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Research Article

Resolution Status and Age as Moderators for Interpersonal Everyday Stress and Stressor-Related Affect

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Abstract

Objectives: To examine stressor characteristics (i.e., stressor resolution) and individual differences (i.e., age) as moderators of affective reactivity and residue associated with everyday interpersonal stressors, including arguments and avoided arguments.

Method: A sample of 2,022 individuals participated in the second wave of the National Study of Daily Experiences ($mean_{age}$ = 56.25, range = 33–84). Over 8 consecutive evenings, participants completed the Daily Inventory of Stressful Experiences and self-report measures of stressor resolution status and daily negative affect (NA) and positive affect (PA). Using multilevel modeling, we examined whether increases in daily NA and decreases in daily PA associated with arguments and avoided arguments occurring on the same day (i.e., reactivity) or the day before (i.e., residue) differed depending on resolution of the interpersonal stressor. We further examined whether such stressor resolution effects were moderated by age.

Results: Resolution significantly dampened NA and PA reactivity and residue associated with arguments; NA reactivity associated with avoided arguments ($ps < .05$). Older age was associated with being more likely to resolve both arguments and avoided arguments ($ps < .05$) and did reduce reactivity associated with avoided arguments. Older age did not moderate PA reactivity or NA or PA residue associated with either arguments or avoided arguments ($ps > .05$).

Discussion: Unresolved everyday arguments and avoided arguments are differentially potent in terms of affective reactivity and residue, suggesting resolution may be crucial in emotional downregulation. Future work should focus on exploring resolution of other everyday stressors to garner a comprehensive understanding of what characteristics impact stressor–affect associations and for whom.

Keywords: Daily stress, Interpersonal interactions, Negative affect, Positive affect, Stressor resolution

Daily life is fraught with experiences that can be positive or negative. In particular, negative experiences, or *everyday stressors*, have been linked to poorer physical (Leger et al., 2018; Piazza et al., 2013), mental (Charles et al., 2013), emotional (Bolger et al., 1989; Schilling & Diehl, 2014), and cognitive health (Sliwinski et al., 2006; Stawski, Cerino, et al., 2019), as well as increased mortality risk (Chiang et al., 2018; Mroczek et al., 2015). Extant literature suggests affective responses are a critical mechanism through which everyday stress impacts health outcomes (Almeida, 2005; Smyth et al., 2017). Moreover, age differences in daily stress processes, particularly affective responses to daily stressors, have received empirical attention for examining age differences in affective well-being and emotion regulation (e.g., Almeida, 2005; Charles et al., 2009; Scott et al., 2013; Smyth et al., 2017; Stawski, Scott, et al., 2019). Little research, however, has examined characteristics of everyday stressors (i.e., resolution status) in conjunction with individual difference characteristics (i.e., age) to elucidate

what about everyday stressors differentiates the potency of stressor–affect associations and for *whom*. We aim to bridge this gap by utilizing data from the second wave of the National Study of Daily Experiences (NSDE II) to examine stressor and individual difference characteristics, specifically stressor resolution and age, as moderators of stressor–affect associations.

The Daily Stress Process Model (DSPM; Almeida, 2005) outlines various everyday stressors such as work/education stressors, home stressors, health stressors, and interpersonal stressors. In particular, *interpersonal stressors* are among the most common and distressing everyday events individuals experience (Almeida, 2005; Birditt et al., 2005; Charles et al., 2009). Research has linked interpersonal everyday stressors to poorer emotional well-being (Birditt et al., 2019), more pain (Fuentecilla et al., 2020; Graham et al., 2018), and increases in heart rate (Birditt et al., 2019), blood pressure and pulse rate (Luong & Charles, 2014), and alpha-amylase level (Birditt et al., 2018). Further, previous research has shown evidence of both age-related decreases and heterogeneity in the affective impact of interpersonal stressors (Birditt et al., 2005; Charles et al., 2009). Thus, it is pertinent to understand whether and what characteristics contribute to interpersonal stressors having differentially potent influences on affect throughout adulthood and older age. Drawing on the DSPM, we focus on two types of interpersonal stressors: arguments and avoided arguments. Consistent with previous literature (e.g., Birditt et al., 2005; Charles et al., 2009; Cichy et al., 2012), the former is conceptualized as arguments that occur between another individual and the respondent. The latter is conceptualized as an argument that could have happened, but the respondent decided to let pass.

Stressor-Related Affect: Reactivity and Residue

Stressor-related affect, or changes in affect associated with the experience of an everyday stressor, is one mechanism through which everyday stress impacts health (Almeida, 2005; Smyth et al., 2017; Stawski, Scott, et al., 2019). Research has identified two complimentary indices of stressor-related affect: affective reactivity and residue.[1] Both reactivity and residue reflect changes in affect associated with experienced stressors but over different temporal intervals. *Reactivity* reflects changes in daily affect associated with stressors occurring on that same day (e.g., Charles et al., 2009; Stawski, Scott, et al., 2019), while *residue* reflects changes in daily affect associated with stressors occurring the previous day (e.g., Leger et al., 2018, 2019). Conceptually, reactivity reflects a more proximal impact of a stressor on affect, while residue reflects a more prolonged affective impact or failure to recover from previously experienced stressors (Leger et al., 2018; Smyth et al., 2017).

