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Brief report

# Highs and lows: Naturalistic changes in mood and everyday hassles over school and vacation periods in adolescents

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ABSTRACT

This study investigated changes in adolescents' mood and everyday hassles across school-terms and vacation periods. 146 (52.7% female) community-dwelling adolescents aged 16.2 ± 1.0 years (*M*±*SD*) completed self-report measures on depression, anxiety, and everyday hassles at four time points: during a school vacation, and the start, middle, and end of school-terms. Latent growth modeling showed that the end of a school-term was associated with significantly higher symptoms of depression, anxiety, and hassles; these measures were lower during the vacation. Hassles were strongly associated with more negative mood at all times. Our findings suggest significant fluctuations in adolescent mood and everyday hassles across school-vacation cycles. These findings call for careful consideration and reporting of timing in mood and stress assessment in adolescent research, as school-vacation cycles may have strong influence on both. Naturalistic changes in mood over school-vacation cycles reported are also clinically informative for designing and delivering adolescent wellbeing programs.


## 1. Introduction

School-vacation cycles occur systematically throughout the year, and are associated with changes in factors that share close relationships with adolescents' mood. For example, daily stressors, or *everyday hassles,* vary as adolescents undergo different life experiences (Dewald, Meijer, Oort, Kerkhof, & Bogels, 2014), and have been associated with mood disturbances (Sim, 2000). Both symptoms of depression (Dumenci & Windle, 1996; Wu, 2015) and anxiety (Lau, Eley, & Stevenson, 2006) have been shown to demonstrate trait (stable) and state (fluctuating) features, with academic demands being one prominent state influence of both mood states (Endler, Kantor, & Parker, 1994). Surprisingly, however, changes in adolescents' mood and hassles across school-vacation periods are not well documented in existing literature, and studies involving school-attending adolescents rarely report the timing of psychological measures in relation to school-vacation periods.

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From a methodological perspective, if naturalistic changes in adolescents' mood indeed occur, school-vacation periods may be an important confounding factor to consider for all studies that concern school-attending adolescents' psychological wellbeing (e.g., longitudinal studies on adolescents' mood, effects of interventions on mood). From a developmental perspective, adolescence is a critical period for the onset of mental health conditions (Kessler et al., 2005). Understanding within-individual variations in mood and hassles may help better understand the overall development of mental health conditions in the context of adolescents' changing life circumstances. From a clinical perspective, identifying periods in which adolescents are particularly vulnerable to negative mood would be clinically informative.

Therefore, the present study aims to examine longitudinal changes in negative mood (operationalized as symptoms of depression and anxiety) and everyday hassles over four time points during vacation and school-term periods. We hypothesized that these measures will change significantly over the observational period. Further, given their relevance to adolescent mood, the roles of age and gender, as well as associations between everyday hassles and mood, were also examined as exploratory aims (Chan, Chan, & Kwok, 2015; Sim, 2000).

## 2. Methods

### 2.1. Procedure

This project was approved by the Human Research Ethics Committee of the University of Melbourne as part of a larger study on adolescent sleep and mental health. Flyers and school e-newsletters were used for recruitment. Inclusion criteria were enrolment in Years 10–12 secondary schools and English literacy, with no a priori exclusion criteria to enhance generalizability. Informed consent was obtained from both adolescents and parents/guardians. In Australia, school-terms and non-summer vacations are typically nine- and two-week long respectively. Participants completed self-report online surveys at the following four time points: during the second week of a two-week vacation (Time-V), and at the start (Time-S), middle (Time-M), and end (Time-E; last week) of a consecutive school-term. Data were collected in five school-vacation waves (each with different participants) spanning two years; the longer end-of-year summer vacations were not included.

## 3. Materials

Symptoms of depression and anxiety were assessed using Centre of Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) and the Spence Children's Anxiety Scale (SCAS; Spence, 1998) respectively. Both scales are well-validated in adolescents, and showed good reliability in this study ($\alpha > 0.83$ for CES-D and >0.92 for SCAS across all times).

The well-validated Inventory of High-School Students' Recent Life Experiences (IHSSRLE) was used to assess everyday stressors/hassles within eight domains including: social alienation, excessive demands, romantic concerns, decisions about personal future, loneliness and unpopularity, assorted annoyances and concerns, social mistreatment, and academic challenge (e.g., “disagreements with teachers”; Kohn & Milrose, 1993). The IHSSRE showed excellent reliability in this study ($\alpha > 0.94$ for all times).

### 3.1. Statistical analyses

Three separate latent growth models (LGM) within the Structural Equation Modeling framework examined changes in CES-D, SCAS, and IHSSRLE over the four observational time points. Time scores for Time-V, -S, -M, and -E were specified as 0, 2, 6 and 10 (weeks) respectively. Each LGM yields a latent intercept that indicates the initial status at Time-V, and a latent slope that indicates the rate of change. Non-linear changes (e.g., substantially higher SCAS at Time-E) were examined by freely estimated time scores. Only theoretically meaningful modifications (e.g., correlated residuals between adjacent time points) that significantly improved goodness-of-fit were applied (see note section of Table 1 and the Supplement for details). The roles of age and gender were examined by including them as predictors of both the latent intercept and slope. Clustered

**Table 1**
Parameter estimates (standardized errors) and fit statistics for latent growth models on mood and life stress across the vacation and school term periods.

| | b (SE), *p* | | Fit statistics | | | |
|---|---|---|---|---|---|---|
| | Intercept | Slope | $\chi^2(df)$, *p* | RMSEA | CFI | SRMR |
| CES-D (Depression) | 12.70 (0.63), <0.001 | 0.15 (0.06), 0.007 | 6.19 (4), 0.186 | 0.061 | 0.972 | 0.056 |
| SCAS (Anxiety) | 18.81 (0.98), <0.001 | −0.22 (0.14), 0.118 | 3.73 (3), 0.292 | 0.041 | 0.997 | 0.034 |
| IHSSRLE (Everyday Hassles) | 68.98 (1.46), <0.001 | 1.06 (0.11), <0.001 | 2.60 (6), 0.864 | 0.000 | 1.000 | 0.039 |

*Note.* b = unstandardized parameter estimates, SE = standardized error, CES-D, SCAS, and IHSSRLE are the total scores of the Centre for Epidemiological Studies Depression, Spence Children's Anxiety Scale, and the Inventory of High-School Students' Recent Life Experiences respectively. RMSEA = Root Means Square Error of Approximation, CFI= Comparative Fit Index, SRMR = Root Means Square Error of Approximation. Latent growth models with time scores being specified at 0, 2, 6, and 10 were fitted to each outcome across four time points. Model modifications: for CES-D, slope variance was fixed at 0, residuals were correlated between Time-V and other time points; for SCAS, residuals were correlated between Time-S and Time-M, the time score for Time-E was freely estimated; for IHSSRLE, slope variance was fixed at 0, the time score for Time-M was freely estimated.