Gender Differences in Adolescents’ Daily Interpersonal Events and Well-Being

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This study examined daily interpersonal events with parents and friends and daily well-being among 589 ninth-grade students (mean age = 14.9 years) from Mexican, Chinese, and European backgrounds. Associations were examined using a daily diary methodology whereby adolescents reported on positive and negative interpersonal experiences and mood each day for 2 weeks. Analyses using hierarchical linear modeling revealed bidirectional associations between adolescents’ daily social interactions and mood. Findings indicated gender differences in adolescents’ reactivity to daily interpersonal events as well as in the strength of daily mood as a predictor of interpersonal events. Furthermore, the ratio of positive to negative events experienced daily was consequential for adolescents’ daily mood. Findings have practical implications for adolescents’ everyday functioning and potential long-term adjustment.

Although family and peers may act as a source of stress or support for adolescents (DuBois et al., 2002; Larson & Amussen, 1991; Smetana, Campione-Barr, & Metzger, 2006), prior research has tended to emphasize stressors in the interpersonal domain and their relation to emotional difficulties. Less attention has been given to the role of positive interpersonal events and mood. In addition, research has tended to rely on global reports of life stress and adjustment collected at intervals spaced apart by a period of several months or years. As such, less is known regarding how adolescents’ interpersonal experiences and well-being are related in daily life. Exploring these associations in the context of adolescents’ everyday lives offers a new lens that may complement existing research documenting these processes over a longer time span. Furthermore, it is relevant to explore these processes in ethnically diverse samples that reflect the increasingly diverse ethnic composition of the United States.

Several models have been posited to explain the association between stress and emotional adjustment. Although these models have been proposed primarily to explain psychopathology, exploring such processes in a normative population in daily life may be informative and may also inform models of developmental psychopathology. According to the stress exposure model, sheer exposure to high levels of stressors predicts poorer adjustment, as manifested by depressive or other symptoms (e.g., Hankin, Abramson, & Siler, 2001; Nolen-Hoeksema, 2001). Second, the stress reactivity model suggests that greater emotional distress in response to stressful events accounts for the association (e.g., Cole, Nolen-Hoeksema, Gurgus, & Paul, 2006; Rudolph, 2002). Third, the stress generation model suggests that individuals who are emotionally distressed (e.g., those who feel depressed) generate more negative life events (e.g., Hammen, 2006; Rudolph et al., 2000). Fourth, the reciprocal model recognizes a mutual influence between stress and emotional adjustment, such that stressful events leads to more emotional distress and emotional distress induces more stressful events (Carter, Garber, Ciesla, & Cole, 2006; Kim, Conger, Elder, & Lorenz, 2003).

Among the few studies to assess daily aspects of functioning, one study examined daily affect related to overall life stress, in line with a stress reactivity model. Researchers used the average of moment-to-moment ratings of affect provided over the course of 1 week and found that prior life events were related to a higher average level of daily negative affect as well as overall depressive...
symptomatology (Larson & Ham, 1993; Larson, Moneta, Richards, & Wilson, 2002). Another study assessed daily stressors in relation to adolescents’ overall depressive symptoms (Hankin, Mermelstein, & Roesch, 2007). In this study, adolescents reported on the single worst event that occurred each day for 7 days, across three waves over a year (baseline, 6 months, 12 months). Stress was indexed by the total number of stressors reported in either the interpersonal or achievement domain across an entire week. Adolescents’ experience of daily stressful interpersonal events, aggregated across the week, was found to be prospectively associated with overall depressive symptoms.

Together, these findings suggest that daily mood is sensitive to stressful life events and that daily interpersonal stress is consequential to overall psychological well-being, both supporting a stress reactivity model. These prior studies have examined specific aspects of adolescents’ daily functioning, such as daily mood or daily interpersonal stress, but not in conjunction with one another at the daily level. However, daily interpersonal events may play an important role in long-term outcomes via their role in everyday adjustment. In addition, although these previous studies tested a stress reactivity model, they did not assess the reciprocal association, that is, the effect of daily mood on interpersonal stress, represented by the stress generation model. Obtaining measurements of stress and mood within the same day allows for a closer look at how these experiences are related on a daily basis, potentially revealing proximal processes that are involved.

