“Time is Money”: Examining the Influence of Temporal Focus

Across the Adult Lifespan

by

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Abstract

Seniors represent the fastest growing demographic in Canada. Internationally, it is projected that the world’s senior population will continue to increase over the next several decades. Thus, more research is needed in order to better understand the specific needs and motives of this important age group. The present research documents how the concept of time influences the thoughts, preferences, and behavioral intentions of older and younger adults. Study 1 reported that older adults devoted significantly more attention towards the present compared to the past and future, while younger adults showed a small preference towards the future. Moreover, older adults’ reduced sense of time remaining in life led to them devoting less time to the future. Surprisingly, sense of time remaining in life also significantly suppressed the relationship between age and present temporal focus. That is, an increased sense of time remaining in life was actually associated with more present focus among seniors. Study 2 investigated the downstream consequences of temporal focus by examining older and younger adults’ motivation for present- and future-focused jobs in the organizational behavior context. Findings revealed that older adults showed a distinct preference for present-focused job opportunities over future-focused ones, whereas younger individuals reported the opposite pattern. In Studies 3 and 4, we moved beyond mental investment in different temporal periods and examined how older and younger adults’ views towards the past and the future influenced their preferences and choices in a consumer behavior context. Results from Study 3 indicated that older adults responded more favorably to persuasive advertisements presented with a past-focus compared to future-focused and control ads (i.e., no temporal focus), while younger adults actually rated the control ads higher than both the past- and future-focused ones. Furthermore, positive general views of the past mediated the relationship between age and preferences for
past-focused advertisements. Finally, Study 4 reported that the findings observed in Study 3 were associated with overt differences in behavioral intentions within a hypothetical purchasing scenario. Specifically, older adults opted for a past-focused product more frequently (68%) than a future-focused product (32%), with younger adults showing no distinct pattern in their choices.
Co-Authorship

Co-authors: Dr. Li-Jun Ji (Supervisor)
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Chapter 1

Introduction

Seniors over the age of 65 represent the fastest growing age group in Canada. Indeed, the number of seniors making up the Canadian population has increased steadily from 8% in 1960 to 15.6% in 2014 (Statistics Canada, 2016). Moreover, this trend is not expected to slow down at any point in the near future. In fact, according to all major population projections, seniors will comprise an estimated 25% of the total Canadian population within the next two decades (Statistics Canada, 2016). Though many factors have contributed to this overall growth, decreasing fertility rates and vast improvements in medical services for the elderly have been identified as two of the main drivers behind this demographic surge (Bongaarts, 2002; Etzioni, Liu, Maggard, & Ko, 2003).

If we take an international perspective, the same pattern begins to emerge across virtually every part of the world. Indeed, researchers have asserted that the relative increase in the prevalence of seniors is a global phenomenon that will impact every region of the world (Harper, 2014). In fact, by 2050, for the first time in history, there will be as many seniors in the world (two billion) as there are children under the age of 15. These demographic shifts will undoubtedly have a major impact on how societies function across many domains including healthcare, labor markets, social networks, as well as housing and transport (Harper, 2014). Thus, it is timely to conduct more research directed at better understanding this increasingly important population. To this end, the present dissertation investigates how the concept of time shapes the thinking, preferences, and behavioral intentions of older and younger adults. Before
presenting some of the empirical studies related to these issues, we first examine the major theories and research findings related to aging and time perception.

**Socioemotional Selectivity Theory**

Socioemotional selectivity theory (SST; Carstensen, 1992) states that perception of time is critical to the selection and pursuit of social goals. According to SST, human beings generally pursue two types of social goals throughout the adult lifespan. The first goals are generally concerned with acquiring knowledge and long-term development, while the second type is more concerned with experiencing emotional satisfaction and meaning in daily interactions (Carstensen, Isaacowitz, & Charles, 1999). SST posits that when time is regarded as open ended and people can easily perceive a functional long-term future, they will be drawn to knowledge and developmental goals. However, when time is perceived as limited, individuals will shift to emphasizing emotional regulation and meaning goals.

In the first case, when people pursue developmental goals, they tend to be motivated by interactions and experiences that will set them up for success in the future. For example, a university freshman who has four years remaining at his school (i.e., expanded time concept) may be interested in attending an academic workshop in his field of interest not because it is emotionally rewarding, but because it may prove to be valuable towards his future career goals. In contrast, individuals who pursue emotional goals tend to favor interactions and experiences that are associated with immediate satisfaction. For instance, the same university student, who is now a senior and planning to move across the country for work in one week (i.e., limited time concept), will now be motivated to spend his or her remaining time with family and close friends before departure. To be sure, both developmental and emotional goals are involved to some degree in most human decisions and one should not treat these motives as mutually exclusive.
Nonetheless, research on SST does support the notion that perception of time plays a significant role in determining which of these goals is more salient across different contexts.

One such context is the human lifespan, where the perception of time is constantly fluctuating. Indeed, Suddendorf and Corballis (1997) argue that knowledge about how much estimated time is remaining in certain endeavors (or in life in general) is a distinctively human characteristic. As it relates to SST, this perception of time may influence the motivation of older and younger adults in unique ways. More specifically, Carstensen and colleagues (1999) argue that a sense of time “running out” in one’s life will reduce motivation towards developmental goals and increase motivation for emotional goals in older individuals (Carstensen et al., 1999). The extant literature on this topic provides some corroborating evidence for this argument.

In a study examining this issue, Carstensen, Pasupathi, Mayr, and Nesselroade (2000) utilized experience sampling methodology to track the day to day emotions (e.g., anger, sadness, joy) of individuals between the ages of 18 and 94 over the course of one week. The researchers reported that as individuals aged, the frequency, but not intensity, of negative emotions decreased. That is, although the impact of these emotions was similar across the adult lifespan, older adults simply experienced negative emotions less frequently. These findings are in line with Urry and Gross’ (2010) assertion that older adults use selective attention to optimize their emotional states and enhance their overall well-being through increased exposure to positive emotions and decreased exposure to negative emotions.

In a related study, Charles and colleagues examined positive and negative emotions longitudinally over 23 years in a large sample of 2,804 adults (Charles, Reynolds, & Gatz, 2001). Findings revealed that although positive emotions remained relatively stable, negative emotions decreased with age. The researchers concluded that positive emotional states appear to become
more salient in older adults and seniors tend to actively avoid interactions that may produce harmful emotional states. This argument is further strengthened by evidence indicating that older adults show greater emotional control compared to younger adults (Gross et al., 1997). By desiring to maximize positive emotional states in the present moment, older adults may simply avoid experiences that have the potential to lead to harmful emotions. Younger adults, on the other hand, may not have this luxury as their developmental goals may sometimes require exposing oneself to negative feedback and emotional states in order to improve and ensure future success.

Along with emotions, another area in which people may prioritize goals differently is social relationships. According to SST, older individuals should favor social networks that are smaller in number, but provide more immediate warmth and meaning in daily interactions. On the other hand, younger adults should gravitate towards larger and more diverse social networks that may prove to be advantageous towards their development. Indeed, research has shown that older adults do tend to have much smaller networks compared to their younger peers (Palmore, 1981). More importantly, it is the potential reasons behind these shifts in social networks that are most intriguing. To this end, Lang and Carstensen (1994) reported that although the number of casual acquaintances decreases greatly as people age, the number of emotionally salient relationships remains very stable. Thus, it is not that older adults are less social in general; rather, they appear to be more selective in regards to whom they chose to interact with.

Along these lines, Fung, Carstensen, and Lutz (1999) gave participants scenarios in which they had to decide between spending some free time with individuals who varied in social closeness. Results indicated that older adults showed a significant preference for spending this free time with individuals who were very close to them (e.g., members of their families) over
more novel social partners (e.g., recent acquaintance with whom you share a lot in common or the author of a book you recently read). In contrast, younger adults showed no such preference. Perhaps the most interesting finding of this study was that, when primed to think that they had an extended amount of time remaining in their lives, the older participants’ preference for close, emotional social partners disappeared. Similarly, younger adults primed with a limited sense of time remaining in their lives showed the same preference that older adults displayed naturally (i.e., preferring to interact with individuals very close to them).

Together, these findings provide some evidence for SST’s assertion that older adults are more interested in experiences that provide emotional satisfaction, while younger adults gravitate more towards developmental experiences. Relating this back to the concept of time, these findings also suggest that older adults may be more focused on the present compared to the past or future, whereas younger adults may incline more towards the future. However, to our knowledge, the direct relationship between aging and temporal focus has yet to be empirically tested.

**The Importance of Temporal Focus**

Temporal Focus is defined as the attention people devote to thinking about the past, present, and future (Shipp, Edwards, & Lambert, 2009). More specifically, it involves being able to remember things from the past, focus on the present, and imagine things into the future. Practically speaking, temporal focus has a significant impact on people’s lives by shaping their everyday attitudes, motives, and behaviors. For instance, past temporal focus can lead to rumination about mistakes and hardships of the past and considerably harm one’s mental health (Holman & Silver, 1998). By the same token, past temporal focus may also allow a person to learn from past experiences and convert these thoughts into enhanced motivation (Elliot, 1999).
In spite of this practical utility, it has been argued that the concept of temporal focus has been understudied, and more research is needed in order to better understand how humans adopt these varying temporal frames in their daily lives (Smallwood, Nind, & O’Connor, 2009).

To this end, the current research examines the degree to which temporal focus varies across the adult lifespan, and how these differences impact preferences and behavioral intentions in older and younger adults. Considering research on SST has demonstrated that a limited sense of time remaining in life drives older adults to prioritize emotional satisfaction and meaning, one could expect that older individuals will seek more satisfaction in the present moment compared to other temporal periods. Similarly, it would be reasonable to expect that younger adults may be more future oriented due to their open ended perception of time remaining in life. However, it is important to note that there are alternate explanations, namely difference in cognitive ability and neural activity, that could also account for these potential differences in temporal focus across the adult lifespan.

Much like sense of time remaining in life, cognitive ability and neural activity also fluctuate across the adult lifespan. Though human cognition is much more dynamic than once believed and emerging findings are highlighting how many aspects of reasoning can be maintained well into older adulthood (Yaffe et al., 2009), research does support the fact that cognitive ability (especially fluid intelligence) does decrease in later life (Craik & Bialystok, 2006). Moreover, research has illustrated that the frontal lobes, which are responsible for long term planning and executive functions, are among the first areas of the brain to be impaired during aging (Raz, 2000). Thus, it is conceivable that being present-focused may be the “default” motive for all human beings, whereas focusing on the future may require cognitive resources that
are only available to a subset of the population. If this is the case, these differences could very well make older adults appear to be more present-focused.

Along these lines, aging is also associated with changes in neural activity within the adult brain, which could in turn influence temporal focus. More specifically, it has been identified that the Default Mode Network (DMN) consists of a set of brain structures that are more metabolically active when the brain is at “rest” compared to attention-demanding states (Raichle et al., 2001; Raichle, 2015). Relating this to the concept of time, research has shown that thinking about the past and the future may activate the same areas of the brain as the DMN. In fact, Spreng and Grady (2010) reported that autobiographic remembering and prospection about the future closely resembles the DMN in neural activation. Linking this with the adult lifespan, recent research has also indicated that, similar to age-related decreases in cognition, aging is also related to decreased functional connectivity in various DMN regions of the brain (e.g., posterior cingulate; Hafkemeijer, van der Grond, & Rombouts, 2012). For example, Biswal et al. (2010) reported a negative relationship between age and neural activity in the DMN across subjects between the ages of 18 and 71. If thinking about the past and future is indeed linked to the DMN, as postulated by Hafkemeijer and colleagues, it is possible that the decreases in these brain regions may have important implications on individuals’ temporal focus as they age.