Reactivity, defined as a stressor-related increase in negative affect (NA), is well documented (Almeida, 2005; Schilling & Diehl, 2014; Sliwinski et al., 2009; Stawski et al., 2008; Stawski, Scott, et al., 2019). Specifically, interpersonal stressors are uniquely and reliably associated with increased NA (Birditt et al., 2005; Birditt, 2014; Charles et al., 2009; Cichy et al., 2012; Rook, 2003). Literature on affective residue, however, is scarce and has not thoroughly differentiated the existence or magnitude of residue across different types of stressors. Leger and colleagues (2018) examined the impact of affective residue associated with any experienced stressor on physical health and found that residue was associated with more chronic conditions and worse functional limitations 10 years later. Similarly, previous research suggests that arguments involving family members may be associated with affective residue (Cichy et al., 2012), but only arguments involving family members were considered. While suggestive, the extant research is unclear regarding the robustness of affective residue associated with interpersonal stressors, or moderation by individual difference or stressor characteristics.

Valence of Stressor-Related Affect

NA and positive affect (PA) are distinct but interrelated constructs (Charles et al., 2001; Kuiper & Martin, 1998; Watson, 1988), both uniquely associated with health (Cohen & Pressman, 2006). Further, affect valence is important for characterizing stressor–affect associations as increases in NA and decreases in PA are not interchangeable (Zautra et al., 2005). While stressor-related affect evidenced by NA reactivity is well documented (e.g., Stawski, Scott, et al., 2019), comparatively fewer studies have included stressor-related affect indexed with PA (i.e., stressor-related decreases in PA). Previous research on stressor-related decreases in PA has typically focused on reactivity, with some studies reporting significant decreases in PA (Röcke et al., 2009; Stawski et al., 2008), while others have not (Bolger et al., 1989; Watson, 1988). Thus, variation in stressor and individual difference characteristics may exist and contribute to this inconsistency. Cichy and colleagues (2012) observed significant reactivity, evidenced by significant decreases in PA associated with arguments and avoided arguments involving family members, but not significant residue.

PA reactivity exhibits inconsistent associations with health outcomes where some researchers report no associations with PA reactivity and depressive symptoms (Parrish et al., 2011), while others found evidence that PA reactivity was associated with increased interleukin-6 (Sin et al., 2015) and mortality risk (Mroczek et al., 2015). An examination of PA affective reactivity and residue is needed to better understand the impacts of everyday interpersonal stressors on daily affect. Therefore, this study aimed to examine affective reactivity and residue, evidenced by both decreases in PA and increases in NA.

Resolution Status

Almeida's (2005) DSPM suggests that various characteristics of stressors may be important moderators of everyday stress–affect associations. Previous research has shown that stressor type (Koffer et al., 2016; Neupert et al., 2007), family involvement (Cichy et al., 2012), and severity (Scott et al., 2013) all moderate affective reactivity. Less is known about whether resolution status may influence associations. Stressor resolution is defined as a subjective evaluation from an ongoing stressor to a resolved stressor. Within everyday stress processes, resolution may contribute to diminished stressor-related affect. To this end, resolution reflects that an individual has identified a stressful experience as having ended, thereby reducing the duration of the stressors' impact. Moreover, as resolution status may be a marker for the downregulation of emotions (Harnish et al., 2000; Oschner et al., 2002), higher levels of stressor-related affect may be attributable to the lack of resolution. Alternatively, reactivity and residue may simply reflect the lack of stressor resolution. If resolution represents the end of a stressor and the downregulation of emotion, an unresolved everyday interpersonal stressor may result in significantly greater affective reactivity and residue compared to a resolved everyday interpersonal stressor. Moreover, a resolved everyday stressor may result in diminished, or even extinguished stressor-related affect.

Age Differences in Stressor-Related Affect and Resolution Status

According to Charles' (2010) Strength and Vulnerability Integration theory (SAVI), age is associated with strengths in avoiding and diffusing stressful experiences; moreover SAVI suggests aging-related physiological vulnerabilities that may result in equal or worse well-being in older adults compared to younger adults (Charles, 2010; Scott et al., 2013). Research findings regarding age differences in affective reactivity to daily stressors are mixed. A recent coordinated analysis revealed small age-related decreases in NA reactivity (Stawski, Scott, et al., 2019). The authors only considered whether any stressors were reported but suggested that age differences may be revealed through examination of stressor characteristics. Consistent with this possibility, researchers observed age-related decreases in reactivity were associated with avoided arguments, but not arguments (Birditt, 2014; Charles et al., 2009).

