

Social Support as a Moderator of Day-to-Day Relationships between Daily Negative Events and Daily Psychological Well-Being

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Abstract

Every day for 3 weeks, a sample of college students described the events that occurred each day and provided measures of their self-esteem, depressogenic thinking and mood. They also provided measures of depressive symptoms and the social support they perceived from friends and family members. A series of multilevel random coefficient modelling analyses found that daily well-being was positively related to the number of positive events that occurred each day and was negatively related to the number of negative events. Relationships between well-being and positive events were stronger for more than for less depressed participants and relationships between well-being and negative events were weaker for participants who perceived more support from friends than for those who perceived less support. Depression was unrelated to the strength of relationships between negative events and well-being, and the social support from friends was unrelated to relationships between positive events and well-being. Surprisingly, relationships between negative events and well-being were stronger for participants who perceived more support from family members than for those who perceived less support. Copyright © 2006 John Wiley & Sons, Ltd.

INTRODUCTION

The relationships between daily events and people's daily psychological states has received considerable attention in the past two decades and this research has focused primarily on two issues: the within-person co-variation between daily events and daily states (with a strong emphasis on daily well-being) and individual differences in such within-person relationships. There is a relatively broad agreement across studies that people experience greater well-being on days when more positive events occur and experience diminished well-being on days when more negative events occur. There is somewhat less consistency in this research, however, concerning how to understand

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Received 21 September 2004

Accepted 28 April 2005

individual differences in these within-person relationships. Much of this research has examined how reactions to daily events vary as a function of individual differences such as neuroticism or depression. In parallel, a smaller (but still meaningful) group of studies has examined how social support moderates within-person relationships between daily events and daily well-being.

The present study was intended to complement our understanding of the relationships between daily events and daily well-being by simultaneously examining various constructs (at the daily and person levels) that, as suggested by previous research, are important to consider when studying daily events. Each day for 3 weeks, participants provided measures of their psychological well-being and they described the events that occurred each day. They also provided trait level measures of constructs that previous research has found to be moderators of reactivity to daily events (e.g. depression and neuroticism), and measures of the social support available to them.

The primary hypothesis guiding the study was that reactions to negative events would be best understood by considering individual differences in social support, whereas reactions to positive events would be best understood by considering individual differences in depression. More specifically, people who had more social support were expected to react less strongly (less negatively) to negative events than those with less support. Social support was expected to be unrelated to reactions to positive events. People who were more depressed were expected to react more strongly (i.e. more positively) to positive events than those who were less depressed, although for various reasons, it was difficult to make a firm prediction about how intrapersonal constructs (e.g. neuroticism and depression) would moderate the reactions to negative events.

The present analysis assumes that the critical difference between reactions to positive and negative events is that negative events are more likely to cause people to seek the support of others than positive events. Negative events, such as task failure, distress in relationships, acts of fate, and so forth, may lead people to seek social support, and such support can be emotionally or instrumentally focused (e.g. Vaux, 1988). One of the important reasons why people seek social support is to obtain reassurance that they are why or will be okay, and that their lives are why or will be fine, and the available data suggest that such reassurance can be quite comforting (e.g. Cobb, 1976). Moreover, some have suggested that people do not actually have to obtain support to obtain relief; the simple knowledge that support is available may be enough to provide relief (e.g. Sarason, Sarason, & Pierce, 1990).

Research on social support suggests quite clearly that people who perceive themselves as having social support find negative events to be less aversive than those who perceive that they have little or no support. In a study of the impact of stressful daily events on mood, Caspi, Bolger, and Eckenrode (1987) found that social support mitigated the duration of the negative affect created by stressful events. Although Caspi et al. did not find that social support moderated the immediate (i.e. same-day) relationship between stress and global measure of mood, they did find that the one-day lagged impact of stress was greater for people who had less social support compared with those who had more social support. Similarly, Affleck, Tennen, Urrows, and Higgins (1994) found that social support moderated one-day lagged relationships between negative events and negative mood but not same-day relationships. The lagged relationship was greater for people with less social support than for those with more support. Finally, DeLongis, Folkman, and Lazarus (1988) found that within-person same-day relationships between mood and daily hassles were stronger for people who had less social support than for those who had more support.

In contrast, support seeking should be relatively irrelevant when considering reactions to positive events. Certainly, people may seek the opinions and advice of others when good things happen to them, or they may wish to tell people about their good fortune; however, such behaviours are qualitatively different from support-seeking behaviours. By definition, positive events do not present the types of challenges presented by negative events. For example, task success and pleasant social encounters are less likely to create self-doubt or arouse concerns about the future than failure and distressing social encounters.

What is not entirely clear from existing research and theory is how individual differences such as neuroticism and depression should moderate within-person relationships between daily events and daily well-being. For negative events the research is mixed. For example, Affleck et al. (1994) found that neuroticism did not moderate the relationship between negative events and mood, DeLongis et al. (1988) found that self-esteem did not moderate hassle mood relationships, and David, Green, Martin and Suls (1997) found that neuroticism did not moderate relationships between negative events and mood. On the other hand, some studies have found that more neurotic people react more strongly (affectively) to negative events than less neurotic people (e.g. Bolger & Schilling, 1991; Marco & Suls, 1993), that more depressed people react more strongly to negative events than the less depressed (e.g. Butler, Hokanson, & Flynn, 1994; Nezelek & Gable, 2001) and that those with stronger dispositional inhibitory motivation react more strongly to negative events (Gable, Reis, & Elliot, 2000). Given this inconsistency, no specific predictions were made regarding how neuroticism and depression would moderate reactions to negative events.

