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Regular Article

Dimension-specific symptom patterns in trajectories of broad anxiety: A longitudinal prospective study in school-aged children

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Abstract

Theories of maladaptive anxiety in children have suggested different developmental trajectories across age. Weems (2008) suggested that one subgroup of children demonstrates high and stable levels of broad anxiety, but shifting levels of dimension-specific symptoms in part due to related normative challenges. In a prospective longitudinal design, the current study examined patterns of dimension-specific anxiety symptoms in subgroups of children following different developmental trajectories of broad anxiety. A total of 300 children (150 girls, 150 boys) ages 8–11 at baseline, completed the Spence Children's Anxiety Scale four times over 3 years. Using latent class growth mixture modeling, we found evidence of three subgroups of children following different trajectories of broad anxiety across age: low-stable, moderate-increasing, and high-decreasing. Compared with other children, the subgroup with moderate and increasing levels of broad anxiety demonstrated an initially higher level of separation anxiety with larger improvement across time but, initially, similar levels of generalized and social anxiety with a larger increase across age. High broad anxiety was partly carried by different sets of dimension-specific symptoms at different ages, which suggests that children with high levels of broad anxiety across time may be more sensitive to normative challenges that happen in typical child development.

Key words: anxiety, developmental trajectories, normative challenges

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Fears are a natural part of a child's development (Muris, Merckelbach, Mayer, & Prins, 2000). However, for a rather large subgroup of the population, fears reflect disruptive and life-interfering anxiety (i.e., anxiety disorders) (Hale, Raaijmakers, Muris, & Meeus, 2008; Muris, Schmidt, & Merckelbach, 2000). Several studies have outlined the severe consequences of anxiety disorders, which involve a negative impact on multiple life domains (Baxter, Vos, Scott, Ferrari, & Whiteford, 2014; Essau, Conradt, & Petermann, 2000), and an increased risk of psychopathology later in life (Bittner et al., 2007). Prevalence rates differ between studies, but a good estimate indicates that about 10% of children have suffered from an anxiety disorder by the age of 16 (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Research indicates that the expression of anxiety in childhood may be associated to normative challenges (i.e., challenges that are to some extent tied to the child's developmental level), such as separation from caregivers in early school years or interpersonal interactions in adolescent years (Weems, 2008). Results from cross-sectional studies (Weems & Costa, 2005) and longitudinal studies (Westenberg, Gullone, Bokhorst, Heyne, & King, 2007) have found differences in the expression of childhood fears and anxiety symptoms across age groups. However, the processes involved are not fully understood.

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Developmental theory of maladaptive anxiety

Current models of the etiology of maladaptive anxiety in children assume an intricate interaction between various biological, developmental, psychological, social, and environmental components (Ollendick & Grills, 2016). Weems (2008) has postulated a comprehensive developmental model of the continuity and change of anxiety symptoms across school-age children. A starting point in the model is that dysregulation of the anxiety-response system serves as a basic core feature of maladaptive anxiety. This idea is supported by evidence from several research areas. For example, in neuroimaging studies, children with anxiety disorders have shown increases in reactivity in the amygdala and the prefrontal cortex (Blackford & Pine, 2012). Further, studies on temperament have found that high levels of negative affectivity and low levels of effortful control are associated with anxiety symptoms (Meesters, Muris, & van Rooijen, 2007). Moreover, studies on information processing have found that anxious children have an increased sensitivity toward threatening or fearful stimuli in the environment (Dudeney, Sharpe, & Hunt, 2015) and a tendency to imagine overly threatening interpretations of these stimuli (Creswell & O'Connor, 2011), which in turn might involve poorer emotion regulation and more frustration (Cisler & Koster, 2010). Finally, studies of emotion regulation have found that children with

anxiety disorders show more dysregulated expressions and less adaptive emotional coping (Suveg & Zeman, 2004).

An associated core feature of maladaptive anxiety is also distress/impairment, resulting from the dysregulation and related negative emotions. Weems (2008) relates these core features of maladaptive anxiety (i.e., dysregulation and distress/impairment) to the common higher-order dimension of anxiety found in research (e.g., Watson, 2005) by some researchers labeled *broad anxiety*[1] (Ebesutani et al., 2012). The core features, according to Weems (2008), are expressed behaviorally, cognitively, and physiologically, thus, a general tendency of avoidance, worry/rumination, and fear-associated somatic symptoms. In addition to the core features of anxiety, there are secondary features corresponding to the symptom clusters of the specific anxiety disorders described in the *Diagnostic and Statistical Manual of Mental Disorders,* 5th Edition (DSM-5; American Psychiatric Association, 2013) (e.g., fear of performances in social anxiety disorder or excessive worry about day-to-day activities in generalized anxiety).

Weems (2008) suggests that the core features of anxiety are rather stable over time, whereas the secondary features shift more and are, in part, shaped by the normative challenges of child development. The continuity and change of anxious emotion is summarized in an illustration (see Figure 1 in Weems, 2008) that shows four main developmental trajectories of anxiety across age. The first trajectory is described as low and stable, which appears to comprise most children. The second trajectory is described as high and stable and should, theoretically, include a smaller number of children. The model proposes that the high and stable group will show high levels of heterotypic continuity, meaning that, although this group will exhibit relatively high levels of broad anxiety over time, the level of dimension-specific symptoms will vary, dependent (in part) on their relevance to normative development. To clarify, a child with high levels of broad anxiety over time might, for example, according to this model, show higher levels of separation anxiety during the early years (i.e., ages 6–9) and higher levels of social anxiety during the older years (i.e., ages 14–17). The third trajectory is described as escalators, representing children with relatively low levels of anxiety at the start, but with increasing levels that connect to the high-stable trajectory. Last, the fourth trajectory is described as a steep decreasing group, starting high during the early school-age years and decreasing to levels connecting to the low-stable trajectory.

Trajectories of anxiety in children

Recent studies evaluating different developmental trajectories of childhood anxiety across age groups have come to different conclusions. For example, support for the trajectories suggested by Weems (2008) was found in one study by Duchesne, Larose, Vitaro, and Tremblay (2010), which included a large community sample of children ages 6–12 years. The study found four different trajectories defined as low-stable (34% of the sample), low-increasing (20%), high-stable (14%), and high-decreasing (32%). In addition, Feng, Shaw, and Silk (2008) found a similar pattern in a community sample of boys ages 2–10 years. However, other studies have found different patterns. In a study of children ages 9–13 years, Allan et al. (2014) found support for three different trajectories starting at low, moderate, and high levels, which diverged from each other over time. A similar pattern was also found in a study of children ages 10–20 years (Crocetti, Klimstra, Keijsers, Hale, & Meeus, 2009). All of these recent studies have implemented similar analytic methods (i.e., variations of the latent class growth models). The different patterns observed might be explained by evaluating different age groups or different approaches when setting up the model. For example, the studies by Allan et al. (2014) and Crocetti et al. (2009), as we have understood, put assessment time and not age as the independent variable in the models, consequently not modeling the continuity and change of anxiety across age per se.