Evidence for the argument that aged-related changes in cognitive ability and neural activity may influence temporal focus comes from Dynamic Integration Theory (DIT; Labouvie-Vief, 2003; 2005), which postulates that age related limitations in cognitive ability result in a marked shift towards less resource-demanding processing in older adults. More specifically, DIT argues that these cognitive changes are the driving factors that lead older adults to prioritizing experiences that provide emotional satisfaction and meaning. For example, since negative
emotions such as anger tend to be quite draining and emotionally strenuous (Mroczek & Kolarz, 1998), DIT asserts that older adults choose to focus on more positive, less demanding emotions in order to conserve their diminishing cognitive resources. This view is in contrast to the aforementioned hypothesis of SST, which regards a motivational shift in aging rather than a cognitive one as the unique driver of older adults’ goal orientations.

Though SST and DIT differ in their proposed mechanisms behind the differences in age related goals, a commonality between the two theories is that they both view aging to be associated with an increased propensity towards experiences that provide enhanced satisfaction and meaning in the present moment. However, to our knowledge, research has yet to empirically examine how these theories relate to temporal focus across older and younger adults. As such, more research is required to examine not only how much attention older and younger adults devote to the past, present, and future, but also how these differences are influenced by factors such as sense of time remaining in life and cognitive ability.

**The Application of Temporal Focus in the Workplace**

Along with investigating how much attention older and younger adults devote to thinking about the past, present, and future, research also needs to examine how these potential differences may manifest themselves practically in the daily lives of older and younger adults. If the variance in temporal focus leads to meaningful differences in the preferences and behavioral intentions of different age groups, policy makers could utilize this knowledge to design programs and initiatives that cater to the specific needs of individuals across the adult lifespan. First, let us begin by examining the existing literature on goal motivation in older and younger adults and how they may relate to temporal focus.
Fingerman and Perlmutter (1995) investigated the extent to which individuals between the ages of 20 and 81 prioritized different types of goals across their lives. The researchers found that younger adults concentrated more on the distant future time periods (e.g., 10 years from now) when asked about the goals that they wanted to accomplish. Furthermore, younger adults were better able to imagine themselves 10 years from now compared to the older adults. More recently, Ebner, Freund, and Baltes (2006) examined goal orientations across the adult lifespan and reported that, on average, younger adults preferred growth goals (e.g., wanting to improve future health) significantly more than maintenance (e.g., wanting to maintain current health) or prevention (e.g., wanting to prevent health problems) goals. Moreover, between groups comparisons showed that older adults scored significantly lower on the future-focused growth goals compared to younger adults. Instead, the older participants favored goals concerned with maintaining the status quo. These findings substantiate the research outlined in the previous sections on how older adults incline more towards experiences that contribute towards immediate emotional satisfaction rather than investing in the future.

One specific domain in which these differences have been understudied is in the realm of organizational behavior, even though research has shown that much like the overall senior population, the number of adults over the age of 65 who are employed in the Canadian workforce is steadily increasing. For example, according to the 1996 Canadian census, only 1 in 13 seniors reported being employed (Duchesne, 2002). This is in stark contrast to 2015, when 1 in 5 seniors reported working during the year (Statistics Canada, 2016).

Along with older adults being more interested in working than ever before, the labor market also appears to share a mutual interest in getting more seniors involved in the workforce. Consider the fact that in 1971, the Canadian senior dependency ratio (i.e., ratio of seniors over
the age of 65 to working aged persons between the ages of 20 and 64) was 15 seniors for every 100 working-aged persons. In 2006, the same ratio accelerated to 21 seniors for every 100 working adults. Furthermore, this trend is likely to continue, with the expectation for a further increase to 50 seniors for every 100 workers by 2056 (Burke, 1991; Chawla, 1990; Williams, 2004). In other words, an economy that once operated on a 1:7 dependency ratio will have to learn to adjust to an unprecedented 1:2 ratio within only a few decades.

Practically speaking, the decreasing percentage of younger people in the workplace represents a major challenge for organizations in terms of where to find adequate employees to offset these trends. To this end, researchers have argued that one potential solution to this problem involves organizations shifting their employment strategies towards the incorporation of older adults who may be interested in joining or remaining in the labor market (Taylor, Shultz, & Doverspike, 2005). Moreover, the wealth of experience that older adults often bring to the table may serve as a competitive advantage for these organizations (Forteza & Prieto, 1994). However, in order to tap into the senior employee reservoir in a way that is beneficial for both organizations and older adults, we must first develop a solid understanding of what exactly older adults desire from their work experiences.

Little is known about the types of roles that seniors may find most appealing, and how they may go about getting these positions. This gap in the literature is highlighted by the fact that the majority (61%) of firms report having difficulty finding suitable older job candidates (Adams & Rau, 2004). Connecting this back to temporal focus, a good starting point for research may be to investigate whether older and younger adults differ in the preferences for job opportunities that highlight the present versus those that focus on the future. Questions such as this may spark
a new line of research aimed at better understanding how the labor market can successfully integrate older adults into the existing workforce.

**Temporal Focus and Consumer Behavior**

Along with its potential impact on the workplace, the influence of temporal focus across the adult lifespan may also extend to other practical domains such as consumer behavior. Indeed, if the concept of time can be used to evoke positive reactions in older and younger adults, this may significantly influence how consumers respond to persuasive messages. Linking this to the current research, we have thus far highlighted how older adults may be more interested in the present compared to the past or future, whereas younger adults may be more interested in the future compared to the present or past. However, it is important to note that these differences do not tell us whether older and younger adults view these distinct temporal periods positively or negatively.

More specifically, just because one spends a significant amount of time and attention thinking about a specific temporal period (e.g., the future), this does not necessarily mean that this will automatically lead to a positive evaluation of it. To the contrary, it is not unreasonable to assume that the future could be extremely important, while at the same time being overwhelmingly stressful for the same individual. Likewise, other temporal periods (e.g., the past) may be evaluated very highly by individuals in spite of the fact that they do not devote a significant amount of time and attention towards them. For example, it is well documented that much of our day to day decisions are based on our past affective experiences (Fredrickson, 2000), and past memories coded as “meaningful” are often extracted to guide our future course of action.
Meaning that is attached to the past may have important consequences if it can lead to enhanced satisfaction in the present. This may be especially relevant to older adults if they are actively seeking more emotional satisfaction in the present. If this is the case, older adults may frame the past in a more positive light, leading to more favorable evaluations of it. Along these lines, researchers have argued that memories of the past can often provide tremendous joy to seniors, transcending some of the developmental issues associated with aging (Kastebaum, 1977). Recently, Reed, Chan, and Mikels (2014) conducted a systematic meta-analysis of studies examining the positivity effect and found that older adults do indeed display a consistent and robust preference for remembering positive information versus negative information. Together, these findings suggest that when older adults are exposed to stimuli incorporating a past focus, they may naturally associate positivity with the message.

In line with these ideas, research has shown that older consumers are more likely to opt for a brand that they have done business with in the past over a new option (Lambert-Pandraud, Laurent, & Lapersonne, 2005). Though different mechanisms could be at play, the researchers noted that nostalgia and a positive attitude of the past could be two important drivers of this effect. Taken together, this literature suggests that there may be an important link between time and meaning within persuasive messages. Although researchers have yet to investigate the impact of temporal focus on consumer behavior across older and younger adults, research has examined the relationship between perceived meaning and consumer behavior in general, and this existing literature provides a solid foundation on which to examine these important issues.

In one of the seminal studies investigating the issue of meaning and consumer behavior, Fung and Carstensen (2003) examined the appeal of emotionally meaningful (i.e., related to love and caring), developmental (i.e., related to knowledge acquisition), and control advertisements in
older and younger adults. The researchers found that older adults remembered advertisements with emotional appeals significantly more than developmental or control ads. The younger adults, on the other hand, showed no such bias in memory between the three categories. Between group differences showed that older adults also preferred emotional advertisements significantly more than younger adults when forced to choose one over the other. In contrast, the developmental advertisements were preferred significantly more by the younger participants.

In a similar study, Williams and Drolet (2005) examined preferences for advertisements that were either described using emotional (e.g., “If your passion is coffee, your pleasure will be Coffea”) or rational (e.g., “A gourmet blend at grocery store prices, Coffea provides an excellent value”) descriptions across older and younger adults. Results showed that older adults consistently preferred the emotional advertisements while younger adults preferred the rational ones. Together, these findings highlight the fact that persuasive advertisements have the power to provide varying degrees of meaning to older and younger adults, in turn influencing their preferences and choices towards these products.

Connecting these findings to the persuasion literature, research has shown that messages that are relevant to the perceiver’s goals tend to be more effective (Petty & Caciopo, 1984). Similarly, people are more likely to respond favorably and behave in accordance with persuasive messages when advertisements are in line with their personal motives (Clary, Snyder, Ridge, Miene, & Haugen, 1994). Given the consistency in preferences for messages that are perceived to be relevant, it follows that persuasive advertisements that evoke a positive response should be preferred more by older and younger adults. However, to our knowledge, research has yet to examine how persuasive messages framed with distinct temporal foci influence the preferences and choices of older and younger adults.
The Present Research

The current research aimed to empirically test how the concept of time influences the thoughts, preferences, and behavioral intentions of older and younger adults. Specifically, we examined how much attention older and younger adults devote towards thinking about the past, present, and future, and how these differences are impacted by factors such as sense of time remaining in life and cognitive ability (Study 1). Moreover, we investigated the applied impact of these potential differences within the realm of organizational behavior by testing whether older and younger adults differed in their preferences for job opportunities with a focus on the present versus the future (Study 2). In light of the existing literature suggesting that older adults prefer emotional satisfaction in the present (Charles et al., 2001), whereas younger adults may be more willing to forego immediate satisfaction for the pursuit of future goals (Fingerman & Perlmutter, 1995), it was expected that older adults would be significantly more focused on the present while younger adults would focus more on the future across both their temporal foci and behavioral intentions in the organizational behavior context.

The present research also aimed to examine the impact of temporal focus in the applied context of consumer behavior. More specifically, we tested how older and younger adults’ positive and negative views towards the past and the future impacted their preferences (Study 3) and choices (Study 4) for persuasive advertisements presented with varying temporal foci. As most consumers tend to respond more favorably to meaningful stimuli and older adults have shown a clear bias towards remembering the past in a positive light (Reed et al., 2014), it was expected that the older adults would rate past-focused advertisements higher and choose them with greater frequency compared to future-focused advertisements. In contrast, we expected
younger adults’ proclivity towards future-focused goals (Ebner et al., 2006) to translate into them rating and choosing the future-focused advertisements with a higher frequency.
Chapter 2

Study 1: Temporal Focus across the Lifespan

Study 1 investigated how much attention older and younger adults devote to the past, present, and future, and how these differences are influenced by sense of time remaining in life and cognitive ability. In light of the fact that older adults tend to be concerned with maximizing positive experiences (e.g., Charles et al., 2001) and interactions (e.g., Fung et al., 1999) in the here and now, we hypothesized that older adults would be significantly more present-focused than past- or future-focused. In contrast, research has shown that younger adults tend to show more interest in future-focused goals (Fingerman & Perlmutter, 1995). As such, it was hypothesized that younger adults would be significantly more future than past or present-focused. In line with previous research, it was also expected that younger adults would score higher on both sense of time remaining in life and cognitive ability compared to their older counterparts.