Positive Interpersonal Events and Mood

Few studies have examined the role of positive social interactions in adolescents’ daily lives. Research examining overall levels of support from parents and peers has found associations with daily positive and negative mood among adolescents (Weinstein, Mermelstein, Hedeker, Hankin, & Flay, 2006). Although this study indicates the importance of overall relationship quality for adolescents’ daily mood, it does not address the role of everyday interactions, which might very well be the ground for nourishing positive relationships and a sense of well-being.

This study assessed both positive and negative interpersonal events in adolescents’ daily lives. Positive interactions with parents and peers in everyday life are expected be associated with daily levels of well-being. In addition, by capturing both positive and negative events in daily life it is possible to examine how the ratio of positive to negative events is related to daily mood. That is, does the proportion of positive to negative daily interpersonal events matter for adolescents’ daily well-being, as opposed to daily mood primarily being driven by one type of event (e.g., negative events alone)? By examining the ratio of events it is possible to determine whether positive events may offset some of the potential effects of negative events in daily life.

Gender

As girls and boys enter adolescence, a striking pattern emerges whereby girls begin to experience more internalizing problems, especially depression (Ge, Lorenz, Conger, Elder, & Simons, 1994; Nolen-Hoeksema & Girgus, 1994; Wade, Cairney, & Pevalin, 2002). Consistent with a stress exposure model, numerous studies have shown that adolescent girls report more interpersonal stressors than boys (Ge et al., 1994; Hankin et al., 2007; Rudolph et al., 2000). Likewise, girls show greater reactivity to interpersonal stressors with family and friends, which accounts for heightened levels of symptomatology (Shih, Eberhart, Hammen, & Brennan, 2006).

Hankin et al. (2007) found greater stress exposure based on the aggregate of daily reports of stressful events and greater stress reactivity as measured by overall depressive symptoms among girls. This study’s glimpse into daily stress suggests that greater exposure to everyday stressors and heightened stress reactivity account for some of the gender differences in overall psychological adjustment. Further work is needed to examine gender differences in the relation between interpersonal events and emotional well-being directly within the context of adolescents’ daily lives. In this study, girls are expected to report more daily negative interpersonal events with parents and peers, and to show greater daily emotional reactivity to interpersonal events, as well as a stronger role of daily mood in predicting interactions with parents and peers.

Daily Diary Method

In this study, daily diary reports are used to assess the association between mood and daily interpersonal events within the same day and from one day to the next, while controlling for the relevant outcome variable (i.e., mood or events) on the prior day. Adolescents reported on events of the day separately from their mood that day; therefore,
the associations are derived through statistical analysis. Using this approach may detect associations that adolescents may not have directly reported themselves. Another benefit of this contextualized approach is that patterns of daily experience can be observed within person as well as between subjects. Within person analyses account for individual differences such as personality or temperament that may influence associations, because each individual serves as their own point of comparison.

This study is one in a series of studies examining intersections across multiple dimensions of adolescents’ daily lives (e.g., family and academic stress, Flook & Fuligni, 2008; family and peer stress, Chung, Flook, & Fuligni, in press). The current study assesses for a bidirectional association between interpersonal events and mood at a daily level in an ethnically diverse sample, by examining how both positive and negative daily events predict mood and, conversely, how daily mood predicts interpersonal events, both within and across days. Primary research questions include: (a) Are there gender differences in the extent to which daily mood predicts interpersonal events, and conversely, interpersonal events predicting daily mood? (b) Is the ratio of positive to negative events experienced on a daily basis consequential for adolescents’ daily well-being?