Resolution status may help account for the inconsistent findings regarding age differences in reactivity to everyday stress. In line with SAVI and Socioemotional Selectivity Theory (SST), older adults may be more likely to, motivated to, and/or more efficient at resolving their everyday stressors as a means of regulating their emotions compared to younger adults (Carstensen et al., 1999; Charles, 2010). Thus, it may be that older adults are more likely to resolve their everyday stressors. SAVI additionally acknowledges that, compared to younger adults, older adults may be impacted similarly or worse following a stressful experience (Charles, 2010). Thus, younger and older adults may exhibit similar levels of reactivity and residue when an everyday stressor is not resolved, with age-related reductions in reactivity and residue for resolved stressors. Few studies, however, have examined age and resolution status of everyday stressors. Brennan and colleagues (2006) explored patterns of successful resolution in later life, finding severity of stressors did not predict the number of resolved stressors, and older adults reported higher frequency of resolution based on coping strategies and health/emotion status. Unfortunately, however, this study did not examine outcomes associated with resolution status or age-resolution patterns associated with outcomes.

The Current Study

Utilizing the NSDE II, the purpose of the current study is to examine both characteristics of everyday stressors (i.e., resolution) and individual differences (i.e., age), contributing to stressor-related affect associated with interpersonal stressors. First, we examine whether resolution status moderates stressor-related affect associated with interpersonal everyday stressors. We hypothesize that resolution will be associated with attenuated affective reactivity and residue (H1). Second, we explore potential age differences in the resolution of interpersonal stressors. If older age is characterized by strengths in diffusing stressful situations (c.f., Charles, 2010), then older age should be associated with stressor resolution. We hypothesize that older age will be associated with a greater prevalence of resolved everyday interpersonal stressors (H2). Finally, we examine whether age and resolution interact to predict stressor-related affect associated with interpersonal stressors. We hypothesize that age will interact with resolution such that diminished affective reactivity and residue associated with resolution will be larger for older adults (H3).

Method

Participants

This study utilized daily diary data from the NSDE II consisting of 2,022 of the initial survey wave participants and a secondary sample of African American participants (see Almeida, 2005; Cichy et al., 2012; Stawski, Scott, et al., 2019 for additional details). Age ranged from 33 to 84 with a mean of 56.25 (SD = 12.20). Of those individuals, more than half were female, White, or highly educated (see Table 1).

Measures

Affect

NA and PA were reported through 27 items (14 items for NA; 13 items for PA) asking participants, "How much

Table 1. Characteristics of Sample and Variables of Interest

	M	*SD*	Range	*N* (%)
Age	56.24	12.20	33–84	2,022
Sex				
Male				44.03%
Female				55.97%
Education				
<HS diploma				36%
Some college				46.29%
≥Bachelors				17.71%
Race				
Caucasian				83.88%
Not Caucasian				16.12%
Marital status				
Married				72.26%
Other				27.74%
Negative affect	0.14	0.39	0–4	
Positive affect	2.82	0.84	0–4	
Arguments[a] available for analysis (% of days)				1,293 (8.87%)
Arguments resolution (% of arguments resolved)				65.30%
Avoided arguments (% of days)				2,177 (14.63%)
Avoided arguments[a] available for analysis (% of days)				1,872 (12.85%)
Avoided arguments resolution (% of avoided arguments resolved)				63.80%

Note: HS = high school. [a]Frequencies (*N*s and days) of interpersonal stressors with subjective severity ratings of at least 1.

of the time today did you feel (*emotion [e.g., anxious, cheerful] here*)?" Items were averaged for NA and PA, where higher scores represent higher affect. Within-person reliabilities for NA and PA were .77 and .86, respectively, while between-person reliabilities for NA and PA were .97 and .99, respectively (Scott et al., 2020). Intraclass correlation coefficients for NA and PA were .47 and .67, respectively. Thus, 47% of the variation in NA and 67% of the variation in PA reflect between-person variation. Remaining variation for NA (53%) and PA (33%) reflects within-person variation across days and error.

Everyday stressors

Everyday stressors were reported using probe questions from the Daily Inventory of Stressful Events (Almeida & Kessler, 1998; Almeida et al., 2002). Initially, participants reported if a specific type of negative event (e.g., argument) occurred within the last 24 hr. The different stressors were dichotomously coded with 1 representing the specific daily stressor did occur. For our purposes, we only utilize data for arguments and avoided arguments. For arguments, individuals were asked, "Did you have an argument or disagreement with anyone since (this time/we spoke) yesterday?" and for avoided arguments, "Did anything happen that you could have argued about but you decided to let pass in order to avoid a disagreement?"

Stressor resolution status

Stressor resolution status was reported for each stressor experienced. Participants were asked, "Is the issue resolved?" and reported either 1 (*yes*) or 2 (*no*). Stressor resolution status was recoded as 0 = *unresolved* and 1 = *resolved*. Skip logic was utilized to obtain information regarding everyday stressors. Participants were first asked about the occurrence of a specific everyday stressor. If an individual said yes to the occurrence, they were asked about everyday stressor characteristics. Moreover, they were asked how severe the everyday stressor was on a scale of 0 (*not at all*) to 3 (*severe*). Participants were only asked about other everyday stressor characteristics (e.g., resolution status) if they reported a severity score of 1 or higher.

Age

Age was the created from the birth year and current year of the reports then centered on the mean age of 56.

Covariates

Marital status, gender, race, education, day in study, and day of week were included as covariates, given their relationships to daily stressor–affect associations (Almeida & Horn, 2004; Almeida, 2005; Stawski, Scott, et al., 2019).