Although daily positive events have not been studied as frequently as negative events (many studies e.g. Affleck et al., 1994; Bolger & Schilling, 1991; Caspi et al., 1987; DeLongis et al., 1988; Marco & Suls, 1993; Suls, Martin, & David, 1998, have studied only negative events), there is a reasonable consistency amongst studies on positive events concerning intrapersonal moderators of reactivity to positive events. For example, Butler et al. (1994), Nezelek and Gable (2001) and Nezelek and Plesko (2003) found that more depressed people reacted more strongly to positive events than the less depressed. Similarly, Gable et al. (2000) found that decreased dispositional approach motivation was associated with increased reactivity to positive events. With this research in mind, we expected that poorer trait level well-being (specifically, increased levels of depressive symptoms) would be associated with greater reactivity to positive events.

In addition to this empirical support, there is a solid theoretical support for the proposition that more depressed people should react more strongly to positive events. This theoretical support comes from models positing that depressed people are more reactive (or more labile) because they have weaker or more vulnerable self-concepts (e.g. Butler et al., 1994). Such models are also consistent with a Rogerian analysis. Individuals whose positive self-regard is more conditional are more reactive to daily events because their sense of self and self-worth is based more on feedback from the environment than on internal standards (Rogers, 1961).

In addition to examining different trait level moderators of reactivity to daily events, the present study was intended to expand our understanding of different ways of conceptualising daily well-being (and by implication, distress). The way in which daily well-being (mood) has been operationalised in research on relationships between social support and reactivity to daily events has been somewhat limited. For example, both Caspi et al. (1987) and DeLongis et al. (1988) measured daily mood with a single item bipolar measure, and Affleck et al. (1994) combined measures of depression, anxiety and hostility into a single measure of negative affectivity. Although informative, these studies need to

be complemented by studies relying on richer operationalisations of daily well-being. Accordingly, the present study collected daily measures of mood, self-esteem and depressogenic thinking.

Finally, because studies of social support have concerned only negative daily events, these studies have not been able to examine the buffering effects positive events might have on the impact of negative events. As demonstrated by Nezlek and Plesko (2003), negative events may be less impactful on days when more positive events occur than on days when fewer positive events occur. Moreover, Nezlek and Plesko found that this buffering effect was greater for people who had lower trait self-esteem or higher trait negative affectivity than it was for people who had higher self-esteem or lower negative affectivity. Given the lack of theoretical and empirical attention buffering effects for daily events have received, it was difficult to form a specific hypothesis about how social support might moderate such relationships. Therefore, such moderation was examined on an exploratory basis.

METHOD

Participants

Participants were 153 undergraduates attending the College of William & Mary, who volunteered for a study in fulfillment of class requirements. There were 68 men and 85 women.

Method

Participants were introduced to the study in groups of 15–25. They were told that the study concerned their daily lives and how they felt each day, and that they would need to provide data every day for 3 weeks. To ensure that their responses represented their reactions to their entire day, they were also told to respond just before going to bed. If they missed a day, they were told not to try to recreate it but to add one more day at the end of the study.

The daily data for this study were collected via the Internet, and participants were told how to access the website and provide their responses. They were also told that the date and time of all their responses would be recorded, something we believe motivated them to follow the instructions more closely. Inspection of the date and time stamps of participants' data led to the deletion of all the data for 3 participants, leaving 153 participants who provided 3079 days of data ($M = 20.1$, $SD = 2.96$).

Trait level measures

During the introductory session, participants completed a series of questionnaires, which provided measures of potential trait level moderators of within-person relationships between daily events and daily well-being. Participants completed the BFI-44 (Benet-Martínez & John, 1998), which provided measures of extraversion and neuroticism and they completed the Beck Depression Inventory (Beck, 1972), as a measure of depressive symptoms. Participants also completed the trait version of the PANAS (Watson, Clark, & Tellegen, 1998). An anxiety subscale (the NA scale with the irritated and hostile items deleted) was created, but it correlated 0.98 with the NA scale and is not discussed.

Finally, participants completed the Social Support Behaviors Scale (SSB; Vaux, Riedel, & Stewart, 1987) as a measure of perceived social support. The SSB asks respondents to

Table 1. Descriptive statistics and correlations of trait level measures

	<i>M</i>	<i>SD</i>	Alpha	Extr	BDI	PA	NA	Fam	Frd
Neuroticism	2.81	0.75	0.83	-0.40	0.47	-0.45	0.60	-0.13	-0.24
Extraversion	3.41	0.82	0.89		-0.30	0.55	-0.23	0.28	0.26
BDI	6.36	6.12	0.88			-0.51	0.61	-0.39	-0.42
PA	4.68	0.83	0.89				-0.37	0.21	0.32
NA	2.50	0.89	0.88					-0.17	-0.20
Family support	4.56	0.49	0.97						0.43
Friend support	4.31	0.46	0.96						

indicate the extent to which friends and family members would show each of the 45 supportive behaviours. Separate scores are then calculated to represent perceived support from family and from friends, a distinction we felt was important to make for the present population. Support scores were operationalised as the mean response across the 45 items for family and for friends.