**Method**

**Participants**

Students in the ninth grade from three high schools in the greater Los Angeles metropolitan area were invited to participate in the study. The three schools represented a diverse cross-section of Los Angeles in terms of ethnic composition, socioeconomic status, and levels of overall academic achievement. Approximately 65% of adolescents agreed to participate and returned a signed parent consent form. Of the 783 ninth-grade students who participated, 589 adolescents of Chinese (n = 174), Mexican (n = 241), and European American (n = 174) descent comprised the target sample for this study (M age of students = 14.86 years, SD = 0.38). The 194 participants from ethnic minority groups that were not the focus of this study and comprised too small a number for meaningful comparisons (e.g., other Latino, other Asian, Middle Eastern, and African American backgrounds) were excluded from these analyses. The sample was relatively evenly split between males (48%) and females (52%).

**Procedure**

Participants were recruited from spring semester classes that all ninth-grade students were required to take, regardless of their academic ability. Students who returned a signed parent consent form and provided assent to participate completed an initial background questionnaire and 14 daily diary checklists at home each night before going to bed. The three-page diary checklists, which consisted of daily family, peer, and school-related experiences, took approximately 5–10 min to complete. Adolescents sealed the diary sheets in individual envelopes and stamped the seal of the envelope with a preprogrammed electronic time stamper to record the date and time of completion. The time stamper method of monitoring daily diary completion and incentives resulted in a high rate of compliance. Approximately 95% of daily diaries were completed, and 86% of those were completed on time, either that night or before noon the following day. All analyses were conducted using only those diaries completed on time to reduce possible biases associated with late diaries.

**Measures**

**Daily Emotional Well-Being**

The mood outcomes consisted of negative and positive mood. Adolescents indicated how they felt each day by rating their mood on a scale from 1 (not at all) to 5 (extremely). The items were recoded for analysis such that the revised scale ranged from 0 to 4.

**Negative mood.** Daily negative mood was assessed using items from subscales of the Profile of Mood States (POMS; Lorr & McNair, 1971). Seven items tapping anxious (nervous, uneasy, on edge, unable to concentrate) and depressed (sad, hopeless, discouraged) mood were averaged together to create a composite anxious-depressed mood scale (α = .77). The anxious and depressed mood scales are highly correlated (r = .81) and have been used as a composite scale in prior research (Yip & Fuligni, 2002).

**Positive mood.** Positive mood was assessed by three items created specifically for this study (joyful, happy, calm). The average of these items was taken to form a positive mood scale (α = .82). These items were modeled after the POMS and have been used in previous daily diary research (Kiang, Yip, Gonzales-Backen, Witkow, & Fuligni, 2006).
**Daily Interpersonal Experiences**

Adolescents indicated each day whether specific interpersonal events with family and friends occurred by marking them on a checklist. The checklist included both positive and negative interpersonal events that are expected to be salient in adolescents’ daily lives. These daily interpersonal events were individually examined in association with adolescents’ daily emotional well-being.

**Negative events.** Three total items tapped daily negative family (‘‘Argued with mother,’’ ‘‘Argued with father’’) and friend (‘‘Argued with close friend’’) events. The number of negative events each day was averaged to create a composite score of average daily negative interpersonal events that ranged from 0 to 1.

**Positive events.** Two items surveyed daily positive family (‘‘Got along with your parents’’) and friend (‘‘Got along with your friends’’) events. The number of positive events each day was averaged to create a composite score of average daily positive interpersonal events that ranged from 0 to 1.

**Results**

First, the average daily levels of well-being and the frequency of positive and negative interpersonal events were examined, along with gender and ethnic differences in these variables, in line with a stress exposure model. Second, emotional (or stress) reactivity to daily events was tested by modeling daily interpersonal events as predictors of emotional well-being. Gender and ethnic differences in emotional reactivity were then examined. Next, consistent with a stress generation model, the reciprocal association was tested by modeling daily mood as a predictor of daily interpersonal events. Gender and ethnic differences were also examined in this association. Finally, the ratio of positive to negative events was tested as a predictor of daily mood. Hierarchical linear modeling (Raudenbush & Bryk, 2002) was employed for all analyses to model this type of nested data in which days are nested within individuals.

