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Life course transitions and changes in network ties among younger and older adults

Jordan Weiss[a], **Leora E. Lawton**[b], **Claude S. Fischer**[c,*]

[a]Department of Demography, University of California, Berkeley, CA, USA

[b]Berkeley Population Center, University of California, Berkeley, CA, USA

[c]Department of Sociology, University of California, Berkeley, CA, USA

Abstract

Several theories of the life course highlight the importance of social connections and ties for coping with transitions that occur at different ages. Individuals rely on family, friends, and colleagues to adapt to these transitions which may in turn change the composition of their networks. Yet, little is known about the association between life cycle transitions and changes in network characteristics. We used fixed effects regression models with three waves of egocentric network data from the UC Berkeley Social Network Study (UCNets) to examine how career- and family-related life cycle transitions during two key life stages—young adulthood and the transition from middle to old age—are associated with network turnover, the proportion of the network comprised of kin, and confidence in receiving support from personal networks. Younger adults experienced churn following a birth and marriage or partnership, while no life transition was associated with changes in proportion kin, and only with the birth of a child did confidence decline. Among older adults, no transition was associated with any measured event, suggesting that older adults maintain more stable relationships compared to young adults and can weather life events without significant disruptions to their networks.

Keywords

Social networks; ego-centric; life course; network composition; fixed effects; churn; life events

1. Introduction

Transitions across the life course have consequences that extend beyond the individuals to the personal networks in which they are situated (for overviews, e.g., Antonucci et al., 2010; Wrzus et al., 2013; Alwin, Felmlee & Kreager, 2018). Moreover, these transitions occur across life domains such as family and work; there are personal, institutional, and structural

*Correspondence to: Claude S. Fischer, 410 Barrows Hall, University of California, Berkeley, CA 94720-1980, USA. fischer1@berkeley.edu; phone: 1.510.642.4766; fax: 1.510.642.0659.

Competing Interests

The authors have no competing interests.

Appendix A Supporting information

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factors that affect life course outcomes and transitions (Mayer, 2009). One's position in the life course trajectory in terms of ascribed or achieved statuses further filters the consequence of such transitions. Given the importance of personal networks for health (Berkman, 1995; Berkman & Glass, 2000; Christakis & Fowler, 2009; Sheldon Cohen & Janicki-Deverts, 2009) understanding the consequences of network change is important for understanding access to support for well-being. Yet we know comparatively little about how the networks are reconstructed by individuals as a response to life events so as to sustain the support, especially for the non-elderly. In our era of "networked individualism" (Rainie & Wellman, 2012), forming and managing social support relationships become yet more important.

2. Networks and change

The research on networks has identified a number of distinct components of network composition and structure (Perry, Pescosolido, & Borgatti, 2018), each of which has implications for the ability of the network to provide support for ego. In this study we are focused on certain aspects of the network related to network change, that is, aspects that would get reshaped following life events. Such a reshaping over the life course occurs mainly because individuals move into and out of different social contexts within which they meet and maintain social ties (e.g., new schools, jobs, neighborhoods, even families by marriage; on theorizing and assessing contexts or "foci", see Fischer et al., 1977, pp. 42ff; Feld, 1981; Mollenhorst, 2009; Mollenhorst, Volker, & Flap, 2014; cf. Tulin, Mollenhorst, & Volker, 2021.) Marsden (2018) has referred to this frame as a "supply-side" analysis as it focuses on how opportunities for ties and for specific sorts of ties vary as individuals move through social "locations" over the life course.

The well-known convoy model (e.g., Kahn & Antonucci, 1980; Antonucci et al., 2010; Suanet & Antonucci, 2017), for example, posits that "networks change over time because of developmental and contextual processes" (Antonucci et al., 2010, p. 434; see also (Bruine de Bruin, Parker, & Strough, 2020). Wrzus et al.'s (2013) meta-analysis suggests that, indeed, most changes occur as individuals move through the standard age-driven stages of life. In many cases, however, the ties fray or are simply no longer desirable, perhaps due to people "drifting apart" (Fischer & Offer, 2020). Also, there can be a resistance to change through a motivation to maintain networks as they are, a principle known as "continuity theory" in gerontology (Atchley, 1989; Badawy, Schafer, & Sun, 2019; Cornwell, Schumm, Laumann, Kim, & Kim, 2014).

Our critical contributions to this work are a few-fold: We deploy a relatively new panel dataset, UCNets, 2015–18, one which enables us to look at change in two periods of the life course that are underrepresented in a literature weighted heavily with studies of the very old or the very young. UCNets focuses on early adulthood, the twenties, and mature adulthood, the fifties to the seventies. As a survey designed to study networks, it also provides a much richer description of social ties than most other studies (e.g., those that vaguely ask about friends, or the "close/closer/closest" associates method). In addition, of the many measures extractable from UCNets, we focus on three aspects of network characteristics networks that are both important and un- or understudied in the literature. Most studies focus simply on the numbers of family and friends (Wrzus et al., 2013), but UCNets' panel study allows us

to examine (a) *churn* (defined below), (b) *the proportion of kin vs non-kin alters*, and (c) *the confidence in receiving support from one's network* (hereafter referred to as network confidence). These three aspects speak to the important ability of mustering social resilience through expected and unexpected life transitions.

