



## Research paper

# Specificity in mediated pathways by anxiety symptoms linking adolescent stress profiles to depressive symptoms: Results of a moderated mediation approach

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## ABSTRACT

**Background:** We investigated the specificity in mediated pathways that separately link specific stress dimensions through anxiety to depressive symptoms and the protective utility of resilience. Thus, this study goes beyond lumping together potential mediating and moderating processes that can explain the relations between stress and (symptoms of) psychopathology and the buffering effect of resilience.

**Methods:** Ghanaian adolescents between 13 and 17 years (female = 285; male = 244) completed the Adolescent Stress Questionnaire (ASQ), Spielberger State Anxiety Inventory (STAI), Short Mood Feeling Questionnaire (SMFQ) and the Resilience Scale for Adolescents (READ). Independent samples *t*-test, multivariate analysis of covariance with follow-up tests and moderated mediation analyses were performed.

**Results:** Evidences were found for specificity in the associations between dimensions of adolescent stressors and depressive symptoms independent of transient anxiety. Transient anxiety partly accounted for the indirect effects of eight stress dimensions on depressive symptoms. Except stress of school attendance and school/leisure conflict, resilience moderated the indirect effects of specific stress dimensions on depressive symptoms. Results suggested differences in how Ghanaian adolescents view the various stress dimensions, and mediated pathways associated with anxiety and depressive symptoms.

**Limitations:** Use of cross-sectional data does not show causal process and temporal changes over time.

**Conclusions:** Findings support and clarify the specificity in the interrelations and mediated pathways among dimensions of adolescent stress, transient anxiety, and depressive symptoms. Conditional process analyses shows that resilience does not only buffer direct, but also indirect psychological adversities. Interventions for good mental health may focus on low resilience subgroups in specific stress dimensions while minimizing transient anxiety.

## 1. Introduction

Recent studies are beginning to fill the gap in addressing the potential contingent effects of resilience protective resources to protect against direct and indirect –through other channels – negative effects of exposure to stress associated with anxiety and depression (Anyan et al., 2017). However, significant gaps remain. Studies that address specificity in the dimensions of adolescent stressors and/or mediated relationship with anxiety and depression and the potential contingencies of the effects on resilience as a moderator are lacking. Dimensions of adolescent stressors include thematically meaningful and recognized dimensions of adolescent stressors within existing body of theory and empirical corpus of adolescent stress research (Byrne et al., 2007). The

need for specificity in the dimensions of adolescent stressors is pressing, similarly to examining specificity in resilient outcomes across different domains of adversities (Luthar et al., 2000). Addressing the lack of specificity in stress dimensions associated with anxiety and depressive symptoms is important as a first step towards identifying specific, differential and uneven associations that can also inform targeted interventions for dimension-specific stress.

## 2. Models of specificity

Three major specificity models are provided in the literature on stress research namely, (1) stressor specific, (2) outcome specific, and (3) stressor – outcome specific models (McMahon et al., 2003). The

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stressor specific model includes many stressors but one single outcome that allows for examining specificity in many different stressors independently associated with one particular outcome. The outcome specific model includes many different outcomes, but one single stressor that allows for determining specificity in outcomes. In the final model, the stressor – outcome, a researcher examine different stressors with many different outcomes, allowing for the determination of specificity in each of the stressors with each of the outcomes. There is a paucity of literature that clarifies specificity in interrelations among specific dimensions of stressors and depression, as well as whether the interrelations are mediated by other variables. In this way, researchers can facilitate a move beyond lumping together potential mediating and moderating processes that can explain the relations between stressors and psychopathology across development (Cicchetti and Cohen, 1995; Grant and McMahon, 2005).

### 3. Role of stressors, mediators and moderators in (symptoms of) psychopathology

It has been suggested that in the absence of stress, negative and dysfunctional cognitions remain latent and inactivated. However, in the presence of stress, endogenous vulnerabilities may be activated, resulting in psychopathology (Ingram and Luxton, 2005). Researchers have provided a general conceptual model in child and adolescent psychopathology that hypothesizes that stressors contribute to psychopathology, moderators influence the relationship between stressors and psychopathology, and mediators explain the relationship between stressors and psychopathology (Grant et al., 2003; Grant and McMahon, 2005). Therefore, moderators (e.g. demographic variables, social factors and fixed cognitive/relational styles) increase or decreases the probability that stressors will predict psychopathology. Mediators (e.g. biological, psychological and social processes) are activated by stressors and markedly increase or decrease in response to the stress. Mediators, like moderators can also be pre-existing characteristics of the child/adolescent or his/her environment.