**Descriptive Statistics Model**

Average levels of daily well-being and interpersonal events were modeled according to the following equation:

\[
\text{Daily-level outcome (mood or event)} = b_{0j} + b_{1j}(\text{week of study}) + e_{ij}
\]

In this basic equation, the intercept \(b_{0j}\) represents the average level of the outcome variable, with week of study \(b_{1j}\) entered as a control variable, and a term for random error \(e_{ij}\). Specifying this empty model provides an estimate without any other predictor variables in the model.

Ethnic and gender differences were tested by mapping an individual-level intercept equation on to the daily-level equation mentioned previously:

\[
(\text{Intercept}) b_{0j} = c_{00} + c_{01}(\text{gender}) + c_{02}(\text{Mexican}) + c_{03}(\text{Chinese}) + u_{0j}
\]

The intercept Equation 2 tested for gender differences across ethnic groups in the average levels of daily emotions and interpersonal events. Gender was effect coded, −1 for males and 1 for females. Ethnicity was dummy-coded, with adolescents from European (EA) backgrounds designated as the baseline group for comparison with adolescents from Mexican (MA) and Chinese (CA) backgrounds. The error term contributing to unexplained variance is represented by \(u_{0j}\).

**Descriptive Statistics Results**

Overall, adolescents tended to report relatively low levels of daily negative mood \((M = 0.54, SD = 0.69)\) and higher levels of daily positive mood \((M = 2.33, SD = 1.06)\). On average, across the 2 weeks, adolescents reported a relatively low frequency of daily negative interpersonal events \((M = 0.09, SD = 0.18)\) and a higher frequency of daily positive interpersonal events \((M = 0.73, SD = 0.34)\).

Girls reported more daily negative mood \((b_{\text{boy}} = 0.50, b_{\text{girl}} = 0.59, p < .01)\) as compared to boys. European American adolescents reported more negative mood on a daily basis compared to those from Mexican backgrounds \((b_{\text{EA}} = 0.60, b_{\text{MA}} = 0.49, b_{\text{CA}} = 0.56, p < .05)\). No other significant differences emerged by ethnicity or gender.

In terms of the frequency of daily events, girls reported more negative interpersonal events \((b_{\text{boy}} = 0.09, b_{\text{girl}} = 0.11, p < .01)\) as well as more positive interpersonal events \((b_{\text{boy}} = 0.74, b_{\text{girl}} = 0.75, p < .05)\) than boys. With regard to ethnicity,
Chinese American adolescents reported fewer negative interpersonal events than European American and Mexican American adolescents \( (b_{EA} = 0.10, b_{MA} = 0.10, b_{CA} = 0.06, p < .01) \). No ethnic group differences emerged in the frequency of positive interpersonal events.

**Daily Emotional Reactivity to Interpersonal Events**

The daily association between interpersonal events and adolescents’ mood was modeled by adding each of the predictor variables, in a separate equation, to the empty model (Equation 1). As shown next, interpersonal events were modeled as predictors of daily mood.

\[
\text{Daily mood} = b_{0j} + b_{1j}(\text{daily event}) + b_{2j}(\text{mood}_{t-1}) + b_{3j}(\text{week of study}) + e_{ij} \tag{3}
\]

In Equation 3, positive and negative interpersonal events \( (b_{1j}) \) were tested separately as predictors of daily mood while controlling for prior-day mood \( (b_{2j}) \). The model also included week of study as a control variable \( (b_{3j}) \) and an error term \( (e_{ij}) \). Daily positive and negative interpersonal events were examined in association with both daily mood outcomes.

In order to examine gender and ethnic differences in daily interpersonal events predicting emotional well-being, individual-level equations for the intercept and slope were mapped on to daily level Equation 3:

\[
\text{(Intercept) } b_{0j} = c_{00} + c_{01}(\text{gender}) + c_{02}(\text{Mexican}) + c_{03}(\text{Chinese}) + u_{0j} \tag{4}
\]

\[
\text{(Slope) } b_{1j} = c_{10} + c_{11}(\text{gender}) + c_{12}(\text{Mexican}) + c_{13}(\text{Chinese}) + u_{1j} \tag{5}
\]

The intercept Equation 4 captures gender and ethnic differences in the average levels of daily emotion. This equation produces estimates similar to those from intercept Equation 2, previously mentioned, with exact estimates varying slightly according to the particular predictor variable specified in each model. The slope Equation 5 examines gender and ethnic differences in the association between interpersonal events and daily well-being. Error terms contributing to unexplained variance are represented by \( u_{0j} \) and \( u_{1j} \). Error terms were specified as random or fixed according to the significance of variance estimates.