Normative challenges and childhood anxiety

Childhood anxiety disorders commonly co-occur (Last, Strauss, & Francis, 1987) and thus do not exclusively appear sequentially corresponding to developmentally different life phases. However, the idea that childhood anxiety in part is associated with normative challenges is supported by studies showing that different anxiety dimensions show dissimilar trends over time (i.e., over the child's age). For example, symptoms of social anxiety have been found to remain stable or increase with age in school-age samples, in contrast to symptoms of physical injury fears and separation anxiety, which typically decrease (Hale et al., 2008; Westenberg et al., 2007). In addition, the idea is also supported by studies evaluating the onset of anxiety disorders, which consistently show that different anxiety disorders tend to have their onset at different ages (Kessler et al., 2005). For example, Kessler et al. (2005) found that specific phobia and separation anxiety disorders had their median onset at age 7, whereas social anxiety disorder, obsessive-compulsive disorder, panic disorder, and generalized anxiety disorder had their median onset in adolescence or in adulthood. Based on this empirical research, Weems (2008) theorized that, in the general population, symptoms of separation anxiety will be increased around ages 6–9 years, symptoms of generalized anxiety around ages 10–13 years, and symptoms of social anxiety around ages 14–17 years (see Figure 1a for a schematic representation). However, worth noting is that the association with normative challenges is probably less relevant for some anxiety disorders. For example, although such association makes sense regarding separation anxiety disorder (e.g., increased salience of anxiety in response to coping with the temporary absence of caregivers in pre-school), generalized anxiety disorder (e.g., increased salience of anxiety in response to an augmented understanding of mortality and world concerns in pre-adolescent years), and social anxiety disorder (e.g., increased salience of anxiety in response to fear of negative evaluations by others in adolescence), it is hard to see what specific developmental challenges would be associated with panic attacks or agoraphobia. Consequently, from now on, we will focus on separation anxiety, generalized anxiety, and social anxiety in terms of secondary features of anxiety associated with normative challenges.

The current study

Previous research (Hale et al., 2008; Weems & Costa, 2005; Weems, Graham, Scott, Banks, & Russell, 2013; Westenberg et al., 2007) has showed a tendency of age-related differences in dimension-specific anxiety symptoms in normal samples (again, see Figure 1a). However, to the best of our knowledge, no studies have evaluated whether such patterns differ between subgroups of children with

1. In the current study, we therefore used the term, *broad anxiety,* to denote core anxiety features.

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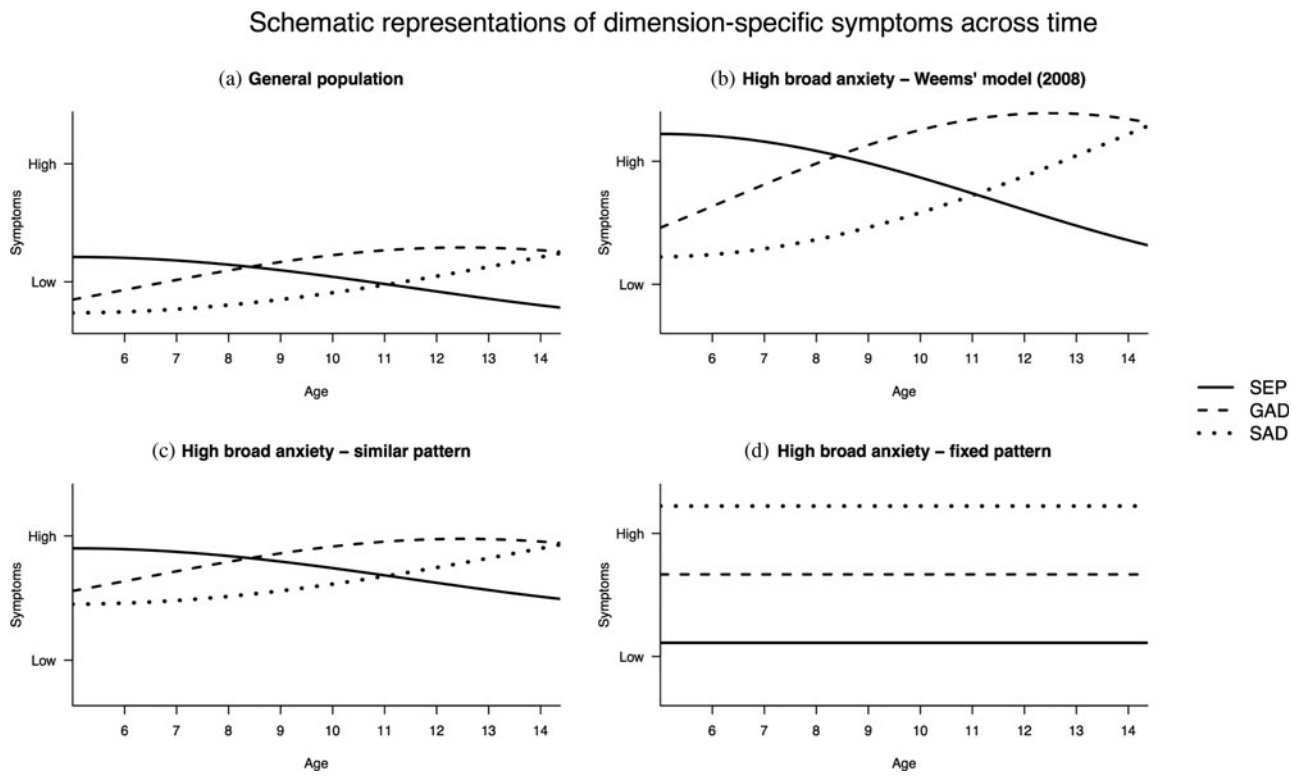

Figure 1. Schematic representations of the trajectories of disorder-specific symptoms according to different hypothetical models. SEP = Separation anxiety, GAD = Generalized anxiety, SAD = Social anxiety.

different levels of broad anxiety across age. An implication of Weems' reasoning (2008) is that children exhibiting high levels of broad anxiety (i.e., due to the core features of anxiety) may be more vulnerable and sensible to normative challenges. Thus, the high levels of broad anxiety may partly be carried by different sets of secondary anxiety features at different ages (see Figure 1b for a schematic representation). This hypothesis make sense, because it is quite imaginable that children with problems regulating the anxious emotion would be more disturbed by the anxiety-related challenges they face during different life phases. However, another scenario also quite plausible is that children with high levels of broad anxiety display a similar profile over time regarding the secondary anxiety features (see Figure 1c for a schematic representation). Such a pattern could also explain the differences in onset between anxiety disorders. Finally, it is also theoretically possible that the secondary features of anxiety are more fixed across age in children with high levels of broad anxiety compared with normal children. Basically, such scenario would imply that high levels of broad anxiety are carried by the same set of secondary features over time in a certain child (see Figure 1d for a schematic representation of a hypothetical child). However, this latter model requires a strong homotypic continuity of maladaptive anxiety, which have been found in some studies (e.g., Bittner et al., 2007), but not in others (e.g., Last, Perrin, Hersen, & Kazdin, 1996; Lieb et al., 2016).

The aim of the current study was to test two hypotheses generated from the model of continuity and change of anxiety as presented by Weems (2008) and to extend the existing literature on age differences in the development of maladaptive anxiety in school-age children. The current study aimed to test the hypotheses that (a) children follow four main trajectories of broad anxiety (low-stable, high-stable, escalating, and decreasing) and that (b) children with high levels of broad anxiety show different patterns of separation anxiety, generalized anxiety, and social anxiety symptoms across time compared with other children. These patterns might indicate an increased vulnerability and sensibility to normative challenges among children with high levels of broad anxiety.

