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# Enduring Bonds: Duration and Contact in Close Relationships in Late Life

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## Abstract

**Background and Objectives:** Older adults maintain ties to long-duration social partners, some with whom have regular contact and some with whom have little contact. We asked whether these ties with little contact still offer a sense of connection and security, and buffer the effects of interpersonal stress in daily life. Helping older adults foster these ties may improve their mental health.

**Research Design and Methods:** Participants ( $n = 313$ ) aged 65+ completed a baseline interview reporting duration and contact frequency of their closest ties. Then, participants completed ecological momentary assessments every 3 hr for 5–6 days, reporting their social encounters and mood.

**Results:** We classified ties according to duration (10+ years = long vs shorter duration) and frequency of contact (at least once a month = active vs dormant). Throughout the day, participants were more likely to have stressful encounters with long-duration active ties. Encounters with active ties were associated with more positive mood (regardless of duration) and encounters with long-duration dormant ties with more negative mood. Having more active ties buffered effects of interpersonal stress on mood, but more long-duration dormant ties exacerbated these effects.

**Discussion and Implications:** Supporting social integration theory, ties with frequent contact were associated with positive mood. Surprisingly, long-duration ties with infrequent contact exacerbated effects of interpersonal stress on mood. Older adults who lack contact with long-duration social partners may be more sensitive to interpersonal stress. Future interventions might focus on phone or electronic media to increase contact with long-duration social partners.

**Keywords:** Attachment theory, Close ties, Social integration theory, Socioemotional selectivity theory

Anecdotally, people maintain ties to old friends, neighbors, classmates, and other social partners they may go months or years without contacting. This pattern may be even more so in old age, when ties to friends and family may have endured for half a century or longer. The implications of having such long-duration close ties are not well understood. Presumably, close ties endure because they are strong and beneficial, but research is warranted to understand how they may benefit individuals in the absence of much contact.

Two theoretical perspectives speak to the benefits of close ties in late life, and the reasons why we still form new ties regardless. Carstensen's socioemotional selectivity theory suggests that adults are more interested in retaining their longer-term closest ties than in forming new ties as they approach the end of life (Carstensen, 2021; Charles & Carstensen, 2010). Yet, the convoy model proposes that as individuals travel through life, some close social ties endure, whereas other ties disband (either purposely or by circumstance) and may be replaced by new relationships (Antonucci & Birditt, 2011).

As such, older adults may have many long-duration ties and also some newer ties.

Likewise, two theories address frequency of contact in social ties. Social integration theory proposes that individuals derive rewards from daily activities with social partners (Berkman et al., 2000). Some close ties may involve frequent contact (e.g., spouse, close friend) and stimulate involvement with an array of activities. But other ties involve infrequent contact. For example, a former college roommate might live hundreds of miles away, and the two may only get talk sporadically, but this social partner fills a special place in the older adult's heart.

This study classified relationships as: (a) long-duration ties with frequent contact—"long-duration active ties" (e.g., spouse, nearby friends), (b) long-duration ties with infrequent contact—"long-duration dormant ties" (e.g., college roommate, sibling), (c) shorter-duration active ties (e.g., new friends), and (d) shorter-duration dormant ties. We asked whether encounters with each type of tie were associated with

older adults' interpersonal stress and mood throughout the day. We also explored whether believing that one has many long-duration relationships mitigates the negative impact of social stress on an older person's mood throughout the day.

## Duration of Relationships

The Convoy Model helps explain patterns of long- and shorter-duration ties in older adults' social world. According to this model, relationships that are close at one point in time may fall by the wayside either intentionally or inadvertently, but close relationships that endure may be of particular importance (Antonucci & Birditt, 2011). The implications of these ties for well-being may differ.

Long-duration social partners may evoke feelings not evident in shorter-duration relationships. For example, research has found that older adults derive a sense of continuity from long-term friendships that is not available in newer relationships (Shea et al., 1988). Yet, long-duration ties are not all positive. Long-duration relationships often involve family, and these ties may evoke mixed or ambivalent feelings, as well as comfort that helps older adults weather stress more easily (Fingerman et al., 2004).

Shorter-duration ties might include new friends, children-in-law, acquaintances, and contacts in everyday life (e.g., at the gym or religious gatherings; Fingerman, 2009). Some of these relationships may be chosen and positive in valence, but others may be negative and unavoidable (e.g., a covolunteer, obnoxious new neighbor).

## Frequency of Contact

Relationships of differing duration engender different frequency of contact. Frequency of contact with social partners can range from multiple times a day to yearly or less often (Berkman et al., 2000; Thomas, 2011). Long-duration ties allow for varying levels of contact, including frequent (e.g., spouse), or infrequent contact (e.g., friend from a prior job). Shorter-duration ties may require frequent contact necessary to establish a relationship (Shea et al., 1988). Older adults disband less close social relationships that evoke negative feelings (Carstensen, 2021), and the same may be true for shorter-term ties. Shorter ties have included comparatively less investment of time, and might be easier to disband or avoid if they are unrewarding.

Furthermore, older adults engage in contact with their social partners through a variety of modalities: in person, telephone, text, social media, and other technologies. Although technologically mediated communication (e.g., text, videoconferencing) has increased among older adults in the past few years, in person and telephone communication remain more common (Fingerman et al., 2020). Research suggests that in person and phone contact are associated with well-being in combination in late life (Lin & Lachman, 2023). In this study, we focused on variability regarding frequency of in person and telephone contact with social partners.