2.1 Churn

Personal networks evolve over time as alters are added and dropped. While the size and often the composition of individuals' networks tend to be stable, life transitions can create turnover. A rebuilding process can bring the network back into desired equilibrium unless lost ties cannot be replaced (Ertel, Glymour, & Berkman, 2009). Networks experience a fair amount of turnover in the specific alters who comprise them–termed "churn" by network analysts–even while looking similar overall (Fischer and Offer, 2020; Marin and Hampton, 2019). Churn itself—size of the network held constant—can, in reasonable doses, be advantageous. New alters may fit new circumstances better than older ones, say, connecting other young parents when one becomes a parent. But the losses of ties—or their becoming "dormant"—can be costly, as can simply the task of managing a rapidly changing network. Research has found that churn is more likely following life transitions (Badawy et al., 2019; Bidart, Grossetti, & Degenne, 2020; Cornwell, 2015; Mollenhorst, Volker, & Flap, 2014; Schafer & Vargas, 2016; Small, Pamphile, & McMahan, 2015). This is one finding we mean to check in the UCNets data. Churn matters, in the end, both because it reflects steps through the life course and missteps, such as not replacing key ties, may endanger social support.

2.2 Kin and non-kin

The distinction between kin and non-kin alters is the most salient partition in an ego's network. Family ties tend to be more prominent in the beginning and later stages of the life course relative to middle aged individuals (Marsden, 1987, 2018; Morgan, 1988). Family ties are generally more critical in financial support, as well as instrumental support when a need is especially critical or long-term. Even friends who are considered "like family" may have to pull back from friends suffering from chronic or long-term hardships. In the UCNets data, for example, respondents had more confidence in getting help from family than from friends. Families also provide grounding in traditions, celebrations, and a context for developing an adult life through families of orientation and eventually volition. Parents of young adults, in particular, provide critical instrumental, financial, and emotional support. Normatively, ties to family are obligatory while those to friends are almost always by choice. Yet, friends and weak ties can still provide support and, moreover, can provide connections to the wider world that close kin often cannot, leading, for example, to potential jobs and romantic partners. In other words, friends and family contribute to well-being in distinct yet overlapping ways (Granovetter, 1973; Huxhold, Miche, & Schüz, 2013). Yet, individuals whose networks have a high proportion of kin tend to be below average in their overall social activity, support received, and morale (e.g., Giannella and Fischer, 2016; Litwin and Shiovitz-Ezra, 2010; Litwin and Stoeckel, 2014; cf, Suanet & Antonucci, 2017; see review in Antonucci et al., 2010). Thus, even among those with some social ties, moving past family seems to be an important strategy.

2.3 Confidence in the social support network

Transitions place people in new contexts and situations – sometimes in terms of geographic distance, and other times due to social distance – which can result in network change and then changing perceptions—accurate or not--that network support may be less or more available as it had been. Whether an individual senses that there are network members who can and will help in a time of need represents a sense of or security or vulnerability. And much research suggests that *feeling* supported may be as or more effective than actual support (e.g., Norris & Krzysztof, 1996; Berkman et al., 2003; Rowe et al., 2006; Beeble, et al., 2009; Lee, Stahl, & Bayer, 2020).

3. Transitions

Life course events are typically transitions from one context or role to another, and therefore can create situations where alters will be added or dropped from the network. In early life, transitions may be hallmarks of building adulthood whereas later life transitions may signify taking stock. Family-related events include young adult children leaving home, getting partnered or married, having children, and getting divorced or widowed. Career-related events include graduating from college, taking a new job, and retiring. Each of these transitions can generate personal growth but also strain mental and physical health (Baum, 1990). Network ties play an important but varied role at each stage of the life course by providing support prior to, during, and following life transitions. Young adulthood, in particular, is a time for distancing from earlier ties and dependencies while establishing connections related to careers and romantic partnerships. For older adults, retirement, changes in marital status, or empty nesting can pare away social ties. Several theories of the life course argue that social ties are instrumental for coping with such key transitions. For example, the social identity model suggests that well-being may be partially determined by the extent to which individuals are able to maintain or establish supportive ties through a key transition (Iyer, Jetten, Tsivrikos, Postmes, & Haslam, 2009; Jetten & Pachana, 2012). Similarly, the stress-buffering hypothesis asserts that supportive ties may have direct, positive benefits, but, critically, also moderate the stresses of transitions (Baum & Singer, 1987; Sheldon Cohen, 2004; S Cohen & Pressman, 2004). Thus, studying network dynamics in response to life transitions may offer insight into the generation of poor mental or physical outcomes at different stages of life.

The importance of social ties being shaped by – and shaping – individual life course trajectories has been documented across multiple outcomes and stages, including, for example, educational and occupational attainment among young adults (e.g., Bifulco, Fletcher, & Ross, 2011) and retirement (e.g., Litwin & Tur-Sinai, 2015) among older adults. Social networks may buffer the physical and psychological impacts of these life transitions. Yet, despite a large body of work documenting the implications of life cycle transitions on health and well-being (e.g., Howard, Galambos, & Krahn, 2010; Wheaton, 1990), fewer studies have examined their effects on social network composition (see Wrzus et al., 2013, for a meta-analysis). Disproportionately many of those have focused on the elderly–showing for example, how widowhood can affect ties in complex fashions (e.g., Ferraro, 1984; Morgan, 1992; Utz, 2002; Li, 2007). Accordingly, in this research we examine the

consequences for personal network composition by examining two different age groups and the life event transitions that encompass building and winding down family and professional careers. Few network models include more than one cohort, and those that do concentrate on the elderly or students, limiting the ability to understand life course processes and status.

