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## Research report

## The impact of lifetime suicidality on academic performance in college freshmen



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## ABSTRACT

**Background:** While suicidal thoughts and behaviors (STB) among college students are common, the associations between STB and academic performance are not well understood.

**Methods:** As part of the World Mental Health Surveys International College Student project, web-based self-reported STB of KU Leuven (Leuven, Belgium) incoming freshmen ( $N=4921$ ; response rate=65.4%) was collected, as well as academic year percentage (AYP), and the departments to which students belong. Single- and multilevel multivariate analyses were conducted, adjusted for gender, age, parental educational level, and comorbid lifetime emotional problems.

**Results:** Lifetime suicide plan and attempt upon college entrance were associated with significant decreases in AYP (3.6% and 7.9%, respectively). A significant interaction was found with average departmental AYP, with STB more strongly associated with reduced AYP in departments with lower than higher average AYP.

**Limitations:** Limited sample size precluded further investigation of interactions between department-level and student-level variables. No information was available on freshman secondary school academic performance.

**Conclusions:** Lifetime STB has a strong negative association with academic performance in college. Our study suggests a potential role for the college environment as target for treatment and prevention interventions.

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## 1. Introduction

The college years are a crucial period when students make the transition from late adolescence to adulthood (Arnett, 2000). Just as their young adult peers (Nock et al., 2012), high numbers of college students report lifetime suicidal thoughts and behaviors (STB), with estimates of suicidal ideation in the 8.1–53.0% range (Drum et al., 2009; Paul et al., 2014), and attempts in the 1.0–11.2% range (Engin et al., 2009; Wang et al., 2014). Importantly, STB during early life is associated with long-term adverse outcomes in later adult life, including persistent mental and physical health problems (Goldman-Mellor et al., 2014; Herba et al., 2007), relationship dysfunction (Goldman-Mellor et al., 2014; Kerr and Capaldi, 2011; Kessler et al., 1998), labor market marginalization

(Niederkrotenthaler et al., 2014), and unemployment (Ettner et al., 1997; Goldman-Mellor et al., 2014).

Mental health and academic performance are closely related (Clarke et al., 2014; Dalgard et al., 2007; Hooven et al., 2012; Keyes et al., 2012). General population studies suggest that early-onset mental disorders account for about 5% of college drop-outs and that students with psychiatric disorders are twice as likely as other students to drop out of college without obtaining a degree (Lee et al., 2009; Kessler et al., 1995; Hartley, 2010). Although one might expect from these results that STB would also be associated with low academic performance, studies on the direct effects of STB on academic performance among college students are scarce and findings are ambiguous. For example, no association was found between suicidal ideation and grade point average (GPA) in two smaller samples (Lester, 2013; Nyer et al., 2013). A larger study of 1296 medical students (Miletic et al., 2015) found that those with lifetime suicidal ideation and/or suicide attempt(s) had a lower GPA as compared to those who never experienced STB (7.90

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vs. 8.24;  $p=0.001$ ). Unfortunately, no separate analyses were conducted for those with more severe STB (e.g., plans or attempts), and those with suicidal ideation only, although a Spearman's coefficient of  $-1.25$  ( $p < 0.001$ ) was found between GPA and severity of suicidal behaviors. The inclusion of multiple STB indices (e.g., suicidal ideation, suicide plans, and attempts) may yield a more fine-grained analysis of the effect of increasing STB severity on academic performance. Moreover, previous studies all assessed academic performance by self-report, introducing the possibility of measurement errors, especially for those with lower grades (Kuncel et al., 2005). They also failed to adjust for relevant covariates such as comorbid psychopathology (Lee et al., 2009), or socioeconomic status (Spera et al., 2009).

We addressed these shortcomings using baseline data from the *Leuven College Surveys*, as a part of the WHO World Mental Health Surveys International College Student project (WMH-ICS). The WMH-ICS aims to obtain accurate longitudinal cross-national information about the prevalence and correlates of mental, substance, and behavioral disorders among college students worldwide. Goals of the project include assessing unmet need for treatment, identifying students in need of outreach, and evaluating preventive and clinical interventions. The aim of the present study is to investigate whether lifetime STB (i.e., death wish, suicidal ideation, suicide plan, or suicide attempt) upon college entrance is associated with academic performance during the first year of college, beyond the effect of sociodemographic variables and lifetime psychopathology.