Methods

Participants

In total, 353 participants were recruited from Queen’s University and local senior lifestyle communities in Ontario, Canada. The younger adults sample (i.e., under the age of 25; Mean age = 19.76, SD = 1.56) was comprised of students (N = 200; 128 women; 72 men) who were enrolled in an introductory psychology course and received course credit as compensation for their participation. Meanwhile, the older adults sample (i.e., over the age of 65; Mean age = ________________

1 Because data collection occurred in different waves with varying time constraints, not all of the participants were able to complete the full battery of questionnaires outlined in the measures section below. Specifically, though all 353 participants completed the temporal focus questionnaire, only 178 participants completed the additional questionnaires on sense of time remaining in life and cognitive ability. These differences will be highlighted in the mediation section of the results.
was comprised of seniors (\(N = 153\); 81 women, 62 men, 10 unspecified) who were living independently in adult lifestyle communities and received an opportunity to win a cash prize from a random draw as compensation for their participation.

**Procedure and Materials**

Prior to data collection, the experimental procedure was approved by the Queen’s University general research ethics board. Informed consent was obtained from all participants prior to participation. Younger adults had the opportunity to sign up for the study voluntarily through an online portal system at Queen’s University. After signing up, participants came into the lab and completed the measures outlined below. In light of the fact that some older adults may not be able to travel independently to the university, data were collected differently for this sample. Specifically, prospective participants were approached by the primary investigator and research assistants in local senior clubs and associations and by going door to door in local senior communities. Prospective participants were given a brief description of the study and any questions that they had were answered by the research team\(^2\). Those who agreed to participate were given a questionnaire package including the measures outlined below.

**Measures** (See Appendix A for complete Study 1 measures)

**Temporal Focus Scale (TFS; Shipp et al., 2009).** The TFS is a 12-item questionnaire designed to capture the amount of attention individuals devote to thinking about the past (4 items; \(\alpha = .80\); e.g., “I think about things from my past”), present (4 items; \(\alpha = .70\); e.g., “My mind is on the here and now”), and future (4 items; \(\alpha = .87\); e.g., “I think about what my future has in store”). All items are answered on a seven-point scale (1 = never, 7 = constantly). The TFS views temporal focus as the attention devoted to the past, present, and future in degrees,

\(^2\) Note: the same recruiting procedure was used for all studies reported in this thesis.
meaning that a person is not restricted to focusing on only one time period. As such, it is possible for an individual to be high on one, two, or all three time periods.

**Sense of Time Remaining in Life (Future Time Perspective Scale; Lang & Carstensen, 2002).** The future time perspective scale is a 10-item ($\alpha = .89$) questionnaire designed to capture how much time one perceives is remaining in life. Higher scores are indicative of a greater sense of time remaining in life, with lower scores indicating a lower sense of time remaining in life. Sample items include “Many opportunities await me in the future”, “My future is filled with possibilities”, and “I have the sense time is running out” (r). All items are answered on a seven-point scale ($1 = very untrue, 7 = very true$).

**Cognitive Ability (Schwartz, Woloshin, Black, & Welch, 1997).** Validated measures of cognitive ability often require a trained technician to administer the test along with a significant amount of time to complete it. For example, the Wechsler Adult Intelligence Scale-Fourth Edition (WAIS-IV; Wechsler, 2008), which is the most widely used tool for the measurement of general intelligence in adults between the ages of 16 and 90, requires specific training to administer and score the test and an average of 60 to 90 minutes to complete the test. Although the WAIS-IV examines various domains of cognitive ability including working memory, processing speed, and verbal reasoning, the constraints of the current data collection, which required seniors to complete the measures on their own and within a shorter time period (one hour), prevented us from using this test. We thus considered shorter, less resource-demanding measures of cognitive ability that could serve as a proxy for fluid intelligence across the adult lifespan.

To this end, it has been argued that cognitive ability can be measured through the ability to work with information and to understand basic probability (Schwartz et al., 1997). Moreover,
research has shown that numeracy questions serve as a good proxy for cognitive ability even among highly educated populations, limiting the confounding influence of formal education (Lipkus, Samsa, & Rimer, 2001). Researchers have also asserted that age-related declines in problem-solving strategies, working memory, and processing speed may be captured in simple numeracy problems (Yagoubi, Lemaire, & Besson, 2005), making them an appropriate gauge of overall cognitive ability across the lifespan.

Thus, we measured cognitive ability with the following three-item scale developed by Schwartz et al. (1997) testing comprehension of basic probabilistic information: (a) Imagine that we rolled a fair, six-sided die 1,000 times. Out of 1,000 rolls, how many times do you think the die would come up even (2, 4, or 6)? (Answer: 500 out of 1000); (b) In the Big Bucks Lottery, the chances of winning a $10.00 prize is 1%. What is your best guess about how many people would win a $10.00 prize if 1,000 people each buy a single ticket to Big Bucks? (Answer: 10 persons out of 1000); (c) In the Acme Publishing Sweepstakes, the chance of winning a car is 1 in 1,000. What percent of tickets to Acme Publishing Sweepstakes win a car? (Answer: 0.1%).

Though we also considered using a longer eight-item numeracy questionnaire developed by Lipkus et al. (2001), we opted to use the shorter three-item measure as past research has shown that these two questionnaires are moderately correlated ($r = .48, p < .001$) yet the shorter measure minimizes participant burden, especially in samples of older adults (Donelle, Hoffman-Goetz, & Arocha, 2007). The three-item measure developed by Schwartz et al. has also recently been included as one of the subscales in a comprehensive tool validated to measure cognitive ability and decision making in older adults (Finucane & Gullion, 2010). Specifically, the

---

3 This measure was similar to the aforementioned three-item measure but tested participants’ comprehension of basic probability in the health domain (e.g., “If the chance of getting a disease is 20 out of 100, this would be the same as having a ___% chance of getting the disease”).
researchers reported that older adults (>65 years old) scored significantly lower than younger adults (25-45 years old) on the three-item numeracy measure as well as various other indices of general cognitive ability including fluid intelligence, memory, and perceptual speed.

Upon completing the respective questionnaires outlined above, participants reported demographic information such as age and gender before being debriefed.

Results

Temporal Focus

A 2 (Age: older adults vs. younger adults) X 3 (Temporal focus: past vs. present vs. future) mixed analysis of variance (ANOVA) revealed a significant main effect of age ($F(1, 351) = 54.87, p < .001; \eta^2_p = .14$), such that younger adults reported higher scores ($M = 5.00, SE = .05$) compared to older adults ($M = 4.43, SE = .06$). There was also a significant main effect of temporal focus ($F(2, 702) = 43.44, p < .001; \eta^2_p = .11$), with present focus ($M = 5.10, SE = .05$) being higher than both past ($M = 4.47, SE = .06$) and future focus ($M = 4.59, SE = .06$).

More importantly, these main effects were qualified by an interaction between age and temporal focus ($F(2, 702) = 53.36, p < .001; \eta^2_p = .13$; see Figure 1). Following up on this interaction, Bonferroni post-hoc analyses indicated that, in line with our hypothesis, older adults were significantly more likely to be present-focused ($M = 5.24, SD = .94$) than past ($M = 4.00, SD = 1.06, p < .000, d = 1.24$) and future-focused ($M = 4.05, SD = 1.10, p < .000, d = 1.16$). Meanwhile, the younger adults displayed a small preference towards being more future-focused ($M = 5.12, SD = 1.11$) than past ($M = 4.94, SD = 1.16, p = .180, d = .16$) and present-focused ($M = 4.96, SD = .91, p = .229, d = .16$), though these differences were not statistically significant. Finally, between-group differences indicated that older adults were significantly more present-focused compared to younger adults ($p = .005, d = .30$), whereas younger adults were
significantly more future-focused \( (p < .001, d = .97) \) and past-focused \( (p < .001, d = .85) \) in comparison to the older adults.

![Temporal Focus](chart.png)

**Figure 1.** Temporal focus (scores ranging from 1-7) as a function of age.

**Sense of Time Remaining in Life**

As hypothesized, independent samples t-tests revealed that the younger adults \( (M = 5.28, SD = .96) \) reported having a significantly greater sense of time remaining in life compared to the older adults \( (M = 3.75, SD = .95; t(176) = 10.59, p < .001; d = 1.57) \).

**Cognitive Ability**

Independent samples t-tests also revealed that the younger adults \( (M = 1.77, SD = .91) \) scored higher on the cognitive ability measure compared to the older adults \( (M = 1.48, SD = 1.16; t(181) = 1.88, p = .062; d = .28) \).

**Mediation Analysis**
As discussed in the introduction, older adults may be more present-focused (or less future-focused) compared to younger adults because they perceive less time remaining in their lives. However, it is also possible that focusing on the future may require cognitive resources that are unavailable to older adults due to their decreased cognitive ability. To explore these potential mechanisms, we tested whether the pathways from age to present and future temporal focus were mediated by the decreased sense of time remaining in life and cognitive ability of older adults. We used Hayes’ (2012) model 4 from PROCESS (SPSS; IBM Corp, 2013), running separate analyses for the two dependent variables (Present and future temporal focus) with the predictor variable set as age (younger = 1, older = 2), and simultaneous (parallel) mediation by sense of time remaining in life and cognitive ability (so that each would control for the role of the other). Each analysis used 10,000 iterations, and estimated 95% bias-corrected confidence intervals (henceforth, CI\textsubscript{95}). See Figures 2 and 3 for complete details.

**Future Temporal Focus.** The analysis revealed that sense of time remaining in life partially mediated the relationship between age and future temporal focus ($ab = -.42$, CI\textsubscript{95} = [-.682, -.176]; see Figure 2), such that the older adults’ decreased sense of time remaining in their lives led to them devoting less time to thinking about the future.

Specifically, the total effect indicated that older adults were significantly less focused on the future compared to younger adults ($c = -1.37$, CI\textsubscript{95} = [-1.69, -1.05], $t(179) = -8.51$, $p < .001$). However, when sense of time remaining in life was controlled for, the difference in future temporal focus between the two age groups (i.e., the direct effect of age on future temporal focus) was reduced ($c' = -.979$, CI\textsubscript{95} = [-1.38, -.584], $t(179) = -4.89$, $p < .001$). In order to further test this relationship, we ran the alternate mediation model with sense of time remaining in life set as the dependent variable and future temporal focus set as our mediator. The analyses
indicated that this pathway was also significant, \((ab = -.29, \text{CI}_{95} = [-.513, -.098])\), though the effect was not as strong as the one observed in the original pathway. Meanwhile, cognitive ability did not mediate the relationship between age and future temporal focus.

![Diagram](image)

**Figure 2.** Sense of time remaining in life mediated the relationship between age and future temporal focus. Total effect = -1.37, CI95 [-1.69, -1.05]. *\(p < .05\), **\(p < .01\), ***\(p < .001\).