### Daily Emotional Reactivity Results

As shown in Table 1, daily negative and positive interpersonal events significantly predicted mood each day. In terms of gender differences, girls showed more emotional reactivity to daily negative interpersonal events as compared to boys. In general, interpersonal conflict was associated with daily mood \( (b_{boy} = 0.44, b_{girl} = 0.60, p < .01) \) and less positive mood \( (b_{boy} = -0.35, b_{girl} = -0.48, p < .05) \) for girls. No ethnic differences were found in these associations.

On days when they experienced positive interpersonal relations, girls reported more positive mood \( (b_{boy} = 0.42, b_{girl} = 0.53, p < .01) \) and less negative mood \( (b_{boy} = -0.19, b_{girl} = -0.28, p < .01) \). European American adolescents showed greater decreases in negative mood related to positive interpersonal events than those from Chinese backgrounds \( (b_{EA} = -0.23, b_{MA} = -0.16, b_{CA} = -0.10, p < .05) \) and more increases in positive mood related to positive events than both Chinese American and Mexican American adolescents \( (b_{EA} = 0.48, b_{MA} = 0.31, b_{CA} = 0.25, p < .05) \).

**Mood as a Predictor of Daily Interpersonal Events**

As shown next, daily mood was modeled as a predictor of interpersonal events.

\[
\text{Daily event} = b_{0j} + b_{1j}(\text{mood}) + b_{2j}(\text{daily event}_{t-1}) + b_{3j}(\text{week of study}) + e_{ij} \tag{6}
\]

In Equation 6, each mood item \( (b_{1j}) \) was tested separately as a predictor of daily interpersonal events while controlling for the relevant prior-day event \( (b_{2j}) \). The model also included week of study as a control variable \( (b_{3j}) \) and an error term \( (e_{ij}) \). The two mood items were examined in association with the two daily interpersonal event outcomes. Gender and ethnic group differences were tested in the same way as described in the previous section, with individual-level Equations 4 and 5 mapped on to the previous daily-level equation.

As shown in Table 2, results indicated that adolescents’ daily mood was a significant predictor of both negative and positive interpersonal events. Negative mood predicted more negative interpersonal events \( (b = 0.06, p < .01) \) and fewer positive interpersonal events \( (b = -0.05, p < .01) \), controlling for prior-day corresponding interpersonal events. On the other hand, positive mood predicted fewer negative interpersonal events \( (b = -0.02, p < .01) \) and more positive interpersonal events \( (b = 0.04, p < .01) \), controlling for prior-day events.
mood predicted more positive interpersonal events ($b_{EA} = 0.05$, $b_{MA} = 0.04$, $b_{CA} = 0.03$, $p < .05$) for European American adolescents than Chinese American adolescents.

### Daily Events Ratio

The proportion of positive relative to negative daily interpersonal events in predicting daily mood was examined by computing a ratio score. First, a constant value (0.50) was added to each raw variable (i.e., total positive events ranged from 0.50 to 2.50 and total negative events ranged from 0.50 to 3.50), so that there were no values of zero. Then, the total number of daily positive events was divided by the total number of daily negative events, with the resulting value representing the ratio score. A higher ratio score indicated more positive events relative to negative events on a daily basis. A higher ratio of positive to negative interpersonal events was expected to predict higher levels of well-being (i.e., more positive mood), whereas a lower ratio score was expected to predict lower levels of well-being (i.e., more negative mood). The association between the ratio of daily positive to negative events and adolescents’ mood was modeled according to the following equation:

$$\text{Daily mood} = b_{0j} + b_{1j}(\text{daily ratio}) + b_{2j}(\text{mood}_{t-1}) + b_{3j}(\text{week of study}) + e_{ij}$$  \hspace{1cm} (7)

In Equation 7, the ratio of daily positive to negative events ($b_{1j}$) was entered as a predictor of daily mood while controlling for prior-day mood ($b_{2j}$). This model also included week of study as a control variable ($b_{3j}$) and an error term ($e_{ij}$). Individual level equations were mapped onto this daily-level equation to examine ethnic and gender differences, as described previously.

