The Relocation Bump: Memories of Middle Adulthood Are Organized Around Residential Moves

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The lifetime temporal distribution of older adults’ autobiographical memories peaks during the transitional period of late adolescence and early adulthood, a phenomenon known as the reminiscence bump. This age-specific memory enhancement suggests that transitions may provide a more general organizing structure for autobiographical memory. To test this hypothesis, we examined how older adults’ memories of events that occurred between the ages of 40 and 60 were distributed around residential relocations occurring within this same time frame. The temporal distribution of memories showed a marked relocation bump around the age of the most important residential move. Although previous research has focused on the negative effects of relocation, the current findings suggest that transitions could have a positive effect on autobiographical memory.

Keywords: autobiographical memory, relocation, middle adulthood, residential mobility, life transition

Research on the life span temporal distribution of adults’ autobiographical memories has identified two age-linked phenomena that are not readily explained by well-documented memory processes, such as primacy, recency, and decay. The first is childhood amnesia, the diminished recall of events that occurred before the ages of 5 to 7 years (Bauer, 2015; Pillemer & White, 1989; Rubin & Schulkind, 1997). The second is the reminiscence bump, the heightened recall of events representing the transition from adolescence to early adulthood (Koppel & Berntsen, 2015; Rubin & Berntsen, 2003). These attention-catching phenomena have inspired dozens of research studies, whereas general memory processes that may govern autobiographical memory across the entire life span have received comparatively little attention. To begin to address this issue, the current study focused on factors influencing the temporal distribution of autobiographical memory in the neglected age period of middle adulthood.

Several theories have addressed the question of why events occurring during adolescence and early adulthood are especially memorable: a peak in mental efficiency during early adulthood (Jansen, 2015); cultural life scripts containing positive events (e.g., marriage) that are expected to occur in early adulthood (Berntsen & Rubin, 2002; Dickson, Pillemer, & Bruehl, 2011); identity formation or life story accounts that emphasize the importance of adolescence and early adulthood for personal development (Conway & Pleydell-Pearce, 2000; Glick & Bluck, 2007; Habermas & Bluck, 2000; McAdams, 2001); a cognitive mechanisms account that focuses on the novelty, distinctiveness, and elaborative processing of events (Pillemer, 2001; Rubin, Rahhal, & Poon, 1998; Schrauf & Rubin, 1998); and a transition-based account that attributes the memorability of events to shifts in material circumstances and psychological outlook (Svob & Brown, 2012). Although age-specific theories may be essential for explaining certain properties of the reminiscence bump, transition theory and the cognitive mechanisms account are especially well suited for making predictions about the impact of a residential move on memory organization between ages 40 to 60, a relatively flat and previously unexamined portion of the lifetime memory distribution.

In addressing the potential impact of residential moves on memory, transition theory and the cognitive mechanisms account appear to offer complementary rather than competing explanations: They both support the prediction that autobiographical memories should cluster around a relocation to a new residence. According to Brown and colleagues (Brown, Hansen, Lee, Vanderveen, & Conrad, 2012; Svob & Brown, 2012; Svob, Brown, Reddon, Uzer, & Lee, 2014), memories associated with a lifetime period are denoted by a set of similar event components; a transitional event, such as relocation, alters many of these components. Material change is external to the individual, including shifts in the people, places and activities in one’s daily life. In contrast, psychological change occurs within the individual, including how one views the self, others, and the world. Through these changing components, transitions provide temporal landmarks that organize memory by marking the end of one lifetime period and the beginning of another (Shum, 1998; Svob et al., 2014). Brown and colleagues (2012, p. 161) observed that people often date autobiographical memories of adulthood to the end of their most important relocation.
ographical events by accessing “period-bounding personal landmarks,” such as a residential move. Additionally, “chapters” in the personal life story (Thomsen, 2015) are defined in part by transitions: 50% of chapter beginnings and endings included physical moves in older adults’ freely recalled life narratives (Steiner, Pillemer, Thomsen, & Minigan, 2014). The cognitive mechanisms that enhance memorability of events accompanying transitions include distinctiveness, novelty, and elaborate mental processing—factors that are known to enhance encoding and recall (Rubin et al., 1998). This cognitive memory enhancement should be especially pronounced when dramatic life transitions are followed by a contrasting period of relative stability (Schrauf & Rubin, 1998).

