Journal of Applied Developmental Psychology 46 (2016) 41–50

Contents lists available at ScienceDirect

Journal of Applied Developmental Psychology

Patterns of anxiety symptoms during adolescence: Gender differences and sociomotivational factors☆

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ARTICLE INFO

Article history:
Received 7 May 2014
Received in revised form 9 March 2016
Accepted 3 July 2016
Available online xxxx

Keywords:
Anxiety symptoms
Developmental trajectories
Gender differences
Academic competence
Social concerns
Motivation

ABSTRACT

Although many adolescents experience anxiety, few studies have examined anxiety trajectories separately for boys and girls or have attempted to understand the role of associated sociomotivational factors (SF). Based on self-determination theory, the present study aimed to identify trajectories of anxiety symptoms for boys and girls aged from 11 to 16 years and to explore whether these trajectories are predicted by academic competence, concerns about relatedness, and introjected regulation. A longitudinal sample of 493 adolescents (224 boys, 269 girls) took part in this study. Group-based trajectory analyses revealed three comparable trajectories for boys and girls (low, moderate, and high trajectory groups), as well as one trajectory unique to girls (moderate-increasing trajectory group). Concerns about relatedness were associated with the trajectory characterized by higher anxiety symptomatology in both boys and girls. Academic competence and introjected regulation, on the other hand, were related to the moderate-increasing trajectory for girls.

1. Introduction

Anxiety is among the most common forms of psychological distress in children and adolescents (Costello, Egger, Copeland, Erkanli, & Angold, 2011; Higa-McMillan, Francis, & Chorpita, 2014; Rapee, Schniering, & Hudson, 2009). Descriptive epidemiological studies have shown that the median age for the appearance of clinical anxiety symptoms is 11 years (Jones, 2013; Kessler et al., 2005), and the lifetime prevalence is slightly more than 30% (Merikangas et al., 2010). The current state of empirical evidence also suggests that anxiety symptoms can severely alter functioning in youth who experience it regularly (Higa-McMillan et al., 2014). This condition also co-occurs with other psychological disorders such as depression (Chu, Merson, Zandberg, & Margaret, 2012) and can significantly undermine adaptation in various areas of life, including academic functioning (Duchesne, Vitaro, Larose, & Tremblay, 2008) and social interaction (Kingery, Erdley, Marshall, Whitaker, & Reuter, 2010).

Research indicates that self-reported anxiety symptoms appear to be moderately stable when measured toward the end of childhood or during adolescence (Bosquet & Egeland, 2006; Duchesne, Ratelle, & Roy, 2012; Gullone, King, & Ollendick, 2001). However, this apparent stability does not apply to all adolescents, as recently revealed in findings that manifestations of anxiety followed different developmental trajectories (e.g., Crocetti, Klimstra, Keijsers, Hale, & Meeus, 2009; Miers, Blöte, de Rooij, Bokhorst, & Westenberg, 2013). Because these studies are still at the initial stage, further research is needed to replicate these trajectories for boys and girls. In the present study, anxiety symptoms refer to normative emotional experiences of worries, nervousness, and oversensitivity.

Moreover, very little is known about sociomotivational factors associated with anxiety trajectories in adolescence. Considering that educational settings are supposed to be hubs for frontline service delivery to prevent mental health problems in youth (Atkins, Hoagwood, Kutash, & Seidman, 2010; Fox, Herzig, Colognori, Stewart, & Warner, 2014), it is critical to identify the malleable personal factors that parents and school staff could intervene in to reduce the risks associated with anxiety. According to self-determination theory (SDT; Deci & Ryan, 2000, 2012), a macro-theory of motivation, personality, and well-being, anxiety may result from poor satisfaction of basic psychological needs as well as controlled motivations (Ng et al., 2012; Ryan, Patrick, Deci, & Williams, 2008; Vansteenkiste & Ryan, 2013). However, these personal factors have not been related to developmental trajectories of anxiety in adolescents. By adopting a sociomotivational perspective drawn largely from SDT, this longitudinal study aimed to identify trajectories of anxiety symptoms for boys and girls from age 11 to 16 years and to explore

☆ This research was entirely supported by grants from the Social Sciences and Humanities Research Council and the Fonds Québecois de Recherche sur la Société et la Culture.

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http://dx.doi.org/10.1016/j.appdev.2016.07.001
0193-3973/

whether these developmental trajectories could be explained by sociomotivational factors. These factors include academic competence (perceiving oneself as being effective as a student), concerns about relatedness (social concerns about peers and teachers), and introjected regulation (behaving out of internal pressures such as guilt and obligation). SDT suggests that people who feel competent, respected by others, and free to act without being pressured are more likely to experience positive emotions (e.g., low anxiety) in new and possibly stressful situations (Ng et al., 2012; Ryan et al., 2008).

2. Trajectories of anxiety symptoms in adolescents and gender differences: background

Studies on developmental changes in anxiety symptoms are scant in the literature, particularly for mixed-gender community samples of adolescents. We found only five published studies in peer-reviewed journals that investigated developmental trajectories of anxiety symptoms in this population (Crocetti et al., 2009; Miers et al., 2013; Legerstee et al., 2013; Letcher, Sanson, Smart, & Toumbourou, 2012; Morin et al., 2011), of which only two considered boys and girls separately (Legerstee et al., 2013; Letcher et al., 2012). All five studies used a longitudinal method based on individual developmental trajectories to identify discrete subpopulations of adolescents who differed qualitatively in terms of the occurrence and persistence of anxiety symptoms over time (for details of this technique see Asparouhov & Muthén, 2007; Muthén & Muthén, 2007; Jones & Nagin, 2007, and Nagin, 2005). A group-based trajectory analysis would be a useful alternative to statistical methods, like variance or growth curve analyses, which assume that developmental patterns evolve in a similar manner for all individuals within a given population (Dupéré, Lacourse, Vitaro, & Tremblay, 2007; von Eye & Bergman, 2003).