## Relationship Duration, Contact, and Daily Well-Being

### Daily Interactions With Social Partners

A social network with many long-duration ties may be beneficial as people go about their daily lives. Relationships formed

in one's teens, twenties, or thirties may be part of a "reminiscence bump," reflecting more intense autobiographical memory for this life period (Munawar et al., 2018). Similarly, shared earlier life experiences may generate rewards. Johnson and Barer (2003) conducted a qualitative study of adults aged 85 and older, many of whom had outlived age peers. One older adult joked that he would trade 12 grandchildren for one old friend. This facetious comment suggests that long-duration relationships provide a peer group not available from beloved younger or newer social partners.

Interacting with these long-duration ties may foster positive emotions due to their salience and meaning. Yet, a history of early or current stress and disagreements also may generate stress during these interactions and compromise older adults' emotional well-being (Fingerman et al., 2004). By contrast, shorter-duration ties may involve less emotional reactions (positive or negative) throughout the day as there has been less investment in these ties.

## Ties in the Overall Network and Daily Experiences

Long-duration ties with infrequent contact may serve as protective factors due to their symbolic nature. According to attachment theory, individuals develop internalized working models of close social ties that allow them to feel secure, regardless of whether the other party is present (Bowlby, 2008). Theories regarding perceived (or latent) support also suggest that individuals benefit from perceptions of having close social partners who will provide help if needed, regardless of actual support (Gleason & Iida, 2015; Uchino, 2009; Wethington & Kessler, 1986).

This mental representation of ties in the broader network may serve a purpose in how individuals experience daily encounters with social partners. To engage in frequent contact, social partners need to invest time and resources to maintain interactions. By contrast, believing one has close ties with whom they contact infrequently may create perceptions of the availability of social contacts without the need to invest such resources into the relationship.

In general, people report worse mood when they incur interpersonal stressors (i.e., less positive and more negative mood; Birditt et al., 2005; Charles et al., 2013). Believing that one has many long-duration relationships may have a salutary effect, however, because these ties are less likely to be a source of that interpersonal stress. Moreover, mental representations of these ties may buffer stresses that arise in other relationships by offering a sense of security. A recent paper found that perceived support minimizes the association between solitude and negative affect as older adults go about their daily lives (Fang et al., 2022), and long-duration ties also may help dampen the effects of interpersonal stressors.

This study examines these premises in a daily context. If these hypotheses are supported, interventions encouraging older adults to recognize that they have close relationships with infrequent contact may help ameliorate feelings of loneliness or lack of social connection.

## Other Factors and the Current Study

We considered covariates (e.g., age, gender, socioeconomic status, health, and marital status) that are known to be associated with duration of tie, contact, and daily well-being. Social network size often decreases with age, but the number of long-duration ties may increase (Fingerman & Birditt,

2003; Lang, 2001). Older women typically have larger social networks than older men (Antonucci et al., 2001; Cornwell, 2011). Older men and women with more education report larger social networks (Ajrouch et al., 2005). Individuals in better health have more social encounters throughout the day (Fingerman et al., 2020). We adjusted for marital status, which also is associated with social network patterns (Antonucci & Birditt, 2011).

Indeed, duration may be confounded with relationship type. Family ties are among the longest-lasting close relationships (Fingerman & Birditt, 2003) and many arise at birth (e.g., tie to parent, sibling). Some family members become estranged (Gilligan et al., 2022; Hartnett et al., 2013), and marital ties may disband followed by remarriage (Raley & Sweeney, 2020), but most family ties endure. As such, in sensitivity tests, we considered family ties of differing duration and contact frequency.

In sum, we treated relationship duration and general frequency of contact as characteristics of the relationships and classified relationships as: (a) long-duration ties with frequent contact—"long-duration active ties" (e.g., spouse, nearby friends), (b) long-duration ties with infrequent contact—"long-duration dormant ties" (e.g., college roommate, sibling), (c) shorter-duration active ties (e.g., new friends), and (d) shorter-duration dormant ties. We asked whether encounters with each type of tie were associated with older adults' interpersonal stress and mood throughout the day. We also explored whether believing that one has many long-duration relationships helps to reduce the negative impact of social stress on an older person's mood throughout the day.

Hypotheses were as follows:

Ho1 Daily encounters with long-duration active ties will be more likely to involve a stressful encounter than daily encounters with long-duration dormant ties or shorter-duration ties (regardless of frequency).

Ho2 Daily encounters with long-duration ties will enhance positive as well as negative mood, regardless of whether those ties typically involve frequent contact (long-duration active and dormant ties). Encounters with shorter-duration ties will enhance positive mood only.

Ho3 Beliefs that one has long-duration ties with infrequent contact (long-duration dormant ties) will dampen negative mood when interpersonal stresses occur throughout the day.

## Method

The Daily Experiences and Well-being Study (DEWS) involved 333 adults aged 65 and older (54% female) residing in the greater Austin Metropolitan Statistical Area. Participants were recruited via listed landline samples with matching addresses because sampling for older adults in 2016 still benefited from use of landlines (Kennedy et al., 2016). Oversampling in high-density minority neighborhoods generated a sample with 33% ethnic or racial minority older adults and the full range of socioeconomic status (SES). Participants first received a prenotification letter followed by telephone recruitment. Interviewers resided in Austin and included some who were bilingual in Spanish.

