Stressful life events and adolescents' mental health
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Chapter 1

General introduction
Chapter 1

Background

Adolescence is a unique developmental period during which people experience a pile-up of life changes not previously encountered. This period is marked by the onset of puberty, changing socio-environmental contexts and tasks (e.g. transition from junior to high school), and the gradual move to more independence and autonomy from parents (Ge, Lorenz, Conger, Elder, & Simons, 1994; Spear, 2000; Windle, 1992). Peer relationships become more important and more intimate, and adolescents become more aware of their status in the peer group (Compas & Wagner, 1991; Rose & Rudolph, 2006; Waylen & Wolke, 2004). These normative transitions and challenges broaden and enrich the world of adolescents, and are important for their emotional, behavioral and intellectual growth and development (e.g. Spear, 2000).

In Western societies, the majority of adolescents emerges unscathed from adolescence, and do not develop maladaptations (Cicchetti & Rogosch, 2002; Waylen & Wolke, 2004). However, a substantial number of adolescents experience mental health problems during this time (e.g. Achenbach, Dumenci, & Rescorla, 2002; Collishaw, Maughan, Goodman, & Pickles, 2004; Tick, Van der Ende, & Verhulst, 2008). Stressful life events have been shown to affect adolescents’ mental health. Stressful life events are defined as ‘environmental events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society’ (Grant et al., 2003), such as parental divorce, loss of a close friend, and serious physical illness (Willemen, Koot, Ferdinand, Goossens, & Schuengel, 2008). Adolescents who experience (cumulative) stressful events have a higher chance of developing internalizing and externalizing symptoms (e.g. Grant, Compas, Thurm, McMahon, & Gipson, 2004), which in turn may predispose them to more stressors and symptoms (e.g. Kim, Conger, Elder Jr., & Lorenz, 2003). To be able to reduce the risk for (prolonged) mental health problems in adolescents, it is important to understand the role of stressful life events in the etiology and maintenance of internalizing and externalizing problems. Put in other words, identifying mechanisms linking stressful life events to mental health problems among adolescents is essential to develop effective, theory-based preventive interventions targeting those processes that lead from stress to mental health problems (McLaughlin, Hatzenbuehler, & Hilt, 2009).

Prospective stress research established that stressful life events have a noteworthy but modest negative contribution to adolescents’ mental health (Grant et al., 2004). However, most studies on adolescent stress research are not placed within a theoretical context (Grant et al., 2003), and few have tested theory-driven specificity models of stress-symptom associations (McMahon, Grant, Compas, Thurm, & Ey, 2003). An example of specificity in stress-symptom associations is that separation events appear to be more related with depressive symptoms than with rule breaking behaviors (Sandler, Reynolds, Kliewer, & Ramirez, 1992). Theoretically guided stress research is likely to advance our understanding about the pathways that predispose adolescents to particular types of common mental health problems.
A general conceptual model has been proposed to serve as a starting point for developing theoretically guided models of the mechanisms through which stressful life events may lead to adolescent mental health problems (Grant et al., 2003; McMahon et al., 2003). The model includes five central propositions: (1) stressful life events contribute to mental health problems; (2) moderators influence the relation between stressful life events and mental health problems; (3) mediators explain the relation between stressful life events and mental health problems; (4) there is specificity in the relation between stressful life events, moderators, mediators, and mental health problems; and (5) relations among stressful life events, moderators, mediators and mental health problems are reciprocal, and dynamic (Figure 1). It is recommended to split up this basic conceptual framework into different models for testing specific associations (Grant et al., 2003; McMahon et al., 2003), for example, to investigate a theory-driven moderation model about whether different stressful life events lead to different mental health problems in adolescent boys and girls (Grant et al., 2006; Rudolph, 2002).

**Figure 1.** Conceptual model of the role of stressful life events in the etiology of adolescent mental health problems (Grant et al., 2003).