Descriptive statistics for these trait level measures and the correlations amongst them are presented in Table 1. Each of the measures was reliable; for all measures Cronbach's alpha was greater than 0.80. It is important to note that each of these measures was standardised prior to being included in the analyses described below. This was done to eliminate the influence on parameter estimates of differences amongst the variances of these measures. See Nezlek (2001) for a discussion of standardising variables in multilevel analyses.

Daily measures

Each day participants provided measures of their daily self-esteem, daily depressogenic thinking, they rated their daily affect, and they described the events that had occurred that day. Daily self-esteem was measured using four items (3, 6, 7, and 10) from the Rosenberg Self-Esteem Scale (Rosenberg, 1965) re-worded to refer to how the participants felt about themselves that day. Daily depressogenic thinking (referred to as the triad measure) was measured with three items based on Beck's Cognitive Triad (Beck, 1972), negative view of self, 'Overall, how positively did you feel about yourself today', negative view of life in general, 'Thinking of your life in general, how well did things go today' and negative view of the future, 'How optimistic are you about how your life (in general) will be tomorrow?' The self-esteem and triad measures have been used successfully in previous research (Nezlek, 2002; Nezlek & Gable, 2001; Nezlek & Plesko, 2003). All daily questions were answered using 7-point scales and daily scores for these two scales were operationalised as the means of the scale items.

Daily affect was measured by asking the participants to rate, how they felt during the day using a circumplex model (e.g. Feldman Barrett & Russell, 1998) as a basis for these ratings. Each day participants rated how enthusiastic, happy, active, energetic, alert, proud, joyful and interested they were (positive activation), and how guilty, nervous, afraid, angry, ashamed, embarrassed, upset and disgusted they were (negative activation). They also rated how calm, satisfied and relaxed they were (positive deactivation), and how sluggish, sad, tired and bored they were (negative deactivation). Participants responded using 7-point bipolar scales with endpoints labelled 'Did not feel this way at all' and 'Felt this way very strongly', and a midpoint (4) labelled 'Felt this way moderately'. Five different measures of daily mood were calculated: one measure for each of the four quadrants, the mean response

for the items representing each quadrant, and an overall measure. The overall measure took the mean for the negative activation and deactivation items and subtracted this mean from the mean of the positive activation and deactivation items.

Daily events were measured using items from the Daily Events Survey (Butler et al., 1994), a 40-item measure of daily events, appropriate for college students. In the present study, 22 of these 40 events were measured, 12 positive and 10 negative, with social and achievement domains equally represented. In addition, four items (combinations of positive-negative and social-achievement) were created to measure other events that might have occurred. For example, other positive social events were measured using the item 'Had other type of pleasant event (not listed above) with friends, family or date'. This 26-item schedule has been found to provide measures of daily events that are very similar to the measures provided by the original 40 items used by Butler et al. (Nezlek, 2002; Nezlek & Gable, 2001; Nezlek & Plesko, 2003).

Each day, participants rated each event using the following scale: 0 = did not occur, 1 = occurred and not important, 2 = occurred and somewhat important, 3 = occurred and pretty important and 4 = occurred and extremely important. For each day, summary scores were calculated representing the number of positive and negative events. The present study also concerned the buffering (interactive) effects of positive and negative events, and this required a term representing the interaction of positive and negative events. Following the advice of Aiken and West (1991), for each participant, event scores were mean centered and these scores were then cross-multiplied to form an interaction term. See Nezlek and Plesko (2003) for a brief discussion on different ways of creating such interaction terms.

RESULTS

The present data comprised what is referred to as a multilevel data structure in that observations at one level of analysis (days) were nested within another level of analysis (people). Accordingly, the data were analysed with a series of multilevel random coefficient models using the program HLM (Raudenbush, Bryk, Cheong, & Congdon, 2000; Version 5). Multilevel random coefficient modelling (MRCM) was used instead of ordinary-least-squares methods because MRCM provides better parameter estimates than OLS methods. Using MRCM to analyse data structures such as those collected in this study is discussed in Nezlek (2001) and general introductions to MRCM can be found in Bryk and Raudenbush (1992) and Snijders and Boskers (1999).

Within the terminology of multilevel modelling, the analyses were two level models. Measures for days were nested within people, and for each person, coefficients were estimated representing the within-person (or day-to-day) relationships between well-being and daily events. In multilevel terminology, such coefficients are referred to as slopes to distinguish them from intercepts. Analyses were also done to determine if these within-person relationships varied as a function of trait level individual differences. For example, did the within-person relationship between self-esteem and events vary as a function of people's depressive symptoms?