**Present Temporal Focus.** The analyses also indicated that age had a significant indirect effect on present temporal focus through sense of time remaining in life \((ab = -.697, \text{CI}_{95} = [-.971, -.459]);\) see Figure 3). However, this indirect effect represents a suppression effect as the direct and indirect effects were directionally opposite. Thus, for older adults, the decreased sense of time remaining in their lives actually led to them being relatively less focused on the present. More specifically, the total effect indicated that older adults were slightly (but not significantly) more present-focused compared to younger adults \((c = .059, \text{CI}_{95} = [-.218, .336], t(179) = .419, p\)
= .676). However, controlling for sense of time remaining in life led to the older adults being significantly more focused on the present compared to younger adults (c’ = .727, CI95 = [.412, 1.04], t(179) = 4.56, p < .001). Moreover, the alternate pathway, with sense of time remaining in life set as the outcome variable and present temporal focus set as the mediator, was not significant, (ab = -.03, CI95 = [-.099, .164]. Again, cognitive ability did not mediate the relationship between age and present temporal focus.

Figure 3. Sense of time remaining in life uniquely suppressed the relationship between age and present temporal focus. Total effect = .06, CI95 [-.22, .34]. *p < .05, **p < .01, ***p < .001.

Summary and Discussion

This lack of significance is somewhat surprising considering the significant difference in present focus between older and younger as reflected in the ANOVA analysis. However, as alluded to in the participants section, the sample size in the mediation analysis was smaller (N = 178) compared to the ANOVA (N = 353) due to missing data. As such, the smaller sample size may have contributed to this non-significant total effect.
As hypothesized, older adults devoted significantly more attention towards thinking about the present compared to the past or the future. In contrast, younger adults showed a small tendency to focus more on the future compared to the present or past. Older adults also perceived significantly less time remaining in their lives and scored lower on cognitive ability compared to younger adults.

These findings add to the existing knowledge base on how the concept of time influences older and younger adults. Specifically, SST (Carstensen, 1992) has argued that older adults’ perception of time running out in their lives leads them to prioritize experiences that provide emotional satisfaction over more developmental experiences. Meanwhile, DIT (Labouvie-Vief, 2003; 2005) has posited that the passage of time produces changes in cognitive ability that lead to older adults inclining more towards emotionally rewarding experiences. Though these theories suggest that aging may be positively correlated with being more focused on the present, to our knowledge, researchers had yet to empirically test whether age also influences how much attention individuals devote to various temporal periods. To this end, the current research is the first to show that older and younger adults differ in the amount of attention they devote towards the past, present, and future.

The results from the current study showing that older adults devote significantly more attention towards the present compared to the past or future are in line with research by Read and Read (2004), who reported that older adults (mean age 75) discounted the future significantly more compared to younger adults (mean age 25). Specifically, the researchers found that older adults were more likely to choose a smaller reward in the present instead of waiting for a larger reward later in the future (e.g., enjoying a very short vacation now vs. enjoying a much longer vacation in the future). This effect got stronger as the delay between the present and future
increased, suggesting that older individuals may view the potential pleasures of the future as less valuable compared to their younger counterparts. Alternatively, the researchers suggested that the uncertainty of how much time is remaining in their lives may lead to seniors discounting the future more compared to younger adults. This potential explanation is concordant with the results from the current study, which reports older adults devoting less attention towards the future due to their decreased sense of time remaining in life.

Surprisingly, the mediation analysis in the current research also revealed that sense of time remaining in life significantly suppressed the relationship between age and present temporal focus. This is in contrast with what one would expect based on SST, which postulates that older adults’ perception of less time remaining in their lives makes them more inclined towards the present. However, the present study finds that an increased sense of time remaining in life would be associated with greater present focus among older adults.

We believe that there could be two potential explanations for this finding. First, for older people, being able to imagine a viable future may allow them to focus and care more about their present endeavors. That is, an expectation that they will likely have an opportunity to reap the fruits of their labor in the time to come may be a prerequisite towards investing any substantial time or thought into the present. In a review related to this issue, Peterson (2000) outlined how positive expectations of the future have been associated with highly beneficial outcomes in the present including positive mood, perseverance, and achievement. However, much of this research has been done with younger adults and more work is required to test these hypotheses across the adult lifespan. Future research should investigate how older adults’ expectations of the future shape their perceptions of the present and how these differences impact factors such as performance and life satisfaction.
Along with the potential benefits of being able to imagine a viable future, not being able to perceive a feasible future may have the opposite effect if it causes distress to older adults. Specifically, if older adults become overly pessimistic about the potential problems and uncertainties of the future, this may take away from their ability to focus on and enjoy the present moment. Indeed, emerging research suggests that focusing on issues such as the potential problems of the future takes away from one’s ability to focus on the present and decreases life satisfaction (Killingsworth & Gilbert, 2010). Research has also shown that older adults experiencing life stressors tend to be more pessimistic about the future, in turn leading to poorer physical and psychological health (Robinson-Whelen, Kim, MacCallum, & Kiecolt-Glaser, 1997). More importantly, the researchers asserted that these individuals may view the future through a lens that is biased by their current challenging circumstances, leading to expectations that their current situation will remain negative. Interestingly, this research points to the potential link between being able to perceive a successful long-term future and one’s present state of affairs, much like the findings from the current study. Future research should build on these results by examining the extent to which older adults’ plans and expectations of the future influence their ability to focus on and engage the present.

In contrast to what we would expect from DIT, the results from the current study indicated that cognitive ability did not influence temporal focus across older and younger adults. Instead, differences in temporal focus appear to be influenced by motivational shifts stemming from perceived sense of time remaining in life. This knowledge may be especially important for older adults, as it illustrates how even with the typical declines in cognitive ability, individuals still have the ability to focus on various temporal periods. These findings may be useful in applied settings where focusing on and prioritizing different temporal periods may influence
motivation and behavior in unique ways. In Study 2, we begin to investigate some of these issues by examining how the differences in temporal focus manifest themselves in applied settings across older and younger adults.
Chapter 3

Study 2: Temporal Focus and Workplace Motivation

Study 2 aimed to build on the findings from Study 1 by examining how the variance in temporal focus between older and younger adults manifested into motivational differences in practical contexts such as organizational behavior. It was hypothesized that the preferences for being present-focused in older adults would translate into greater motivation for job opportunities highlighting immediate benefits and satisfaction in the present, while younger adults’ inclination towards the future would lead them to prefer job opportunities focused on future success and potential.

Participants.

225 total participants were recruited from Queen’s University and local senior communities in Ontario, Canada. The young adults sample (i.e., under the age of 25; Mean age = 20.59, SD = .85) was comprised of students (N = 110; 62 women; 47 men; 1 unspecified) enrolled in an introductory psychology course who received course credit as compensation for their participation. Meanwhile, the older adults sample (i.e., over the age of 65; Mean age = 76.38, SD = 7.12) was comprised of seniors (N = 115; 62 women, 47 men, 6 unspecified) who were living independently in adult lifestyle communities and received an opportunity to win a cash prize from a random draw as compensation for their participation.

Procedure and Materials

Similar to Study 1, participants completed the study in the lab or at their homes or local community centres. Specifically, younger adults came into a lab at Queen’s University and completed measures after signing up for study online, whereas older adults were once again approached by the research team and asked to participate in the study.
After agreeing to participate in the study, participants were presented with the scenario below, which asked participants to imagine that they were on the job market and looking for employment. They were then informed about two similar job offers that they had recently received from different organizations. The first job opportunity described an organization focused on the present, whereas the second job opportunity described an organization focused on the future. Specifically, participants were given the following instructions:

“Please imagine that you are looking for a job and you have been offered the same position at both of the following companies:

(a) A stable company that encourages employees to build on previous skill and experience, offering insight to an established clientele, and allows for reputable connections [Present-focused organization].

(b) A growing company that encourages employees to challenge the status-quo, participate in revolutionizing the job market and values creativity and extreme flexibility. [Future-focused organization]”

Measures

Upon reading each scenario, participants were asked to rate how likely they were to choose each of the organizations (1 = Not likely at all, 9 = Very likely)\(^5\). The ratings of the present-focused and future-focused organizations served as the primary dependent variable. Presentation of the two work opportunities was counter-balanced such that half the participants viewed the present-focused organization first while the other half viewed the future-focused organization.

\(^5\) Due to a small error during data collection, the younger adults sample was given a 1 to 7 Likert scale (1 = Not likely at all, 7 = very likely) instead of a 1 to 9 scale. All other facets of the scenario and question were the same.
organization first. Finally, participants reported demographic information, such as age and gender, before being debriefed to complete the study.

Results

In line with our hypothesis, paired samples t-tests revealed that older adults rated the present-focused organization \((M = 6.64, SD = 2.33)\) significantly higher compared to the future-focused organization \((M = 5.31, SD = 2.50; t(114) = -4.27, p < .001; d = .55)\). In contrast, younger adults displayed the opposite pattern, rating the future-focused organization \((M = 5.68, SD = 1.41)\) significantly higher compared to the present-focused organization \((M = 4.74, SD = 1.56; t(109) = 4.40, p < .001; d = .63; see Figure 4)\).

![Figure 4](image-url)

**Figure 4.** Present vs future organizational preference as a function of age.

Summary and Discussion

As hypothesized, older adults rated the present-focused organization as significantly more appealing compared to the future-focused one, while younger adults preferred the future-
focused organization over the past one. These findings complement existing literature showing that older adults tend to incline more towards experiences that are emotionally satisfying in the present, while younger adults are more likely to postpone immediate gratification for bigger rewards in the future (Read & Read, 2004). The results from the current study augment this knowledge by illustrating how these motivational differences may extend to the organizational behavior context. This is especially relevant considering the increased prevalence of seniors in the modern labor market (Taylor et al., 2005).

Past research related to the findings of the current study is scarce. In one of the few empirical studies to examine the work experiences of older adults, Warr, Butcher, Robertson, and Callinan (2004) studied the well-being of older adults in relation to employment and satisfaction across different roles. The researchers found that there was a positive relationship between well-being and employment in later life. Though this indicates that many seniors may enjoy and indeed benefit from being a part of the workforce, Warr and colleagues also reported that these advantages were qualified by whether the work was voluntary (e.g., working to stay active) or necessarily (e.g., working for monetary reasons). Specifically, well-being was higher in individuals who had intrinsic motives for their jobs and lower in those who were working primarily for financial reasons. In light of the fact that more and more seniors are postponing retirement and being forced to continue working out of financial necessity (Sargent-Cox, Butterworth, & Anstey, 2011), future research should further examine how the well-being of working older adults varies as a function of voluntary and involuntary work.

Another major finding from the Warr et al. (2004) study was that well-being was also positively associated with opportunities for control and clarity within the jobs held by older adults. These results suggest that older individuals may prefer more steady and stable roles
where they can focus on execution instead of constant learning and ambiguity on the job. However, this speculation must undergo further testing in order to refine these propositions and gain a better understanding of the work experiences of older adults.

