



The association between parenting behavior and somatization in adolescents explained by physiological responses in adolescents



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ABSTRACT

Introduction: This study adds to the knowledge on somatization in adolescents by exploring its relation with parenting behavior and the mediating/moderating role of physiological responses in adolescents to parenting behavior.

Method: Eighteen adolescents with high and 18 adolescents with low somatization scores and their mothers completed a discussion task, from which observed parenting behavior scores were derived. Skin conductance in adolescents was measured before and during the discussion.

Results: For adolescents with high levels of physiological responses, unadaptive parenting was related to a higher chance of high somatization scores. For low physiologically responsive adolescents, the relation between parenting behavior and somatization was not significant.

Conclusion: Parenting behavior is not univocally related to somatization in adolescents, but the association depends on physiological responses in adolescents.

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1. Introduction

About 15% to 25% of all adolescents report recurrent or continuous physical complaints, such as dizziness, headaches, or fatigue (Lundqvist et al., 2006; Perquin et al., 2000). The majority of these complaints can be classified as physical functional complaints (PFC): physical complaints for which no straightforward medical cause is found (Campo and Fritsch, 1994; Garralda, 1996). The tendency to experience and report multiple PFC is named somatization (De Gucht and Fischler, 2002). The impact of somatization is substantial, both for the child (e.g., physical discomfort, restricted school attendance; Campo et al., 2002) and the child's family (e.g., family stress; Palermo and Eccleston, 2009). Insight into the etiology of somatization is needed to tailor efficient treatment. Although considerable etiological research has been conducted, several domains remain understudied, such as the

association between somatization and parenting behavior (Palermo and Chambers, 2005).

1.1. Parenting behavior

Parenting behaviors can be classified into two dimensions: warmth (parenting behaviors that show support, acceptance and understanding) and control (parenting behaviors undertaken to influence the child's behaviors) (Barber, 1996; Baumrind, 1991; Maccoby and Martin, 1983; Rollins and Thomas, 1979). The control dimension can be differentiated into behavioral control (the child's behavior is controlled directly, e.g., through punishment) and psychological control (the child's behavior is controlled indirectly, through control of the child's emotions and cognitions, e.g., guilt induction) (Barber, 1996). Previous studies on the link between parenting behavior and adolescent internalizing and externalizing problems showed that more psychological control is mainly associated with higher levels of internalizing problems, while behavioral control is related to externalizing problems (Barber, 1996). Barber (1996) explains these unique connections by stating that internalizing problems predominantly flow from stifled independent expression and autonomy, typically induced by higher levels of parental psychological control. In contrast, externalizing problems

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are more likely to flow from difficulties in self-regulation, or from behavior which is set to test limits of acceptable behavior, typically induced by inadequate parental behavioral regulation (e.g., more harsh punishment). Higher parental warmth was identified as a significant predictor of both more internalizing and more externalizing child behavior (Galambos et al., 2003).

1.2. Parenting behavior and somatization

Within the large theoretical framework of somatization, cognitive and emotional functioning in adolescents has been proposed to play a key etiological role (Campo et al., 2004; Diepenmaat et al., 2006). Since cognitive and emotional functioning in adolescents is also related to parenting behavior, it can be assumed to (partly) explain the link between parenting and somatization (Barber, 1996). More specific, the stress theory can be applied (Eminson, 2007; Lazarus and Folkman, 1984). Traditionally, this theory distinguishes three components: the event, a persons' immediate responses to it (emotional, cognitive, behavioral, and physiological), and the outcome. The event is believed to be related to the outcome, mediated or moderated by the immediate responses. In accordance with the stress theory, parenting behavior can be conceived as the event somatization as the outcome, mediated or moderated by responses of adolescents to parenting behavior. Generally, two assumptions have been made about the link between events, responses, and outcome (Lazarus, 1999). The first assumption states an objective stimulus–response link, or in other words that comparable events are responded to in the same way by everyone and therefore cause comparable results (e.g., adolescents who experience high amounts of parental psychological control, will all respond to it in the same way, resulting in comparable somatization outcome). The second assumption states that comparable events can be reacted to in different ways by different people and therefore cause different results (e.g., adolescents who experience high amounts of parental psychological control may respond to it in different ways, resulting in different somatization outcome). In other words, while the first approach suggests that the relation between event and outcome is mediated by responses, the second approach supports moderation.