The current study provides a unique contribution to the field because, for the first time, to our knowledge, it used a four-wave prospective longitudinal design during a 39-month period to evaluate the continuity and change of secondary anxiety features within subgroups of children following different trajectories of broad anxiety across age.

Method

Participants

The participants included in the current study were generated from the control group in a longitudinal universal prevention study in Stockholm County, Sweden (Ahlen, Hursti, Tanner, Tokay, & Ghaderi, 2018). Parents of 1,021 children were, in writing, invited to let their child participate in the trial. A total of 695 (68%) children agreed to participate, 235 (23%) did not respond to the invitation, and 91 (9%) declined. To increase participation from different ethnic groups, the invitation letter with information of the trial was translated to Arabic, Spanish, Kurdish (both Sorani and Kurmanji), Turkish, English, and Polish. In the current study, we chose to evaluate the continuity and change of anxiety only in the control group (children who did not receive the intervention) for external validity reasons. The control group originally comprised 342 children. We excluded children who only provided data at one assessment point ($n = 8$) or who only provided data for the first two assessment points with only 3

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months in between ($n = 34$) to adequately model the long-term continuity and change. Consequently, the current study sample comprised 300 children (82% of the original control group). Age at baseline ranged from 8.5 to 10.8. The mean age was 9.4 years ($SD = 0.5$), and the sample included 150 girls and 150 boys. A total of 69% of the parents reported that they had a post-secondary education, compared with 62% of all parents of primary–school-aged children in Sweden (The Swedish National Agency for Education, 2015). The median disposable household income in the current sample was 48.000–52.000 SEK, compared with the median of 46.125 SEK in Sweden (i.e. households with children) (Statistics Sweden, 2017). A total of 78% of the parents were born in Sweden, 8% in other European countries, 6% in the Middle East, 3% in Asia, 2% in Africa, and 2% in South America.

Measures

The Spence Children's Anxiety Scale (SCAS) (Spence, 1998) is a 38-item self-report measure of anxiety symptoms used to assess the (a) child's overall anxiety, and (2) different dimensions of anxiety related to the *DSM-IV* criteria. The SCAS covers the following six dimensions of anxiety: separation anxiety, social anxiety, obsessive-compulsive disorder, panic-attacks/agoraphobia, physical injury fears, and generalized anxiety. Children are asked to state how frequently they experience each symptom according to a 4-point Likert-scale, scored between 0 and 3. The subscales of separation anxiety, social anxiety, obsessive-compulsive disorder, and generalized anxiety each comprise six items, whereas the subscale of specific phobia comprises five items, and the subscale of panic-attacks/agoraphobia comprises nine items. Excellent internal consistency of the total scores, acceptable internal consistency of subscale scores, and support for convergent and divergent validity have been found in a Swedish sample (Essau, Sasagawa, Anastassiou-Hadjicharalambous, Guzmán, & Ollendick, 2011). Internal consistency of subscale scores (ordinal alpha; Gadermann, Guhn, & Zumbo, 2012) in our sample at baseline assessment was 0.92 for total anxiety, 0.79 for separation anxiety, 0.73 for social anxiety, and 0.80 for generalized anxiety.

Procedure

Children completed the SCAS on four separate occasions. The assessments were completed at the children's school within regular school hours. Children sat individually, and the first author (a clinical psychologist) or two master level psychology students were present in the classrooms to read the instructions and items aloud, and to answer any questions, to facilitate the children's understanding. A total of 283 (94%) children completed the baseline assessment, 285 (95%) children completed the 3-month assessment, 276 (92%) children completed the 15-month assessment, and 225 (75%) children completed the 39-month assessment. All 300 children were included in the statistical analyses. In total, 218 (73%) parents provided information regarding their educational level. We obtained written informed consent from all parents of participating children, and ethical approval was granted by the Regional Ethical Review Board (Dnr: 2012/432).

Data analysis

The data analyses were performed in two main steps corresponding to the study's two hypotheses. The first step involved using latent class growth mixture modeling (LCGMM) to generate latent classes (i.e., subgroups of children) following different developmental trajectories of broad anxiety. In brief, the LCGMM is an extension of a multilevel random effects model, where sample heterogeneity is handled with latent categorical variables (latent classes), which results in separate growth models for each latent class (Jung & Wickrama, 2008). The LCGMM (in comparison with the latent class analysis and latent class growth models) also adequately handles the dependent nature of repeated measures and allows for variations in growth parameters within classes by the inclusion of random effects (Twisk & Hoekstra, 2012). Many studies examining subgroups of populations within the framework of latent classes have not included random effects in the models (Lubke et al., 2016). Not specifying random effects (i.e., individual variation in intercept and slope) in longitudinal data is problematic because it assumes that repeated measures from the same individual are independent (Proust-Lima, Philipp, & Liquet, 2017). Further, when random effects are not included, the risk of overestimation of the number of classes increases because individual variation is derived to additional classes (Lubke et al., 2016). Another important benefit of the LCGMM regarding the current study is that it models a latent construct (i.e., representing the underlying construct of broad anxiety, rather than the observed total scores of the SCAS). Moreover, the LCGMM is estimated by a maximum likelihood method, involving the benefit of including all subjects, even those with partly missing observations.

To make adequate model-based inferences, we followed principles presented by Burnham and Andersen (2004). These principles include (a) examining several reasonable models, (b) determining adequate selection criterions, and (c) choosing simple and parsimonious models. Following recent findings, we compared models with one to five classes with the dependent variable either as a linear or quadratic function of age. Further, we chose the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the average posterior probability as selection criteria. The AIC and the BIC are fit statistics that penalize for the number of parameters in the models. The average posterior probability is a goodness of fit measure defined as the average probability for class members of belonging to the latent class of interest. High average posterior probability implies high discrimination of the sample. Accordingly, the model with the lowest AIC and BIC values was considered the best model, conditioned that the average posterior probability of each class exceeded 0.80. The first step of the analyses was performed in the R software program (R Development Core Team, 2015), using the lcmm-package (Proust-Lima et al., 2015).

Several previous studies have evaluated trajectories of broad anxiety in children using different versions of latent class growth models (e.g., Allan et al., 2014; Crocetti et al., 2009; Duchesne et al., 2010; Feng et al., 2008). Although latent class growth models might be superior to more simple clustering methods, it should still be interpreted with caution. Extracting latent classes of continuity and change using latent class growth models could be conducted with comparatively objective criteria, but the procedure might include difficulties when it comes to the clinical interpretability of the classes (see Twisk & Hoekstra, 2012). Consequently, to validate and facilitate interpretations of the LCGMM-classes, we also examined the sample within the framework of clinical change according to Jacobson and Truax (1991). Compared with the inductive process of LCGMM, the clinical change approach is deductive and includes the classification of

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individuals according to a priori-defined criteria. Specifically, individuals are classified based on whether they have made a statistically reliable change and whether this change has moved the individual within the functional population or out of the dysfunctional population. Consequently, we first calculated how large a change between any time-points in SCAS total score should be to be considered a reliable change. Given the reliability of 0.92 and the standard deviation of 13.38 at baseline, a change of 11 points or more was considered a reliable change. To examine whether changes moved an individual from the functional to the dysfunctional population (or vice versa), we used the cut-off scores of 44 for girls and 37 for boys from norms (children 7–12) reported by Muris, Schmidt, and Merckelbach (2000). The cut-off scores by Muris, Schmidt, & Merckelbach (2000) were generated by estimating the 90th percentiles and were considered a better approach than using the *b*-criterion proposed by Jacobson and Truax (1991) due to skewed data (i.e., using the *b*-criterion, one must assume a normal distribution). We then combined the information of reliable change and transitions between functional and dysfunctional population. In line with Weems's (2008) theory, we created four categories of children (defined in Table 1): *healthy, chronic, recovered, deteriorated*. Finally, we evaluated the overlap between the latent classes generated from the LCGMM and the categories derived within the clinical change framework simply by examining the categories in a cross-table.