The first set of analyses were 'totally unconditional' models in that daily measures were not modelled as a function of other-day or person-level variables. The basic level 1 (day level or within-person) model was:

$$y_{ij} = \beta_{0j} + r_{ij}$$

Table 2. Descriptive statistics for daily measures

	Mean	Between-person variance	Within-person variance
Self-esteem	5.52	1.46	1.37
Cognitive triad	5.34	0.64	0.70
NA	2.29	0.59	0.62
ND	3.10	0.62	0.77
PA	4.10	0.75	0.81
PD	4.19	0.60	0.88
Mood	1.45	1.43	1.69
Positive events	7.22	7.47	5.81
Negative events	3.35	6.76	4.09

In this and all the following tables, NA, ND, PA and PD represent daily negative active, negative deactive, positive active and positive deactive moods respectively, and mood represents an overall mood composite measure.

In this model, y_{ij} is a daily measure for person j on day i , β_{0j} is a random coefficient representing the mean of y for person j (across the i days for which each person provided data), r_{ij} represents the error associated with each measure and the variance of r_{ij} constitutes the day-level residual (or error) variance.

In multilevel modelling, the coefficients from one level of analysis are passed on to the next. For present purposes, this meant that individual differences in within-person phenomena were analysed at level 2. The basic level 2 (or person level) model was:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

In this model, γ_{00} represents the grand mean of the person level means (β_{0j} s) from the day level model, u_{0j} represents the error of β_{0j} , and the variance of u_{0j} constitutes the level 2 residual (error) variance. A summary of the results of these analyses is presented in Table 2.

Daily events and daily well-being

The next series of analyses examined the within-person covariation between daily events and daily well-being. The basic day-level (within-person) model was:

$$y_{ij} = \beta_{0j} + \beta_{1j}\text{PosEvent} + \beta_{2j}\text{NegEvent} + \beta_{3j}\text{NegPos} + r_{ij}$$

in which y_{ij} is a daily score for person j on day i , β_{0j} is a random coefficient representing the intercept for person j , $\beta_{1j}\text{PosEvent}$ is a random coefficient (a slope) for positive events, $\beta_{2j}\text{NegEvent}$ is a random coefficient for negative events, $\beta_{3j}\text{NegPos}$ is a random coefficient representing the interaction of negative and positive events and r_{ij} represents error. The positive and negative event scores were group mean centered, whereas the interaction term was entered uncentered because the terms had been centered before the interaction term was created. Positive and negative event terms were not centered prior to the HLM analyses; they were centered as part of the analyses.

There are differences of opinion regarding the implications of group-mean centering. Some argue that models in which predictors are group-mean centered and that do not include the means of the predictors as terms in the level 2 model are underspecified because they do not include the variance in the mean of the level 1 predictors (e.g. Snijders & Boskers, 1999). In contrast, others (e.g. Bryk & Raudenbush, 1992) present group centered analyses without discussing such concerns. One way to avoid such issues is to

Table 3. Relationships between daily events and daily well-being

	Intercept	Positive events		Negative events		Interaction	
		Coeff.	<i>t</i>	Coeff.	<i>t</i>	Coeff.	<i>t</i>
Self-esteem	5.52	0.08**	10.07	-0.17**	12.74	0.00	1.39
Cognitive triad	5.34	0.11**	12.40	-0.18**	13.45	0.01*	2.50
NA	2.27	-0.05**	6.07	0.17**	13.17	-0.01*	2.04
ND	3.10	-0.06**	6.57	0.12**	9.10	0.00	<1
PA	4.10	0.15**	16.09	-0.14**	14.05	0.00	<1
PD	4.18	0.10**	11.03	-0.16**	11.87	0.01*	2.39
Mood	1.45	0.18**	14.60	-0.30**	15.42	0.01 ^a	1.92

For this and all other tables, coefficients marked with **were significantly different from 0 at $p < 0.01$ or beyond, coefficients marked with *were significant at $p < 0.05$ or beyond and coefficients marked with 'a' were significant at $p < 0.06$.

grand-mean center level 1 predictors, and the results of analyses in which event scores were grand-mean centered were very similar to those presented here. Regardless, separate analyses were done for the self-esteem, triad and mood measures.¹

To determine if within-person relationships between daily measures and daily events were significant, within-person event slopes were analysed at the person level with this model:

$$\begin{aligned} \text{Intercept:} & \quad \beta_{0j} = \gamma_{00} + u_{0j} \\ \text{Positive events:} & \quad \beta_{1j} = \gamma_{10} + u_{1j} \\ \text{Negative events:} & \quad \beta_{2j} = \gamma_{20} + u_{2j} \\ \text{Interaction:} & \quad \beta_{3j} = \gamma_{30} + u_{3j} \end{aligned}$$

In this model, γ_{00} represents the mean intercept, and γ_{10} , γ_{20} , and γ_{30} represent the mean positive, negative and interaction event slope respectively. A summary of the results of these analyses is presented in Table 3.