3.1 Stages of the life course

We focus on the two age groups of UCNets to expand the time frames for transitions studied in this field (George, 1993). One stage of great interest is young or "emerging" adulthood, which has been expanding in length and in significance as the "launch" stage of later life (Arnett, 2000, 2014). Another stage underrepresented in the research literature but of interest are those of late middle-age—in this case 50–70 years old—who have for the most part passed child-rearing and not yet started into the health- and often financially-challenging "senior" years, and who at the same time are facing or experiencing retirement. Is this a quiescent time of life in terms of life and network transitions? Moreover, this age group, consisting of the so-called baby-boomers, are more likely to be unmarried and have fewer children compared to the current 'oldest-old' cohort; a 50-year-old woman has about 2.0 currently compared to 3.2 children in 1985. Rates of living alone have soared, creating greater reliance on friendships (Gerberich, Priest, Boen, Straub, & Maxwell, 1983). The designers of the UCNets panel chose to focus on these two groups as they are the most likely to undergo substantial life changes - in activities, family status, residence, and so on -- albeit of strikingly different kinds, with accompanying changes in social connections, albeit of strikingly different kinds. Thus, understanding the ways in which life events are associated with changes in network characteristics requires examining these associations at multiple stages of the life course (Kalmijn, 2012). Further, given that the response to a life cycle transition may require an adjustment in one's personal networks, these adjustments may vary with respect to where an individual is in the life course (Rözer, Hofstra, Brashears, & Volker, 2020). For these reasons, the two age groups represented in the UCNets data provide valuable foci for networks and life course research.

3.2 Young adulthood

Young adulthood, here captured as ages 21–30, entails years of establishing independence of family. Steps can include leaving the parental home, graduating college, beginning or developing work careers, and seeking and establishing romantic partnerships. Because "emerging adulthood" (Arnett, 2000, 2014) is a time of experimentation, network ties may be especially transitory (Degenne & Lebeaux, 2005). Non-kin ties are expected to grow in significance as these ties are critical for obtaining opportunities and for interpersonal development, although many youth remain embedded in earlier family ties (Youm, Laumann, & Lee, 2018). Amidst these developments, individuals may come to question the commitment and strength of their social support.

3.3 Older adulthood

In contrast to young adults, older adults are likely have established occupational and marital careers with friendships perhaps retained over the life course and now subject to less churn compared to young adults. Grandchildren may intensify ties with grown children, yet these older adults are generally healthy enough to engage with new non-kin. Some may have

strong friendships at work, others may be retiring and reshaping their networks accordingly (e.g., Cornwell, 2009; van Tilburg, 2003; Youm, Laumann, & Lee, 2018). Still others may have significant health issues and turn to family and close friends for support so that kin ties therefore would become more central. Transitions among this demographic may be especially important considering their implications for social support (e.g., Guiaux, van Tilburg, & Broese van Groenou, 2007), health, and survival (e.g., Ellwardt, Aartsen, & van Tilburg, 2017). In particular, divorce or widowhood prior or during this period can disrupt ties (Wrzus, et al., 2013) and perhaps create insecurity about support.

In summary, we incorporate a life course perspective to develop an understanding of the factors underlying causes of network churn, and consequences for network support related to this churn.

4. Conceptual Model and Hypotheses

Our objective in this study is to examine how career- and family-related life cycle transitions during the two key life stages affect churn, the proportion of kin and non-kin ties, and egos' confidence in receiving support from their personal networks. Individuals within networks experience life events, which in turn affect the composition of the network as some alters take on more central roles, and others drift away (Fischer and Offer, 2020). The shaping of these networks is also determined in part by one's position along the life course because the different life course stages imply, on average, different sets of resources available for adjusting to life events. Our overall hypothesis is that life event transitions will cause a realignment of network characteristics to adjust to the new roles and stressors related to the transition as individuals remake their ties in response to changes in needs and priorities. Accordingly, depending on the type of transition – family or work-related – there will be an increase in churn, adjustment in the proportion of kin to non-kin, such that moving into family roles will tilt toward a higher proportion kin, and work-related transitions will tilt toward more non-kin alters. Transitions regarding familial roles that invoke the reshaping will reflect changes in confidence in accessing network support such that a greater proportion of family ties may be associated with greater confidence. For example, the death of a spouse would entail at least initially reaching out to the support of family members. The arrival of a partner may mean adding the partner's kin into the kin network, or distancing from family of origin. Within age groups, young adults would be expected to tend towards more non-kin as they move towards autonomy and family formation whereas patterns among older adults would tend towards more kin as they transition away from work relationships (see Duppen et al., 2020 for discussion). For both groups, when there is a change in network composition, then confidence is likely to decline as the relationships are newer and less tested by time and events, unless the change brings in 'dormant' ties that were ready to act in time of need (Offer & Fischer, 2022), in which case the confidence level would be higher.