The results from the current study further suggest that in contrast to the older adults, younger adults may be more interested in future-focused organizations compared to those emphasizing the present. Again, this make sense considering the existing literature illustrating how young adults incline more towards future oriented growth goals (Ebner et al., 2006; Fingerman & Perlmutter, 1995). More support for this argument comes from research showing that compared to older workers, younger individuals are more willing to undergo new skills training in their jobs, highlighting their readiness to engage in processes that may not be overly satisfying in the present, but may set them up for heightened success in the time to come (Kanfer & Ackerman, 2004). Related to this, a study asking participants about the extent to which they engaged in behaviors to attain goals that they had not yet reached in their professional careers indicated that younger adults were significantly more likely than older adults to chase future-focused goals and placed a higher value on the importance of fair evaluations and consequent advancements due to meeting these standards (Lord & Farrington, 2006). Taken together, these findings suggest that younger workers may be more willing to learn skills that may be beneficial for the future and more likely to value and go after future achievement, illustrating their overall penchant towards work settings associated with the future.
Chapter 4

Study 3: Temporal Focus and Persuasive Advertisements

Though the results from Studies 1 and 2 provide valuable knowledge, an important limitation of this research is that it does not tell us about the affective views of older and younger adults towards these different temporal periods. Indeed, the fact that older adults are more present-focused does not necessarily mean that the past and future is viewed negatively by these individuals. Likewise, it is not a given that younger adults are overly optimistic about the future just because they appear to be more future oriented. Therefore, further research is needed in order to tease apart these potential differences.

In Study 3, we aimed to go beyond mental investment in different temporal periods and examine the attitudes of older and younger adults towards varying temporal foci. Specifically, the purpose of study 3 was to examine whether persuasive advertisements presented with a past or future focus were preferred to varying degrees by older and younger adults. As outlined in the introduction, past research has shown that older adults prefer advertisements that evoke emotion and meaning (Fung & Carstensen, 2003; Williams & Drolet, 2005). Considering that older adults also frame the past in a positive light (Reed et al., 2014), it was hypothesized that advertisements presented with a past focus would be preferred significantly more than future-focused ads by older participants. Meanwhile, younger adults, who are more interested in future growth and development (Ebner et al., 2006), should favor future-focused ads compared to past-focused ones. Lastly, we examined how affective attitudes of the past and future (i.e., positive vs. negative) influenced these potential differences.

Participants
There were a total of 182 participants in Study 3. Participants were recruited from Queen’s University and local senior lifestyle communities in Ontario, Canada. The young adults sample \((N = 99; 49 \text{ women}; 50 \text{ men})\) was composed of individuals under the age of 25 (Mean age = 19.65, SD = 1.19) who enrolled in an introductory psychology course at Queen’s University and received course credit as compensation for their participation. Meanwhile, the older adults sample \((N = 83; 38 \text{ women}, 36 \text{ men}, 9 \text{ unspecified})\) was composed of individuals over the age of 65 (Mean age = 73.53, SD = 6.86) who were living independently in adult lifestyle communities and received an opportunity to win a cash prize from a random draw as compensation for their participation.

**Procedure and Materials**

As with the previous studies, participants completed the measures outlined below in the lab or at their homes and local senior centres. In the first part of the study, participants were asked to rate various persuasive advertisements focusing on different temporal periods. They then moved on to complete a battery of measures, including questionnaires asking about their views towards the past and the future, before reporting demographic information such as age and gender to complete the study.

**Advertisements.** Six pairs of colored advertisements were created for this study. Within four of these pairs, one ad highlighted how the product or service was related to the past, and the other highlighted how the product or service was related to the future. Each of these four pairs included an identical image with a slogan underneath which focused on the past (e.g., “A Rich History of Academic Success") or the future (e.g., “The Home of Future Leaders”; see Figure 5 for a sample pair). The other two pairs of advertisements served as control ads. They differed from the past- and future-focused ads in that they did not include a temporal element. Each pair
of control ads included an identical image with a slogan underneath that was unrelated to time (e.g., “Love your Style”, “Feel the Comfort”; see Appendix B for all advertisements). In order to increase generalizability, the advertisements represented products or services from varying domains familiar to both older and younger adults (e.g., education, construction, food, consulting service). The past- and future-focused advertisements were selected based on a pretest involving a separate group of participants ($N = 30$). Pretest participants indicated, in a force choice paradigm, whether each advertisement reminded them more of the past or the future. Indeed, most participants in the pretest (average of 90%) identified the stimuli as intended. The same pretest also showed no significant differences in pleasantness (all $p’s > .345$) or persuasiveness (all $p’s > .340$) between each of the past- and future-focused advertisement pairs. Participants were presented each of the 12 total advertisements one at a time and in random order, and asked to rate how much they liked each ad on a 9-point scale ($1 = not at all, 9 = very much$), with higher ratings indicating a more positive evaluation.
Figure 5. Example of one of the four pairs of colored advertisements varying in past vs. future temporal focus.

Other Measures (See Appendix C for complete Study 3 measures)

Zimbardo Time Perspective Inventory-Short (ZTPI-Short; Košťál, Klicperová-Baker, Lukavská, & Lukavský, 2016). The ZTPI-Short allows for the operationalization of temporal period (e.g., past, future) into positive and negative affective categories. This information may be used to test whether individuals prefer past or future-focused advertisements because of their general attitudes towards these temporal periods. Recently, the original 56-item questionnaire (Zimbardo & Boyd, 1999) has been condensed down to a shorter version which includes 3 items per subscale for each of past positive (3 items; α = .42; e.g., “It gives me great
pleasure to think about my past”), past negative (3 items; \( \alpha = .45 \); e.g., “I think about the bad things that have happened to me in the past”), future positive (3 items; \( \alpha = .34 \); e.g., “I complete projects on time by making steady progress”), and future negative (3 items; \( \alpha = .53 \); e.g., “To think about my future makes me sad”) scales. All items were answered on a five-point scale (1 = very untrue, 5 = very true).

Nostalgia (Holbrook, 1993, 1994). Holbrook’s nostalgia index is an 8-item (\( \alpha = .70 \)) questionnaire designed to compare between the past (e.g.: “Things used to be better in the good old days”) and the future (e.g., “Modern business constantly builds a better tomorrow”; reverse coded), with higher scores indicating a belief that the past was superior to the future on social and economic issues. All items were answered on a nine-point scale (1 = strongly disagree, 9 = strongly agree).

Results

Advertisement Ratings

An overall subjective evaluation of each advertisement focus (i.e., past vs. future vs. control) was calculated by taking the average of all of the scores from the respective focus. Mauchly’s test indicated that the assumption of sphericity had been violated for the main effects of advertisement temporal focus, \( \chi^2 (2) = 45.56, p < .001 \). Therefore, degrees of freedom were corrected using Huynh-Feldt estimates of sphericity (\( \epsilon = .83 \)).

2 (Age: older adults vs. younger adults) X 3 (Advertisement focus: past vs. future vs. control) mixed analysis of variance (ANOVA) on the advertisement ratings revealed that there was no significant main effect of age (\( F(1, 180) = 2.18, p = .141; \eta^2_p = .012 \)) or advertisement focus (\( F(1.66, 297.92) = .437, p = .608; \eta^2_p = .002 \)), however, there was a significant interaction between age and advertisement focus (\( F(1.66, 297.92) = 20.82, p < .001; \eta^2_p = .10 \); see Figure 6).
Following up on this interaction, Bonferroni post-hoc analyses indicated that, in line with our hypothesis, older adults preferred past-focused advertisements ($M = 5.29, SD = 1.62$) more compared to future-focused ads ($M = 4.89, SD = 1.61, p = .001, d = .25$) and control ads ($M = 4.64, SD = 1.84, p = .001, d = .37$). Meanwhile, younger adults did not show any significant differences in preferences between the past and future-focused ads ($p = .08$), but preferred the control advertisements ($M = 5.54, SD = 1.06$) more than both the past-focused ($M = 4.91, SD = 1.21, p < .001, d = .55$) and future-focused ads ($M = 5.14, SD = 1.08, p < .012, d = .37$).

Between groups analyses revealed a non-significant trend for the older adults to prefer the past-focused advertisements more than the younger adults ($p = .078, d = .27$). There was no age difference in preferences for future-focused ads ($p = .227$). Together, these findings indicate that the older adults showed a clear preference for the past-focused advertisements. However, the younger adults did not respond more favorably to either of the temporal focused ads, and actually rated the control ads more positively than both the past and future-focused messages.
Figure 6. Preference of varying temporal advertisements (scores ranging from 1-9) as a function of age.

Zimbardo Time Perspective Inventory-Short

Mauchly’s test indicated that the assumption of sphericity had been violated for the main effects of time attitudes, $\chi^2(5) = 40.89, p < .001$. Therefore, degrees of freedom were corrected using Huynh-Feldt estimates of sphericity ($\varepsilon = .90$).

A 2 (Age: older adults vs. younger adults) X 4 (Time attitudes: past negative vs. past positive vs. future negative vs. future positive) mixed analysis of variance (ANOVA) revealed that there was a significant main effect of time attitudes ($F(2.69, 475.62) = 59.77, p < .001, \eta^2_p = .25$) and age ($F(1, 177) = 25.80, p < .001; \eta^2_p = .13$), and that these effects were qualified by a significant interaction between age and time attitudes ($F(2.69, 475.62) = 93.11, p < .001, \eta^2_p = .35$). To break down this interaction, Bonferroni post hoc analyses were used to examine the relationship between age and time attitudes. As outlined in Table 1, findings revealed that older
adults scored significantly higher on both the past positive \( (p < .001, d = .96) \) as well as future positive \( (p < .001, d = 1.04) \) attitudes compared to younger adults. Older adults also scored significantly lower on both the past negative \( (p < .001, d = -1.23) \) and future negative \( (p < .001, d = -1.58) \) attitudes compared to younger adults. Within group analyses revealed that older adults scored significantly higher on the past positive attitudes compared to the past negative attitudes \( (p < .001, d = 2.08) \), along with scoring higher on the future positive attitudes compared to the future negative attitudes \( (p < .001, d = 2.81) \), indicating a clear positivity bias towards both temporal frames.

<table>
<thead>
<tr>
<th></th>
<th>Older Adults</th>
<th>Younger Adults</th>
<th>Between-group differences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Past Negative</strong></td>
<td>( (M = 2.28, SD = .90) )</td>
<td>( (M = 3.37, SD = .87) )</td>
<td>( p &lt; .001 )</td>
</tr>
<tr>
<td><strong>Past Positive</strong></td>
<td>( (M = 3.97, SD = .71) )</td>
<td>( (M = 3.30, SD = .69) )</td>
<td>( p &lt; .001 )</td>
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<tr>
<td><strong>Future Negative</strong></td>
<td>( (M = 1.82, SD = .79) )</td>
<td>( (M = 3.54, SD = 1.32) )</td>
<td>( p &lt; .001 )</td>
</tr>
<tr>
<td><strong>Future Positive</strong></td>
<td>( (M = 3.97, SD = .74) )</td>
<td>( (M = 3.20, SD = .74) )</td>
<td>( p &lt; .001 )</td>
</tr>
</tbody>
</table>

**Table 1.** Attitudes of the past and future as a function of age.

**Nostalgia**

As expected, independent samples t-tests revealed that older adults scored significantly higher \( (M = 4.85, SD = 1.03) \) on nostalgia compared to younger adults \( (M = 4.44, SD = 1.08; \)
$t(178) = -2.58, p = .011; d = .39), indicating that older adults believed that the past was better than the future on social and economic issues.

**Mediation Analysis**

Though the younger adults did not show a consistent positive view of the future as hypothesized, the older adults did show a clear and consistent positive evaluation of the past. This was reflected in their high nostalgia scores as well as their positive evaluations of the past on the time attitudes measure. As such, we decided to explore whether either of these elements (i.e., nostalgia and past positive time attitudes) could account for the preferences shown by older adults in past advertisements.