Results indicated that the ratio of positive to negative interpersonal events was significantly associated with daily levels of well-being. Specifically, a higher ratio score (more positive events relative to negative events on a daily basis) predicted more positive mood ($b = 0.07$, $p < .01$) and less negative mood ($b = -0.05$, $p < .01$), controlling for mood on the prior day. The effect was even more pronounced for girls, indicating that experiencing more positive relative to negative interpersonal events on a daily basis predicted more positive mood ($b_{boy} = 0.06$, $b_{girl} = 0.08$, $p < .01$) and less negative mood ($b_{boy} = -0.04$, $b_{girl} = -0.06$, $p < .01$) for girls than boys. No ethnic differences emerged in these associations.
Discussion

Findings indicate that the association between interpersonal events and mood operates bidirectionally in adolescents’ daily lives. Results indicate that negative mood actually predicts more negative and fewer positive interpersonal events, whereas positive mood predicts more positive and fewer negative interpersonal events, controlling for prior-day levels of each outcome. Likewise, negative interpersonal events predict less positive and more negative mood, while positive interpersonal events predict more positive and less negative mood, controlling for prior-day interpersonal events.

Findings also suggest that the ratio of positive relative to negative events on a given day matters. Specifically, experiencing positive interpersonal events may partially offset the potential impact of negative events on mood that same day. This association was stronger for girls than boys, indicating that girls reported even more positive mood and less negative mood on days when they experienced more positive than negative interactions with parents and friends.

An overall pattern of gender differences emerged that was consistent across ethnic groups. Adolescent girls’ daily experiences support a stress exposure model in that girls reported more interpersonal stressors than boys. Furthermore, findings are indicative of a reciprocal stress model, in that girls showed more reactivity to daily interpersonal stressors as well as more stress predicted by daily negative emotions, as compared with boys. An important caveat, however, is that girls also reported more positive daily interpersonal events. In addition, girls showed greater response to positive interpersonal events in that positive interactions with parents and friends predicted less negative and more positive daily mood. These associations suggest that interpersonal events are especially prominent in adolescent girls’ daily lives and were consistent across adolescents from diverse ethnic backgrounds. Perhaps other types of outcomes (e.g., behavioral) are more closely linked to interpersonal events for boys, or other types of events may be more closely tied to mood, such as those in the academic domain (Shih et al., 2006).

All analyses in this study included a control for prior-day outcomes, which allows for making stronger inferences about the relation between variables of interest by parsing out possible confounding factors. However, data are not causal. Although we can infer directionality by controlling for prior-day levels of the relevant outcome variable, we cannot ascertain causality. A limitation of this research is that adolescents provided a single report each day and only those experiences in the social domain were examined. Future research that assesses experiences multiple times each day and that includes other domains in daily life such as academic events and extracurricular activities would broaden our view of adolescents’ everyday experiences. In addition, including other aspects of daily mood, such as a wider assessment of positive emotions and other negative emotions like anger may yield a more nuanced understanding of how events and well-being are linked.

Strengths of this study are that it assessed both positive and negative interpersonal events as well as positive and negative mood among adolescents from ethnically diverse backgrounds. The inclusion of positive emotion as a marker of well-being is important to understanding how interpersonal relationships are associated with well-being in daily life. The microperspective approach used here complements and builds on prior research by looking at daily events in adolescents’ lives, temporally proximate to their actual occurrence. Although the absolute magnitude of these daily associations may be modest, given that these associations occur at the daily level, cumulatively, their effect over the long term may be quite substantial.

References


and depressive symptoms during adolescence. Developmental Psychology, 30, 467–483.