The second step of analyses aimed at testing the second hypothesis (i.e., to evaluate the evidence for different dimension-specific patterns between the latent classes of broad anxiety trajectories generated in the LCGMM). Below, we describe in detail how the statistical analysis was developed and conducted regarding the separation anxiety dimension. Following analyses of generalized anxiety and social anxiety were conducted in the same way.

First, we decided to use linear mixed models (LMMs) (Verbeke & Molenberghs, 2000) because LMMs have the advantages of adequately estimating fixed effects in repeated measures design and including participants with partly missing observations (Verbeke & Molenberghs, 2000). We performed the LMMs as two-level regression models with observations nested within subjects. The mean item score of the separation anxiety subscale (of the SCAS) served as the dependent variable, the latent classes derived from the LCGMM served as a categorical independent variable, and the child's age as a continuous independent variable. To increase the interpretability of the LMMs, child's age was centered around 8.5 (i.e., the minimum age in the sample).

A specific concern about the LMM caught our attention. Because the SCAS is a hierarchical measure of anxiety (i.e., the subscales are strongly correlated to each other due to the higher-order construct of broad anxiety), change in separation anxiety subscale scores cannot unambiguously be interpreted as a change in the construct of separation anxiety. Specifically, due to the hierarchical structure, a change in separation subscale scores are largely accounted for by change in the broad anxiety construct. For example, Ahlen, Vigerland, and Ghaderi (2017), as well as Reise (2012) found that much of the variation of subscale scores in dimensional measures of child anxiety was actually attributable to the latent construct of broad anxiety rather than to the dimension-specific constructs. Weems et al. (2013) recently highlighted this issue and showed that, without accounting for other sources of anxiety, a real change in a specific dimension of anxiety can be suppressed. For example, a general decline in broad anxiety can suppress an actual increase in social anxiety across age. Consequently, we needed to control for the effect of other sources of anxiety in our analyses. We therefore created a construct labeled *other anxiety*, by summing all other subscales other than separation anxiety (i.e., social anxiety, obsessive-compulsive disorder, generalized anxiety, specific phobia, and panic-attacks/agoraphobia). The *other anxiety* variable was also centered around the mean and added as a covariate in the LMM.

Two effects in the LMM-analysis were of special interest: First, the main effect of age, which was interpreted as the change in separation anxiety across age in the reference group (i.e., the latent class including most children). Second, the age × latent class interaction effects provided additional information of differences in changes in separation anxiety across age between the different latent classes. We calculated confidence intervals for the beta-coefficients based on bootstrap standard errors to interpret the statistical significance of the effects. Finally, according to the procedure described by Feingold (2013), we calculated within-group effect-sizes (Cohen *d*) to estimate the size of symptom changes between ages 9-14 years. The LMM-analyses in the second step were performed in the R software program (R Development Core Team, 2015), using the LME4-package (Bates, Maechler, Bolker, & Walker, 2014).

Table 1. Definitions of the categories generated within the clinical change framework

Category	Definition
Healthy	No reliable change occurred, and more than half of the assessments were under the cutoff; or Reliable changes occurred, but no assessment was over the cutoff; or Reliable changes occurred from a functional to a dysfunctional level and then again back to a functional level (i.e., only temporarily impaired)
Chronic	No reliable change occurred, and at least half of the assessments were over the cutoff; or Reliable changes occurred, but all assessments were over the cutoff; or Reliable changes occurred from a dysfunctional to a functional level and then again back to a dysfunctional level (i.e., only temporarily improved)
Recovered	A reliable decrease occurred over the cutoff (from a dysfunctional to a functional level), and no further reliable increase occurred that moved the child back to a dysfunctional level
Deteriorated	A reliable increase occurred over the cutoff (from a functional to a dysfunctional level), and no further reliable decrease occurred that moved the child back to a functional level

Results

Preliminary analyses

We examined whether the 42 children that were excluded from the current study differed from the study sample ($n = 300$). In two Welch t tests, we found no significant differences between groups regarding age, t (46.1) = 1.12, $p = .27$, or SCAS at baseline, t (40.9) = 1.29, $p = .21$. Moreover, two Fisher exact tests found no significant differences regarding gender, $p = .62$ or parents' educational level, $p = .83$. Means and standard deviations for the total SCAS scores, and subscales scores of separation anxiety, generalized anxiety, and social anxiety across time-points are presented in Table 2.

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Table 2. Descriptive statistics for the total sample ($N = 300$) across all four time-points

SCAS scores	Time 1		Time 2		Time 3		Time 4	
	Mean (*SD*)	*N*	Mean (*SD*)	*N*	Mean (*SD*)	*N*	Mean (*SD*)	*N*
Total scale	26.5 (13.4)	283	20.8 (14.8)	285	20.4 (12.9)	276	23.0 (13.6)	225
Separation anxiety	4.3 (3.0)	283	3.4 (2.9)	285	2.9 (2.5)	276	2.8 (2.4)	225
Generalized anxiety	5.3 (2.9)	283	4.2 (3.2)	285	4.4 (2.8)	276	5.1 (3.1)	225
Social anxiety	4.7 (2.8)	283	3.7 (2.0)	285	4.0 (3.2)	276	5.3 (3.5)	225

SCAS = Spence Children's Anxiety Scale.

Table 3. Goodness of fit statistics for the competing LCGMM models of broad anxiety

Number of classes	Model	AIC	BIC
1 class	Linear	8337.70	8359.92
	Quadratic	8316.14	8342.07
2 classes	Linear	8309.84	8343.18
	Quadratic	8290.55	8331.30
3 classes	Linear	8315.84	8360.29
	Quadratic	**8271.96**	**8327.52**
4 classes	Linear	8321.84	8377.40
	Quadratic	8276.72	8361.91
5 classes	Linear	8311.23	8377.90
	Quadratic	8286.72	8390.43

AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; LCGMM = Latent Class Growth Mixture Modeling.
Bold indicates lowest AIC and BIC values.

LCGMM – trajectories of broad anxiety

A three-class model including quadratic trajectories showed the best fit according to both the AIC and the BIC values (see Table 3). In the two-class quadratic solution (the second-best solution according to the BIC values) the high-decreasing class was merged into the moderate-increasing class, forming a similar trajectory as the moderate-increasing class, however, with a less steep increase. Solutions including more than three classes did not meet criteria regarding adequate posterior probability of classes.