We offer three hypotheses related to the consequences of life transitions for the ego's personal networks.

Hypothesis 1: Life transitions cause an increase in churn for both younger and older adults. For young adults who experience life events related to work--a new job --will experience an

increase in churn, as new alters enter in their lives, and old ones cease to fit with the new priorities. For the older cohort, job changes also represent a change in alters and thus lead to churn. In addition, they may experience retirement, which has the effect of disconnecting a set of alters. Family changes – marriage, divorce or widowhood – are hypothesized to also invoke the reshaping of ties for both age groups.

Hypothesis 2: The proportion of kin in the network will also be affected by life events as some ties become more prominent and/or necessary while others fall aside. In the case of family-related transitions, the shift would be toward more family for support systems (e.g. births), for realignment of ties (e.g. marriage). For work-related events, the proportion is hypothesized to swing from a higher to a lower ratio of family to non-kin ties as autonomy and investments in work would tend to move people away from extended family members.

Hypothesis 3: Because the changes that life events bring about in network structure, we further hypothesize that the confidence in the network support will decline because of life events as they invoke disequilibrium. For example for young adults, having a baby, and its concomitant exhausting demands, can lead to a decline in network confidence, often because existing ties no longer fit, and the new ties are not yet tested with experience. Older adults who experience life events related to work and family gravitate toward the ties that have remained more constant, setting aside the more peripheral ties from work, which would tend toward greater confidence. At the same time, dissolution of a marriage from widowhood or divorce can make one feel more vulnerable and thus less confident of getting support.

These outcomes reflect both the paths taken at different stages of the life course for development of personal networks as well as indicators of resources available at times of need.

5. Materials and Methods

5.1. Data

We used three waves of the UC Berkeley Social Networks Study (UCNets). UCNets is a publicly available,[1] longitudinal, egocentric network study of personal relationships, life events, and well-being among young and late middle-aged adults recruited from the San Francisco Bay Area. Details on the sample design and study recruitment have been described elsewhere (Fischer & Lawton, 2020). Briefly, respondents were sampled from two distinct age cohorts, 21 to 30 year-olds (n=485) and 50 to 70 year-olds (n=674) at Wave 1 in year 2015–2016, with subsequent follow up in years 2017 and 2018. UCNets thereby provides two concentrated populations undergoing especially substantial life changes--in activities, family status, residence, and so on--with accompanying changes in social connections, albeit of strikingly different types. The UCNets project used a narrower age range among the young because so much volatility exists in that decade and a longer period for the mature adults because important life events are more stretched out over time at older ages.

[1] https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/36975.

The older population was entirely recruited through address-based sampling procedures, while the younger population proved hard to reach, so in addition to ABS, a small proportion were recruited through referrals (n=37) and the majority through using targeted Facebook advertisements (n=290). Data collection procedures employed both face-to-face and web-based data collection with about three-quarters of the older respondents and just under one-third of the young adults given FTF surveys (Fischer & Bayham, 2019). Post-stratified sample weights were calculated, winsorized (95%), and provided by UCNets researchers. These weights are used to approximate the demographic composition (i.e., age, gender, race/ethnicity, marital status, and educational attainment) of the age-specific population of adults in the San Francisco Bay Area from which respondents were drawn. Attrition was 12% from wave 1 to wave 2 and 6% from wave 2 to wave 3. Among 485 younger and 674 older adults at Wave 1, we restricted our analytic sample to 379 younger adults and 561 older adults who appeared in all three survey waves and had complete data.

Respondents (egos) were asked to list the names of individuals in their lives (alters) including, for example, their spouse or partner, members of their household, and most critically in answer to several questions about the people in whom they confide, that they do various activities with, who help them, whom they help, and even who annoys them. For each named alter (the overall mean number of alters is about 10, the range from 1 to 28), the respondent was asked to report on the nature of their relationship (e.g., kin, co-worker) and demographic characteristics of the alter. Thus, these data are about specific, named alters rather than estimated numbers and about relatively many of them.

5.2. Network Outcomes

We examined associations between life transitions and three network related outcomes: churn, the proportion of kin ties, and network confidence.

(1) We measured churn at time t as the sum of the time t_{-1} alters dropped in the subsequent wave and the number of time t alters added in the subsequent wave, all divided by the number of unique alters listed across both time points (Perry et al., 2018).[2] Note that we treat those alters listed in one wave but not in the subsequent one but whom respondents said that they had simply forgotten to re-list as *not* dropped (per Fischer & Offer, 2020). The churn measure involves both purposeful additions and deletions, e.g. ‘drifting apart,’ as well as those occurring due to other circumstances that may be beyond the egos’ control, such as health issues or alters moving away.’ This measure does not account for the T1 alters that were similarly forgotten, an unknowable variable. The forgotten ties tend to be peripheral (Fischer & Offer, 2020), so the overall salience of such not having the ‘forgotten’ T1 ties is likely reduced compared to omitting, say, an immediate family member who is an active network tie. Churn is overestimated if T1 missing are added in T2 as new ties. However, the data includes all three waves so we account for forgotten ties at T2 and T3.