Earlier studies have also examined the impact of immigration—a dramatic and relatively uncommon transition—on memory distributions during the reminiscence bump period. Schrauf and Rubin (1998) used a word-cueing procedure to elicit specific personal memories from 12 older adults who had immigrated permanently to the United States between the ages of 20 and 35. The reminiscence bump for the four participants who had relocated at younger ages (20–24 years) was earlier and more pronounced than the bumps for participants who had relocated at older ages (26–30 years and 34–35 years). Similarly, memory ages extracted from the life stories of 10 older Hispanic adults who immigrated to the US between the ages of 20 and 35 showed a peak when centered on their age at immigration (Schrauf & Rubin, 2001). College students’ dating of important events they identified from their parents’ lives also clustered around the date of their parents’ immigration, although this study did not examine immigrants’ own memories (Svob & Brown, 2012). Because the mean age of immigration in these studies fell within the traditional reminiscence bump period, the impact of general memory processes triggered by immigration may have been confounded with other explanatory factors unique to early adulthood. Additionally, changes in language and culture accompanying immigration are profound and pervasive; it is unclear whether more ordinary transitions occurring during one’s lifetime would lead to similar memory enhancements.

In the current study, we examined the temporal distribution of older adults’ memories around moving to a new residence, which is a relatively common experience in the US (Oishi & Schimmack, 2010). We expected participants’ ages at the time of remembered events and residential moves to be relatively evenly distributed across ages 40 to 60, but that memory ages would cluster around the date of participants’ most important move. In addition, memory clustering should be most pronounced for moves with a high degree of material and psychological change, as predicted by transition theory (Brown et al., 2012; Svob et al., 2014). Cultural life script theory (Berntsen & Rubin, 2002; Koppel & Berntsen, 2015) attributes the traditional reminiscence bump to major events that populate late adolescence and early adulthood. Accordingly, memories may cluster most strongly around midlife moves that coincided with major life events.

### Method

#### Participants

Adults aged 65 and older were recruited through the University of New Hampshire Survey Center, using a method similar to that used in a previous study (Dickson et al., 2011). Potential participants were contacted by phone until 744 had verbally agreed to receive the study materials; 516 participants provided email addresses and were sent a link to the online questionnaire, and 226 participants without email were sent a paper questionnaire (two participants did not provide an address). Of the 252 participants who completed the questionnaire (180 online, 72 paper), 23 (11 online, 12 paper) were excluded: five did not provide any event memories, two reported that their current age was less than 65, three listed events outside the age range 40 to 60, four did not clearly identify their most important move, and nine selected an international move. In total, data from 229 older adults (113 males, aged 65 to 92 years, $M = 73.85$ years, $SD = 6.39$) were included. The majority of participants were Caucasian (99%), college-educated (84%), and retired (78%).

#### Materials and Procedure

The questionnaire consisted of four sections: recall of life events between the ages of 40 and 60, recall of moves between the ages of 40 and 60, items regarding participants’ most important move, and background information. Memories were described before moves, ensuring that participants’ event memories would not be influenced by questions regarding moves; paper questionnaires instructed participants not to look ahead. To elicit memories, participants were instructed to recall five specific events (lasting no longer than a single day) that they experienced between ages 40 and 60. For each event, participants provided a brief title and their age at the time. They also rated positive emotion, negative emotion, and importance on scales ranging from 1 (not at all positive/negative/important) to 7 (extremely positive/negative/important).

Next, participants reported the number of times that they moved (i.e., relocated from one primary residence to another) between ages 40 and 60. Participants who reported moving at least once during the targeted age range listed all the times that they moved between ages 40 and 60. For each move, they provided the state they moved from, the state they moved to, and how old they were at the time of the move. They also rated how much each move changed their views of the world (i.e., psychological change) and their daily lives (i.e., material change) on scales from 1 (not at all changed) to 7 (totally changed); these items were adapted from the Transitional Impact Scale (Svob et al., 2014).