Participants completed an in-person interview in their home or a place of convenience that lasted 1.5–2 hr (i.e., "baseline interview"), with information about social ties, including duration and contact. Then, using a study-provided handheld Android device, participants completed a 5- to 6-day data collection (across 3 weekdays and 2 weekend days) involving ecological momentary assessments (EMAs) every 3 hr throughout waking hours. Participants unfamiliar with this technology received training and technical support.

This study included 313 participants who completed EMAs. The 20 participants who did not complete the EMAs were more likely to identify as ethnic or racial minority ( $\chi^2 = 7.19$ ,  $p = .007$ ), but did not differ on other background characteristics, reports of social ties, or well-being.

## Measures of Social Relationships in the Baseline Interview

### Convoy model

Participants completed the convoy measure, a diagram with three concentric circles, listing social partners who are very important in their lives ( $n = 2,867$  social partners; Antonucci & Birditt, 2011). Participants indicated their relationship to each of the 10 closest social partners (e.g., spouse, sibling, friend). Then, they indicated the number of years they had known each of those close social partners. They reported how often they generally (a) see each social partner in person and (b) have contact by phone, from 1 = *once a year or less often* to 8 = *daily* (Fingerman et al., 2011). Participants reported engaging in texting or other electronic communications at 15% of assessments and we did not consider this mode of contact further. We combined in person and phone contact because either form of contact could evoke stress and be associated with mood (e.g., Burholt et al., 2020; Polenick et al. 2021).

### Background characteristics

Participants reported their age, gender, and education. They provided racial and ethnic identities; we coded these identities as 1 = *minoritized race/ethnicity* (Latinx, African American), 0 = *non-Hispanic White*. Study criteria limited participants to working 20 hr a week or less, coded 1 = *works for pay* or 0 = *does not work for pay*. Participants rated their physical health from 1 = *poor* to 5 = *excellent* (Idler & Kasl, 1991). We coded marital status as 1 = *first marriage*, 0 = *other partnership status or never married*.

### Ecological Momentary Assessments

We transferred the top 10 closest social partners named in the convoy to the handheld device. Every 3 hr, participants received a list of those 10 partners and they selected the name of any they had contact with. They reported 1.47 ( $SD = 1.83$ , range 0 to 10) encounters with less close social partners at each 3-hr assessment

Participants then reported whether they had contact with anyone else during the prior 3 hr and then indicated their relationship with those people. If they had such contact, they indicated how they knew this person (e.g., less close friend, service provider, stranger). On average, participants reported 1.40 ( $SD = 0.83$ , range 0 to 5.82) encounters with less close social partners at each 3-hr assessment. Shorter-duration dormant ties rarely occurred, (only 1% of relationships,  $n = 26$ )

belonged to this category and thus we did not consider these ties further.

We considered any encounters with social partners in each category (e.g., long-duration active ties, long-duration dormant ties, and shorter-duration active ties). There is a distinction between self-reports of contact frequency in the baseline interview and reports of *actual* encounters throughout the day. For example, in the convoy, a participant might list Maria as a close partner of long duration whom they typically see once a year. But that participant might encounter Maria during one of the 3-hr assessments because, coincidentally, that was one of the times that year the participant saw Maria. Thus, it is possible that participants report encounters with a tie classified as “dormant.”

Participants reported whether they had discussed something stressful with each social partner they encountered in the prior 3 hr (1 = *yes*, 0 = *no*). Participants also rated the extent to which they felt four negative emotions (e.g., sad, bored) and four positive emotions (e.g., calm, proud) in the prior 3 hr from 1 = *not at all* to 5 = *a great deal* (Birditt et al., 2019; Huo et al., 2021; Ng et al., 2021),  $\alpha = 0.73$  for positive mood, and  $\alpha = 0.72$  for negative mood (see Table 1).

## Analytic Procedure

We first examined descriptive statistics and bivariate correlations and then tested the hypotheses. We hypothesized that encounters with social ties of different duration and contact frequency would be associated with interpersonal stress and mood throughout the day. We conducted multilevel modeling due to the nested structure of data; assessment level (*Level 1*) was nested within the day level (*Level 2*), nested within the participant level (*Level 3*). To test Hypothesis 1, we treated any stressful encounter during the 3-hr assessment as the outcome and any encounter with each category of tie as the predictors (e.g., long-duration active ties, long-duration dormant ties, shorter-duration active ties). Because the outcome variable was binary, we estimated 3-level logistic regression models to predict of probability of having any stress encounter. We then estimated two 3-level models to predict 3-hr positive and negative mood as separate continuous outcomes.

To examine buffering effects of long-duration dormant ties on the association between interpersonal stress and mood, we estimated 3-level models and treated the number of ties fitting each category from the baseline interview as the moderating variables. We added the interaction terms of number of ties in each category  $\times$  interpersonal stress at each 3-hr assessment. The outcomes were positive and negative mood during those 3 hr.

We used *lme4* in R to test the models, and we adjusted for participant age, gender, ethnic/racial minoritized status, employment status, education, health, and first marriage (obtained in the baseline interview). We also adjusted for encounters with additional social partners (outside of the closest 10) in the prior 3 hr.