Procedure

The NSDE II is a daily diary study consisting of end-of-day telephone interviews on eight consecutive evenings (Almeida, 2005). Participants completed 14,912 of the 16,176 possible daily interviews (92% completion rate). Preliminary analyses indicated that data for our primary affect or interpersonal stressor variables were missing on 79 days. Further, as stressor resolution was only assessed if a participant's subjective severity rating of their reported interpersonal stressor was 1 or greater on the 0–3 scale, 262 days were dropped as stressors occurring on these days were rated to have a severity of zero. Thus, the final analytic sample consisted of $N_{persons}$ = 2,022 and N_{days} = 14,571 (97.9% of possible days). Previous research has shown the 8-day assessment protocol and 2,022 participants to provide adequate power for detecting time-varying stressor–affect

associations, and individual differences therein (Stawski, Scott, et al., 2019).

Analytic Strategy

Multilevel modeling was employed because of the nested data structure and to allow for examining time-varying associations among stressors and affect (Hoffman & Stawski, 2009). Analyses were conducted using maximum likelihood estimation in SAS PROC MIXED v.9.4 (SAS Institute, 2013). Both arguments and avoided arguments were included in the models simultaneously. As such, the outcomes, affective reactivity and residue, are represented by the time-varying slopes between current-day and/or previous-day stressors, respectively, and affect, while the intercept reflects level of affect on days when neither arguments nor avoided arguments were reported. For examining age differences in stressor resolution, we utilized multilevel models in SAS PROC GLIMMIX v 9.4 (SAS Institute, 2013).

First, to examine the effect of resolution status on both affective reactivity and residue, two-level models were utilized with days (level 1) nested within individuals (level 2). Models included time-varying effects of both same- and previous-day arguments and avoided arguments, and resolution status for each type of stressor, covarying for individual differences in frequency of exposure (Hoffman & Stawski, 2009). Separate models were estimated for NA and PA as outcomes. Second, we used multilevel logistic models to explore age differences in resolution status. Finally, we extended the model noted above for examining resolution moderating reactivity and residue slopes to include age as a moderator of reactivity, residue, and resolution slopes by adding associated interactions. All models were adjusted for covariates, with enhanced model details in Supplementary Appendix A.

Results

Descriptive Statistics

Participants reported 1,355 arguments (9.10% of days), of which 1,293 (95.4% of arguments; 8.87% of days) had a severity of 1 or greater and included information pertaining to resolution status. Similarly, 2,177 avoided arguments (14.63% of days) were reported, of which 1,872 (86.0% of reported avoided arguments; 12.85% of days) had a severity of 1 or greater and allowing for inclusion in the analysis of resolution. Of these reported arguments and avoided arguments, 65.30% and 63.80% were resolved, respectively. Older age was significantly correlated with lower frequency of arguments and avoided arguments, $r(2,020) = -.23$, $p < .0001$ and $r(2,020) = -.19$, $p < .0001$, respectively. Additional correlations between variables of interest are given in Supplementary Table 1. We conducted preliminary analyses to obtain evidence of stressor-related affect associated with arguments and avoided arguments by examining the time-varying associations among arguments and avoided arguments with affect, modifying Equation 1 by omitting resolution effects. Compared to noninterpersonal stressor days, NA was higher on days when arguments (estimate = 0.19, $SE = 0.01$, $p < .0001$) or avoided arguments (estimate = 0.09, $SE = 0.01$, $p < .0001$) occurred, indicative of NA reactivity associated with both types of interpersonal stressors. Further, PA was significantly lower on days when arguments (estimate = –0.21, $SE = 0.02$, $p < .0001$) or avoided arguments (estimate = –0.06, $SE = 0.02$, $p < .0001$) occurred compared to noninterpersonal stressor days, indicative of PA reactivity associated with both types of interpersonal stressors. Moreover, PA was not significantly different when an argument or avoided argument occurred the previous day compared to a nonstressor day (see Table 2; $ps > .05$), suggesting neither interpersonal stressor was associated with PA residue, in terms of prolonged decreases in PA.

Resolution Status Moderating Reactivity and Residue

Resolution significantly moderated reactivity slopes for both arguments (estimate = –0.16, $SE = 0.02$, $p < .0001$) and avoided arguments (estimate = –0.07, $SE = 0.02$, $p = .0002$). As seen in Figure 1A and Table 2, reactivity slopes for both arguments and avoided arguments were significant, regardless of resolution status (all $ps < .001$); however, reactivity slopes for resolved interpersonal stressors were significantly smaller compared to reactivity slopes for unresolved interpersonal stressors. Moreover, resolution did moderate the residue slopes associated with arguments (estimate = –0.05, $SE = 0.02$, $p = .02$). Unresolved arguments occurring in the previous day were associated with increased NA (estimate = 0.04, $SE = 0.02$, $p = .02$) compared to resolved arguments, which were not (estimate = –0.01, $SE = 0.01$, $p = .71$). Resolution did not moderate residue slopes for avoided arguments ($ps > .05$).