Primary analyses focused on a single move, so participants were asked to identify the move that they considered to be the most important (participants with a single move had only one option). Participants briefly described their memory of the most important move, explained why this move was the most important, and rated how positive and negative their emotions were at the time on scales from 1 (not at all positive/negative) to 7 (extremely positive/negative). Participants were also asked whether or not their most important move coincided with any other major life events. If so, they identified other events coinciding with the move from the following list: marriage, job change, divorce, birth of child, child leaving home, death of spouse, major injury or illness, retirement, or other (specify). Participants were permitted to select more than one event.

The last section of the questionnaire consisted of a series of background items, including the number of times participants moved before age 40 and after age 60, age, sex, ethnic background, current employment status, and highest level of education. After
completing the questionnaire, online participants were debriefed and directed to another webpage where they entered a random raffle drawing for one of three $100 gift cards; paper participants mailed in a separate form to enter the raffle drawing and received a debriefing letter upon study completion.

Results

Preliminary Analyses

In total, participants recalled 1,110 memories. The mean age of participants at the time of their remembered events was 50.31 years ($SD = 6.38$). Memories were rated above the midpoint for positive emotions ($M = 5.24, SD = 2.24$) and below the midpoint for negative emotions ($M = 2.81, SD = 2.25$). Although participants were instructed to recall any event that came to mind, memories tended to be rated very highly on importance ($M = 6.10, SD = 1.32$).

Of the 229 participants, 149 reported moving at least once in the specified time range and identified their most important move. The mean age of the most important move was 49.54 years ($SD = 6.33$). Participants’ ratings of the move’s importance ($M = 6.29, SD = 1.06$) were high, and ratings of material change ($M = 4.99, SD = 1.94$) and psychological change ($M = 4.07, SD = 2.03$) were moderate. Participants tended to rate their most important move (for movers only).

Distributions of Memory Ages Centered on Move Ages

To test the prediction that movers’ event memories would cluster around their most important moves, we set the age of each participant’s move to zero and centered the distribution of memories on this point (a method previously used by Schrauf & Rubin, 2001, and Svob & Brown, 2012). Centered memory ages were grouped into 13 bins: eleven 3-year bins for the main body of the distribution and two 4-year bins for the tails (which contained very few observations). The center of the distribution (−1 thru 1) corresponded to memories for events that occurred one year before, one year after, or in the same year as the participants’ most important move. Over one quarter (25.56%) of all memories represented events that occurred within this 3-year time interval (see Figure 2).

Because memory ages and move ages both had approximately uniform distributions, the distribution of centered ages expected by chance is triangular rather than uniform. The ages of participants’ memories and moves were restricted to 21 possibilities (40 thru 60 inclusive). To center memory ages on move ages, we computed the difference between the two ages (event age – move age), yielding 41 possible scores (−20 thru 20). The probabilities of obtaining each score by chance are not equal; for example, there are 21 possible ways to get a difference score of 0 (40–40, 41–41 . . . 60–60), but only one possible way to get a difference score of 20 (60–40 or −20–40–60). As a result, the chance probability that a centered memory age would fall in the peak bin of the distribution is 61 in 441 (the sum of the probabilities of getting a difference score of −1, 0, or 1), and the expected percentage of memories in the peak is 13.83%.

To maintain independence of observations, the observed percentage of memories in the peak bin was computed for each of the five memories separately. The percentage of participants whose memory ages fell in the center bin was consistently above the value expected by chance: 19.73%, 25.52%, 28.47%, 27.27%, and 26.95%; 95% CIs [13.30%, 26.16%], [18.42%, 32.62%], [21.10%, 35.84%], [19.97%, 34.57%], and [19.63%, 34.27%]. To examine memory clustering with a single index, we computed the percentage of memories falling into the center bin for each individual participant separately and then calculated the mean percentage across participants (similar to a procedure used by Steiner et al., 2014). For participants who provided fewer than five memories, this percentage was calculated based on the number of memories provided. The mean percentage of memories in the center bin was 26.06%, 95% CI [22.48%, 29.64%].

