and used in the following countries South Africa/Netherlands (Muris et al., 2002), Saudi Arabia and Lebanon (Arab et al., 2016; Hariz et al., 2013), Brazil (Desousa et al., 2013; Isolan et al., 2011), Canada (Martin & Gosselin, 2012), Cyprus (Essau et al., 2013), Finland (Kaajalaakso et al., 2020), Iceland (Olason et al., 2004), Italy (Crocetti et al., 2009), Malaysia (Ang, 2020), Iran (Dehghani et al., 2013), Spain (Hale et al., 2013), and Sweden (Ivarsson et al., 2018) among others.

The SCARED sub-scales measure the five anxiety disorder as follows; Generalized Anxiety Disorder (9 items), Panic Disorder (13 items), Separation Anxiety Disorder (8 items), Social Anxiety Disorder (7 items), and Significant School Avoidance (4 items). In this self-rated scale, children are asked to rate the frequency with which they experience each symptom using a three-point Likert scale (0=almost never, 1=sometimes, and 2=often) (Russell et al., 2013). The parents' version uses the same items and type of Likert scale and parents were required to estimate the level of anxiety of their children.

SCARED has been designed for and validated with children experiencing anxiety. However, there is little information on how anxiety presents in individuals with other disorders relative to the typical population (Carruthers, 2020). There is also an evident lack of research in Malta about children's mental health (Rampazzo et al., 2016) and even less about children with ADHD. Some exploratory work on school climate in Malta (Martinelli & Raykov, 2021) provides some results about students' school connectedness in the local setting, but there is still an evident need for research in this domain.

The current study used the SCARED scale to assess children's anxiety and parents' perception of anxiety symptoms in their children. Data were collected for children and parents in dyads to address Carruther et al.'s (2020) and Gokce et al.'s (2015) concerns about the limited studies on anxiety and ADHD. This study compared the results of parent and child reports of the SCARED scale of children diagnosed with ADHD with those who did not report having the condition. The first aim of this study was to evaluate how children with and without ADHD rated themselves for anxiety. The second aim of this study was to evaluate how parents of children with and without ADHD rated their children for anxiety. Finally, the third objective of this study was to explore the congruency between the matched children's self-reported anxiety and parent perception of children's anxiety.

To reduce possible over-reporting of anxiety symptoms through the use of a trichotomous scale indicator and to accurately reflect participants' perceptions (Krosnick & Presser, 2010), this study used a 5-point Likert scale. As Cummins and Gullone (2000) and Lozano et al. (2008) suggested, this modification increases the sensitivity and validity of the SCARED scale and improves the consistency and reliability of participants' responses (Cummins & Gullone, 2000; Lozano et al., 2008). This study applied a back-translated version of the 1999 English version of the SCARED 41-item questionnaire (Birmaher et al., 1999). Some minor modifications were necessary to mitigate linguistic differences between the original and Maltese versions of the scale. A Maltese language expert translated the English version of SCARED to Maltese, and a second expert back-translated the Maltese version to English. The author examined the content of the final translated version to ensure that the meaning of the questions was consistent with the original English version.

2.2 Participants

The study applied an online form of the SCARED scale to examine the incidence of anxiety in secondary school children attending state, church, and

independent schools in Malta. According to the latest available data, of the 21,064 secondary school children in compulsory education in Malta, 11,275 attend state schools, 7,450 attend church schools, and 2,339 attend independent schools (National Statistics Office, 2021). Ethical approval for this study was obtained from the institutional research ethics committee. The school administrators granted permission for this study, and consent was sought from each participant's parent/s or guardian/s. Children in Years 8 to 10, who were between 12 and 14 years old, were invited to participate in this voluntary study to complete the online SCARED scale. About 3000 children were invited to participate, and only 362 parents and children completed the questionnaire. Sixty-five pairs of matched parent-child data sets were collected. Most participants were from state schools (N=36), while a smaller number were from the church (N=15) and independent schools (N=13).

2.3 Data analysis

Exploratory techniques (means and standard deviations) were used to examine the distribution of responses and describe the level of anxiety among children with and without ADHD. The same exploratory analysis was applied to examine the parents' rating of the anxiety level of their children (Field, 2018). The study used the Mann-Whitney U test to explore the relationship between the self-rating for anxiety of children with ADHD and children without the condition. The same tests were used to examine how parents of children with ADHD rated their children for anxiety compared to parents of children with no such condition. The Wilcoxon signed-rank test was used to compare the ratings within each child-parent dyad and to explore differences between the scores. The statistical analyses were conducted using the SPSS package (IBM SPSS Statistics, IBM Corp., USA). Spearman's rank correlation was used to examine relationships between the children's and their parents' scores for the children with and without ADHD.