In the first study that considered gender differentiation, Letcher et al. (2012) administered age-appropriate questionnaires to assess anxiety symptoms longitudinally at ages 11–12, 13, 15, and 17 years. Trajectory analyses revealed three distinct patterns for boys (low, moderate-decreasing, and high-increasing) and for girls (low, moderate, and high-increasing). In the second study, Legerstee et al. (2013) assessed anxiety symptoms in youth at three times over a six-year period (age 11–17 years). Their analyses also revealed three distinct developmental trajectories for boys (low, mid-adolescence-limited, and mid-adolescence-decreasing) and for girls (low, mid-adolescence-limited, and mid-adolescence-increasing). The three studies that did not estimate trajectories as a function of gender (Crocetti et al., 2009; Miers et al., 2013; Morin et al., 2011) found trajectories that were consistent with those obtained by Legerstee et al. and Letcher et al. These studies identified two (Crocetti et al., 2009), three (Miers et al., 2013), and five (Morin et al., 2011) trajectories with low, moderate, high, and changing symptoms. In addition, significantly more girls than boys were in the trajectories characterized by higher anxiety symptoms (Crocetti et al., 2009; Morin et al., 2011).

In sum, these studies highlight the diversity of developmental patterns of anxiety symptoms across non-clinical adolescent samples. In the two studies that considered gender differences, three sex-specific trajectories were identified. In most boys and girls, these symptoms were slightly or moderately severe and stable over time, or in some cases declined slightly from the end of childhood to the end of adolescence. Some youth also showed high anxiety symptoms at ages 11–12, which increased steadily up to the end of adolescence, while for a subgroup of girls, these symptoms appeared progressively at about age 12 (Legerstee et al., 2013). Methodological differences such as participants' age at initial assessment, type and reliability of measures used, and assessment frequency can partly explain the variability observed in the number and shape of the trajectories. Further studies are therefore needed to replicate the three distinct developmental patterns in terms of gender in adolescence.

Building on the two above-mentioned studies, we believed that we could obtain a more comprehensive description of adolescents' anxiety trajectories by measuring anxiety at more than three time points to determine in more detail the shape of developmental trajectories. This would allow a finer assessment of how symptoms fluctuate over time (e.g., a cubic trajectory form), and would enable including in the trajectory analysis factors that provide more insight into individual differences (Jones & Nagin, 2007; Jones, Nagin, & Roeder, 2001; Nagin, 1999, 2005). The latter is critical for gaining an in-depth understanding of anxiety symptoms and for structuring the education service delivery, in accordance with its mandate to provide universal and targeted interventions (e.g., Duchesne, Larose, Vitaro, & Tremblay, 2010; Stoiber & DeSmet, 2010). In the present study, we focused on the contribution of perceived academic competence, concerns about relatedness, and introjected controlled regulation, in line with the literature on the transition to adolescence, which generally acknowledges their importance in understanding the psychological well-being of young adolescents (e.g., Grills-Taquechel, Norton, & Ollendick, 2010; Roeser, Eccles, & Sameroff, 2000). The theoretical framework underlying this study is that of SDT, a motivation theory that has been applied in health and education fields (Ryan et al., 2008; Vansteenkiste, Lens, & Deci, 2006). To the best of our knowledge, developmental trajectories of anxiety during adolescence have not yet been explored with sociomotivational factors based on SDT.

3. A sociomotivational perspective on anxiety

SDT (Deci & Ryan, 2000, 2012) proposes that competence and relatedness are essential psychological needs for human functioning. They are considered innate and universal needs, which, when satisfied, foster autonomous, self-regulated behavior and psychological health (Deci & Ryan, 2000; Ryan et al., 2008; Schultz & Ryan, 2015). The need for competence refers to the desire to interact effectively with the environment, to engage optimal challenges, and to experience mastery or effectance in accomplishing tasks of varying difficulty (Deci, 1975; Reeve, 2012). In education, this need is satisfied when youth are actively engaged in tasks that are appropriate for their ability levels, and when they aim to exceed themselves and improve their mastery. The need for relatedness refers to the desire to be emotionally connected to others, to be involved in interpersonal relationships that are warm, caring, and sensitive, and to belong to a social group (Baumeister & Leary, 1995; Ryan, La Guardia, Butzel, Kim, & Chirkov, 2003). This need is satisfied when youth have meaningful relationships with significant persons in their lives, such as peers and teachers.

Some studies have examined the contribution of competence and relatedness, in educational settings, to anxiety symptoms and/or emotional stress during the transition from elementary to high school (Duchesne et al., 2012; Grills-Taquechel et al., 2010; Harter, Whitesell, & Kowalski, 1992; Letcher et al., 2012; Roeser et al., 2000). Of these studies, the only one that estimated the trajectory of anxiety symptoms found that girls in a high-anxiety group had lower academic competence and more difficult relationships with peers, which can be approximated as poor relatedness (Letcher et al., 2012). A similar relatedness pattern was found for boys in the high-anxiety group. These results concur with other studies, which have suggested that students who are academically competent, socially connected, and less concerned about relatedness with peers and teachers prior to the high school transition are at lower risk for anxiety and emotional distress post-transition. From an SDT perspective, it is reasonable to believe that students' competence and relatedness needs were satisfied and that they have resources and options enabling them to feel confident about adapting to the demands and constraints of high school and to experience positive feelings there (Ratelle & Duchesne, 2014).

Another unique concept of SDT is the multidimensional conceptualization of motivation, which can be defined as reasons underlying a behavior. SDT distinguishes between *autonomous* (engaging willingly in