As shown in Table 2, reactivity indexed by stressor-related decreases in PA was significantly moderated by resolution for arguments (estimate = 0.16, $SE = 0.02$, $p < .001$) but not avoided arguments ($p = .28$). Figure 1B displays reactivity slopes for both arguments and avoided arguments, which were significant regardless of resolution status ($ps < .001$). Further, the moderating effect of resolution indicated that reactivity slopes were smaller for resolved interpersonal stressors relative to unresolved interpersonal stressor stressors, but this difference was only statistically significantly for arguments. Regarding residue, resolution moderated the effect of arguments (estimate = 0.11, $SE = 0.04$, $p < .01$) but not avoided arguments ($p = .97$) occurring the previous day. As shown in Figure 1B, unresolved arguments (estimate = –0.08, $SE = 0.03$, $p = .01$) were associated with significantly decreased PA, while resolved arguments were not ($p = .23$).

Table 2. Resolution Effects on Stressor-Related Affect: Solution for Fixed Effects

	Negative affect		Positive affect	
	Model 1	Model 2	Model 1	Model 2
	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)	Estimate (*SE*)
Intercept	0.01 (0.02)	0.02 (0.02)	3.01 (0.06) **	3.02 (0.06) **
Between persons				
Argument	0.21 (0.05) **	0.22 (0.05) **	−0.55 (0.13) **	−0.56 (0.13) **
Avoided argument	0.37 (0.04) **	0.35 (0.04) **	−0.68 (0.11) **	−0.67 (0.11) **
Same day				
Argument	0.19 (0.01) **	0.31 (0.02) **	−0.21 (0.02) **	−0.33 (0.03) **
Argument resolution	—	−0.16 (0.02) **	—	0.16 (0.04) **
Avoided arguments	0.09 (0.01) **	0.15 (0.01) **	−0.06 (0.01) **	−0.10 (0.03) **
Avoided argument resolution	—	−0.07 (0.02) **	—	0.03 (0.03)
Previous day				
Arguments	0.02 (0.01)	0.04 (0.02) *	−0.005 (0.02)	−0.08 (0.03) *
Argument resolution	—	−0.05 (0.02) *	—	0.11 (0.04) *
Avoided arguments	0.01 (0.01)	0.03 (0.01) *	−0.01 (0.01)	−0.02 (0.02)
Avoided argument resolution	—	−0.03 (0.02)	—	−0.001 (0.03)

Notes: All models covary for age, gender, race, education, marital status, day of week, and day in study. Full model results (e.g., unadjusted models) are available upon request. $N_{persons}$ = 2,022, N_{days} = 14,571.
*p < .05. **p < .001.

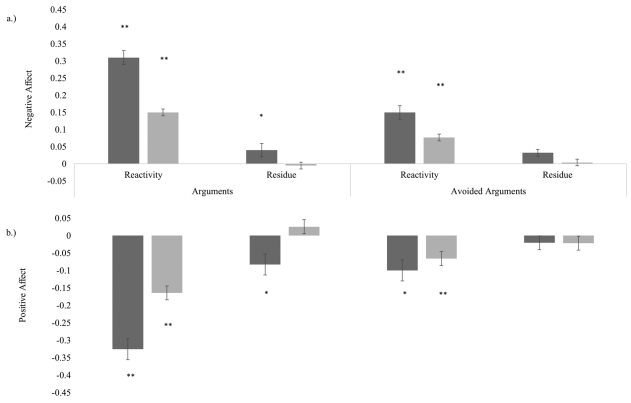

Figure 1. Light gray bars denote estimates for resolved stressors. Dark gray bars denote estimates for unresolved stressors. (**A**) Estimates for negative affect. (**B**) Estimates for positive affect. Figures represent covariate-adjusted models. *p < .05. **p < .0001.

Age Differences in Stressor Resolution

For this analysis, age was standardized using z scores, so estimates reflect odds of resolution associated with a 1 *SD* increase in age. Age was associated with increased odds of reporting arguments (OR = 1.21, 95% CI = [1.03, 1.44]) and avoided arguments (OR = 1.24, 95% CI = [1.05, 1.46]) as resolved.

Age Differences in Stressor-Related Affect and Resolution

As shown in Table 3 and representative of affective reactivity for unresolved stressors, NA was significantly higher for days when unresolved arguments (estimate = 0.30, *SE* = 0.02, p < .0001) or avoided arguments (estimate = 0.14, *SE* = 0.02, p < .0001) occurred compared to nonstressor days. Age did significantly moderate the impact of unresolved avoided arguments on NA such that increased age was associated with diminished increases in NA (estimate = −0.003, *SE* = 0.001, p = .03). Age, however, did not significantly moderate the impact of unresolved arguments (p = .06). Moreover, while the effect of resolution significantly moderated NA reactivity associated with arguments (estimate = −0.15, *SE* = 0.02, p < .0001) and avoided arguments (estimate = −0.06, *SE* = 0.02, p = .001), these associations were not further moderated by age (ps > .05). As indicated in Figure 2A, reactivity slopes for arguments and avoided arguments were significant regardless of both resolution status and age (ps < .05). Neither the effects of previous-day arguments (p = .06) or avoided arguments (p = .05) were statistically significant for NA reactivity, nor were these NA residue slopes moderated by resolution or age (ps > .05).