## Results

### Descriptive Information: Duration and Frequency of Social Ties

We examined distributions of relationship duration and frequency of contact. On average, participants' relationships with close partners had endured decades ( $M = 37.32$  years,  $SD = 21.55$ ). We treated 10 years as the cutoff to

**Table 1.** Descriptive Information for Participants, Social Ties, Well-Being, and Experiences Throughout the Day

Variables	Participants ( $n = 313$ )		
	M	SD	Range
<i>Participant background information</i>			
Age	73.94	6.38	65–90
Self-rated health <sup>a</sup>	3.56	1.02	1–5
Proportion			
Female		0.56	
Ethnic or racial minority		0.31	
Education			
High school or less		0.15	
Some college		0.28	
College graduate or more		0.57	
Employed for pay (part time)		0.12	
Married		0.59	
<i>Close relationships</i>			
Number of close partners in convoy	15.10	6.97	0–30
Duration/years social partner known	37.32	21.55	0–87
Frequency of contact <sup>b</sup>	5.68	1.77	1–8
Number of relationships reported in the convoy			
Long-duration active ties <sup>c</sup>	6.80	2.18	0–10
Long-duration dormant ties <sup>c</sup>	1.33	1.72	0–9
Shorter-duration active ties <sup>c</sup>	0.94	1.27	0–6
Shorter-duration dormant ties <sup>c</sup>	0.08	0.34	0–3
<i>EMA measures every 3 hr (<math>n = 6,262</math>)</i>			
Long-duration active ties encountered	1.32	1.20	0–10
Long-duration dormant ties encountered	0.03	0.20	0–4
Shorter-duration active ties encountered	0.11	0.40	0–5
Shorter-duration dormant ties encountered	0.00	0.03	0–1
Interpersonal stressful encounters	0.30	0.77	0–8
Positive mood <sup>d</sup>	3.47	0.81	1–5
Negative mood <sup>e</sup>	1.23	0.40	1–5

Notes:  $n = 313$  participants,  $n = 6,262$  assessments.  $M =$  mean;  $SD =$  standard deviation; EMA = ecological momentary assessment. <sup>a</sup>1 (*poor*) to 5 (*excellent*).

<sup>b</sup>1 (*less than once a year or never*) to 8 (*daily*).

<sup>c</sup>Long-duration ties (10 years or longer); shorter-duration ties (*less than 10 years*); active ties (*contact once a month+*); dormant ties (*contact less than once a month*).

<sup>d</sup>Mean score of four items (e.g., proud, content) rated 1 (*not at all*) to 5 (*a great deal*).

<sup>e</sup>Mean score of four items (e.g., irritated, bored) rated 1 (*not at all*) to 5 (*a great deal*).

“shorter-duration” relationships (0–9 years;  $M = 5.03$  years,  $SD = 2.40$ ), which account for 11% of all relationships reported in this sample ( $n = 319$  out of 2,855). Notably, relationships of 8–9 years might be considered of long duration. Yet, given the age of participants and distribution of social partners, we treated these as shorter-duration relationships.

Drawing on prior research (e.g., Cohen & Janicki-Deverts, 2009), we defined frequent contact as at least once a month. A majority of social ties involved frequent contact ( $n = 2,414$ ), and fewer involved infrequent contact less than once a month ( $n = 441$ ).

We then created four categories of social ties: (a) long-duration active ties ( $n = 2,121$  relationships), (b) long-duration dormant ties ( $n = 415$  relationships), and (c) shorter-duration active ties ( $n = 293$  relationships).

As mentioned previously, only 1% of ties fit the shorter-duration dormant ties criteria. Each social partner fit one category, but participants had ties distributed across three categories. For example, Denzel might list 4 long-duration active ties, 2 long-duration dormant ties, and 4 shorter-duration active ties among the 10 closest ties. Therefore, we treated the number of relationships in each category as predictors. Among participants, 99% reported at least one long-duration active tie, 50% reported at least one long-duration dormant tie, and 48% experienced at least one shorter-duration active tie.

Regarding encounters with different types of ties throughout the day: 76% ( $n = 4,770$ ) of the assessments involved encounters with long-duration active ties, 2% ( $n = 127$ ) involved encounters with long-duration dormant ties, and 9% ( $n = 558$ ) involved encounters with shorter-duration active ties. Due to the relatively small  $n$ , we interpret findings involving long-duration dormant ties with caution.

### Encounters With Close Relationships in Different Categories of Duration/Frequency

We asked whether participants experienced stress in each daily encounter with each type of social partner. We estimated a 3-level logistic regression assessing the likelihood that encounters with different types of social partners were considered stress-laden (1 = *yes*, 0 = *no*). We found that participants were more likely to report that they had discussed something stressful at assessments when they had encounters with long-duration active ties ( $B = 1.20$ , *Odds Ratio* = 3.33,  $p < .001$ ; Table 2). Interacting with shorter-duration active ties or long-duration dormant ties was not associated with a significantly elevated likelihood of experiencing stress.

We estimated 3-level multilevel models predicting positive and negative mood (rated on a 5-point scale) every 3 hr. We found significant associations between having an encounter with long-duration active tie ( $B = 0.08$ ,  $p < .001$ ) or shorter-duration active ties ( $B = 0.12$ ,  $p < .001$ ) with more positive mood. By contrast, having an encounter with long-duration dormant ties was associated with more negative mood ( $B = 0.09$ ,  $p = .006$ , Table 3).