As expected, all daily measures co-varied with positive and negative events. The γ_{10} and γ_{20} coefficients were significantly different from zero in all analyses (all $ps < 0.01$). For all measures, well-being was positively related to the number of positive events that occurred each day and was negatively related to the number of negative events that occurred. The coefficients representing these relationships can be interpreted as unstandardised regression coefficients. For example, the mean positive event coefficient for self-esteem was 0.08, and the mean negative event coefficient was -0.17. So, on an average, for every 1 point increase in positive events, self-esteem increased 0.08 points, and for every 1 point increase in negative events self-esteem declined 0.17 points. Predicted scores for day 1 *SD* above and below the mean for positive and negative events can be estimated using the *SDs* for events (the square roots of the within-person variances in Table 2), 2.41 for positive events and 2.02 for negative events. Moreover, follow-up tests of the magnitude (absolute value) of the positive and negative event slopes indicated that the co-variation between negative events and daily well-being was stronger than the co-variation between positive events and daily well-being for all measures (all $ps < 0.01$)

¹In the initial analyses of day-level relationships, all slopes were modeled as random coefficients; however, the random variance component for the event interaction term in some analyses was not significant, and so these effects were modelled as fixed. Details are available from the first author.

Table 4. Buffering effects of positive events on the impact of negative events on daily well-being

Positive events Negative events	Low Low	Low High	High Low	High High	Buffering effect
Cognitive triad	5.48	4.66	5.92	5.30	0.20
NA	2.00	2.78	1.85	2.44	0.19
PD	4.31	3.57	4.70	4.15	0.19
Mood	1.68	0.36	2.44	1.32	0.20

except for PA. See Nezlek and Gable (2001) for a description of this application of the tests of fixed effects described in Bryk and Raudenbush (1992; pp. 48–52).

As indicated by the tests of the γ_{30} coefficients, the interaction between positive and negative events did not approach conventional levels of significance in the analyses of daily self-esteem (all $ps = 0.17$), daily ND and daily PA (all $p > 0.15$). In contrast, this interaction was significant in the analyses of the triad, daily NA, daily PD and composite mood measures. To interpret these interactions, scores were estimated for days that were one *SD* above and below the mean for positive and negative events, and these predicted scores are presented in Table 4.

For the daily depressogenic, NA, PD and composite mood measures, positive events buffered the effects of negative events. This buffering effect was calculated as follows. For the triad measure, the effect for negative events (the difference between a +1 *SD* and –1 *SD* day) on days when fewer than average (+1 *SD*) number of positive events occurred was 0.82, whereas the negative event effect was 0.62 on days when more than average (–1 *SD*) positive events occurred. This resulted in a buffering effect of 0.20 (the difference between 0.82 and 0.62). For the triad measure, the buffering effect was equivalent to approximately 0.24 *SD* (0.20 divided by 0.84, the *SD* for the triad measure), and for the NA, PD and mood measures, the buffering effects were equivalent to approximately 0.26, 0.20 and 0.15 *SD* respectively.

Depression as a moderator of event slopes

The primary focus of the study was how different individual differences moderated reactivity to daily events. Although one of the primary foci of the study was on how depression moderated the reactions to daily events, the moderating effects of the following trait level variables were examined: depression (BDI scores), neuroticism and extraversion (from the BFI-44) and PA and NA (from the trait version of the PANAS). The moderating roles of neuroticism, extraversion, PA and NA were examined because previous research has examined such moderation.

To determine if within-person relationships between daily measures and daily events varied as a function of these individual differences, within-person event slopes were analysed with a variant of the model used to examine mean within-person slopes:

$$\begin{aligned}
 \text{Intercept:} & \quad \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Moderator}) + u_{0j} \\
 \text{Positive events:} & \quad \beta_{1j} = \gamma_{10} + \gamma_{11}(\text{Moderator}) + u_{1j} \\
 \text{Negative events:} & \quad \beta_{2j} = \gamma_{20} + \gamma_{21}(\text{Moderator}) + u_{2j} \\
 \text{Interaction:} & \quad \beta_{3j} = \gamma_{30} + \gamma_{31}(\text{Moderator}) + u_{3j}
 \end{aligned}$$

Table 5. Coefficients describing how depression moderated relationships between daily events and daily well-being

Daily measure	Event slopes			
	Intercept	Positive events	Negative events	Interaction
Self-esteem	-0.42**	0.03**	-0.02	0.00
Cognitive triad	-0.36**	0.03**	-0.02	0.00
NA	0.30**	-0.02*	0.00	0.00
ND	0.33**	-0.01	0.00	0.00
PA	-0.24**	0.00	0.01	0.00
PD	-0.21**	0.02	0.00	0.01**
Mood	-0.45**	0.03**	0.00	0.00

In this model, γ_{01} represents the relationship between a specific moderator and the intercept for each person (i.e. mean daily well-being), γ_{11} represents the relationship between a specific moderator and the positive event slope for each person and so forth.

The results of these analyses generally confirmed the hypothesis that the co-variance between daily well-being and daily positive events would be greater for people who reported more depressive symptoms than for people who reported fewer symptoms. For the daily self-esteem, triad and composite mood measures, scores on the BDI were positively related to positive event slopes and for daily NA, positive event slopes were negatively related to BDI scores. For daily self-esteem, the γ_{11} coefficient (the BDI coefficient) was significant ($t = 3.44, p < 0.01$), as it was for the triad measure ($t = 2.98, p < 0.01$), the mood measure ($t = 2.17, p < 0.05$), and the daily NA measure ($t = 2.06, p < 0.05$).