Figure 2 provides a graph of the predicted SCAS scores for the different latent classes based on the chosen model.[2] The average posterior probability of belonging to the purported class was between 0.80 and 0.94 between classes, which indicated a good discrimination between classes. The first class comprised 83% of the sample ($n = 249$), and its curve started around the mean value of SCAS total scores according to norms in this age group (Muris, Schmidt, & Merckelbach, 2000). There was a significant quadratic polynomial term, $ß_2 = 0.10$, $SE = 0.02$, $p < .001$. To interpret linear slopes in quadratic functions, we centered ages at 9.5 and 12 years. This procedure made it possible to evaluate

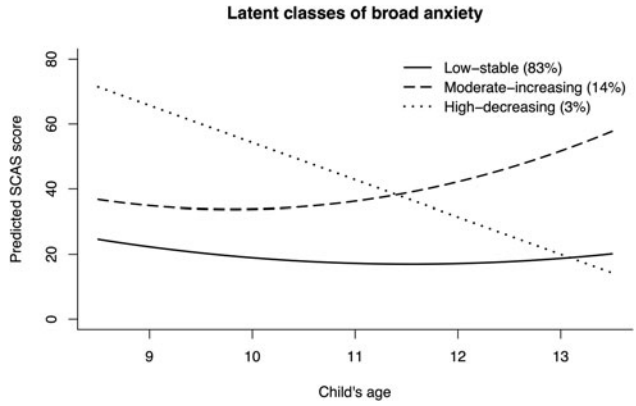

Figure 2. Predicted trajectories of SCAS-scores for different latent classes.

the slope at those specific ages (simply because the quadratic term is set to zero). We found a significantly decreasing slope at age 9.5, $ß_1 = -0.43$, $SE = 0.08$, $p < .001$, but stable slope at age 12, $ß_1 = 0.10$, $SE = 0.06$, $p = .086$. Consequently, the first class was labeled low-stable.

The second class comprised 14% of the sample ($n = 41$), and its curve started just below the clinical cut-off (about one standard deviation above the mean) of SCAS total scores according to norms (Muris, Schmidt, &Merckelbach, 2000). Again, there was a significant quadratic polynomial term, $ß_2 = 0.19$, $SE = 0.06$, $p < .001$. We found a stable slope at age 9.5, $ß_1 = -0.11$, $SE = 0.19$, $p = .554$; and a significantly increasing slope at age 12, $ß_1 = 0.82$, $SE = 0.16$, $p < .001$. The second class was labeled *moderate-increasing*.

The third class comprised 3% of the sample ($n = 10$) and started above the clinical cut-off (more than two standard deviations above the mean value) of SCAS according to norms (Muris, Schmidt, & Merckelbach, 2000). There was no significant quadratic polynomial term, $ß_2 = 0.17$, $SE = 0.30$, $p = .580$. Consequently, we re-analyzed it as a linear trajectory and found a significantly decreasing slope, $ß_1 = -1.02$, $SE = 0.25$, $p < .001$. Therefore, the third class was labeled *high-decreasing*. Table 4 presents descriptive statistics by latent classes.

Overlap of latent classes and clinical change categories

As described in the method section, we categorized individuals into four different categories based on reliable changes and transitions between the functional and dysfunctional population. A total of 229 (76%) children were categorized as healthy, 36

2. Latent classes were modeled based on broad anxiety (i.e., the underlying latent construct). However, in Figure 2, trajectories of broad anxiety were depicted as predicted SCAS scores for a meaningful interpretation of symptom-levels across time (see Proust-Lima et al., 2015 for statistical details).

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Table 4. Descriptive statistics by the three latent classes derived from the Latent Class Growth Mixture Modeling

	Latent classes		
	Low-stable	Moderate-increasing	High-decreasing
Percent girls (*n*)	46% (114)	78% (32)	40% (4)
Percent boys (*n*)	54% (135)	22% (9)	60% (6)
Mean age at baseline (*SD*)	9.41 (0.50)	9.38 (0.49)	9.77 (0.46)
Parents with post-secondary education (*n*)	69% (125)	75% (24)	40% (2)

		Latent classes of broad anxiety		
		Low-decreasing-stable	*Moderate-stable-increasing*	*High-decreasing*
Clinical change categories	*Healthy*	219	10	0
	Recovered	27	2	7
	Deteriorated	2	19	0
	Chronic	1	10	3

Figure 3. Cross-table presenting the overlap between latent classes and clinical change categories.

(12%) children as recovered, 21 (7%) children as deteriorated, and 14 (5%) children as chronic.

Figure 3 shows a cross-table for the two methods of generating subgroups of children. The latent class defined as low-stable embraced 96% of the children categorized as healthy according to the clinical change framework. In addition, this latent class also embraced 75% of children categorized as recovered. Beyond this, the low-stable class also included two of the children categorized as deteriorated (10%) and one child categorized as chronic (14%).

The latent class defined as moderate-increasing embraced 90% of children categorized as deteriorated, and 71% of children categorized as chronic according to the clinical change framework. Finally, this latent class also included 4% of children categorized as healthy and 6% of children categorized as recovered.

The last latent class defined as high-decreasing embraced 19% of children categorized as recovered and 21% of children categorized as chronic.

Dimension-specific patterns in latent classes of broad anxiety

Table 5 presents the statistical details of the LMMs. The intercepts in the LMMs represent the estimated (mean item) symptom level in the low-stable group (with imagined children age 8.5 years and mean levels of other sources of anxiety). The main effects of latent class represent additional (or reduced) symptom levels in the moderate-increasing and high-decreasing class (i.e., correspondingly, with imagined children age 8.5 years and mean levels of other sources of anxiety). Furthermore, the beta-coefficient of the main effect of age is interpreted as a mean item change per year in the low-stable class. The mean item change per year in the other two latent classes is calculated by summing the beta-coefficient for the main effect of age and the beta-coefficient for the relevant age × latent class interaction effect. The effect-sizes below (Cohen *d*) comprise this summation and denote the effect size of an estimated within-group 5-year change.[3]

Separation anxiety

First, examining the main effect of latent class in a LMM revealed that children in the moderate-increasing class had significantly higher symptoms of separation anxiety at early ages (i.e., 8.5 years). Furthermore, we found a significant main effect of age on separation anxiety symptoms ($d = -0.54$), meaning that children in the low-stable group showed a moderate decrease in separation anxiety symptoms over a 5-year period. Moreover, we found a significant age × latent class interaction effect regarding the moderate-increasing class ($d = -1.10$), meaning that children in the moderate-increasing class showed a large decrease of separation anxiety symptoms across age. There was no significant age × latent class interaction effect regarding the high-decreasing class, meaning that children in the high-decreasing class were assumed to show a similar decrease in separation anxiety symptoms across age as the low-stable class.

Social anxiety

In contrast to separation anxiety, an LMM revealed no significant differences in symptom levels of social anxiety at early ages between latent classes. However, we found a significant main effect of age on

3. The choice of a 5-year period to estimate within-group effect sizes is of course arbitrary, but was chosen because we included ages 8.5 to 13.9 years in the analyses.