## 2. Methodology

### 2.1. Procedures

As part of the WMH-ICS project, the *Leuven College Surveys* consist of a series of ongoing web-based self-report surveys of KU Leuven university students. Representing Belgium's largest university, the KU Leuven has an enrollment of over 40,000 students. In the academic years 2012 and 2013, a total of 7527 Dutch-speaking incoming freshmen aged 18 years or older were eligible for the baseline survey. The sample was recruited in three stages. In the first stage, the baseline survey was included in a routine psychomedical check-up organized by the university student health center. All incoming freshmen from all departments were sent a standard invitation letter for the check-up. Students arriving for their check-up were invited to complete the study survey on a desktop computer in the waiting room of the student health center. In a second stage, non-respondents to the first stage (i.e., the psycho-medical check-up) were personally contacted using customized emails containing unique electronic links to the survey. The third stage was identical to the second stage, but additionally included an incentive to complete the survey (i.e., a raffle for 20 euro store credit coupons). Each stage used reminder emails, setting the maximum amount of contacts at eight. The study's protocol was approved by the University Hospital Leuven Biomedical Ethical Board and by the Belgian Commission for the Protection of Privacy. Students who reported any past year STB or non-suicidal self-injury were presented with links to local mental health resources.

The KU Leuven is divided in 40 departments based on the academic content being offered to the enrolled students within that department (e.g., bio-engineering, law, romance languages, etc.). A department is a micro-unit within the larger campus environment, with shared structural (e.g., classrooms), interpersonal (e.g., sense of belongingness), and social (e.g., sports participation) elements. We obtained freshman departmental status from the KU Leuven administration office. This enabled us to run additional

multilevel analyses and to test for between-department variability in the association between STB and academic performance. Such an approach may be especially relevant since evidence suggests that students' wellbeing and performance is linked to peer-group effects, student-faculty interactions, and general institution characteristics (Astin, 1993; Fink, 2014; Pascarella and Terenzini, 2005).

### 2.2. Measures

The WMH-ICS survey instrument was developed by the *World Mental Health Survey Consortium* to include multiple screening instruments measuring a wide range of mental health outcomes. Survey data on lifetime emotional problems, and lifetime STB were linked for each participant to administrative unit-level data obtained at the KU Leuven students' administration office, including academic year percentage, and sociodemographic variables. Survey measures and administrative information for this study are briefly discussed below.

*Academic year percentage (AYP)*: The AYP is the final grade percentage (range 0.0–100.0%), as objectively calculated by the KU Leuven administration office. Examinations are held in June, and when students do not participate or fail, retakes are being held in September. The AYP is calculated after the September retakes, and consists of the weighted sum of all final course grades. When students do not participate in an examination, the obtained grade of this particular course is zero.

*Sociodemographic variables* included gender, age, and parental educational level. Parental education was divided in three levels: both parents completed a high degree of education (i.e., college bachelor degree or more), only one parent completed a high degree of education, and none of the parents completed a high degree of education. Parental education was included as covariate because it is a reliable proxy variable for socio-economic status (Hauser and Warren, 1997), but also for young people's educational success or achievement-related behaviors (Eccles et al., 2004).

*Lifetime suicidal thoughts and behaviors (STB)*: STB items were taken from the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007). STB was conceptualized as a continuum (Crosby et al., 1999), starting with a death wish ("Did you ever wish you were dead or would go to sleep and never wake up?"), which may proceed into suicidal ideation ("Did you ever in your life have thoughts of killing yourself?"), possibly accompanied by a suicide plan ("Did you ever think about how you might kill yourself [e.g., taking pills, shooting yourself] or work out a plan of how to kill yourself?"), and then leading in some cases to a suicide attempt ("Have you ever made a suicide attempt [i.e., purposefully hurt yourself with at least some intent to die]?"). Construct validity of the SITBI is good to excellent compared with the Schedule for Affective Disorders and Schizophrenia for School Aged Children (K-SADS-PL;  $\kappa=0.48-0.65$ ), and the Beck Scale for Suicide Ideation (BSI;  $\kappa=0.59$ ). Inter-rater reliability and test-retest reliability after 6-month follow-up are excellent ( $\kappa=0.7-1.0$ ; Nock et al., 2007).

*Lifetime emotional problems*: Number of lifetime emotional problems was assessed using the Global Appraisal of Individual Needs Short Screener, a well-validated screening instrument for mental disorders among both adolescent and adult populations (GAIN-SS; Dennis et al., 2006). The GAIN-SS consists of four five-item sub-screener, including an internalizing disorder sub-screener (depression, anxiety, sleep problems, post-traumatic stress, and suicidal ideation), an externalizing disorder screener (inattentiveness, hyperactivity, impulsivity, and conduct disorder), a substance disorder screener (substance issues, abuse, and dependence), and a crime/violence disorder sub-screener (interpersonal, property, and drug related crimes). Subscreeners show good internal consistency (Cronbach  $\alpha=0.65-0.81$ ), and they are

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