These coefficients are presented in Table 5, and interpreting these coefficients is relatively straightforward. Recall that all trait level measures were standardised prior to analysis. For self-esteem, this meant that a 1 *SD* (1 point) increase in BDI scores was associated with a 0.03 increase in positive event slopes. The mean positive event slope for self-esteem was 0.08. Therefore, the predicted positive event slope for a person 1 *SD* above the mean on the BDI was 0.11 ($0.08 + 0.03$), and for a person 1 *SD* below the mean on the BDI it was 0.05 ($0.11 - 0.03$). Similar calculations can be made for the triad and composite mood measures. For daily NA, a 1 point increase in BDI scores was associated with a 0.02 decrease in positive event slopes. The mean positive event slope for anxiety was -0.04 . Therefore, the predicted positive event slope for a person 1 *SD* above the mean on the BDI was -0.06 ($-0.04 - 0.02$), and for a person 1 *SD* below the mean it was -0.02 ($-0.04 + 0.02$).

In contrast to these moderating relationships, BDI scores did not moderate negative event slopes for any of the daily measures. Furthermore, BDI scores did not moderate the buffering effect (interaction term) for any measure (all $p > 0.15$) except daily PD. For participants who were 1 *SD* below the mean on the BDI, there was no buffering effect, whereas the buffering effect was larger for participants who were one-*SD* above the mean on the BDI. Finally, although relationships between depression and daily mean well-being (the intercepts) were not a focus of any hypothesis, BDI scores were negatively related to mean self-esteem, triad, PA, PD and composite mood measure and positively related to daily NA and ND (all $ps < 0.001$).

Analyses that examined other trait level moderators did not find that event slopes (positive or negative) varied as a function of neuroticism, NA, extraversion or PA. Although in the analyses of daily self-esteem, both neuroticism and NA significantly moderated positive event slopes when analysed in isolation (all $ps < 0.05$), when BDI scores were included simultaneously, BDI scores remained a significant moderator, whereas neuroticism and NA were not significant.

Social support as a moderator of event slopes

The second hypothesis of the study was that relationships between daily well-being and negative events would be weaker for people who had more social support than for those who had less social support. This hypothesis was tested with a series of models similar to those used to examine the moderating effects of depression, except that these models examined two moderators simultaneously, support from friends and support from family members. The results of these analyses are summarised in Table 6.

The results of the analyses of social support from friends were quite clear and confirmed the hypothesis that the relationship between daily well-being and daily negative events would be weaker for people who reported more support than for people who reported less support. For the three positively valent daily measures (self-esteem, triad and mood), support from friends was positively related to negative event slopes, and for the one negatively valent daily measure (anxiety), negative event slopes were negatively related to support from friends. For self-esteem, the γ_{21} coefficient (support from friends) was significant ($t = 3.45$, $p < 0.01$), as it was for the triad measure ($t = 2.98$, $p < 0.01$), the mood measure ($t = 1.92$, $p < 0.06$) and the anxiety measure ($t = 3.58$, $p < 0.01$).

Predicted negative event slopes for people 1 *SD* above and below the mean on perceived support from friends illustrate this moderating relationship. The same pattern was found for the three positively valent daily measures. For self-esteem, the mean slope for negative events (from Table 3) was -0.17 . The γ_{21} coefficient (representing the moderating effect of support from friends) was 0.05. Therefore, the predicted negative event slope for

Table 6. Coefficients describing how social support moderated relationships between daily events and daily well-being

Daily measure	Event slopes				
	Type of support	Intercept	Positive events	Negative events	Interaction
Self-esteem	Friend	0.27**	-0.01	0.05**	0.00
	Family	0.09	0.00	-0.03 ^a	0.00
Cognitive triad	Friend	0.23**	-0.02 ^a	0.05**	0.00
	Family	0.04	0.00	-0.03**	0.01*
NA	Friend	0.21**	0.01	-0.05**	0.00
	Family	0.03	0.00	0.03**	0.00
ND	Friend	-0.16**	0.01	-0.04*	0.00
	Family	0.05	-0.01	0.04**	0.01 ^a
PA	Friend	0.26**	0.00	0.00	0.00
	Family	-0.03	0.00	-0.02	0.00
PD	Friend	0.26**	0.00	0.01	0.00
	Family	-0.11	0.00	-0.01	0.01**
Mood	Friend	0.45**	-0.01	0.05 ^a	0.00
	Family	-0.11	0.00	-0.05*	0.01**

someone 1 *SD* above the mean on friend support was -0.12 ($-0.17 + 0.05$), whereas for someone 1 *SD* below the mean it was -0.22 ($-0.17 - 0.05$). Predicted negative event slopes values for the triad and mood measures revealed a similar pattern. For anxiety, the mean negative event slope was 0.16 , and the γ_{21} coefficient (representing the moderating effect of support from friends) was -0.05 . Therefore, the predicted negative event slope for someone 1 *SD* above the mean on friend support was 0.11 ($0.16 - 0.05$), whereas for someone 1 *SD* below the mean it was 0.21 ($0.16 + 0.05$).