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Table 5. Statistical details of the linear mixed models (LMMs)

Outcome	Predictor	Coefficient (*B*)	*SE B*	95% CI
SEP				
	Intercept	0.66***	0.021	[0.62, 0.70]
	Latent class			
	Moderate-increasing	0.19***	0.055	[0.07, 0.30]
	High-decreasing	−0.10	0.129	[-0.34, 0.15]
	Age	−0.05***	0.008	[-0.07, -0.04]
	Age × Latent class			
	Age × Moderate Increasing	−0.05*	0.020	[-0.10, -0.01]
	Age × High-decreasing	0.01	0.043	[-0.07, 0.11]
	Other anxiety	0.03***	0.001	[0.02, 0.03]
GAD				
	Intercept	0.74***	0.021	[0.70, 0.78]
	Latent class			
	Moderate-increasing	−0.03	0.056	[-0.14, 0.08]
	High-decreasing	0.12	0.128	[-0.13, 0.36]
	Age	0.02*	0.008	[0.01, 0.03]
	Age × Latent class			
	Age × Moderate Increasing	0.05**	0.020	[0.01, 0.09]
	Age × High-decreasing	−0.01	0.042	[-0.09, 0.08]
	Other anxiety	0.03***	0.001	[0.03, 0.03]
SAD				
	Intercept	0.58***	0.023	[0.01, 0.13]
	Latent class			
	Moderate-increasing	0.07	0.062	[-0.07, 0.19]
	High-decreasing	−0.05	0.144	[-0.32, 0.21]
	Age	0.06***	0.008	[0.04, 0.07]
	Age × Latent class			
	Age × Moderate Increasing	0.07***	0.022	[0.03, 0.12]
	Age × High-decreasing	0.04	0.047	[-0.05, 0.14]
	Other anxiety	0.03***	0.001	[0.03, 0.03]

Note: Intercepts are interpreted as estimated initial symptom level in the low-stable group (in children age 8.5 years and mean levels of other sources of anxiety). Main effects of latent class represent additional initial symptom levels in corresponding classes. Main effects of age are interpreted as mean item change per year in the low-stable class. Change in other classes are calculated by summing the main effect of age and the age* latent class interaction effect. GAD = Generalized anxiety; SAD = Social anxiety; SEP = Separation anxiety.
*p < .05, **p < .01, ***p < .001 (generated using the Satterthwaite approximation)

social anxiety symptoms (d = 0.54), meaning that children in the low-stable group showed a moderate increase in social anxiety symptoms across age. Further, there was a significant age × latent class interaction regarding the moderate-increasing class (d = 1.25), meaning that children in the moderate-increasing class showed a large increase of social anxiety symptoms across age. Again, no significant interaction effect was found in the high-decreasing class.

Generalized anxiety

An LMM revealed no significant differences in symptom levels of generalized anxiety at early ages between latent classes. We found a small but significant increase of generalized anxiety symptoms across age in the low-stable class (d = 0.18). Furthermore, there was a significant age × latent class interaction effect regarding the moderate-increasing class (d = 0.70), meaning that children in the moderate-increasing class showed a moderate increase in generalized symptoms across age. Moreover, no significant age × latent class interaction effect was found regarding the high-decreasing class.

Discussion

The current study contributes to the existing literature on the development of maladaptive anxiety in children, and it deepens our understanding of age-related expressions of anxiety in children following different trajectories of broad anxiety across age.

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Overall, the results of the study support the theorizing that subgroups of children follow different developmental trajectories of broad anxiety across age groups, and that these subgroups also show different patterns of dimension-specific symptoms, which could be theoretically linked to the normative challenges of certain developmental periods. Specifically, children with high levels of broad anxiety demonstrated an initially higher level of separation anxiety with larger improvement across age, but, initially similar levels of generalized and social anxiety with a larger increase across age compared with other children. These results provide evidence in favor of the theorizing by Weems (2008), portrayed in Figure 1b, compared with the other suggested theoretical models (Figures 1c and 1d).

Regarding the first hypothesis, our study to some extent found evidence of the four trajectories suggested by Weems (2008), but with an important alternation. Although we found a low-stable, a decreasing, and an increasing class in the LCGMM, we did not find evidence of a high-stable class. However, children with high and stable levels of the SCAS total scores were identified using the clinical change approach (approximately 5% of the sample). Our comparison between the results from the LCGMM and the clinical change categories (Figure 3) sheds some light on this issue. In general, these two approaches showed much similarity, and the solution generated by LCGMM could, in large part, be interpreted as a condensed version of the clinical change categories. Accordingly, the low-stable class included, more or less, all of the healthy children and most of the recovered children. Furthermore, the moderate-increasing class included almost all deteriorated and chronic children. However, nonequivalence between methods was also found. Specifically, the interpretation of the composition of children in the high (decreasing) class from the clinical change approach was not straightforward. Our comparison between the two methods highlights one limitation regarding the clinical interpretations of the purely inductive LCGMM, as previously emphasized by Twisk and Hoekstra (2012). Specifically, given that the high-decreasing class showed a markedly different trajectory compared with other classes, it may have suppressed the formation of a high-stable class and pushed children with high and stable levels of broad anxiety into the moderate-increasing class. This is also consistent with Figure 3, showing that children with chronic levels of total SCAS anxiety scores generally were embraced by the moderate-increasing class. In summary, the current study suggests that the LCGMM method adequately differentiated between children with maladaptive anxiety development across age (i.e., children with deteriorated or chronic symptoms across time) and children with unproblematic anxiety across time (i.e., healthy and recovered children). However, the LCGMM method was not able to differentiate between clinically relevant categories as defined by the clinical change category approach (for example, deteriorated or chronic children).

In line with previous research (e.g., Hale et al., 2008; Weems & Costa, 2005), we found overall decreasing levels of separation anxiety symptoms across age and increasing levels of social anxiety symptoms. Furthermore, we also found a significant but small increase in generalized anxiety symptoms. Beyond results in previous research, we found that children with high levels of broad anxiety across time showed larger decreases in separation anxiety and larger increases in generalized and social anxiety compared with other children. A suggestion consistent with the developmental theory postulated by Weems (2008) is that children following a detrimental trajectory of broad anxiety exhibit a dysregulation of their fear/anxiety-response system, and, when facing normative challenges, they are less able to cope with these challenges. The enlarged increases of social anxiety and generalized anxiety symptoms between the ages of 8.5 and 14 years testify to this, because preadolescence has been linked to challenges associated with generalized anxiety (e.g., fears concerning danger and deaths; Weems & Costa, 2005), and adolescence has been linked to challenges associated with social anxiety (e.g., fear of negative evaluations by others; Westenberg et al., 2007). Moreover, the larger decrease in separation anxiety could be viewed as an effect of the departure from problems associated with the normative challenges of separation from caregivers during the early school years. Weems (2008) hypothesized that a high level of heterotypic continuity would be found in the hypothetical high-stable trajectory. Our finding suggests that this prediction was appropriate; however, we found support of such heterotypic continuity in the class defined as moderate-increasing.

Contrary to the dissimilar pattern of dimension-specific symptoms found in the moderate-increasing class, we found no different patterns regarding changes of separation, generalized, or social anxiety in the high-decreasing class compared with children in the low-stable class. The overall large decrease in broad anxiety in this class is thus due to decreases in other dimensions of anxiety and is not easily interpreted. One speculation coming from our own experience is that some children have difficulties understanding some of the items found in the SCAS. As an example, "My heart suddenly starts to beat too quickly for no reason." One possibility is that some children overestimated the frequency of such symptoms in younger ages, but then more adequately grasped the meaning of the item as they got older. Although highly speculative, this explanation is also consistent with the descriptive statistics (Table 4) showing that these children on average came from less-educated families. Another possibility is that these children suffered from acute states of anxiety at early assessments due to temporary adverse situations, but which were resolved during the course of the study. Finally, worth noting is that the high-decreasing class consisted of 10 children only. Their initially high values of the SCAS may be interpreted as extreme values, and following the regression to the mean concept, it is also much likely that such extreme values will decline in follow-up assessments.