[2]For example, Adam: ABCDEF = 6, CEDFGH = 6, so 2 old have been dropped (AB), 2 new have been added (GH), which means churn = (2 lost + 2 added) / (8 names across two waves) = Adam = 0.50.
Charlotte: (2 lost + 0 added) / (6 total) = 0.33. Therefore, Adam faces more churn, more replacement of old ties with new ties, and presumably more effort of network management and dynamics.

(2) We defined the proportion of *immediate* kin as the number of named alters who were ego's parents, spouses, siblings, adult children, and step- or half-variations, divided by the total number of alters.[3] *Extended* kin were only 8 and 12 percent respectively of younger and older respondents' alters and, in terms of churn, look much like non-kin (Fischer & Offer, 2020). Because a transition involving marriage by necessity includes adding or subtracting one person to the kin totals, for analyses in which we examined the association between proportion of immediate kin and entering marriage or partnership among younger adults or becoming divorced or unpartnered among older adults, our measure of proportion of immediate kin excluded spouses.

(3) We derived a subjective measure of perceived confidence in attaining network support, as several studies (e.g., Kessler, 1992; Cornwell and Waite, 2009) have suggested that *feeling* that one has support may be most important. We pooled responses from two items inquiring about the extent to which a respondent felt they had some (i) relatives and/or (ii) friends on whom they could rely for assistance with a serious problem, such as a life-threatening illness or losing their home. Response options for both questions (definitely have [4], probably have [3], might have [2], probability don't have [1] such relatives/friends) were coded such that higher scores reflected more confidence in a respondent's network. We then calculated an unweighted mean of responses to both questions which we used as our measure of network confidence. This measurement is based on the subjective evaluation of the network by the ego and does not distinguish between family and friends, a potential limitation as family are more likely than friends to feel obligated for long-term commitment. That said, close friends are critical for emotional support, and often can perform instrumental tasks. Thus, the measurement captures the ego's sense of having a generalized support system that they can tap into should the need arise rather than a measurement of specific needs that could be fulfilled.

5.3. Life Transitions

We examined three transitions for each age group that feature prominently in sociological studies of the life course and network transitions. Among young adults, we examine time-varying indicators for whether respondents transitioned to full-time employment from being a student or changed jobs, whether they transitioned from a state of not married nor partnered to being either married or partnered, and whether they reported the birth of a child in the immediately preceding period. For older adults, we included transitions from employment to retirement, married/partnered to divorced/unpartnered, where "unpartnering" means transitioning from cohabiting to no longer cohabiting, and living with a child in the home to living without a child in the home which we refer to as empty nesting. We considered other definitions of these transitions but these analyses were underpowered due to a small number of observed transitions: from married/partnered to widowed; distinguishing between first job and subsequent jobs, and distinguishing between the first

[3]The count of immediate kin included all elicited alters, including those named only as members of the household, whom the respondent identified as 1, (step-)parents, or 2, (step- or half) siblings, or 3, *if* the respondent was 50+ years of age, as (step-)children. UCNets did not get the ages of children but we assumed that the great majority of the younger respondents' children would be small children and those of the older respondents would be adults. This introduces a small error.

child and subsequent children. Accordingly, individuals who reported being widowed were classified as “unpartnered.”

5.4. Covariates

Covariates were selected for their hypothesized joint associations with life cycle transitions and network characteristics. Demographic characteristics included age (continuous, years), gender (male, female), race/ethnicity (white, black, Latino, Asian). Some younger adults in the sample were active students at Wave 1. Thus, we included a time-varying measure of educational attainment (less than a bachelor’s degree, bachelor’s degree, more than a bachelor’s degree) for younger adults. For older adults, we included a time-fixed measure of educational attainment with the same discretized categories. For both cohorts, we included time-varying measures of self-reported overall health (excellent or very good, good, fair or poor) and a count of network size (continuous).

5.5 Methodological approach

The primary objective of our analysis was to explore how life transitions are associated with changes in network characteristics. We used fixed effects regression models to account for the repeated observations within individuals as well as to account for observed (e.g., race/ethnicity) and unobserved time-fixed differences between individuals in the sample (Allison, 2009). To the extent that life transitions are observed, the fixed effects framework can be used to explore how life transitions between survey waves are associated with changes in network characteristics between survey waves while mitigating concerns related to unobserved heterogeneity and omitted variable bias. This approach allowed us to rule out confounding due to measured and unmeasured characteristics that may jointly influence life transitions and network characteristics. We adjusted for the aforementioned time-fixed and time-varying covariates in all models. In addition, due to the gendered nature of the transitions under study, we examined the extent to which the association between life transitions and changes in network characteristics may differ for men and women by incorporating a gender-by-life transition interaction term. Each model took the form

$$y_{it} = \alpha_i + \beta_1 x_{it} + \quad \beta_2 z_{it} + \epsilon_{it}$$

where y_{it} reflects the network outcome of interest for individual i at time t, α_i accounts for time-fixed characteristics of each individual, x_{it} indicates the occurrence of a specific life transition experienced by individual i at time t, z_{it} is a vector of time-varying characteristics, and ϵ_{it} represents an error term that may vary with respect to time.