We used Hayes’ (2012) model 4 from PROCESS (SPSS; IBM Corp, 2013) to run our analysis, setting preference for past-focused advertisements as our dependent variables, with the predictor variable set as age (younger = 1, older = 2), and simultaneous (parallel) mediation by nostalgia and past positive time attitudes (so that each would control for the role of the other). Each analysis used 10,000 iterations, and estimated 95% bias-corrected confidence intervals (henceforth, CI95). See Figure 7 for complete details.

The analysis revealed that past positive attitudes mediated the relationship between age and preferences for past-focused advertisements ($ab = .238, CI95 = [.054, .521]$), such that the older adults’ increased positive evaluations of the past led to more favorable ratings of the past-focused advertisements. Specifically, the total effect of age on past-focused advertisements was significant ($c = .414, CI95 = [.008, .822], t(179) = 2.00, p < .047$). However, controlling for the effect of past positive attitudes rendered the direct effect of age on preferences for past-focused advertisements non-significant ($c’ = .15, CI95 = [-.30, .61], t(179) = .67, p < .503$). Moreover, the reverse model, with the outcome variable set as age past positive attitudes and preferences for
past-focused advertisements as the mediator showed no significant effect. Finally, the analysis also revealed that nostalgia did not mediate the relationship between condition and future temporal focus.

Figure 7. Past positive attitudes uniquely mediated the relationship between age and preferences for past-focused advertisements. Total effect = .41*, CI95 [.006, .82].
* p < .05, ** p < .01, *** p < .001.

Summary and Discussion

As hypothesized, older participants preferred past-focused advertisements significantly more than the future-focused and control ads. However, younger adults did not prefer future advertisements more than past and control ads as expected. Moreover, older adults scored significantly higher on both the past positive and future positive time attitudes, while also scoring significantly lower on both past negative and future negative attitudes compared to younger adults. Similarly, older adults scored higher than younger adults on nostalgia, as predicted. Finally, the mediation analysis revealed that positive attitudes towards the past mediated the relationship between age and preferences for the past-focused advertisements.
These findings indicate that although younger adults tend to be focused relatively more on the future (Studies 1 and 2), they are not overly optimistic about it, especially as compared to older adults. To be sure, the between group differences could be a product of the aforementioned positivity bias that older adults appear to have; however, within group differences also indicated that the younger adults actually held more negative ($M = 3.54, SD = 1.32$) than positive ($M = 3.20, SD = .74$) attitudes about the future. Moreover, the fact that younger adults did not prefer the future-focused advertisements more compared to past or control ads further highlights how they may not feel overly positive about the future.

Why might younger people be pessimistic of the future, in spite of the fact that they tend to be more concerned about it? A closer look at the literature on the economic conditions that young people find themselves in along with their prospects for the future may provide some answers. Indeed, it has been argued that the mindsets of young adults (aged 18-25) are especially susceptible to the macroeconomic conditions of their times (Giuliano & Spilimbergo, 2009). Recently, researchers have also asserted that young adults have suffered disproportionately since the great recession that occurred in 2008-09 (Bell & Blanchflower, 2011), and factors such as the spread of automation in the workplace and increased competition point to further struggles for young people in the future (Berman, Bound, & Griliches, 1994). The fact that over two-thirds of university graduates are now graduating with an average of more than $26,600 in debt may further compound these concerns about the future in young adults (Denhart, 2013). To be sure, every generation has had its fair share of problems and concerns to deal with (e.g., famine, illness, fear of war) throughout history. However, research indicates that the difference now may be the social comparisons that are more prevalent in today’s society than ever before. For example, the 2017 Global Youth Wellbeing Index reported that only 30% of young adults...
envision their future standard of living as being better than that of their parents (Sharma, 2017). Taken together, the increased competition and uncertainty of the future along with diminishing expectations for improvement may well account for some of the reservations young adults have about the future. An important point to note here is that younger people may not be more future-focused in spite of these concerns, but actually because of them. However, more research is required in order to empirically test this hypothesis.

The other interesting finding from this study was that positive attitudes towards the past, and not nostalgia, uniquely mediated the relationship between age and preferences for past-focused advertisements. This indicates that a general positive outlook of the past, as compared to a belief that the past was superior to the future on social and economic issues, appears to be one of the mechanisms through which older adults may find stimuli presented with a past temporal focus appealing. This provides one potential avenue through which older adults may respond favorably to the past in spite of the fact that they reported being more present-focused in studies 1 and 2. Indeed, past research has indicated that remembering and viewing the past in a positive light is a powerful way for older individuals to experience positive emotional states in the present moment (Pasupathi & Carstensen, 2003). As such, older adults may display a positive bias towards stimuli framed with a past focus so that they can maintain a satisfactory emotional state in the here and now.

Past research supports this argument as older adults seem to display better memory for positively valenced information compared to negatively valenced information. For example, Kennedy, Mather, and Carstensen (2004) had participants recall personal information that occurred 14 years earlier and found that older individuals displayed a propensity to recall past information more positively than they reported it 14 years prior. Moreover, the researchers found
that this bias appeared to help regulate present emotion, as the older adults reported enhanced mood following the remembering task compared to their baseline affect.

In a related study, it was reported that older adults’ positivity bias towards past information may even be strong enough to offset some of the natural declines in working memory (Mikels, Larkin, Reuter-Lorenz, & Carstensen, 2005). More specifically, though age-related deficits for visual memory were apparent, older participants seemed to show no such pattern for emotional memories. Even more interesting was the fact that the type of emotional memory moderated this relationship, such that older individuals displayed greater performance on retrieving positive past memories compared to negative ones.

Beyond remembering past positive information to a higher degree, research has also shown that older adults actually have a tendency to falsely remember positive information that never actually occurred. For instance, Fernandes, Ross, Wiegand, and Schryer (2008) reported that older adults did in fact reproduce more false positive memories than false negative memories across autobiographical memories, pictures, and words. The fact that this effect was pervasive across both well detailed memories (e.g., autobiographical) as well as less detailed ones (e.g., words) illustrates how the false recall of positive information generalized across different contexts involving varying levels of cognitive engagement.

Together, these findings suggest that older adults’ bias towards remembering the past in a positive light may be one of the mechanisms through which they enhance emotional states in the present moment. The present research adds to this knowledge base by elucidating how this bias also impacts preferences for persuasive messages framed with a past focus compared to those presented with a future focus or non-temporal focus.
A limitation in the current study that could be addressed by future research is the inclusion of an additional experimental condition, namely present-focused advertisements. This temporal period was omitted from the current study for two main reasons. First, as this was the first study of its kind to examine the influence of temporal focus in persuasive advertisements across older and younger adults, we wanted to start with past- and future-focused messages in order to determine whether there were any meaningful differences in preferences for these contrasting temporal periods before branching out to other temporal frames. Secondly, from a practical perspective, although designing past- and future-focused advertisements proved to be a challenging task in and of itself, designing ads that clearly accentuate the present without eluding to either the past or the future is much more difficult. Having now established the current differences between past- and future-focused messages, future research should work to incorporate present-focused messages in order to extend the findings reported in the current study.
Chapter 5

Study 4: Temporal Focus and Consumer Behavior

Preferences do not always manifest into overt behavioral choices. To conceptually replicate the findings from Study 3 and to examine the effects on behavioral intentions, study 4 utilized a forced-choice paradigm within a hypothetical purchasing scenario to examine whether older and younger adults differed in their choices for a product being advertised with a past or future focus. It was hypothesized that the observed preferences in Study 3 would manifest into meaningful differences in behavioral intentions, leading to older adults choosing a product with a past focus significantly more frequently than a similar product presented with a future focus.

Participants

There were a total of 174 participants in Study 4. These individuals overlapped with the participants of Study 3 as the data collected for these two studies came from the same battery of measures. Participants were recruited from Queen’s University and local senior lifestyle communities in Ontario, Canada. The young adults sample ($N = 98$; 49 women; 49 men) was composed of individuals under the age of 25 (Mean age = 19.65, $SD = 1.20$) who enrolled in an introductory psychology course at Queen’s University and received course credit as compensation for their participation. Meanwhile, the older adults sample ($N = 76$; 35 women, 35 men, 6 unspecified) was composed of individuals over the age of 65 (Mean age = 73.92, $SD = 6.15$) who were living independently in adult lifestyle communities and received an opportunity to win a cash prize from a random draw as compensation for their participation.

Materials and Procedure

Young adults completed the study in a lab at Queen’s University while older participants completed the study at their homes or in local senior centres. Adapting a procedure from Fung
and Carstensen (2003), we asked participants to imagine that they had just come across two different advertisements of a similar product that they were interested in purchasing. One advertisement highlighted how the product was related to the past, while the other one highlighted how the product was related to the future. We purposely chose a product that both older and younger adults may find relatable (i.e., Adult learning service). Below are the two advertisements that were presented in a counterbalanced order across participants:

“Over the past 4 decades, we have helped thousands of people learn and develop the skills they need to thrive. This tradition of excellence makes Peak Learning Inc. the best choice for all your learning needs” [Past-focused product]

“At Elite Education Inc., we use revolutionary advancements to help you learn more efficiently. Our innovative technology has re-shaped the future of education and made us the preferred choice in learning” [Future-focused product]

A pretest with a separate group of participants ($N = 30$) showed that the majority of participants (80%) agreed that the respective product advertisements did indeed communicate the intended temporal message (i.e., past or future focus). Moreover, the pretest showed that the ads of the past and future-focused products did not differ in ratings of pleasantness ($p = .473$) or persuasiveness ($p = .787$).

After reading the descriptions of the two product advertisements, participants were asked to choose one of the options through a forced-choice paradigm. The choice between the past and future-focused products across older and younger adults served as the primary dependent variable for this study.

**Result**

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A chi-square test of independence was performed to examine the relation between age and consumer behavior. The analysis revealed that older adults chose the learning service presented with a past focus (68%, 52 out of 76 people) more compared to the one presented with a future focus (32%, 24 out of 76 people), indicating a departure from random chance (e.g., 50% in both groups). Meanwhile, younger adults displayed virtually no preference between the past-focused service (55%, 54 out of 98 people) and the future-focused service (45%, 44 out of 98 people; $\chi^2 (2, N = 174) = 3.189, p = .074$. Effect size, as indexed by Cramer’s $V$, was $.135 (p = .074)$, indicated a small to moderate effect.

**Summary and Discussion**

The results from Study 4 theoretically replicated the findings from Study 3 by showing that older adults were more likely to opt for a past-focused product compared to a future-focused one, while younger adults showed no meaningful difference in their choices. These findings build upon the results from Study 3 by showing that the preferences exhibited by older adults in Study 3 were strong and robust enough to manifest into behavioral intentions in the hypothetical purchasing scenario presented in this study. Taken together, the findings from Studies 3 and 4 illustrate how the past may evoke a positive response from older adults, in turn leading to greater ratings and choices for stimuli framed with a past focus.