As shown in Table 3, PA was significantly lower on days when arguments (estimate = −0.34, *SE* = 0.03, p < .0001) or avoided arguments (estimate = −0.10, *SE* = 0.03, p < .001) were unresolved; age did not moderate these associations (ps > .05). Moreover, while resolution did moderate the association between arguments and PA (estimate = 0.18, *SE* = 0.04, p < .0001), age did not further moderate this association (p = .37). Associations between avoided arguments and PA were not significantly moderated by resolution status or age (ps > .05). As shown in Figure 2B, all reactivity slopes were significant regardless of resolution status and age for both types of stressors (ps < .05). Evidence of PA residue was observed for arguments

Table 3. Age Differences in Resolution Effects on Stressor-Related Affect: Solution for Fixed Effects

	Negative affect Model 3	Positive affect Model 3
	Estimate (*SE*)	Estimate (*SE*)
Intercept	0.02 (0.02)	3.02 (0.06) **
Between persons		
Argument	0.21 (0.05) **	−0.56 (0.13) *
Avoided argument	0.36 (0.04) **	−0.67 (0.11) **
Age	−0.00004 (0.001)	0.01 (0.001) **
Same day		
Argument	0.30 (0.02) **	−0.34 (0.03) **
Argument resolution	−0.15 (0.02) **	0.18 (0.04) **
Arguments × Age	−0.003 (0.002)	−0.004 (0.003)
Argument resolution × Age	0.0004 (0.002)	0.003 (0.003)
Avoided arguments	0.14 (0.02) **	−0.10 (0.03) **
Avoided argument resolution	−0.06 (0.02) **	0.03 (0.03)
Avoided arguments × Age	−0.003 (0.001) *	0.001 (0.002)
Avoided argument resolution × Age	0.002 (0.002)	−0.002 (0.003)
Previous day		
Arguments	0.04 (0.02)	−0.09 (0.03) *
Argument resolution	−0.04 (0.02)	0.12 (0.04) *
Arguments × Age	−0.001 (0.002)	−0.001 (0.003)
Argument resolution × Age	−0.001 (0.002)	0.003 (0.003)
Avoided arguments	0.03 (0.01)	−0.02 (0.02)
Avoided argument resolution	−0.02 (0.02)	−0.03 (0.03)
Avoided arguments × Age	−0.001 (0.001)	−0.0002 (0.002)
Avoided argument resolution × Age	0.002 (0.001)	−0.001 (0.002)

Notes: All models covary for age, gender, race, education, marital status, day of week, and day in study. Full model results (e.g., unadjusted models) are available upon request. $N_{persons}$ = 2,022, N_{days} = 14,571.
*p < .05. **p < .001.

reported the previous day (estimate = −0.09, *SE* = 0.03, p = .01) but not avoided arguments (p = .40). Resolution, however, significantly moderated PA residue associated with arguments (estimate = 0.12, *SE* = 0.04, p = .01), but not avoided arguments (p = .92). As seen in Figure 2B, previous-day unresolved arguments were associated with significantly lower PA (estimate = −0.09, *SE* = 0.03, p = .01) compared to resolved arguments, which were not (p = .15). Age did not significantly moderate any of these reactivity, residue, or resolution effects (ps > .05).

Discussion

This study examined everyday stressor resolution and age as moderators of stressor-related affect associated with interpersonal stressors. Results yielded several findings. First, while resolution was consistently related to diminished reactivity and residue for both arguments and avoided arguments, resolution effects were only statistically significant for (a) NA and PA reactivity for arguments; (b) NA reactivity for avoided arguments; and (c) NA and PA residue for arguments. Second, older adults were more likely to report both arguments and avoided arguments as resolved. These results provide dimensions of everyday stressor characteristics (e.g., unresolved stressors) that may incite higher risk for affecting health and well-being and individual differences (e.g., being older) associated with protective factors (e.g., avoiding and resolving interpersonal stressors).

Arguments and avoided arguments were associated with NA and PA reactivity regardless of resolution. The magnitude of reactivity, however, was significantly greater for unresolved arguments as evidenced by larger decreases in PA and increases in NA, as well as unresolved avoided arguments, as evidenced by larger increases in NA. Clearly, resolution provides mitigation of the impact arguments and avoided arguments when the interpersonal stressor occurs in the same day. For these immediate responses, resolution may be a protective factor reflecting initiation of emotional downregulation (Ochsner et al., 2002). Thus, it may be imperative for adults to resolve their daily interpersonal stressors by the end of the day to reap the affective benefits associated with resolution.

