



## Internalizing symptomatology and academic achievement: Bi-directional prospective relations in adolescence



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### ABSTRACT

Prior research has documented negative, concurrent relations between internalizing symptomatology and academic achievement among adolescents. The present study provided the first rigorous, longitudinal examination of the bi-directional, prospective relations between adolescent internalizing symptomatology and academic achievement. One hundred and thirty adolescents reported depression and anxiety annually from 6th through 10th grades, and GPA records were obtained annually from schools. Results showed that (a) high depression and anxiety at the beginning of a school year predicted lower GPA during that school year, and (b) low GPA in any school year predicted higher depression and anxiety at the beginning of the following school year. These findings underscore the tight link between adolescent internalizing symptomatology and academic achievement.

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### 1. Introduction

A substantial body of research suggests that internalizing symptomatology is negatively linked with concurrent academic performance, in adolescent samples that cut across gender, age, socioeconomic status, ethnicity, and nationality (for reviews, see Hishinuma, Chang, McArdle, & Hamagami, 2012; Seipp, 1991).<sup>1</sup> To date, however, no rigorous longitudinal studies have examined this link, leaving the temporal dynamics underlying these relations underexplored. This gap in the literature is problematic, given that elevated internalizing symptomatology and poor academic performance often shape the adolescent experience. Estimates from the National Comorbidity Survey Replication-Adolescent Supplement suggest that approximately 12% of adolescents had experienced an episode of major depression or dysthymia and over 30% had been diagnosed with an anxiety disorder (Merikangas et al., 2010); furthermore, estimates for sub-clinical levels of depression and anxiety

run as high as 20–40%, particularly in certain at-risk subgroups (e.g., females, ethnic minorities; Saluja et al., 2004). Additionally, the National Center for Education Statistics in the U.S. estimates that approximately 25% of junior high students have minimal or no mastery of fundamental skills in reading and mathematics, and nearly 10% of young adults aged 16–24 are not enrolled in school and have not earned a high school degree (Aud et al., 2012).

In the present research, we therefore conducted the first rigorous, longitudinal study of the relation between internalizing symptomatology and academic achievement in adolescence. We sought to answer two questions: (a) Does poor academic achievement predict subsequent increases in internalizing symptomatology?, and (b) Does elevated internalizing symptomatology predict subsequent declines in academic performance? To answer these questions, we followed a group of adolescents from 6th through 10th grades, obtaining annual assessments of self-reported depression and anxiety at the beginning of each school year, and school records of GPA at the end of each school year.

#### 1.1. Does poor academic achievement predict subsequent increases in internalizing symptomatology?

Stressful life events are commonly thought to precipitate the onset of internalizing symptomatology (Brown & Harris, 1978; Hammen, 2005; Hudson & Rapee, 2004; Monroe & Reid, 2009).

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<sup>1</sup> In this paper, we use the term *internalizing symptomatology* to refer to depression and anxiety, in light of substantial evidence suggesting that major depression, dysphoria, and generalized anxiety disorder constitute a common class of psychiatric disorders labeled *anxious-misery, distress disorders, or internalizing disorders* (Kendler, Prescott, Myers, & Neale, 2003; Krueger, 1999; Watson, 2005).

Individuals who experience internalizing symptomatology report having experienced stressful life events over the prior 6–12 months at a higher rate than healthy individuals (e.g., Allen, Rapee, & Sandberg, 2008; Brown, Bifulco, Harris, & Bridge, 1986; Kendler, Karkowski, & Prescott, 1999), and this effect has been repeatedly demonstrated among adolescents (e.g., Cole, Nolen-Hoeksema, Girgus, & Paul, 2006; Hankin, Mermelstein, & Roesch, 2007; Rudolph, Flynn, Abaied, Groot, & Thompson, 2009). Importantly, Kendler et al. (1999) employed a large sample of twins to demonstrate that stressful life events play a causal role in precipitating internalizing symptomatology, above and beyond underlying genetic factors that could cause individuals to experience both stress and internalizing symptomatology. However, although interpersonal events (e.g., those involving loss, or rejection from a close friend) have typically been implicated as the most potent at inducing internalizing symptomatology in both adults (Brown, Bifulco, & Harris, 1987; Kendler, Hettema, Butera, Gardner, & Prescott, 2003) and adolescents (Hankin et al., 2007; Harkness et al., 2010), little work has examined achievement-related stressors.

Evidence suggests that achievement-related stress, in addition to interpersonal stress, may also precipitate internalizing symptomatology among adolescents. For example, poor academic performance over time has numerous inimical effects, including low perceptions of competence and self-efficacy (Bandura, 1986; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991) and feelings of hopelessness, distress, and low self-esteem (Blyth, Simmons, & Carlton-Ford, 1983; Harter, Whitesell, & Kowalski, 1992; Moilanen, Shaw, & Maxwell, 2010), all of which may lead to the onset of depression or anxiety (e.g., Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Hankin, Abramson, & Siler, 2001; Sowislo & Orth, 2013). Repeated academic failure can also lead students to adopt performance-impairing behaviors in an effort to protect their damaged self-images, including reduced task engagement, avoidance of optimal challenge, and divestment from academic pursuits (Elliot & Church, 2003; Osborne, 1997). Given this evidence, it seems reasonable to posit academic achievement as a negative prospective predictor of internalizing symptomatology.