### Buffering Effects of Different Categories of Close Relationships

Next, we asked whether perceiving a greater number of long-duration dormant ties serves as psychological resources to buffer the impacts of interpersonal stress on mood throughout the day. For comparison, we assessed each category of tie as a potential moderator. Multilevel models revealed significant interactions of relationship category  $\times$  interpersonal stress on mood. Participants who experienced a stressful encounter reported lower positive mood and higher negative mood; these effects were attenuated among participants who reported a greater number of shorter-duration active ties in the convoy (positive mood:  $B = 0.03$ ,  $p = .005$ ; negative mood:  $B = -0.02$ ,  $p = .02$ ; Table 4; simple effects analysis, Figure 1). Likewise, the association between experiencing a stressful encounter and increased negative mood was attenuated for those participants who reported a greater number of long-duration active ties in the convoy ( $B = -0.01$ ,  $p = .05$ ; Supplementary Figure 1).

Associations involving long-duration dormant ties did not fit our predictions. Having a greater number of long-duration dormant ties exacerbated the associations between discussing stressful situations and decreased positive mood, as

**Table 2.** Multilevel Logistic Regression Model Predicting Stressful Encounters Every 3 hr From Encounters With Social Ties of Different Duration and Frequency of Contact

Variables	Stressful encounters <sup>d</sup>		
	B	OR	SE
Fixed effects			
Intercept	0.20	1.22	1.09
Encounter with long-duration active ties <sup>a</sup>	1.20***	3.33	0.13
Encounter with long-duration dormant ties <sup>a</sup>	0.40	1.49	0.28
Encounter with shorter-duration active ties <sup>a</sup>	0.29	1.34	0.16
Covariates			
Encounter with less close ties <sup>b</sup>	0.90***	2.45	0.09
Age	-0.04**	0.96	0.01
Female	0.34*	1.41	0.17
High school or less	Ref.	Ref.	Ref.
Some college	-0.15	0.86	0.26
College graduate or more	0.23	1.26	0.26
Self-rated health <sup>c</sup>	-0.24**	0.79	0.08
Ethnic or racial minority	-0.64**	0.53	0.20
Employed for pay (part time)	-0.12	0.88	0.24
First marriage	-0.40*	0.67	0.17
Random effects			
Intercept VAR (Level 2: Day)	0.48***		0.02
Intercept VAR (Level 3: Participant)	1.16***		0.06
-2 (pseudo) log likelihood		5,224.6	

Notes:  $n = 313$  participants,  $n = 6,262$  assessments.  $B$  = unstandardized coefficient; OR = odds ratio; Ref. = reference category for comparison to other categories of education; SE = standard error; VAR = variance.

<sup>a</sup>1 (had any encounter with social partner in this category of ties), 0 (did not have encounter with this category of tie). Long-duration ties (10 years or longer); shorter-duration ties (less than 10 years); active ties (contact once a month+); dormant ties (contact less than once a month). Shorter-duration dormant ties were not included because only 1% of such ties in the convoy fit this category.

<sup>b</sup>1 (had any encounter with not close ties), 0 (did not have encounters with not close ties).

<sup>c</sup>1 (poor) to 5 (excellent).

<sup>d</sup>1 (had any stressful encounter), 0 (did not have stressful encounters).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

well as increased negative mood (positive mood:  $B = -0.02$ ,  $p = .02$ ; negative mood:  $B = 0.02$ ,  $p < .001$ ; Supplementary Figure 2).

### Sensitivity Tests

Over 72% of long-duration relationships were with family members (e.g., spouse, child), whereas only 46% of shorter-duration relationships were. We reran the analyses considering family relationship and frequency of contact (e.g., family active tie, family dormant tie, nonfamily active tie, nonfamily dormant ties). The pattern of findings was generally the same (Supplementary Tables 1–3).

We reran the analyses examining within-group differences for each racial/ethnic group separately: African American, Hispanic, and non-Hispanic White samples. The pattern of findings was nearly identical in each group.

The pattern for gender was the same for the first two hypotheses. However, three-way interaction analyses revealed gender differences in the moderating effects of relationship category on the association between interpersonal stress and momentary mood (Hypothesis 3). Findings for

**Table 3.** Multilevel Models Predicting Positive and Negative Mood Every 3 hr From Encounters With Social Ties of Different Duration and Frequency of Contact Classified in the Convoy

Variables	Positive mood <sup>d</sup>		Negative mood <sup>e</sup>	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Fixed effects				
Intercept	3.62***	0.55	1.76***	0.23
Encounter with long-duration active ties <sup>a</sup>	0.08***	0.02	0.01	0.01
Encounter with long-duration dormant ties <sup>a</sup>	0.05	0.05	0.09**	0.03
Encounter with shorter-duration active ties <sup>a</sup>	0.12***	0.02	-0.01	0.02
Covariates				
Encounter with less close ties <sup>b</sup>	0.02	0.01	0.02*	0.01
Age	-0.01	0.01	-0.00	0.00
Female	0.01	0.08	-0.01	0.03
High school or less	Ref.	Ref.	Ref.	Ref.
Some college	0.18	0.13	-0.04	0.05
College graduate or more	-0.03	0.13	0.02	0.05
Self-rated health <sup>c</sup>	0.12**	0.04	-0.09***	0.02
Ethnic or racial minority	0.08	0.10	-0.03	0.04
Employed for pay (part time)	-0.12	0.12	-0.08	0.05
First marriage	-0.08	0.09	-0.07	0.04
Random effects				
Intercept VAR (Level 2: Day)	0.05***	0.01	0.02***	0.00
Intercept VAR (Level 3: Participant)	0.46***	0.04	0.07***	0.02
Residual VAR	0.13***	0.02	0.06***	0.01
-2 log likelihood	7,130.6		2,393.4	

Notes:  $n = 313$  participants,  $n = 6,262$  assessments. *B* = unstandardized coefficient; Ref. = reference category; *SE* = standard error; VAR = variance. This analysis involves encounters with different types of social partners every 3 hr.