The influence of age on preferences and behavioral intentions for products highlighting different temporal foci demonstrates that older and younger adults may vary in the way that they process and evaluate information containing a temporal element. As the concept of time is something that we are constantly exposed to in our daily lives, these differences may significantly impact our day to day decision making across numerous domains. The current research highlights one such context where temporal focus may influence decision making.
namely in the realm on consumer behavior. More broadly, Peters (2011) has argued that there are various processes involved in decision making, and aging may be associated with important differences in how individuals process information across the lifespan. Two such routes that are involved in decision making include automatic (i.e., System 1) and deliberate (i.e., System 2) modes of processing (Epstein, 1994; Loewenstein, Weber, Hsee, & Welch, 2001; Reyna, 2004; Sloman, 1996; Kahneman, 2003). System 1 operates in a relatively effortless and intuitive manner, while system 2 functions through a more conscious and analytical process. Previous research has shown that aging is related to a robust decrease in system 2 processing, as evidenced by declines in memory performance, information processing speed, and comprehension of basic numeric probabilities (Hibbard, Peters, Slovic, Finucane, & Tusler, 2001; Park et al., 2002). On the other hand, aging has also been linked to wisdom and enhanced decision making (Lim & Yu, 2015), demonstrated by the overabundant representation of persons over the age of 65 in some of the most important roles in our society (e.g., fortune 500 companies, the judicial system, politics). To be sure, this overrepresentation may also be a product of the experience that individuals accumulate over their lifespan. However, the main point to take away is that along with experience, older individuals may also rely more on other modes of processing (e.g., system 1) in order to compensate for their declines in system 2 and maintain their overall decision making abilities.

Research supporting the assertion that seniors may use system 1 more frequently indicates that compared to younger individuals, older adults do indeed use simpler strategies and utilize less information when making decisions. For instance, Johnson (1990) examined information tracing techniques across older and younger adults who were asked to make a decision regarding which one of six cars they would purchase based on the information that was
provided to them. Results indicated that although the total time to reach a decision did not differ between ages, older adults spent a longer amount of time studying each piece of information while sampling fewer pieces of information overall compared to younger adults. Furthermore, findings similar to this one have also been reported across other domains such as managerial decision making (Streufert, Pogash, Piasecki, & Post, 1990). Together, this literature points to important differences in how older and younger adults process information while making decisions in their daily lives.

Relating this to the present research, the findings from Studies 3 and 4 may be explained by older and younger adults processing past- and future-focused information differently through system 1 and system 2. For instance, system 1 may be exerting a more powerful influence on the preferences and choices of older adults by inducing a relatively intuitive and automatic positive response to past-focused material. Interestingly, older adults responded more favorably to the past advertisements compared to the future ads in spite of the fact that they hold equally positive views of both time periods (see Table 1). One potential explanation for these findings is that although older adults responded positively to both past and the future ads, as evidenced by their higher ratings compared to the control ads, the past ads exerted the most powerful influence on these individuals. This was reflected in their choice for the past-focused product over the future-focused product in the forced-choice paradigm utilized in study 4. At this point, more research is required to examine these issues in greater detail in order to tease apart these potential intricacies.

In contrast to older adults’ potential reliance on system 1, younger adults may depend more on system 2, leading to a reduced affective response to either past or future-focused material. As for determining the precise reasons why older and younger adults may be influenced
differently by the two systems, dynamic integration theory would postulate that the
aforementioned declines in cognitive ability lead to an adaptive shift towards less resource
demanding decision making through system 1 in older adults. However, socioemotional
selectivity theory would argue that older adults’ motivational shift towards meaning and
emotional satisfaction actually leads them to relying more on the affective and intuitive nature of
system 1. At this point, these speculations must undergo further examination in order to develop
a more concrete picture of how decisions are made across the adult lifespan, along with the
potential mechanisms causing them (e.g., motivational vs. cognitive shifts).
Chapter 6

General Discussion

Temporal Focus and Motivation

The present research found that older adults devoted significantly more attention towards the present compared to the past and the future, while younger adults reported a small bias towards the future compared to the past and present. In trying to uncover some of the possible mechanisms behind these results, mediation analyses revealed that younger adults’ greater perception of how much time they had left in their lives led to them devoting more time to the future compared to the senior sample. More surprising was the suppression effect that illustrated how older adults’ decreased sense of time remaining in their lives actually led to them being less focused on the present.

These findings add to the existing literature by showing that along with being more inclined towards positive emotions (Charles et al., 2001) and meaningful social interactions (Fung et al., 1999), older adults also devote significantly more time towards thinking about the present compared to the past or future. However, our findings also extend the existing knowledge base by illustrating how the mechanisms behind this effect may be distinct from those that make seniors gravitate towards emotional satisfaction (Carstensen et al., 1999), the current findings suggest that seniors actually would focus more on the present moment if they had a heightened sense of time remaining in life. Future research should examine how these two divergent routes complement each other to produce unique experiences in older adults.
The current research also reported that older adults found an organization focusing on the present more appealing than one prioritizing the future, whereas the younger adults actually found the future-focused organization more appealing than a past-focused one. These results highlight how the differences in temporal focus across the adult lifespan may manifest into meaningful differences in practical settings, at least in the organizational behavior context.

These findings may have important practical implications if organizations can use this knowledge to guide how they interact with and treat individuals of varying ages. For example, organizations could apply this knowledge in their scheduling practices in order to improve overall performance by finding an optimal balance between how much older and younger adults are willing and able to work. That is, if younger adults are indeed more future-focused in their work motivation, they may be more receptive to working more than their regular full-time hours in order to potentially get ahead. In contrast, older adults may respond more negatively to the same demands if they are more interested in experiencing satisfaction in the present over setting themselves up for success in the future. Furthermore, organizations could also use this knowledge to improve the relationship between incentives (e.g., present-focused vs. future-focused rewards) and important factors such as job satisfaction and performance. Moving forward, additional research on these important topics will help further elucidate the potential differences in the desires and needs of older and younger adults in the workplace.

Gaining a better understanding of what older and younger adults want from their work experiences will be critical towards ensuring the overall success of a labor market in the midst of a drastic shift in its demographic make-up. Indeed, the proliferation of seniors in the workplace along with the relative decrease in young adults will necessitate a paradigm shift towards recruiting from diverse set of age groups. As such, organizations looking to remain competitive
will need to cater to the specific needs of individuals at all stages of life (Forteza & Prieto, 1994; Taylor et al., 2005). In order to accomplish this, researchers and organizations must work together to first develop a thorough understanding of what seniors and young people actually want from their work experiences, before applying this knowledge to find an optimal fit for these individuals within the existing labor market.

Temporal Focus and Persuasion

Along with examining the differences in temporal focus and motivation, the current research also investigated older and younger adults’ affective attitude towards the past and the future. Findings revealed that older adults displayed a clear and consistent preference for persuasive advertisements presented with a past temporal focus compared to those presented with a future focus or control ads (i.e., no temporal focus). However, the younger adults actually rated the control advertisements higher than the past and future-focused ones, showing no preference for either temporal period. Moreover, older adults were much more optimistic in their general attitudes of both the past and the future compared to younger adults. Older adults also scored higher than their younger counterparts on the nostalgia index, illustrating that they viewed the past as comparatively superior to the future on social and economic issues. Lastly, mediation analyses revealed that a general positive attitude towards the past, but not nostalgia, mediated the relationship between age and preferences for the past-focused advertisements. Finally, Study 4 reported that these differences translated into meaningful behavioral choices in a hypothetical purchasing scenario as older adults chose a past-focused product more than a future-focused one, with the younger adults showing no distinct pattern in their behavioral intentions.

These findings add to previous research showing that older adults tend to have a positivity bias towards the past (Lambert-Pandraud, et al., 2005; Pasupathi & Carstensen, 2003),
and show a propensity to remember past information more favorably (Fernandes et al., 2008; Kennedy et al., 2004; Mikels et al., 2005). The present research builds on this literature by illustrating how these biases may be extended to domains such as consumer behavior by leading to distinct preferences and choices for past-focused messages in older adults. The present research also suggests that although younger adults may be more concerned about the future compared to the past and present, this does not mean that they are necessarily optimistic about it. In contrast, the results from the current research actually suggest that young people are more future-focused because of their reservations about the future. Future research should aim to disentangle these inconsistent findings in future focus and future attitudes in younger adults.

The findings from this research could have widespread implications in fields such as consumer behavior, especially if marketers can harness this knowledge to design past-focused messages that appeal more strongly to older adults. This is especially important as researchers have asserted that until recent times, seniors have been essentially ignored in consumer behavior research (Yoon, Cole, & Lee, 2009). This is unfortunate as seniors comprise one of the most powerful consumer markets the world has ever seen, with roughly three trillion dollars of spending power in the United States alone (Boyle, 2013).

One of the primary reasons for this untapped potential has been the lack of empirical research devoted to better understanding the specific needs and desires of seniors. This gap in the literature has led to older adults being significantly underserved, with only products that are considered necessities (e.g., Fixodent denture cream, Depend undergarments) being prevalent to any meaningful degree (Boyle, 2013). The result of this is that existing products that seniors may be intrinsically motivated to purchase have failed to create any kind of meaningful emotional connection with older consumers. This is in stark contrast to youth consumers, who have
garnered substantial attention from researchers and marketers alike (Akturan & Tezcan, 2012; Gao, Sultan, & Rohm, 2010; McCreanor et al., 2013). Thus, the present research may serve as a starting base for better understanding not only the necessities, but also the desires and motives of older adults.

Along with the impact on marketing, the knowledge generated from the present research may also be used in other domains such as health promotion, as policy makers could draft health promotion messages (e.g., proactive cancer screening messages) with a past focus in order to once again petition to the penchants of older adults. Future research should examine whether the observed preferences and choices for past-focused messages in older adults observed in the present research replicate across these and other domains.

Limitations

There are some limitations in the present research. First, the results from Studies 1 and 2 indicated that older adults may have a proclivity towards the present, whereas younger adults may focus more on the future. However, it is important to note that Study 2 was limited by a one-item scenario measure, and more research is required in order validate these claims. More specifically, the job descriptions utilized in Study 2 could have been interpreted in ways that were unintended, in turn influencing the results. For example, the “present-focused” organization also highlighted stability and certainty, while the “future-focused” organization also highlighted creativity and flexibility. Though these traits have been associated with their intended temporal periods (Sarooghi, Libaers, & Burkemper, 2015), it is not self-evident that this is exactly how they were interpreted by the participants. Therefore, more research is required in order to conceptually replicate these findings and draw more direct conclusions.
Similarly, though the pretest from Study 4 indicated that the past- and future-focused product descriptions did indeed communicate their intended temporal messages, it is possible that participants could have interpreted them in other ways, in turn influencing their ratings. For instance, the “future-focused” product included a mention of technology, while “past-focused” product did not. Because these differences could have influenced the participants in an unintentional manner, more research is required in order to replicate the observed results.

The current research is also limited by the fact the measure of cognitive ability used in Study 1 may not have been well equipped to provide a full examination of mental capabilities. Though time and resource constraints prevented us from using more broad measures such as the Wechsler Adult Intelligence Scale (WAIS-IV; Wechsler, 2008), this does not detract from the fact that doing so may have provided a more valid measure of cognitive ability encompassing a full range of mental skills (e.g., working memory, processing speed, verbal reasoning). As such, future research should aim to test the influence of cognitive ability on the thoughts and motives of older and younger adults using measures that are more comprehensive in nature.