The results of the analyses of social support from family found exactly the opposite pattern of results from the analyses of support from friends. The relationship between daily well-being and daily negative events was stronger for people who reported more support from family members than for those who reported less support. For the three positively valent daily measures, support from family members was negatively related to negative event slopes, and for anxiety, negative event slopes were positively related to support from family members. For the triad ($t = 2.57, p < 0.01$) and mood measures ($t = 2.18, p < 0.05$) the γ_{22} coefficient was significant, and for the self-esteem ($t = 1.87, p = 0.06$) and anxiety measures ($t = 1.94, p < 0.06$), it approached conventional levels of significance.

Predicted negative event slopes for people 1 *SD* above and below the mean on perceived support from family members illustrate this moderating relationship. The same pattern was found for the three positively valent daily measures. For the triad measure, the mean slope for negative events (from Table 3) was -0.18 . The γ_{22} coefficient (representing the moderating effect of support from family) was -0.03 , and so the predicted negative event slope for someone 1 *SD* above the mean on family support was -0.21 ($-0.18 - 0.03$); in contrast, for someone 1 *SD* below the mean it was -0.15 ($-0.18 + 0.03$). Predicted negative event slopes for the self-esteem and mood measures revealed a similar pattern. For anxiety, the mean negative event slope was 0.16 , and the γ_{22} coefficient (representing the moderating effect of support from family) was 0.03 . Therefore, the predicted negative event slope for someone 1 *SD* above the mean on family support was 0.19 ($0.16 + 0.03$), whereas for someone 1 *SD* below the mean, it was 0.13 ($0.16 - 0.03$).

Family support also moderated the buffering effect for the triad and mood measures. To determine the nature of this relationship, separate sets of coefficients for participants 1 *SD* above and below the mean on family support were generated. These coefficients were then used to generate the predicted values for these measures for days 1 *SD* above and below the mean on positive and negative events. These predicted values showed that there was no buffering effect for participants 1 *SD* below the mean on family support, whereas there were buffering effects for participants 1 *SD* above the mean. These buffering effects were slightly larger than those presented in Table 4.

Finally, although relationships between support and daily mean well-being (the intercept) were not a focus of any hypothesis, support from friends was positively related to mean daily self-esteem, triad and mood, and was negatively related to mean daily anxiety ($ps < 0.05$). In contrast, support from family members was not significantly related to mean daily well-being for any of the four daily measures ($ts < 1$). It is important to note that the sharp differences in the analyses of support from friends and family occurred despite the fact that the correlation between support from family and friends was 0.43 (from Table 1).

Finally, a series of analyses were done which examined the simultaneous moderation of reactions to daily events of individual differences in depression, neuroticism, extraversion, NA, PA and social support. As might be expected by the fact that depression (and no other measures when combined with depression) moderated reactions to positive events,

whereas social support (and no other measures) moderated reactions to negative events, the moderating relationships found in these analyses were functionally equivalent to those reported earlier. That is, when social support and the other individual differences were analysed together, depression and only depression significantly moderated reactions to positive events and social support and only social support significantly moderated reactions to negative events.

DISCUSSION

The results confirmed the primary hypotheses of the study. As expected, participants reporting more depressive symptoms reacted more strongly to positive events than participants reporting fewer symptoms. In contrast, reports of depressive symptoms did not moderate relationships between daily well-being and daily negative events. Also as expected, social support moderated relationships between daily well-being and daily negative events, although these moderating relationships varied dramatically as a function of the source of support. Participants who reported higher levels of support from friends reacted less strongly to negative events than those who reported lower levels of support from friends. In sharp contrast to this, participants who reported higher levels of support from their families reacted more strongly to negative events than those who reported lower levels of support from their families. Social support from neither friends nor family moderated reactions to positive events.

The fact that depressive symptoms (which for the present sample represented different degrees of depressogenic dysphoria more than depression *per se*) moderated reactions to positive events is consistent with previous research (Butler et al., 1994; Nezlek & Gable, 2001; Nezlek & Plesko, 2003) and existing theory. Moreover, similar to the results of Nezlek and Plesko, BDI scores moderated reactivity to positive events more reliably than NA or neuroticism. These results suggest that there is something about depressogenic distress *per se* (as opposed to a more generalised form of distress, such as that represented by NA or neuroticism) underlying reactivity to positive events. As suggested by Rogers (1961) and more contemporary scholars (e.g. Butler et al., 1994), the specific factor responsible for such moderating relationships may be a more fragile sense of self that accompanies depressogenic distress. Environmental feedback may play a larger role in determining the state well-being of depressogenically distressed people than it does for the less distressed. Moreover, to offset their distress, depressed individuals may find more meaning or value in positive events than their less dysphoric counterparts.

One explanation for the stronger reactions to positive events of the depressogenically distressed people could be that these people have fewer positive events, and so the positive events that occur are more meaningful. Although plausible, such an explanation cannot account for the present results because there was no relationship between BDI scores and the number of positive events people recorded ($t < 1$). Alternatively, it is possible that depressogenically distressed people are less optimistic and believe that fewer good things will happen to them than to their less distressed counterparts. If this is the case for the depressogenically distressed, positive events may be more impactful because they violate expectations. Clearly, understanding the specific aspects of depressogenic distress responsible for increased reactivity to positive events requires further study.