### 4. Dimensions of adolescent stressors and (symptoms of) psychopathology

Rudolph and Hammen (1999) examined multiple domains of stressors in preadolescents ( $n = 46$ ) and adolescents ( $n = 42$ ) who ranged in age from eight to eighteen years. As predicted, the results showed that, in the adolescent samples, independent stress in the interpersonal domain was strongly associated with depressive symptoms than in the preadolescent samples. Independent stress was defined as life events that an individual has no control over, occurring outside of the individual's control. Dependent stress was defined as life events that an individual at least partially contributes to its occurrence.

Exposure to disruptions in relationships predict depressive characteristics and behaviours which also create new interpersonal stressors that contribute to recurring depression over time among adolescents (Hammen et al., 2003). Stress of home life including negative family relationships, parent-child conflict and parental over control are associated risk factors for depression in adolescents (Hammen et al., 2003). The authors suggested a bidirectional relationship between adolescent depression and problematic family relationships. Stress of peer relationships are found to be both antecedents and consequences of depression among adolescents. Difficulties in interpersonal behaviours within peer relationships such as excessive reassurance seeking and peer victimization are associated with depression (Borelli and Prinstein, 2006; Rudolph et al., 2011). Stress of romantic relationships are thought to be both antecedents and consequences of depression among adolescents (Hammen et al., 2003). Engagement in romantic relationships was positively associated with depressive symptoms over time among adolescents (Davila et al., 2009).

### 5. The mediating relation of anxiety symptoms and the protective utility of resilience

To our knowledge, the only existing study that examined the mediating relation of generalized anxiety symptoms (GAD) and the protective utility of resilience in the relationship between stressful negative life events and depressive symptoms was conducted with an adult sample. The study examined the mediating role of generalized anxiety symptoms across samples from Australia ( $n = 206$ ) and Norway ( $n = 210$ ) (Anyan et al., 2017). The authors found a significant mediating relation of generalized anxiety symptoms between exposure to stressful negative life events and depressive symptoms in both samples. The authors contended that exposure to stressful life events were associated with stressful life circumstances and additional negative life events, which was further associated with increases in anxiety-related cognitions that, may in turn, contribute to depressive symptoms. Interestingly, the authors also found that the pathway through which anxiety symptoms mediate exposure to stressful negative life events on depressive symptoms vary systematically across subgroups of resilience. High subgroup of resilience were less affected by both the direct effects of anxiety symptoms, and the indirect effects of exposure to stressful life events mediated by anxiety symptoms on depressive symptoms than the low subgroup of resilience. The authors concluded that resilience protective resources namely, positive personal dispositions, family cohesion and external social support outside the family protect against both direct and indirect (i.e. through other channels) psychological adversities.

### 6. The current study

Studies that examine specificity in multiple dimensions of stressors among adolescents have become increasingly important, as subtle variations in youngsters' experience of stress are unable to be accounted for by aggregate indexes of measure of stressful negative life events (Rudolph and Hammen, 1999). According to the general conceptual model of the role of stressors in psychopathology (Grant et al., 2003; Grant and McMahon, 2005), specific stressors have specific relations with psychological outcomes via specific mediators and/or moderators. While a few existing specificity in stress studies have been reviewed, we could not find any study conducted with African samples. Hence, the present study was conducted to expand the literature on specificity in stress studies across diverse populations. The present study extends past work regarding the relationship between profiles of adolescent specific stress dimensions, transient anxiety symptoms and depressive symptoms in ways that these associations can be buffered depending on levels of resilience protective resources. This is achieved by examining the mediating role of transient anxiety symptoms between specific stress dimensions and depressive symptoms, and the protective utility of resilience resources.

The use of a conditional process modelling – *moderated mediation* – in the present study overcomes the shortfalls in mediated or moderated models that result in oversimplification of complex processes involving indirect relations and mechanisms, which is why researchers lump together mediating and moderating relations and mechanisms by ignoring potential contingent effects. Moderated mediation combines mediation and moderation to determine when the strength of an indirect effect is estimated to depend on the level of some variable (Hayes, 2013, 2015; Preacher et al., 2007). In this way, we go beyond explaining mediated pathways through which the relationship between exposure to adolescent specific stress dimensions and depressive symptoms unfold, to specify subgroups of resilience – *high, average versus low resilience* – that is able to overcome psychological adversities that do not only directly, but also indirect affect them.

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