3. Results and discussion

The initial screening of the collected data identified no outliers among the responses of the parents or their children. In the parents' responses, skewness (-.074) and kurtosis (-.919) coefficients were in the range which is considered acceptable and indicated a normal univariate distribution of anxiety scores (Hair et al., 2019). The inspection of the quantile-quantile (Q-Q) plots and the histograms also showed the normality of the distribution of parents' SCARED scores. The assumption of multivariate normality was confirmed by the

Shapiro-Wilk test, which indicated no differences in the normality of the distribution of the overall score (W = .972, p = .134). On the other hand, in the children's responses, skewness (-.304) and kurtosis (-.854) coefficients differed somewhat from those of their parents. Inspecting the quantile-quantile (Q-Q) plots and the histograms indicated some minor departure from a normal distribution of SCARED scores. The assumption of multivariate normality was also not confirmed by the Shapiro-Wilk test, which indicated some deviation from a normal distribution of the score (W = .962, p = .041). This and the limited number of participants necessitated the use of nonparametric analysis. Basic descriptive results of children's self-reported anxiety levels and parents' perceptions of their children's anxiety on the SCARED scales are presented in Table 1.

Table 1 SCARED subscales and total score means and standard deviations

	Panic Disorder	Generalized Anxiety Disorder	Separation Anxiety	Social Anxiety Disorder	Significant School Avoidance	Total
All parents (n=65)	26.22 (10.361)	24.52 (8.537)	18.77 (7.280)	19.43 (6.636)	7.97 (3.046)	96.89 (29.825)
All children (n=65)	29.40 (11.678)	26.78 (9.54)	19.71 (7.707)	21.72 (7.705)	8.97 (3.8)	106.58 (33.677)
Parents of children with ADHD (n=16)	32.69 (12.349	27.75 (5.434)	22.88 (7.830)	20 (6.208)	9.94 (3.151)	113.25 (30.396)
Parents of children without ADHD (n=49)	24.10 (8.773)	23.45 (9.127)	17.43 (6.636)	19.24 (6.821)	7.33 (2.74936)	91.55 (27.911)
Children with ADHD (n=16)	36 (10.758	29.38 (6.771)	24.38 (8.861)	23 (6.055)	10.63 (6.3.243)	123.38 (28.182)
Children without ADHD (n=49)	27.24 (11.243)	25.94 (10.201)	18.18 (6.710)	21.31 (8.183)	8.43 (3.841)	101.10 (33.754)

(Bracketed values are standard deviations)

The first aim of this study was to compare how children with and without diagnosed ADHD rate themselves for anxiety. The study found statistically significant differences between median SCARED scores of children with and without ADHD (126.5 and 107, respectively). Mann–Whitney (U = 238, n_1 = n_2

= 65, $p < 0.019$ two-tailed) confirmed that children diagnosed with ADHD experience significantly greater anxiety than their counterparts without ADHD.

Considering the SCARED subscales and the significant difference between the participants with and without ADHD, children with ADHD reported significantly higher scores in three of the five subscales. Median Panic Disorder scores of the ADHD and non-ADHD groups were 40.5 and 26, respectively; the distributions in the two groups differed significantly (Mann–Whitney U = 206.5, $n_1 = n_2 = 65$, $p < 0.005$ two-tailed). Median Separation Anxiety scores of the ADHD and non-ADHD groups were 25.5 and 18, respectively; the distributions in the two groups differed significantly (Mann–Whitney U = 221.55, $n_1 = n_2 = 65$, $p < 0.009$ two-tailed). Finally, the median Significant School Avoidance scores of the ADHD and non-ADHD groups were 11 and 8, respectively; the distributions in the two groups differed significantly (Mann–Whitney $U = 237$, $n_1 = n_2 = 65$, $p < 0.18$ two-tailed).

The second aim of this study was to compare how parents of children with ADHD rated their children for anxiety compared to parents of children with no such condition. Parents of children with ADHD rated the anxiety of their children (with ADHD) on the SCARED scale significantly higher than other parents. Median SCARED-P scores in the two groups were 122.5 and 93, respectively; the distributions in the two groups differed significantly (Mann–Whitney $U = 230$, $n_1 = n_2 = 65$, $p < 0.014$ two-tailed).