As expected, reactivity to negative events was moderated by social support, not by individual differences in depression, neuroticism, extraversion or PA and NA. However,

there were sharp differences in the moderating relationships when social support from friends and families was considered. As expected, greater social support from friends was associated with decreased reactivity to negative events, whereas, unexpectedly, greater support from family members was associated with increased reactivity. It is important to note that this difference occurred, despite the fact that the support from family and friends was positively correlated (0.43).

The direction of the moderating relationship of support from friends is consistent with the results of previous research (e.g. Affleck et al., 1994; Caspi et al., 1987; DeLongis et al., 1988) and is fairly intuitive. Negative events are less stressful for people who can rely on others for support than they are for people who cannot rely on others for support. In contrast, the nature of the moderating relationship for family support is inconsistent with previous research, is not all that intuitive and asks the question: Why should greater support from family members be associated with increased reactivity to negative events?

Answering this question requires considering the possible dual nature of social support. On the one hand, social support, as it is typically considered, reflects what some might define as adaptive social integration. People who have social support have friends upon whom they can rely in times of trouble. On the other hand, social support can be considered as a form of dependence. People rely on others because they cannot fend for themselves, perhaps because they do not have the skills or resources required to cope with the problems they experience. Within such a context, high social support may reflect some kind of weakness.

In contemporary American society, college students are likely to be in the midst of what Erikson (1959) described as a search for identity, and part of this search is likely to involve establishing an identity that is somewhat distinct from the identity that students bring from their families of origin. That is, they are becoming adults, and distancing themselves in some ways from their families is part of this process. Participants who reported high levels of family support may have been students who were not making the emotional break from their families as cleanly or as fully as participants who reported lower levels of support.

The relative lack of independence that may have been indicated by high family support may have been associated with a less well developed sense of self, which made students more susceptible to the negative events in their lives. High levels of family support may have reflected a greater dependence on families for approval and for confirming and affirming students' identities and self-concepts. In turn, this greater dependence may have made failure more salient (e.g. an increased concern for 'letting my family down') than it was for students who did not rely on their families so much. At this point, such explanations are speculative because such moderating relationships were not fully anticipated, and no data were collected that could be used to understand them more fully.

This issue is discussed briefly by Vaux (1988, pp. 81–82) who suggested that increased reliance on parental support may hamper adolescents' development of their own, independent support networks. Although this explanation may be appealing, the positive correlation between parent and friend support in the present study and the fact that families were perceived as equally (if not more) supportive as friends ($M = 4.6, 4.3$) suggest that the family support networks of participants in the present study did not hamper the development of their peer networks.

In addition to examining the trait level moderation of reactivity to daily events, the present study also found that daily positive events buffered the effects of daily negative events. This finding replicates the results of Nezlek and Plesko (2003), and provides further support for the notion that positive events may ameliorate the effects of negative

events. The buffering effect for positive events on daily depressogenic well-being is also consistent with the results of Cohen and Hoberman (1983) who found a buffering effect for positive events and measured well-being in terms of depressive symptoms. Unlike Nezlek and Plesko (2003) however, in the present study, depression and anxiety did not moderate this buffering effect, although social support from family members did. The buffering effect was larger for participants who perceived more family support.

The contribution of the present study needs to be evaluated within the context of its limitations. Similar to many studies of daily events, we have assumed that events lead to changes in internal states, and such causal relationships can be examined by comparing lagged relationships between measures taken on adjacent days. Although previous studies have found lagged relationships from events on day n to states on day $n + 1$ (Bolger & Zuckerman, 1995; Gable et al., 2000; Nezlek & Gable, 2001), we did not find such relationships. We also did not find any significant lagged relationships from well-being to events.

In addition to concerns about causality, the present operationalisation of social support may limit the generalisability of the present findings. Social support can take different forms, ranging from more agentically focused support such as giving advice and providing resources to more communally focused support such as providing a non-judgemental 'shoulder to cry on', and the SSB, the measure of social support used in the present study, assessed various forms of support. Although each subscale (family and friends) of the SSB was internally consistent (using Cronbach's alpha as a guide), suggesting that each measured a single latent construct, inspection of the 45 items constituting each scale suggest that the scales may have been multifactorial. Some items concerned agentic support (e.g. Would give me a ride if I needed one), whereas others (e.g. Would comfort me if I was upset) concerned more communally focused support. Unfortunately, the present sample was not large enough to conduct meaningful factor analyses of the subscales of the SSB, so it was not possible to examine possible differences in the moderating relationships of different types of support.

Despite these limitations, the present study meaningfully extends our understanding of the relationships between daily events and daily well-being. It provided further proof that positive events can buffer the effects of negative events and suggested that different individual differences may moderate reactivity to negative and positive events. Moreover, there was an additional suggestion that although social support can buffer the effects of negative events, high levels of support may also reflect dependence on the source of support and be associated with increased reactivity to negative events.

ACKNOWLEDGEMENT

We are grateful to Marilyn Groff for her help in collecting the data described in this article.

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