The implications of the study's findings are several. First, one suggestion concerns school-based prevention of anxiety in children. Recent research shows that school-based prevention of internalizing problems is less effective compared with school-based prevention of externalizing problems (Sanchez et al., 2018). Specifically, although school-based prevention of anxiety typically includes small but significant short-term effects, these effects seem to vanish in the long-term (Ahlen, Lenhard, & Ghaderi, 2015; Ahlen, Lenhard, & Ghaderi, 2018). One possible improvement that may enhance the sustainment of the short-term effects may be to consider (to a wider extent) the normative challenges of certain ages. Specifically, these could mean implementing the intervention at several times during the school years with each occasion tailored to equip the child with strategies corresponding to the theoretically associated normative challenges. In previous research regarding school-based prevention of anxiety, almost all programs have aimed at targeting overall anxiety, depression, or both (Ahlen et al., 2015). However, in recent years, there has been a growing interest in disorder-specific anxiety treatments, and there is at least one example of preventive intervention targeting specific anxiety disorders (i.e., social anxiety; Aune & Stiles, 2009).

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A second implication concerns the screening of children, for example, the selection of children relevant to indicated preventive interventions. Following the longitudinal patterns of anxiety symptoms in this study, one conclusion is that it may be difficult to select individuals at risk of developing maladaptive anxiety based on a single assessment. According to the current study, this would be especially hard in the ages of 10–12 years (see Figure 2). One suggested approach would be to instead conduct repeated assessment prior to such selection.

Finally, one important comment is that girls were overrepresented in the moderate-increasing class. Our study suggests that the subgroup of children following a detrimental trajectory of anxiety predominantly includes girls (78%). To increase the gender equality of health, we suggest developing interventions specifically to girls (i.e., selective prevention), or perhaps also specifically by targeting girls with increasing levels of anxiety in repeated assessments (i.e., indicated prevention).

Study limitations

A limitation of the current study was the relatively restricted age range between 8 and 14 years. Given that the study aimed at examining patterns of separation anxiety symptoms (developmentally perhaps most relevant before the age of 8 years) and social anxiety and generalized anxiety symptoms (developmentally very relevant also after the age of 14 years), it would have been informative to include a wider age range. Future studies evaluating a wider age-range (e.g., 6–18 years) and using the current study's analytic methodology should probably also look at non-linear trends in the dimension-specific symptom clusters to further test the accuracy of the predicted trajectories in Figure 1b. Specifically, a wider age-range may involve both decreases and increases of dimension-specific symptoms within the same latent class.

It was beyond the aim of the current study to also study gender-specific trajectories and subsequent associations to the different dimensions of anxiety. Further, the current study sample was too small to further subdivide the sample. However, to more specifically understand gender differences in the development of specific dimensions of anxiety, such analyses would be of considerable interest. Moreover, the current study's comparison between different person-centered approaches highlights one limitation with the LCGMM. For example, as the clinical change approach suggests, the moderate-increasing class was found to be a fuse of two different, interesting clinical change categories. Finally, several class-specific analyses in the current study suffered from low power because the high-decreasing class comprised very few children. Future studies with larger samples are needed to make valid estimates of the specific patterns of changes in dimension-specific anxiety dimension for such groups. Despite these limitations, we believe that the current study provides several important contributions to the anxiety-development literature.

Conflict of interest statement. The authors have no conflicts of interest to declare, financial or otherwise.

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References

Ahlen, J., Hursti, T., Tanner, L., Tokay, Z., & Ghaderi, A. (2018). Prevention of anxiety and depression in Swedish school children: A Cluster-randomized effectiveness study. *Prevention science*, *19*(2), 147–158. doi:10.1007/s11121-017-0821-1

Ahlen, J., Lenhard, F., & Ghaderi, A. (2015). Universal prevention for anxiety and depressive symptoms in children: A meta-analysis of randomized and cluster-randomized trials. *The Journal of Primary Prevention*, *36*, 387–403. doi:10.1007/s10935-015-0405-4

Ahlen, J., Lenhard, F., & Ghaderi, A. (2018). Long-term outcome of a cluster-randomized universal prevention trial targeting anxiety and depression in school children. *Behavior Therapy*, https://doi.org/10.1016/j.beth.2018.05.003

Ahlen, J., Vigerland, S., & Ghaderi, A. (2017). Development of The Spence Children's Anxiety Scale – Short Version (SCAS-S). *Journal of Psychopathology and Behavioral Assessment* (*in press*). doi:10.1007/s10862-017-9637-3

Allan, N. P., Capron, D. W., Lejuez, C. W., Reynolds, E. K., MacPherson, L., & Schmidt, N. B. (2014). Developmental trajectories of anxiety symptoms in early adolescence: The influence of anxiety sensitivity. *Journal of Abnormal Child Psychology*, *42*, 589–600. doi:10.1007/s10802-013-9806-0

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Aune, T., & Stiles, T. C. (2009). Universal-based prevention of syndromal and subsyndromal social anxiety: A randomized controlled study. *Journal of Consulting and Clinical Psychology*, *77*, 867. doi:10.1037/a0015813

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2014). LME4: Linear mixed-effects models using Eigen and S4. *R Package Version*, *1*, 1–23.

Baxter, A. J., Vos, T., Scott, K. M., Ferrari, A. J., & Whiteford, H. A. (2014). The global burden of anxiety disorders in 2010. *Psychological Medicine*, *44*, 2363–2374. doi:10.1017/S0033291713003243

Bittner, A., Egger, H. L., Erkanli, A., Costello, E. J., Foley, D. L., & Angold, A. (2007). What do childhood anxiety disorders predict? *Journal of Child Psychology and Psychiatry*, *48*, 1174–1183. doi:10.1111/j.1469-7610.2007.01812.x

Blackford, J. U., & Pine, D. S. (2012). Neural substrates of childhood anxiety disorders: A review of neuroimaging findings. *Child and Adolescent Psychiatric Clinics of North America*, *21*, 501–525. doi:10.1016/j.chc.2012.05.002

Burnham, K. P., & Anderson, D. R. (2004). Multimodel inference understanding AIC and BIC in model selection. *Sociological Methods & Research*, *33*, 261–304. doi:10.1177/0049124104268644

Cisler, J. M., & Koster, E. H. (2010). Mechanisms of attentional biases towards threat in anxiety disorders: An integrative review. *Clinical Psychology Review*, *30*, 203–216. doi:10.1016/j.cpr.2009.11.003

Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*, *60*, 837–844. doi:10.1001/archpsyc.60.8.837

Creswell, C., & O'Connor, T. G. (2011). Interpretation bias and anxiety in childhood: Stability, specificity and longitudinal associations. *Behavioural and Cognitive Psychotherapy*, *39*, 191–204. doi:10.1017/S1352465810000494

Crocetti, E., Klimstra, T., Keijsers, L., Hale III, W. W., & Meeus, W. (2009). Anxiety trajectories and identity development in adolescence: A five-wave longitudinal study. *Journal of Youth and Adolescence*, *38*, 839–849. doi:10.1007/s10964-008-9302-y

Duchesne, S., Larose, S., Vitaro, F., & Tremblay, R. E. (2010). Trajectories of anxiety in a population sample of children: Clarifying the role of children's behavioral characteristics and maternal parenting. *Development and Psychopathology*, *22*, 361–373. doi:10.1017/S0954579410000118

Dudeney, J., Sharpe, L., & Hunt, C. (2015). Attentional bias towards threatening stimuli in children with anxiety: A meta-analysis. *Clinical Psychology Review*, *40*, 66–75. doi:10.1016/j.cpr.2015.05.007