We stratified all analyses by age cohort and included wave-specific person-level weights to account for the complex sampling design. Robust standard errors were used to account for clustering (i.e., non-independence of observations) at the individual level. Analyses were performed using R version 4.0.2 (R Core Team, 2020) and Stata version 14 (StataCorp, 2015).

6. Results

Descriptive characteristics of the analytic sample at Wave 1 are shown by age cohort in Table 1. Among the sample of 379 adults who comprised the younger age group, the most common transition was a school or job transition (80%) over the study period – that is, a t1 to t2 transition, or t2 to t3 transition –, followed by birth of a child (21.6%) and becoming married or partnered (36.1%). Among the 561 adults in the older age group, 28.4% retired, 6.7% experienced an empty nest, and 6.4% became divorced or unpartnered. Women were more likely to experience an empty nest. On average, the network characteristics were about the same for both the younger and older cohorts. Both reported a network size mean of 10. Women reported larger network sizes, on average, than men across both age cohorts. The churn measure—the ratio of added plus dropped alters between two waves to the total number of alters named in both waves together—was 0.51 for the younger group and 0.41 for the older group. Among the alters reported by younger adults, 37% were kin whereas 42% of the alters reported by older adults were kin. The average network confidence measure is 2.69 and 2.44 for the younger and older age groups, respectively.

The demographic characteristics of the younger age group show that 50.6% (weighted) of the sample was female; 38.9% and 8.5% self-identified as non-Hispanic white and black, respectively; less than half (47.5%) of the sample attained a bachelor's degree or higher; and more than half (53.1%) of the sample self-reported their overall health as very good or excellent. Among the older adults, 53.8% were female; 58.7%were non-Hispanic white; 47.8% held a bachelor's degree or higher, and more than half (56.7%) self-reported their overall health as excellent or very good. Descriptive measures shown by age cohort and gender are provided in Table S1. On average, within the younger cohort, men were older (25.8y [SE=0.4]; women: 25.4y [SE=0.3]) and had a smaller network size (9.4 [SE=0.4]; women: 10.7 [SE=0.3]. Among the older cohort, women were more likely to experience an empty nest (9.2%; men: 3.8%) and had a larger network size, on average (10.6 [SE=0.3], men: 9.6 [SE=0.4]).

Table 2 presents the results from our fixed effects analyses examining associations between life transitions and network characteristics. Time-varying covariates were excluded from the tables for brevity but are available by request from the lead author. Among younger adults, experiencing the birth of a child was associated with an increase in churn and a decline in network confidence. A transition to marriage or partnership was also associated with an increase in churn. The family transitions for older adults, in contrast, were not associated with churn, changes in the proportion of reported alters listed as kin, nor network confidence. Moreover, we did not observe gender differences in the association between life transitions and outcomes in models which included gender-by-life transition intersection terms for either cohort.

7. Discussion

Using a fixed effects model and a longitudinal egocentric dataset comprised of older and younger adults, we tested hypotheses that life events would tend to increase churn of network members and alter the balance of kin to non-kin in the network, which could in turn

lead to a reduction in confidence that the network was reliable in time of need. We found mixed support for our hypotheses that a life event would lead to churn, a readjustment to the proportion kin, and a reduction in network confidence. While younger adults did experience churn following a birth and marriage or partnership, no life transition was associated with changes in proportion kin, and only with the birth of a child did confidence decline. For older adults, no life transition was associated with churn, proportion of kin, or confidence in the network. An alternative analysis included the spouses and romantic partners and in those models, we found that retirement resulted in increased network churn whereas both empty-nesting and reporting a divorce or separation was associated with a decreased proportion of kin. Excluding them netted out the tautology of having a change in marital status mechanically changing the network by one alter. At the same time, including them does indicate spousal changes have repercussions elsewhere in the network.

To understand these results, we place the life transitions in the context of the life course. The effects of life events for young adults may be more pronounced because their alters are relatively new ties, not yet full established or tested, something which takes a history of time and experience. Young adults themselves are going through their own personal transitions of independence and autonomy; they will identify paths they wish to follow and those they do not, and with those decisions, some people may emerge in or fade out of the network. For older adults, the situation is to some extent reversed. Their ties are much more likely to be long term, spanning even decades and are thus more stable. There is therefore less upheaval following life events, and instead the ego and alters adjust to the new situation more smoothly. Older adults are also past the age of self-exploration, and while significant changes in lifestyle may occur post-retirement or empty-nesting, the basic priorities may not have shifted. For these reasons, the results were not statistically significant for older adults, but that does not mean they were not meaningful, especially in comparison to the younger age group.

We hypothesized that these events should change network characteristics through several mechanisms. First, there is a continuity and discontinuity of network ties as individuals adjust to the disequilibrium that a life event induces. While earlier research had found that marriage could mean a noticeable reduction in friendships among women (e.g., Fischer & Oliker, 1983), in the 21st century getting married is often the next step of a well-established relationship, with many young adults cohabiting prior to marriage (Manning, 2020) rather than living independently or with parents or other family members (Goldscheider & Goldscheider, 1993), and they may be embedded in a friendship network that led to that relationship. Getting partnered initially, however, would imply a change in network activities and partners. This change is experienced more acutely with a birth, especially a first birth, which is always a radical change, requiring more focus on families with same-age children, reduction in free time, and family-focused leisure. Confidence may therefore initially decline because there are new, less proven, friends and a discontinuity with previous friends, coupled with the demands of a new baby, all of which serve to shuffle support networks as well. For these young adults, the proportion kin in the network doesn't change because young adults have not ceased to rely on family[4] and have not yet grown out of this phase, and indeed, just as they might have been growing out of it as they enter their late

twenties and early thirties, a new baby entices the grandparents into a new, perhaps more welcomed role, of intergenerational support (Bidart et al., 2020).