In recent years, a number of studies have developed and tested theory-driven models of mechanisms about the role of cumulative stressful life events on adolescents’ mental health (e.g. Bouma, Ormel, Verhulst, & Oldehinkel, 2008; McLaughlin & Hatzenbuehler, 2009; Willemen et al., 2008). Progress has also been made in testing theoretically-derived mechanisms regarding specific stress-symptom associations (e.g. Harkness & Stewart, 2009; Keller, Neale, & Kendler, 2007; Rudolph, Flynn, Abaied, Groot, & Thompson, 2009; Rudolph et al., 2000). Nonetheless, theory-based models of mechanisms linking specific stressful life events to specific types of mental health problems remain understudied (Grant et al., 2003; Grant et al., 2006; McMahon et al., 2003).
Chapter 1

Objectives

The general objective of this thesis is to further advance adolescent stress research by developing and testing theoretically guided models of particular stress-symptom associations (Grant et al., 2003; McMahon et al., 2003). More specifically, we aim to gain more insights into stress generation and stress reaction models involving particular stressful life events. The stress generation model proposes that individual characteristics contribute to the occurrence of stressful life events, and the stress reaction model suggests that stressful life events increase the chance of developing mental health problems (e.g. Caldwell, Rudolph, Troop-Gordon, & Kim, 2004; Hammen, 2006; Rudolph & Hammen, 1999). We developed and tested specific stress generation models or stress reaction models that included either moderators or mediators. Moderators are (preexisting) individual or environmental characteristics that increase or decrease the likelihood that a risk factor will lead to a particular (mental health) outcome (Grant et al., 2006). Mediators are characteristics that are activated or caused by a risk factor, and serve to explain the association between the risk factor and the outcome (Grant et al., 2006).

The TRAILS sample

The thesis consists of five empirical studies, which were part of the Dutch ‘Tracking Adolescents’ Individual Lives’ Survey’ (TRAILS). TRAILS is a multidisciplinary prospective cohort study of 2230 Dutch adolescents that started in 2001 in order to learn more about the etiology and course of mental health problems in the Dutch population. The overall objective of the TRAILS study is to contribute to the understanding of the determinants of adolescents’ mental (ill-)health and social development during adolescence and young adulthood, as well as the mechanisms underlying the associations between determinants and these outcomes (Huisman et al., 2008). So far, three data collection waves have been completed: T1: pre-adolescence (2001 – 2002: n = 2230; mean age = 11.09, SD = 0.56; 50.8 % girls), T2: early adolescence (2003 -2004: n = 2149; mean age = 13.56, SD = 0.53; 51.0 % girls) and T3: late-adolescence (2005 – 2007: n = 1816; mean age = 16.28, SD = 0.71; 52.3 % girls). The profile of the TRAILS study is described in more detail elsewhere (see De Winter et al., 2005; Huisman et al., 2008).
Thesis outline

This thesis continues in Chapter 2 with the first study. This study examined whether boys and girls are susceptible to different peer stressors (peer victimization versus relationship losses), and whether they are likely to express stress differently (internalizing versus externalizing problems). In the second study (Chapter 3), we investigated whether adolescent boys and girls with poor assertion or poor self-control were more susceptible to experience either peer victimization or conflict with authorities. Additionally, we tested whether early physical maturation increased the effects of the social skills deficits on these interpersonal stressors. The third study (Chapter 4) explored the existence of internalizing-specific and externalizing-specific stress generation processes. In the fourth study (Chapter 5), we investigated whether childhood family instability was related to internalizing and externalizing problems during late adolescence, and whether this effect was better explained by continued family instability or by the pre-adolescent onset of mental health problems. The fifth and final study (Chapter 6) examined whether adolescents’ self-regulation capacities protects them against developing internalizing and externalizing problems when they are exposed to family instability. In the last chapter of this thesis (Chapter 7), the main findings and conclusions are presented and implications for research and practice are discussed.