Ebesutani, C., Reise, S. P., Chorpita, B. F., Ale, C., Regan, J., Young, J., … Weisz, J. R. (2012). The Revised Child Anxiety and Depression Scale–Short Version: Scale reduction via exploratory bifactor modeling of the broad anxiety factor. *Psychological Assessment*, *24*, 833–845. doi:10.1037/a0027283

Essau, C. A., Conradt, J., & Petermann, F. (2000). Frequency, comorbidity, and psychosocial impairment of anxiety disorders in German adolescents. *Journal of Anxiety Disorders*, *14*, 263–279. doi:10.1016/S0887-6185(99)00039-0

Essau, C. A., Sasagawa, S., Anastassiou-Hadjicharalambous, X., Guzmán, B. O., & Ollendick, T. H. (2011). Psychometric properties of the Spence Child

Anxiety Scale with adolescents from five European countries. *Journal of Anxiety Disorders*, *25*, 19–27. doi:10.1016/j.janxdis.2010.07.001

Feingold, A. (2013). A regression framework for effect size assessments in longitudinal modeling of group differences. *Review of General Psychology*, *17*, 111–121. doi:10.1037/a0030048

Feng, X., Shaw, D. S., & Silk, J. S. (2008). Developmental trajectories of anxiety symptoms among boys across early and middle childhood. *Journal of Abnormal Psychology*, *117*, 32. doi:10.1037/0021-843X.117.1.32

Gadermann, A. M., Guhn, M., & Zumbo, B. D. (2012). Estimating ordinal reliability for Likert-type and ordinal item response data: A conceptual, empirical, and practical guide. *Practical Assessment, Research & Evaluation*, *17*, 1–13.

Hale, W. W., Raaijmakers, Q., Muris, P., & Meeus, W. (2008). Developmental trajectories of adolescent anxiety disorder symptoms: A 5-year prospective community study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *47*, 556–564. doi:10.1097/CHI.0b013e3181676583

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, *59*, 12–19. doi:10.1037/0022-006X.59.1.12

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass*, *2*, 302–317. doi:10.1111/j.1751-9004.2007.00054.x

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*, 593–602. doi:10.1001/archpsyc.62.6.593

Last, C. G., Perrin, S., Hersen, M., & Kazdin, A. E. (1996). A prospective study of childhood anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, *35*, 1502–1510. doi:10.1097/00004583-199611000-00019

Last, C. G., Strauss, C. C., & Francis, G. (1987). Comorbidity among childhood anxiety disorders. *Journal of Nervous and Mental Disease*, *175*, 726–730. doi:10.1097/00005053-198712000-00004

Lieb, R., Miché, M., Gloster, A. T., Beesdo-Baum, K., Meyer, A. H., & Wittchen, H. U. (2016). Impact of specific phobia on the risk of onset of mental disorders: A 10-year prospective-longitudinal community study of adolescents and young adults. *Depression and Anxiety*, *33*, 667–675. doi:10.1002/da.22487

Lubke, G. H., Miller, P. J., Verhulst, B., Bartels, M., van Beijsterveldt, T., Willemsen, G., … Middeldorp, C. M. (2016). A powerful phenotype for gene-finding studies derived from trajectory analyses of symptoms of anxiety and depression between age seven and 18. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*, *171*, 948–957. doi:10.1002/ajmg.b.32375

Meesters, C., Muris, P., & van Rooijen, B. (2007). Relations of neuroticism and attentional control with symptoms of anxiety and aggression in non-clinical children. *Journal of Psychopathology and Behavioral Assessment*, *29*, 149–158. doi:10.1007/s10862-006-9037-6

Muris, P., Merckelbach, H., Mayer, B., & Prins, E. (2000). How serious are common childhood fears? *Behaviour Research and Therapy*, *38*, 217–228. doi:10.1016/S0005-7967(98)00204-6

Muris, P., Schmidt, H., & Merckelbach, H. (2000). Correlations among two self-report questionnaires for measuring DSM-defined anxiety disorder symptoms in children: The Screen for Child Anxiety Related Emotional Disorders and the Spence Children's Anxiety Scale. *Personality and Individual Differences*, *28*, 333–346. doi:10.1016/S0191-8869(99)00102-6

Ollendick, T. H., & Grills, A. E. (2016). Perceived control, family environment, and the etiology of child anxiety—revisited. *Behavior Therapy*, *47*, 633–642. doi:10.1016/j.beth.2016.01.007

Proust-Lima, C., Philipps, V., & Liquet, B. (2017). Estimation of extended mixed models using latent classes and latent processes: The R package lcmm. *Journal of Statistical Software*, *78*(2), 1–56. doi:10.18637/jss.v078.i02

R Core Team. (2015). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/

Reise, S. P. (2012). The rediscovery of bifactor measurement models. *Multivariate Behavioral Research*, *47*, 667–696. doi:10.1080/00273171.2012.715555

Sanchez, A. L., Cornacchio, D., Poznanski, B., Golik, A. M., Chou, T., & Comer, J. S. (2018). The effectiveness of school-based mental health services for elementary-aged children: A meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, *57*, 153–165. doi:10.1016/j.jaac.2017.11.022

Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy*, *36*, 545–566. doi:10.1016/S0005-7967(98)00034-5

Statistics Sweden. (2017). Disposable income by type of household and age of head of household. Retrieved from http://www.scb.se/en/finding-statistics/statistics-by-subject-area/household-finances/income-and-income-distribution/income-and-tax-statistics/pong/tables-and-graphs/income--households-the-entire-country/disposable-income-by-typ-of-household-and-age-of-head-of-household/

Suveg, C., & Zeman, J. (2004). Emotion regulation in children with anxiety disorders. *Journal of Clinical Child and Adolescent Psychology*, *33*, 750–759. doi:10.1207/s15374424jccp3304_10

The Swedish National Agency for Education. (2015). SIRIS. Retrieved from http://siris.skolverket.se/siris/f?p_Siris:1:0

Twisk, J., & Hoekstra, T. (2012). Classifying developmental trajectories over time should be done with great caution: A comparison between methods. *Journal of Clinical Epidemiology*, *65*, 1078–1087. doi:10.1016/j.jclinepi.2012.04.010

Verbeke, G., & Molenberghs, G. (2000). *Linear mixed models for longitudinal data*. New York: Springer.

Watson, D. (2005). Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. *Journal of Abnormal Psychology*, *114*, 522–536. doi:10.1037/0021-843X.114.4.522

Weems, C. F. (2008). Developmental trajectories of childhood anxiety: Identifying continuity and change in anxious emotion. *Developmental Review*, *28*, 488–502. doi:10.1016/j.dr.2008.01.001

Weems, C. F., & Costa, N. M. (2005). Developmental differences in the expression of childhood anxiety symptoms and fears. *Journal of the American Academy of Child & Adolescent Psychiatry*, *44*, 656–663. doi:10.1097/01.chi.0000162583.25829.4b

Weems, C. F., Graham, R. A., Scott, B. G., Banks, D. M., & Russell, J. D. (2013). Suppressor effects and age differences in the expression of anxious emotion. *Personality and Individual Differences*, *55*, 283–287. doi: 10.1016/j.paid.2013.02.007

Westenberg, P. M., Gullone, E., Bokhorst, C. L., Heyne, D. A., & King, N. J. (2007). Social evaluation fear in childhood and adolescence: Normative developmental course and continuity of individual differences. *British Journal of Developmental Psychology*, *25*, 471–483. doi:10.1348/026151006X173099