Affective reactivity has previously been associated with worse health outcomes (e.g., Charles et al., 2013; Chiang et al., 2018; Leger et al., 2018; Mroczek et al., 2015; Piazza et al., 2013; Schilling & Diehl, 2014; Stawski, Scott, et al., 2019); however, few studies have disaggregated everyday stressors by their characteristics, specifically resolution status. The current results suggest that unresolved everyday stressors may be particularly detrimental to health and well-being. Unresolved everyday interpersonal stress may contribute to or exacerbate rumination and perseverative cognition which are associated with increased affective reactivity (Brosschot et al., 2006), slower recovery from stressful experiences (Williams et al., 2015), and cardiovascular disease risk (Pieper & Brosschot, 2005). Further, conceptual models explaining rumination often include neural and cognitive regulatory processes that "break" the cycle between ruminating and acute responses (e.g., physiological responses; Gerin et al., 2012) that create dysregulation in the systems—resolution may be one of these

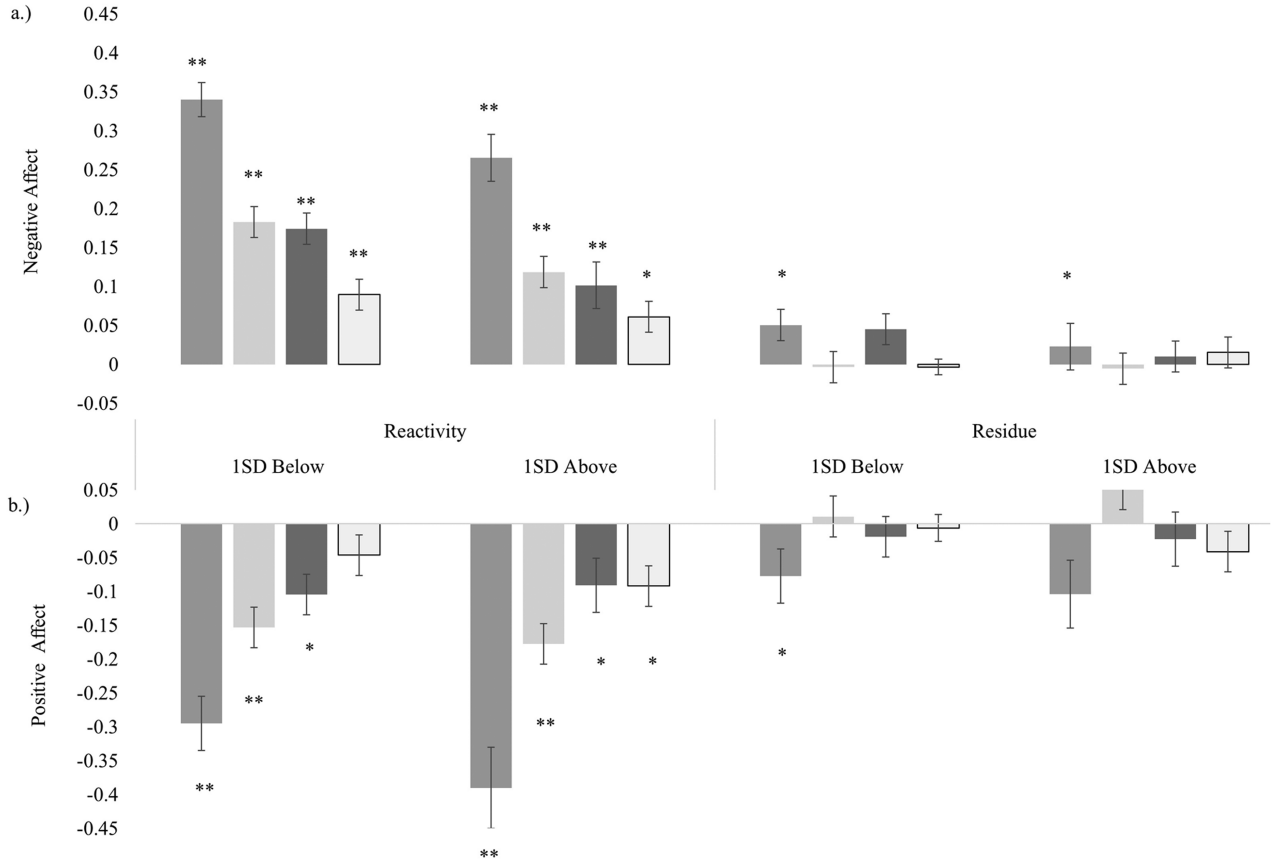

Figure 2. White bars represent resolved avoided arguments. Dark gray bars represent resolved arguments. Medium gray bars represent unresolved avoided arguments. Light gray bars represent unresolved arguments. (**A**) Estimates for negative affect. (**B**) Estimates for positive affect. Figures represent covariate-adjusted models. *$p < .05$. **$p < .0001$.

processes. Future research will need to explore how resolution contributes to associations between everyday stress processes, rumination, and health and disease risk.

Our results do suggest that affective residue exists, and, importantly, that resolution appears to mitigate the effect of affective residue for arguments. Previous research has acknowledged that lingering reactivity (Cichy et al., 2012; Leger et al., 2018) and residue results in worse physical health (Leger et al., 2018). Our results echo these previous studies and provide further support to the importance of affective residue as, regardless of resolution, arguments during the previous day were associated with increased NA and decreased PA. Resolution, however, significantly decreased the impact of previous-day arguments for both NA and PA, to the point of nonsignificance. The literature on affective residue, while growing, is still small (Cichy et al., 2012; Leger et al., 2018). Our results suggest that previous-day arguments were associated with worse NA and PA and resolution may play a significant protective role in the impact of previous-day arguments on NA and PA. Particularly, these results may support the aforementioned models (Gerin et al., 2012), suggesting that resolution is a regulatory process that impacts the links among and duration of psychological and physiological responses to stress.