To determine the extent to which memories of the move itself contributed to the centered peak, we counted the number of event memory titles that clearly referred to a move (e.g., “Moving in day”) and occurred in the same year as the participant’s most important move. There were 24 memories of moves that coincided exactly with the most important move; 22.99% of memories fell into the center bin with these move-specific memories omitted.

Secondary Analyses Based on Characteristics of Most Important Move

Additional exploratory analyses were conducted to determine whether the distribution of memory ages was dependent on the type of change associated with the move or other major events that
of changes differ more sharply, as with the new research ideas proposed below. Future studies could also purposefully target comparisons between events for which material and psychological change were each assessed with only one questionnaire item; to improve the validity and reliability of measurements, future research should use the full Transitional Impact Scale (Svob et al., 2014). Future studies could also purposefully target comparisons between events for which material and psychological changes differ more sharply, as with the new research ideas proposed below.

Consistent with the cognitive mechanisms account (Rubin et al., 1998; Schrauf & Rubin, 1998), events accompanying moving to a new residence may receive preferential processing because of their novelty and distinctiveness, thereby deepening encoding and enhancing memorability. In shorter-term experimental studies, changes in ongoing activities define “event boundaries” where
existing mental models must be updated, and as a result these boundaries have a “privileged status in long-term memory” (Swallow, Zacks, & Abrams, 2009, p. 237); the new information associated with event boundaries is processed more intensively (Radvansky, 2012). Similarly, changing residences requires that existing autobiographical memory models be updated, regardless of whether the move was down the road or across the country. Events marking even unexceptional life transitions may be more deeply processed and frequently recalled because they contain important information for successful adaptation to new environmental circumstances and demands (Pillemer, 2001, 2003).

Future studies linking relocation and memory should examine variations in the distribution of recalled events as a function of differing life circumstances. Residential mobility has potential negative consequences, such as anxiety, loneliness, and low subjective well-being (Oishi & Talhelm, 2012; Stokols & Shumaker, 1982), yet moves in the current study were rated highly on positive emotions and low on negative emotions. Many Americans change residences of their own volition in order to better their life situations, and under these circumstances moving is more likely to be viewed as beneficial (Stokols & Shumaker, 1982). In contrast, childhood moves—which are often involuntary and can cause disruptions in social relationships and educational continuity—have been associated with reduced well-being (Oishi & Schimmack, 2010); childhood moves were not represented in the current study. New research should examine relocations associated with adverse as well as positive life circumstances.

Although prior research has focused primarily on the negative effects of relocation (Oishi & Talhelm, 2012), the current study supports the speculation that transitions could have a positive effect on autobiographical memory. Memories from the reminiscence bump are preserved in older adults with mild dementia (Matuszewski et al., 2009). Planned variations in living circumstances later in life—such as travel, shifting residential locations, or even minor changes in daily routines—could offer an organizing structure for autobiographical memory that promotes and preserves recall of the personal past.

The discovery of a relocation bump illustrates the potential benefits of a more general research strategy: identifying major life events that differ in theoretically meaningful ways and examining the corresponding magnitude of memory clustering around those events. With respect to transition theory, comparisons could focus on events that vary predictably in the extent of material and psychological change—such as marriage with or without a prolonged period of prior cohabitation, birth of a first rather than a second child, retirement with or without a change of residence, and beginning college as a residential or commuter student. The cognitive mechanisms account would predict that higher levels of novelty, distinctiveness, and elaborative processing accompanying these events should lead to greater memory clustering.

In conclusion, research on the temporal organization of autobiographical memory will benefit by broadening the current focus on particular age-linked phenomena—including childhood amnesia and the reminiscence bump—to examine general memory processes that may be evident across the entire life span. Research extending the strategy used in the present study—making theoretically motivated predictions about the extent to which different life events should provide an organizing structure for memory—may deepen our understanding of the impact of life transitions on autobiographical memory across the entire life cycle.

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