<sup>a</sup>1 (had any encounter with this category of tie), 0 (did not have encounters with this category of tie). Long-duration ties (10 years or longer); shorter-duration ties (less than 10 years); active ties (contact once a month+); dormant ties (contact less than once a month). Shorter-duration dormant ties were not included because only 1% of such ties in the convoy fit this category.

<sup>b</sup>1 (had encounters with not close ties), 0 (did not have encounters with not close ties).

<sup>c</sup>1 (poor) to 5 (excellent).

<sup>d</sup>Mean score of four items (e.g., proud, content) rated from 1 (not at all) to 5 (a great deal).

<sup>e</sup>Mean score of four items (e.g., irritated, bored) rated from 1 (not at all) to 5 (a great deal).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

these hypotheses were only significant for women and not for men.

## Discussion

This study addressed a key issue that has not been well-studied with regard to older adults' social world—duration of relationships. We found that the vast majority of relationships in late life were formed over a decade ago. Many long-duration relationships endured in the absence of regular contact. We had predicted that these long-duration ties that were dormant would serve an important purpose in reassuring older adults of their connection to the broader social world, and allowing them to weather daily interpersonal stressors. If so, fostering

connection to and memories of these long-duration dormant ties could serve as a low-hanging intervention point for older adults' well-being. Surprisingly, we found the opposite. Active ties that involved regular and frequent contact served as an asset in buffering the impact of interpersonal stressors on mood, regardless of duration of the ties. By contrast, having long-duration ties without contact exacerbated the implications of interpersonal stress on mood.

## Duration and Contact in Social Ties in Late Life

Findings advance an integration of four major theoretical perspectives regarding the social world in late life: socioemotional selectivity theory and the convoy model (addressing duration of ties), and social integration theory and attachment theory/theories of perceived support (addressing frequency of contact).

Although the convoy model provides a framework for understanding why new close relationships form throughout adulthood (Antonucci & Birditt, 2011), our findings are more consistent with an extension of socioemotional selectivity theory (Carstensen, 2021). Other studies also suggest that individuals are more interested in retaining and enhancing close relationships than in establishing new ones in late life (Carstensen, 2021).

Further, findings support social integration theory by showing that a majority of close ties involve contact at least once a month. To foster closeness in new relationships, individuals need frequent contact (Shea et al., 1988), but apparently, this premise holds true even in relationships that have endured for decades. Further, reporting frequent engagement with social partners may serve as a mechanism through which these ties confer benefits (Berkman et al., 2000; Thomas, 2011). In other words, ties with frequent contact may be most beneficial.

## Benefits of Ties of Different Duration and Frequency of Contact in Daily Life

Importantly, we advance an understanding of how different relationship types may fit together and be associated with interpersonal stresses in daily life. Findings suggest that contact may be necessary to generate benefits in both shorter-term and long-duration ties. This pattern contradicts a study conducted in the 20th century examining holiday cards; that study suggested that long-duration ties lend a sense of belonging in late life even in the absence of ongoing contact (Fingerman & Griffiths, 1999). The current study suggests that these benefits may have changed or be limited to the holiday season. Consistent with social integration theory, frequent contact was a key factor in associations with positive mood in daily interactions (Berkman et al., 2000).

Ties with frequent contact were generally beneficial, but patterns also were nuanced. Long-duration active ties were associated with more positive mood consistent with socioemotional selectivity theory (Carstensen, 2021; Charles & Carstensen, 2010). Yet, older adults also were more likely to report interpersonal stress when they had encounters with long-duration active ties. Older adults may feel more comfortable talking about something stressful or engaging in minor conflict with ties that have endured for more than a decade.