A second mechanism for the hypotheses is the adjustment of the roles that alters play (Bidart et al., 2020). We did not see statistically significant results for the change in proportion, but the increased churn is suggestive of this mechanism. There was no change in that proportion possibly because there was a ‘swapping of roles’ with some kin alters changed from passive to active in the aftermath of transitions, and vice versa. This could be disentangled in the data, (see Marin and Dubash, 2021) but goes beyond the scope of this paper. With older adults, as we noted, these transitions had no association with churn or confidence in their networks to provide support. As we had suggested earlier, it appears that by this time in the lives of older adults, both family members and friendships are known entities, most likely long-lasting, and such that despite transitions there is stability.

8. Conclusion

The results in the present study regarding transitions and networks have added to the growing understanding that experiences along the stages of the life course are negotiated based on that stage. Research employing a life course perspective often frame individuals as independent agents yet this approach can miss the important dynamics of linked lives, where, as we see here, consequences of change are bound up in the interdependence between individuals and their network of family, friends and other relationships (Elder Jr., 1994; Marshall & Mueller, 2003). These findings provide more understanding to networks in young adults’ lives beyond the literature for adolescents, college student and older adult populations. In our results, we saw that younger adults have less well-established relationships outside of family, and so life transitions have a greater effect, whereas older adults are in a completely different stage and now more settled with more resources for kith and kin, can weather life events without the same level of disruption. Further, young adults typically still rely on their parents for a variety of forms of social support, and network ties with parents are more stable than those with friends (Min, et al. 2021). These results contribute to the understanding that life transitions are related to network characteristics, and so advance our understanding of how network dynamics unfold over the life course. It is well established that life cycle transitions may induce stress which can affect mental and physical health at each stage of the life course (e.g., Almeida & Wong, 2009; Lee & Gramotnev, 2007; Praharso, Tear, & Cruwys, 2017; Wheaton, 1990), but our results show that the ability to handle this stress also varies by stage. Additionally, considering the large body of work implicating social relationships are both important determinants of health and wellbeing as well as affected by changes in health and well-being (Haslam et al. 2021), understanding how these life cycle transitions are associated with network characteristics allows us to better understand the role of life cycle transitions beyond their direct effect on stress processes.

[4]In UCNets, immediate kin are 50% more likely to be among the alters named as people who would provide ego with important advice or as people who would care for ego if ego was laid up for a couple of weeks.

Our study had several strengths. The UCNets study surveyed both younger and older adults which allowed us to examine how life cycle transitions are associated with changes in network characteristics at two distinct stages of the life course. Moreover, we were able to examine specific life course transitions which have received attention in the sociological literature for their role in shaping numerous health-related outcomes. We used fixed effects regression models which eliminate bias introduced by unmeasured time-invariant factors.

As with all studies that leverage egocentric data, one must consider the role of network homophily—or the extent to which individuals within networks are more similar in terms of certain attributes (McPherson, Smith-Lovin, & Cook, 2001)—and its potential influence on our findings, especially as it pertains to the fact that individuals who are going through certain life cycle transitions (e.g., marriage, birth) may be doing so at a similar time as their network ties which could influence outcomes in the current study. Thus an explanation for the findings for young adults may be that friends may tend to get married or become parents around the same time, in part because it is the 'on time' position along the life course. Their experiences may also serve to encourage other friends to do the same. These similarly timed transitions may serve to accentuate churn in networks of young adults as they concurrently experience constraints on their time and availability for existing ties, resulting in reduced availability of friends, and then a higher proportion kin.

Our study also had its limitations. Our methodological approach accounted for unmeasured time-invariant factors but does not address bias that may results from unobserved time-varying characteristics. Due to sample size limitations, our study was underpowered to examine gender- or age stratified models. Although we did estimate models with gender-by-life transition interaction terms, our study was likely underpowered to detect statistical differences by gender. UCNets is also a relatively short interval of time and some adjustments to networks following transitions may not be immediately apparent. In addition, the study's panel design could have resulted in the attrition of less healthy respondents and thus could reduce the reported importance of kin. However, we found no association between the self-reported health measure in Wave 1 and whether the respondent appeared in the subsequent wave.

Given the results of our research, we suggest further avenues of exploration. We did not give full attention to the importance of cohort experience and period effects versus age effects, something requiring longer periods of longitudinal data than the 4-year progression in UCNets. Yet doing so is important in order to direct focus on life course away from a functionalist-developmental approach into one that recognizes the macrosocial context (Dannefer, Kelley-Moore, & Huang, 2016). The types of adjustments that the UCNets young adults might make in their older years may well be different than our older age group, who are in any case demographically distinct. The nature of parent-child relationships in the early 21st century and the priorities for parenting are distinct from that of the parent-child relationships in the baby boomer era (Goldscheider, 2000; Jiménez-Iglesias, García-Moya, & Moreno, 2017). It is likely therefore that the ways that people respond to life transitions in terms of the balance of kin and friends will shift from cohort to cohort. Moreover, one could further examine within the kin and non-kin groups; that is, whether the composition of kin evolves with transitions, and what types of non-kin ties remain and emerge as result of life

events. We do not account for social preferences—be it quality or quantity of relationships—but this remains an area of further exploration.