Empirical studies found that lower warmth was related to higher somatization (Feldman et al., 2010; Kristjansdottir and Rhee, 2002; Rhee et al., 2005). Relying on the general parenting literature, one could also expect a relation between psychological control and somatization, however we are not aware of research on this issue. A first challenge for further research, and a first goal of the current study, is to investigate the relation between both dimensions of general parenting behavior and somatization.

A second challenge for further research is the inclusion of possible mediators/moderators. Above, we stated that the link between parenting behavior and somatization might be explained by the stress theory. In that view, the relation between parenting behavior and somatization may be mediated or moderated by emotional, cognitive, behavioral, and physiological responses of adolescents to parenting behavior. The second goal of this study is to assess this hypothesis, focussing on physiological responses in adolescents caused by the autonomic nervous system (ANS). The ANS controls a variety of vital organs through the reciprocally functioning sympathetic and parasympathetic branches. When higher order brain centers detect events that are possibly harmful (instead of benign or irrelevant), sympathetic activity (energizing influence on various target organs) increases and parasympathetic activity (feeding, energy storage and reproduction) decreases (Lovallo, 2005). Research on the link between physiological responses and somatization revealed that somatization is related to higher amounts of sympathetic and lower amounts of parasympathetic physiological activity in reaction to a variety of external events (Dietrich et al., 2011; Dorn et al., 2003; Dufton et al., 2011; Rief and Auer, 2001; Tak and Rosemalen, 2007; Tak and Rosemalen, 2010). We are not aware of research on the relation

between parenting behavior and physiological responses of adolescents to parenting behavior.

1.3. Research questions and hypotheses

In sum, this study addresses two knowledge gaps: the first gap concerns the relation between parenting behavior (psychological control and warmth) and somatization in adolescents, and the second concerns the mediation/moderation of this relation by physiological responses in adolescents. Three research questions are examined:

- 1) Are there significant independent relations between parenting behavior (psychological control and warmth) and somatization in adolescents?
- 2) Is the relation between parenting behavior and somatization in adolescents moderated by physiological responses of adolescents to parenting behavior?
- 3) Is the relation between parenting behavior and somatization in adolescents mediated by physiological responses of adolescents to parenting behavior?

Relying on the stimulus–response assumption in stress-theory, it is hypothesized that adolescents with high somatization scores experience more parental psychological control and less warmth than adolescents with low somatization scores, and that the relation between parental psychological control/warmth and high somatization scores is mediated by higher levels of physiological responses to parenting behavior. Relying on the moderation assumption of the stress-theory, it is hypothesized that the relation between parenting and somatization depends on the level of physiological responses to parenting behavior.

2. Material and methods

2.1. Participants

Parents and adolescents included in this research were participants in the JONG1-study, a longitudinal research program on development, parenting, behavior and health in three cohorts of Flemish children (Grietens et al., 2010). The eldest cohort included 1499 adolescents and their parent (mostly mothers), who filled out questionnaires in 2009 (adolescents were 12–13 years old), 2010 (13–14 years old) and 2011 (14–15 years old). Based on 2010 self-report data, a total of 73 adolescents with high somatization scores (>1.5 SD above the mean SCL-score [$M = 1.60$, $SD = 0.54$], cf. infra) were invited for a face-to-face contact. In addition, 100 control adolescents were randomly selected from the group of adolescents with low somatization scores ($<$ mean SCL-score for both the 2009 [$M = 1.68$, $SD = 0.54$] and 2010 survey [$M = 1.60$, $SD = 0.54$], i.e. 382 adolescents). In total, 20 adolescents with high and 25 adolescents with low somatization scores participated in 2011 in the face-to-face contact. For the current analyses, data of two adolescents with high somatization scores were excluded due to resistance toward the discussion task and technical problems regarding the physiological measurement. In addition, three female and four male adolescents were randomly removed from the low levels of somatization group in order to match both study samples on gender (7 males, 11 females). Included families were compared to non-included families concerning gender of adolescents, family constellation, family origin, parental occupation, parental education, and family income by means of chi-square tests. For the high levels of somatization group, no significant differences were seen. However, in the low levels of somatization group, significant differences were revealed for mothers' work status (in participating families, mothers had more often paid work; $\chi^2(1) = 6.68$, $p = 0.01$), and parents' education (in participating families, parents had more often a degree beyond high school; education mother $\chi^2(1) = 10.67$, $p = 0.01$; education father $\chi^2(1) = 9.71$, $p = 0.01$). These variables were controlled for in the analyses. A comparison of the high and low levels of somatization groups on the

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