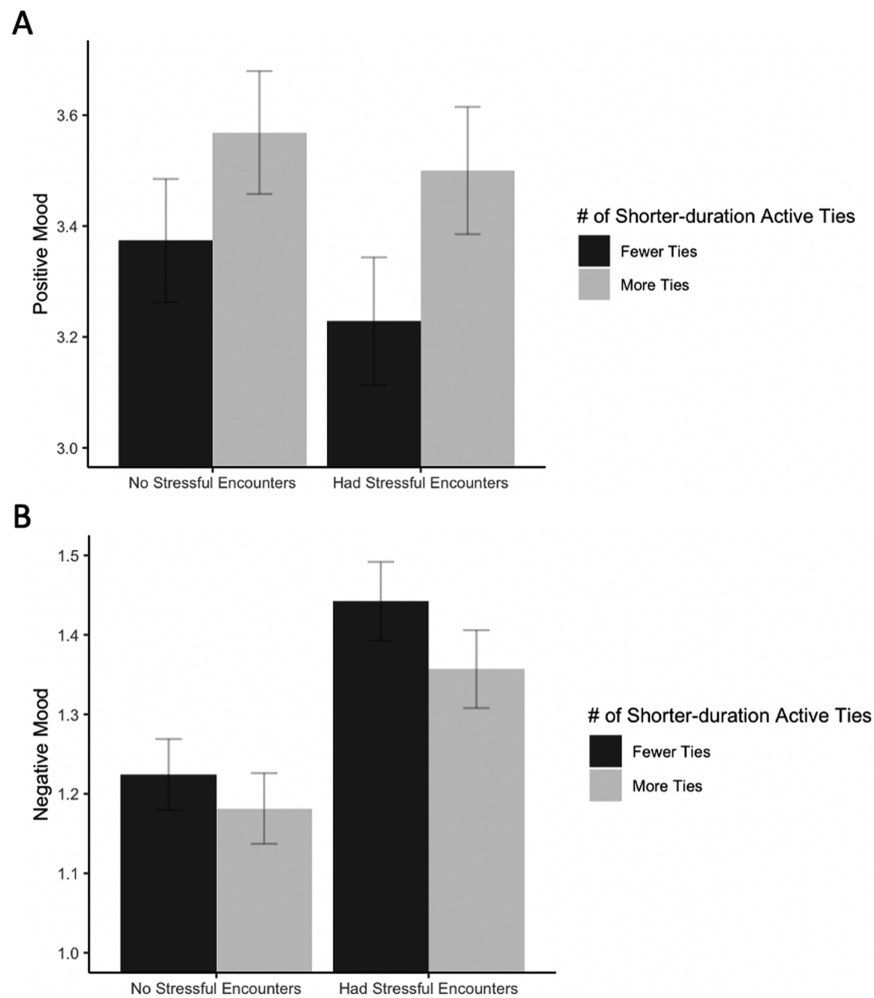
We speculated that mental representation of enduring close social ties would buffer the implications of interpersonal stress for mood throughout the day. Believing one has many enduring ties may allow individuals to dismiss interpersonal tensions in daily life as a fleeting experience. Among the array

**Table 4.** Multilevel Models Predicting Positive and Negative Mood From Stressful Encounters Every 3 hr: Moderated by Number of Social Ties of Different Duration and Frequency of Contact Classified in the Convoy

Variables	Long-duration active ties			Long-duration dormant ties			Shorter-duration active ties					
	Positive mood <sup>c</sup>		Negative mood <sup>d</sup>	Positive mood <sup>e</sup>		Negative mood <sup>f</sup>	Positive mood <sup>g</sup>		Negative mood <sup>h</sup>			
	B	SE	B	SE	B	SE	B	SE	B	SE		
Fixed effects												
Intercept	3.78***	0.55	1.69***	0.22	3.72***	0.55	1.70***	0.22	3.63***	0.55	1.72***	0.22
Any stressful encounter past 3 hr <sup>a</sup>	-0.11***	0.01	0.20***	0.01	-0.11***	0.01	0.20***	0.01	-0.11***	0.01	0.20***	0.01
Long-duration active ties <sup>b</sup>	0.05*	0.02	-0.00	0.01	—	—	—	—	—	—	—	—
Stressful encounters × long-duration active ties	0.00	0.01	-0.01*	0.00	—	—	—	—	—	—	—	—
Long-duration dormant ties <sup>b</sup>	—	—	—	—	-0.03	0.02	0.00	0.01	—	—	—	—
Stressful encounters × long-duration dormant ties	—	—	—	—	-0.02*	0.01	0.02***	0.01	—	—	—	—
Shorter-duration active ties <sup>b</sup>	—	—	—	—	—	—	—	—	0.08*	0.03	-0.02	0.01
Stressful encounters × shorter-duration active ties	—	—	—	—	—	—	—	—	0.03**	0.01	-0.02*	0.01
Covariates												
Encounter with less close ties <sup>c</sup>	0.03**	0.01	-0.00	0.01	0.03**	0.01	-0.00	0.01	0.03**	0.01	-0.00	0.01
Age	-0.01	0.01	-0.00	0.00	-0.01	0.01	-0.00	0.00	-0.01	0.01	-0.00	0.00
Female	-0.06	0.09	-0.01	0.04	-0.02	0.09	-0.01	0.03	0.00	0.08	-0.01	0.03
High school or less	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Some college	0.15	0.13	-0.03	0.05	0.16	0.13	-0.03	0.05	0.18	0.13	-0.03	0.05
College graduate or more	-0.04	0.13	0.01	0.05	-0.03	0.13	0.01	0.05	-0.04	0.13	0.02	0.05
Self-rated health <sup>d</sup>	0.11*	0.04	-0.08***	0.02	0.11**	0.04	-0.08***	0.02	0.10*	0.04	-0.08***	0.02
Ethnic or racial minority	0.04	0.10	-0.01	0.04	0.06	0.10	-0.01	0.04	0.11	0.10	-0.02	0.04
Employed for pay (part time)	-0.12	0.12	-0.07	0.05	-0.11	0.12	-0.07	0.05	-0.13	0.12	-0.07	0.05
First married	-0.09	0.09	-0.06	0.03	0.09	0.09	-0.06	0.03	0.10	0.09	-0.06	0.03
Random effects												
Intercept VAR (Level 2; Day)	0.05**	0.01	0.02***	0.00	0.05***	0.01	0.02***	0.00	0.05***	0.01	0.02***	0.00
Intercept VAR (Level 3; Participant)	0.45***	0.04	0.07***	0.01	0.46***	0.04	0.07***	0.01	0.45***	0.04	0.07***	0.01
Residual VAR	0.13***	0.02	0.06***	0.01	0.13***	0.02	0.06***	0.01	0.13***	0.02	0.06***	0.01
-2 log likelihood	7,125.0		2,004.0		7,124.0		1,994.1		7,116.6		2,000.4	