The balance of kin and friends also a measurement issue. In preliminary analyses, we utilized various versions of the 'percent kin' variable, for example, including spouses in the numerator and denominator. In doing so we noted that the significance of the coefficients would change. The final version – not counting spouses for the marital status transitions - was selected as it would avoid a bit of artifact, having the number of kin change mechanically upon marriage or dissolution of marriage. However, researchers pursuing this topic may wish to consider more expansive, or restrictive, versions of percentage kin depending on their theoretical model, e.g., dropping household members, in order to explore ways in which family members appear in an ego's network, depending upon life course and other statuses.

An important but growing area of research seeks to understand how resilience can mitigate the effects of adversity such as that triggered by a life event, and one's personal network is increasingly seen as a buffer. It is worth noting that the initial research findings from the COVID-19 pandemic-induced shut-down and social distancing indicate that the resulting isolation has been harder on young adults than on older adults (Xiong et al. 2020), underscoring the importance that network stability and strength has in weathering rough patches. It is already well-established that social relationships for health and well-being are important at all stages of the life course (e.g., Carmichael, Reis, & Duberstein, 2015; Child & Lawton, 2020; Cornwell & Laumann, 2015; Holtzman et al., 2004; Seeman et al., 2011; Settersten, 2018; Smith & Christakis, 2008; Umberson, Crosnoe, & Reczek, 2010). Increasingly researchers are examining how characteristics of these networks change in response to life cycle transitions (Alwin, Felmlee, & Kreager, 2018; Kaufman & Uhlenberg, 1998; Marsden, 2018). We contribute to this understanding of resiliency in connecting transitions to network characteristics. Future research could modify our model to add personality metrics, outcomes of physical and emotional health, and advance the understanding of resiliency, personal networks and well-being.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Descriptive characteristics of the analytic sample over the study period by age cohort *, UCNets

Characteristic	Age 21–30 y	Age 50–70 y
	n=379	n=561
Network Outcomes		
Churn, M (SE)	0.51 (0.01)	0.41 (0.01)
% Kin, M (SE)	0.37 (0.01)	0.42 (0.01)
Network confidence, M (SE)	2.69 (0.03)	2.44 (0.03)
Life Transitions, n (%)		
School or job transition	323 (81.5)	—
Became married/partnered	160 (36.1)	—
Birth of a child	42 (21.6)	—
Retired	—	160 (28.4)
Became divorced/unpartnered	—	42 (6.4)
Empty nest	—	44 (6.7)[a]
Wave 1 Characteristics		
Age, M (SE)	25.6 (0.2)[a]	59.3 (0.3)
Gender**, n (%)**		
Male	117 (49.4)	196 (46.2)
Female	262 (50.6)	365 (53.8)
Race/Ethnicity**, n (%)**		
Non-Hispanic white	192 (38.9)	428 (58.7)
Non-Hispanic black	18 (8.5)	42 (7.9)
Latino	59 (23.0)	37 (12.9)
Asian	110 (29.6)	54 (20.5)
Educational Attainment**, n (%)**		
Less than bachelor's degree	80 (52.5)	157 (52.2)
Bachelor's degree	208 (32.5)	212 (28.3)
More than bachelor's degree	91 (15.3)	192 (19.5)
Overall Health**, n (%)**		
Excellent or very good	243 (53.1)	339 (56.7)
Good	95 (31.1)	140 (26.0)
Fair or poor	41 (15.8)	82 (17.3)
Network Size, M (SE)	9.9 (.16)[a]	10.1 (0.14)[a]

Notes. Group sums may not add to one due to rounding. M (SE), Mean (standard error).

*Weighted proportions or means (standard error) and unweighted frequencies shown.

[a] $p < 0.05$ for Chi-squared or t-test indicating gender differences within cohorts.

Table 2:

Fixed-effects regression models showing associations between each life transition and network characteristics*, UCNets

Characteristic	Churn	% Kin	Confidence
Younger Adults			
School or job transition	0.022 (0.018)	−0.001 (0.009)	−0.022 (0.036)
Became married/partnered	**0.044 (0.02)** **	0.006 (0.011)	0.007 (0.046)
Birth of a child	**0.097 (0.044)** **	0.017 (0.022)	**−0.174 (0.090)** *
Older Adults			
Retired	0.035 (0.034)	−0.005 (0.026)	0.100 (0.114)
Became divorced/unpartnered	−0.034 (0.070)	−0.046 (0.044)	0.176 (0.201)
Empty nest	−0.004 (0.032)	−0.025 (0.025)	0.102 (0.107)

Notes. Coefficient estimates shown. Covariates excluded from table for brevity.

* $p < 0.10$,

** $p < 0.05$,

*** $p < 0.01$.