Moreover, the former result regarding NA is supported by and builds on previous research (Cichy et al., 2012) to suggest that the lingering impact of arguments is significant even with the inclusion of nonfamily involvement. The latter result regarding PA is contrary to previous research (Cichy et al., 2012), reporting no significant associations between arguments and affective residue for PA. It may be that by aggregating between family and nonfamily daily interpersonal stressors, the current study's associations may be largely carried by either family or nonfamily interactions, or that there is simply more power to detect these associations.

The lack of robust and consistent associations between resolution and affective residue may be in part due to the timing of arguments and avoided arguments. Both types of interpersonal stressors are potentially relatively short-term events that occur throughout the day. Over half of the interpersonal stressors in this study were resolved, suggesting that it may be easier to resolve an argument or avoided argument on the same day. Interview times varied across days, thus, the interpersonal everyday stressors that were reported as unresolved may have been resolved by or during the next day. As the study protocol did not involve assessing resolution of unresolved stressors from the previous day, we cannot completely disentangle the role of resolution processes contributing to residue.

Age, Stressor Resolution, and Stressor-Related Affect

Older adults were more likely to resolve both arguments and avoided arguments, supporting emotional and motivational theoretical perspectives (SAVI, Charles, 2010; SST, Carstensen et al., 1999). Both SAVI and SST suggest older adults are more motivated or efficient at resolving stressful experiences. The scant age associations between resolution, stressor type, and stressor-related affect provide additional complexity to understanding associations between characteristics of daily stress and affective reactivity and residue. SAVI (Charles, 2010) recognizes that older adults' resilience to avoiding stressful experiences may be depleted when the stressful experiences occur, resulting in equally or worse outcomes compared to younger adulthood. In line with SAVI (Charles, 2010), the impact of resolution for arguments and avoided arguments was comparable across age, suggesting that when an everyday interpersonal stressor occurred, older adults were similarly vulnerable to its impacts. In partial support of research reporting age-related decreases in reactivity for avoided arguments but not arguments (Charles et al., 2009), our results suggest that affective reactivity was comparable across both resolution status and age for arguments. Moreover, while older adults exhibited smaller nonsignificant increases in NA reactivity and NA and PA residue compared to younger adults, they also showed patterns of greater PA reactivity, which is inconsistent with an age-related benefit.

Similar to Charles and colleagues (2009), we observed significant age-related reductions in avoided arguments. Our study further clarifies that these age-related advantages are specific to unresolved avoided arguments because age differences were not present when considering resolved avoided arguments. In the absence of resolution, older adults' disengagement from an interpersonal interaction before turning into an argument is indicative of an age-related strength in emotion regulation consistent with previous empirical (Charles et al., 2009) and theoretical (Charles, 2010) work. Thus, better understanding the processes by which older adults successfully deescalate and avoid arguments could provide insight into potential strategies younger adults might employ to better navigate their interpersonal interactions and moderate their affective responses.

Limitations and Future Directions

Little is known about how individuals define resolution. As this study provided a subjective qualification of stressor resolution, each individual may consider resolution as something different. Further, because resolution was only provided for at one point in the day (i.e., end of day), this study could not explore resolution as a dynamic process happening over a more fine-grained temporality. Finally, our study only considered resolution associated with everyday interpersonal stressors; other characteristics of everyday stress might additionally contribute to differences in stressor-related affect. Future directions should explore associations with appraisal processes in order to ascertain an understanding of the role coping processes may have on resolving an interpersonal stressor. Moreover, future research should consider other types of everyday stressors as understanding a more general benefit of resolution as a protective characteristic in the face of everyday stress may provide a target for effective strategies and interventions for promoting health and well-being.

Conclusion

This study aimed to elucidate *what* about everyday interpersonal stressors differentiated stressor-related affect, both in terms of reactivity and residue and for *whom*. While there was limited evidence of age differences in stressor-related affect, unresolved interpersonal stressors are clearly the most affectively evocative and may differentially contribute to compromises of long-term health. Our findings suggest that resolution is effective for decreasing stressor-related affect associated with everyday interpersonal stressors. Individuals should strive to resolve their interpersonal everyday stressors to curb the affective upheaval associated with these experiences. To this end, identifying ways to facilitate resolution has considerable value for mitigating the effects of everyday stress on both daily and long-term health and well-being.

Supplementary Data

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

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Conflict of Interest

None declared.

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made available upon request of the first author. This study was not preregistered.

Author Note

[1]Recent research discusses the appropriateness of the term reactivity as seen in the context of end-of-day diary studies (Smyth et al., 2017; Stawski, Scott, et al., 2019). Studies utilizing the term reactivity do not necessarily examine affect-related responses directly following a reported stressful experience. Thus, we acknowledge the term stressor-related affect as an umbrella term and utilize reactivity to be consistent with previous research considering same-day, time-varying, stressor–affect associations.

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