### 1.2. Does elevated internalizing symptomatology predict subsequent declines in academic performance?

Internalizing symptomatology is associated with numerous motivational, cognitive, and biological processes that are likely to disrupt learning and performance. From a motivational standpoint, depressive symptoms are negatively related to approach-based goal pursuit and striving for rewards (Dickson & MacLeod, 2004; Shankman, Klein, Tenke, & Bruder, 2007; Strauman, 2002), and anxiety symptoms are positively related to avoidance-based goal pursuit and vigilance for threats (Derryberry & Reed, 2002; Dickson & MacLeod, 2004; Higgins, Shah, & Friedman, 1997); both diminished approach and heightened avoidance motivation can impair academic achievement (Elliot & Church, 1997; Oertig et al., 2013). Cognitively, depression promotes a memorial bias for negative events, facilitates rumination, reduces working memory capacity, and impairs one's ability to inhibit distracting information (Gotlib & Joorman, 2010; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), and anxiety facilitates a narrow, inflexible focus on negative possibilities that can distract students from academic work and make learning and integrating information difficult (Eysenck, Derakshan, Santos, & Calvo, 2007); these cognitive tendencies are likely to impair students' ability to learn new information and perform on demanding school assignments and exams. From a biological standpoint, depression is often characterized by sleep disturbances, loss of energy, and general fatigue (American Psychiatric Association, 2013; Kovacs, 1985), and anxiety is similarly characterized by restless arousal and tension, difficulty

concentrating, and trouble sleeping (American Psychiatric Association, 2013; Dahl & Lewin, 2002; Reynolds & Richmond, 1978), all of which are likely to hamper school performance.

Additionally, the stress generation hypothesis suggests that individuals who experience internalizing symptomatology tend to encounter subsequent life stress, because they select into stressful situations and because their interpersonal styles evoke stress in their ongoing relationships (Hammen, 2005); longitudinal analyses have supported this proposition for adolescents experiencing both depression and anxiety (Cole et al., 2006; Harkness & Stewart, 2009; Uliaszek et al., 2012). Heightened life stress resulting from the motivational, cognitive, and biological impairments inherent to internalizing symptomatology will likely disrupt adolescents' ability to succeed in achievement-related contexts.

### 1.3. Do academic achievement and internalizing symptomatology simultaneously predict each other?

Several studies have previously examined bi-directional prospective relations between internalizing symptomatology and academic achievement in adolescence, all of which have operationalized internalizing symptomatology by measuring depression. First, Grimm (2007) assessed depression and standardized vocabulary test performance annually from ages 8 to 14; he found support for the academic performance to depression relation, but not for the depression to academic performance relation. Second, Hishinuma et al. (2012) assessed depression and self-reported GPA annually throughout high school; they found that depression negatively predicted changes in GPA, but did not find support for the GPA to depression relation. Third, Verboom, Sijtsema, Verhulst, Penninx, and Ormel (2014) assessed students' depression and achievement biennially three times from late childhood into adolescence (ages 10–18), and assessed achievement through teachers' ratings of students' work pace, effort, and performance; they found a negative relation between depression and achievement in both directions for females but not males. Finally, Owens, Shippee, and Hensel (2008) assessed high school students' depression and self-reported GPA from freshman through senior years; they found no support for prospective relations in either direction.

It is too early to draw conclusions regarding these prospective relations, however, given the sparse existing evidence, and the way that academic achievement has been assessed in prior studies. Specifically, achievement has been operationalized using (a) self-reports of GPA, (b) composite teacher perceptions of student achievement that include effort and pace, as well as achievement, or (c) performance on a standardized vocabulary test. Self-reported GPA and actual GPA from official school records are often discrepant (students in general tend to over-state their actual GPA, but depressed students tend to under-state it; Gramzow, Elliot, Asher, & McGregor, 2003; Zimmerman, Caldwell, & Bernat, 2002), composite teacher reports likely contain information beyond student achievement per se, and performance on a standardized test in one specific domain at one time point is likely a constricted indicator of students' academic achievement (i.e., it does not reflect a students' ability to engage and persist in school assignments, studying, note-taking, and classroom learning over an extended period of time). A longitudinal study using both official school GPA data and internalizing symptomatology has yet to be conducted.

### 1.4. The present research

In the present research, we tested the bi-directional prospective relations between internalizing symptomatology and academic performance using a sample of students from Western New York who were followed from 6th through 10th grade. To assess internalizing symptomatology, students provided annual reports of

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