Note. *n* = 313 participants, *n* = 6,262 assessments. *B* = unstandardized coefficient; Ref. = reference category; SE = standard error; VAR = variance. This analysis involves stressful encounters every 3 hr moderated by the mental representation of the number of social ties in each category reported in the convoy.  
<sup>a</sup>1 (had any stressful encounter), 0 (did not have stressful encounters).  
<sup>b</sup>Number of this category of tie listed in the convoy measure. Long-duration ties (10 years or longer); shorter-duration ties (less than 10 years); active ties (contact once a month+); dormant ties (contact less than once a month). Shorter-duration dormant ties were not included in analysis because participants only reported 1% of such ties in their convoys.  
<sup>c</sup>1 (had encounters with not close ties), 0 (did not have encounters with not close ties).  
<sup>d</sup>1 (poor) to 5 (excellent).  
<sup>e</sup>Mean score of four items (e.g., proud, content) rated from 1 (not at all) to 5 (a great deal).  
<sup>f</sup>Mean score of four items (e.g., irritated, bored) rated from 1 (not at all) to 5 (a great deal).  
<sup>g</sup>\**p* < .05, \*\*\**p* < .001.





**Figure 1.** Interaction effects of shorter-duration active ties  $\times$  stressful encounters on momentary mood. Panel A: Interaction effect of number of shorter-duration active ties in the convoy  $\times$  any stressful encounters during each 3-hr interval throughout the day on positive mood during the 3-hr interval. Panel B: Interaction effect of number of shorter-duration active ties in the convoy  $\times$  any stressful encounters during each 3-hr interval throughout the day on negative mood during the 3-hr interval.

of long-duration ties, the active ones that involve frequent contact were associated with greater positive mood throughout the day. Perhaps these long-duration active ties include frequent contact with old friends who are more likely to be purely positive (Ng et al., 2021).

We asked whether family ties account for associations observed between long-duration ties, stressful encounters, and mood. The answer is yes and no. As with long-duration active ties, encounters with active family ties were associated with a greater likelihood of stressful encounters as well as with increased positive mood throughout the day. Yet, encounters with active family ties also were associated with greater negative mood. As such, consistent with other studies, older adults' experiences with family involve ambivalence (both positive and negative sentiments; Fingerman et al., 2004).

### Additional Concerns and Implications

We considered other factors that may condition the patterns of association. Findings were consistent across race and ethnicity, begging the question of the role cultural and structural factors play with regard to implications of enduring social ties. Presumably, these factors do play a role, but the distinctions were not evident here. Rather, patterns of findings were

differentiated by gender. Women may be driving the findings regarding buffering effects of having many high-contact ties. Studies examining social integration theory have not provided much attention to gender (Thomas, 2011), but research has documented that social relationships may have a greater impact on women than on men in general (Umberson & Montez, 2010). Future research should pursue an understanding of duration of ties in these gendered patterns.

The study is hampered by several limitations. The sample was constrained to one geographic region, and despite distribution by race/ethnicity and SES in the baseline interview, the sample in the EMA component was biased toward non-Hispanic White older adults. Nevertheless, this sample is more diverse than some prior EMA studies with older adults that have yielded important findings (Ram et al., 2014). Larger samples may also capture nuances not captured by a sample of 300, but given the in-depth nature of such data, this study remains one of the largest with regard to older adults and EMA techniques.

Definition of shorter-duration ties included relationships that had endured nearly a decade and also encompassed ties that were potentially well-established (i.e., 5–9 years). Future qualitative research might investigate older adults' subjective

definitions and perceptions of long-enduring and newer close relationships. Importantly, we also do not know why some ties are dormant, whereas others are more active. Understanding the motivation for the frequency of contact may also shed insights into the patterns identified here. It is possible that interventions should focus on helping older adults understand why they do not have contact with some social partners rather than attempting to foster increased connection.

Overall, this study emphasizes the importance of examining both duration and contact frequency when investigating social ties and their implications for daily life. As expected, long-duration ties had important implications for daily mood and greater likelihood of interpersonal stressors. Yet, the degree of involvement with these ties also mattered. Long-duration active ties (i.e., with contact at least once a month) appear to be beneficial whereas long-duration dormant ties (with infrequent contact) had a different effect. This suggests possible benefits from long-term ties are lost when these ties are inactive. Future research should examine duration of ties in more detail and determine how the interchanges during daily encounters contribute to overall well-being.

## Supplementary Material

Supplementary data are available at *The Gerontologist* online.

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## Conflict of Interest

None.

## Data Availability

The data used in this paper are available through the National Archives of Computerized Data on Aging at the University of Michigan <https://www.icpsr.umich.edu/web/NACDA/studies/38570/versions/V1>. This study was not pre-registered.

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