The comparisons of parents' estimated anxiety levels of their children on the SCARED subscales have also found significant differences between the parents of children with and without ADHD in three of the five subscales. Median Panic Disorder scores of the parents of the ADHD and the non-ADHD groups were 38.5 and 22, respectively; the distributions in the two groups differed significantly (Mann–Whitney $U = 218$, $n_1 = n_2 = 65$, $p < 0.008$ two-tailed). Median Separation Anxiety Disorder scores of the parents of the ADHD and non-ADHD groups were 23.5 and 17, respectively; the distributions in the two groups differed significantly (Mann–Whitney $U = 225$, $n_1 = n_2 = 65$, $p < 0.011$ two-tailed). Median Significant School Avoidance scores of the ADHD and the non-ADHD groups were 10.5 and 7, respectively; the distributions in the two groups differed significantly (Mann–Whitney $U = 209$, $n_1 = n_2 = 65$, $p < 0.005$ two-tailed).

The third aim of this study was to explore differences between the dyads and examine the match between children's self-reported anxiety and parents' rating of the anxiety level of their children. As shown in Table 1, children ranked their anxiety levels (*Mdn* = 111) higher than their parents (*Mdn* = 95). A Wilcoxon signed-rank test indicated that this difference was statistically significant, Z = -3.563, z= p<.001. The scores of the child-parent dyads correlated at .822, p<.001. The scores of the ADHD dyads correlated at .903 p<.001, and those of the non-ADHD dyads were less at .775 p<.001, but nevertheless high.

This study was intended to explore possible issues stemming from administering this screening instrument to child-parent dyads where the children were clinically diagnosed with ADHD and other dyads where the children did not have such a diagnosis. It was intended to examine whether this translated version is sensitive to the differences in anxiety that other studies claim children with ADHD experience (Biederman, 2005; Bowen et al., (2008); Hartman et al., 2004; Koyuncu et al., 2015). The study also intended to compare the self-reported anxiety of children and parents' ratings of their children's level of anxiety. The scale was changed from a 3-point to a 5-point Likert scale to increase the sensitivity of the translated instruments.

Overall, in the SCARED subscales and the composite SCARED score, as shown in Table 1, children with ADHD consistently ranked themselves as having higher levels of generalised anxiety, panic disorder, separation anxiety, social anxiety and school avoidance than their peers without ADHD. The same was true for the parents' ranking of their ADHD children in each subscale and the composite score compared to the other parents. This is consistent with several studies conducted by Bowen et al. (2008), Hartman et al. (2004), Koyuncu et al. (2015), Pliszka (2007), and Souza et al. (2005), who showed a significant association between the intensity of anxiety and ADHD. The higher scores of the ADHD children self-reported scores and their parents' perception of their children's levels of anxiety in comparison to their non-ADHD peers was statistically significant for the total SCARED score and subscales that measure Panic Disorder, Separation Anxiety, and Significant School Avoidance. There were no statistically significant differences between the compared groups on Generalized Anxiety and Social Anxiety Disorders. It is likely that generalised anxiety and social anxiety may be less evident in children's and parents' perceptions than the other three types of anxiety because they are less situationally embedded. Panic, separation, and school avoidance are easier to identify because they cause significantly more distress to the affected children

and their parents than general feelings of anxiety and social anxiety. Generalized Anxiety and Social Anxiety Disorders may be perceived as aspects of children's personalities rather than anxiety.

In sum, the adapted SCARED scale appears to retain its validity and effectively screen for anxiety symptoms in school children. The translated measure effectively identified anxiety symptoms in children who are typically expected to be more anxious than others because of their ADHD conditions (Bowen et al., 2008). The results also show that the SCARED scale is efficient for identifying children's anxiety and parent perception of the level of anxiety their children experience. The modification of the Likert scale from three to five points did not appear to reduce the scale's metric characteristics. Like other studies on very specific groups of children in small populations, this study suffers from a low number of participants because the data needed to be collected in intact child-parent pairs. It is expected that the future use of the modified SCARED scale will provide a larger dataset for a more comprehensive validation of the scared scale.

Nevertheless, given the encouraging results of this study and the simplicity of the screening procedure, the adapted version of the Maltese SCARED scale can be considered an appropriate instrument for use in education settings once a norming process has been completed for the entire population of 11 to 13-year-old children. Furthermore, given the lack of studies using SCARED with populations of children with ADHD (Carruthers et al., 2020; Gokce et al., 2015), this study provides new evidence about links between the two conditions and provides some initial evidence that the SCARED scale is a useful instrument for the population of 11 to 13-year-old children.

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