A further limitation of the present research is that we examined differences in temporal focus across the lifespan by using a sample of young (under 25) and old (over 65) adults. Though this is a good starting point and can serve as a base for future research, by no means are these age groups comprehensive of the human lifespan. Even within older adults, research has shown how there are important differences in aging between the “young-old” (60-69 years old), “old-old” (70-79 years old), and “oldest-old” (80+ years old). For instance, Garfein and Herzog (1995) reported that although the young-old cohort displayed slightly higher levels of physical and mental functioning compared to the old-old group, the biggest difference was observed between the oldest-old cohort and the rest of the participants. More specifically, although many of the
participants in the young-old and old-old groups showed signs of successful aging, issues related to declines in cognition and functionality appeared to be relatively more prevalent in the oldest-old cohort. In light of this, future research should investigate potential differences in temporal focus along with its practical impact across the various age groups that comprise the senior population.

Along with the varying age categories of older adults, another limitation of the present research is that we did not collect data from youth or middle aged adults. These age groups may be relevant to the present research on temporal focus as past research has suggested that young children and seniors may be similar in their shared disinterest of the future, though the underlying reasons behind these motives may differ significantly. Specifically, Sozou and Seymour (2003) have asserted that children’s impulsiveness and lack of foresight about the future along with seniors’ reservations about the prospects of their future makes both of these age groups more oriented towards the present compared to middle-aged individuals. According to this logic, future temporal focus may follow an inverse-U pattern across the lifespan, though future research is required to confirm this hypothesis.

Another limitation is that the current research could be further extended to examine the behavioural consequences of temporal focus in day to day life. Though participants in the current research responded to a hypothetical tasks asking them to rate and choose between varying organizations or services in applied contexts, future research should investigate the consequences of temporal focus on judgment and decision-making in real life. For example, real workers in organizational behaviour settings could be asked about their motivation for present and future-focused tasks that they engage in on a daily basis. Moreover, research could examine how these motives impact important outcomes such as performance and work satisfaction.
Finally, although the present research provides empirical evidence for how older and younger adults vary in their preferences for information presented with varying temporal foci, it remains to be seen how long the effect lasts. For instance, though older adults displayed a consistent and robust preference for material presented with a past focus, the precise mechanisms causing this effect and its last impact remain unknown. In the present research, participants rated and chose the messages immediately after being exposed to their temporal focus. It would be interesting to see if being exposed to an irrelevant past-focused message leads to similar preferences, and if these effects can be maintained even after engaging in a control task after being exposed to the temporal message. As such, future research is warranted to further explore the strength and duration of the temporal focus effects observed in the current research.

**Future Directions**

Though the current research adds to the existing literature on the influence of temporal focus across the lifespan, there is ample room to expand this knowledge base in order to gain a comprehensive understanding of the underlying mechanisms, potential extensions, and downstream consequences of these observed findings.

Studies 1 and 2 reported that older adults are more present-focused than past or future-focused and prefer organizations highlighting the present, whereas younger adults preferred the future-focused organizations more than the present ones. These results should be theoretically replicated and extended in the organizational behavior context by examining the impact of temporal focus on other factors such as leadership. If the current findings are generalizable in this setting, we should expect older adults to prefer leaders who focus on the present and improving the current state of affairs, while younger adults should prefer leaders who focus on the future and ensuring success in the time to come. If future research illuminates the fact that
older and younger adults vary in their preferences for leaders focusing on different temporal foci, this research would add to the growing constellation of findings highlighting the increasingly important role of individualized consideration in leadership (Zacher, Pearce, Rooney, & McKenna, 2014). Indeed, it has been asserted that leaders who can cater to the specific needs of their followers at the individual level will thrive in a landscape dominated by globalization and diverse teams. As such, this research would have practical implications by guiding the behavior of future leaders who will undoubtedly have to appeal to individuals of varying ages co-existing within the same group.

Another potentially fruitful avenue for future research involves examining the underlying mechanisms behind some of the results observed in the current research. For example, though the findings from Studies 3 and 4 showed that older responded more favorably to messages presented with a past focus, the precise reasons behind this trend remain unknown. Indeed, factors such as priming and mood may be influencing this effect, and future research would be well served by empirically testing these hypotheses. This is especially intriguing considering the fact that past research has suggested that older adults may be more susceptible to priming effects compared to younger adults. For example, Hess, Waters, and Bolstad (2000) had older and younger adults rate unfamiliar Japanese letters that were preceded with a conscious or subliminal prime of positive and negative words. In the subliminal prime condition, both older and younger adults rated the Japanese letters higher in likeability when they were preceded by positive words compared to the negative words. However, the most interesting finding from this study was that older adults also exhibited the priming effect when they could consciously perceive the prime, whereas this effect disappeared for younger adults. Future studies should follow up on this
research by examining whether stimuli focusing on the past is sufficient enough to prime (consciously or subliminally) older adults into responding more favorably to neutral stimuli.

Along with priming, the observed preferences for past-focused messages in older adults could also be related to mood. Indeed, past research has shown that mood has a significant impact on current judgment and decision making (Schwarz & Clore, 1983). Moreover, Phillips, Smith and Gilhooly (2002) found that both positive and negative induced moods led to greater impairments on a cognitive task (Tower-of-London Task) in older adults, while having a minimal impact on younger adults. Though the adverse impact of negative moods was expected, the fact that even positive moods decreased performance in seniors was surprising. The researchers postulated that positive mood may hurt performance in older adults by creating a false sense of achievement, or by acting as a cognitive load. Relating this to the present findings, the past-focused messaged may have induced positive mood in older adults, in turn impacting preferences and choices. Future research should build upon these findings by examining how exposure to past-focused messages directly impacts mood, and how this influences subsequent performance on cognitive tasks across older and younger adults.

Along with examining potential mechanisms, the results from studies 3 and 4 should be extended to novel domains in order to test the generalizability of the current findings. For instance, research could examine the influence of past and future-focused messages in domains such as health promotion and well-being. If older adults respond more strongly to past-focused health messages, policy makers could utilize this knowledge to design more effective health campaigns. Moreover, the preferences for past and future-focused messages in younger adults should also be tested across different domains, especially those unrelated to the economic domain (e.g., advertisements).
Finally, the current research focused exclusively on documenting the influence of temporal focus among Canadian subjects. Future research should expand upon these findings by examining the influence of temporal focus in older and younger adults across different cultures. This may be worthwhile as the concept of aging is viewed differently across distinct cultures (Löckenhoff et al., 2009). Indeed, Tout (1989) affirmed that factors such as mass migrations to cities and urban centres have left many developing nations unable to deal effectively with their aging populations in more rural areas. Moreover, in their pursuit for modernity, developing countries often prioritize investing in the younger generation and the economy, often at the expense of any meaningful investment in social service initiatives aimed at seniors. Linking this to the current research, future work should examine whether the inclination towards the present displayed by older adults holds across less developed cultures.
Chapter 7

Conclusion

In summary, the current research demonstrates that older and younger adults devote varying levels of attention towards the past, present, and future, and these differences have a meaningful impact on the motivation of these individuals towards past and future-focused work opportunities. Furthermore, older adults show a clear and consistent preference for past-focused persuasive messages compared to future-focused and control messages, while younger adults show no such preferences. This research contributes to our understanding of how the concept of time influences thoughts, preferences, and behavioral intentions across the adult lifespan. Future research should investigate the potential underlying mechanisms of the observed effects and their consequences in real life settings.
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https://doi.org/10.1016/j.jrp.2004.09.007


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https://doi.org/10.1086/497545


Appendix A

Complete Study 1 Measures

Temporal Focus Scale (TFS; Ship, Edwards, & Lambert, 2009)

Please read the following statements carefully. For each statement, use the following scale to enter a number of your choice in the bracket before each question.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Sometimes</td>
<td>Frequently</td>
<td>Constantly</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

( ) I think about things from my past.
( ) I live my life in the present.
( ) I think about what my future has in store.
( ) I focus on what is currently happening in my life.
( ) I focus on my future.
( ) I replay memories of the past in my mind.
( ) I imagine what tomorrow will bring for me.
( ) My mind is on the here and now.
( ) I reflect on what has happened in my life.
( ) I think about where I am today.
( ) I think back to my earlier days.
( ) I think about times to come.
Future Time Perspective Scale (FTP; Lang & Carstensen, 2002)

Now, please read each item and, as honestly as you can, answer the questions: “How true is this of you?” Enter a number of your choice in the bracket before each question.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all satisfied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(    ) Many opportunities await me in the future.
(    ) I expect that I will set many new goals in the future.
(    ) My future is filled with possibilities.
(    ) Most of my life lies ahead of me.
(    ) My future seems infinite to me.
(    ) I could do anything I want in the future.
(    ) There is plenty of time left in my life to make new plans.
(    ) I have the sense time is running out.
(    ) There are only limited possibilities in my future.
(    ) As I get older, I begin to experience time as limited.
Cognitive Ability (Schwartz, Woloshin, Black, & Welch, 1997)

Please answer the following questions by yourself (i.e., without any books, internet, or any help) and one at a time. If you do not know an answer, simply leave the question blank and go to the next one.

1. Imagine that we rolled a fair, six-sided die 1,000 times. Out of 1,000 rolls, how many times do you think the die would come up even (2, 4, or 6)? Answer: _______________

2. In the BIG BUCKS LOTTERY, the chances of winning a $10.00 prize is 1%. What is your best guess about how many people would win a $10.00 prize if 1,000 people each buy a single ticket to BIG BUCKS? Answer: _______________

3. In the ACME SWEEPSTAKES, the chance of winning a car is 1 in 1,000. What percent of tickets to ACME PUBLISHING SWEEPSTAKES win a car? Answer: _______________
Appendix B

Study 3 Sets of Advertisements

Set 1 – Consulting Company Past and Future-focused

OpenConsulting

“A Trustworthy Name That Has Never Let You Down” [Past]

OpenConsulting

“We Will Stand by Your Side” [Future]
“A Tried and Tested Formula that Has Stood the Test of Time” [Past]

“A Novel Recipe That Will Redefine the Future of Great Coffee” [Future]
“A Dependable Brand that Has Been Trusted for Decades” [Past]

“A Trailblazing Company That Will Propel the Industry Forward” [Future]
Set 4 – School Past and Future-focused

“A Rich History of Academic Success” [Past]

“The Home of Future Leaders” [Future]
Set 5 – Filler Advertisements 1 and 2

“Love Your Style”

“Feel The Comfort”
Set 6 – Filler Advertisements 3 and 4

“Healthy Food for Healthy People”

“Taste The Difference”
Appendix C

Complete Study 3 Measures

Zimbardo Time Perspective Inventory-Short (ZTPI-Short; Košťál et al., 2016)

Read each item and, as honestly as you can, answer the question “How characteristic or true is this of me?” Use the following scale to enter a number of your choice in the bracket before each question.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Very Untrue</td>
<td>Neutral</td>
<td></td>
<td>Very True</td>
<td></td>
</tr>
</tbody>
</table>

(   ) 1) I often feel that I cannot fulfill my obligations to friends and authorities
(   ) 2) I complete projects on time by making steady progress
(   ) 3) I think about the good things that I have missed out on in my life
(   ) 4) It gives me pleasure to think about my past
(   ) 5) I am able to resist temptations when I know that there is work to be done
(   ) 6) To think about my future makes me sad
(   ) 7) I think about the bad things that have happened to me in the past
(   ) 8) Happy memories of good times spring readily to mind
(   ) 9) Usually, I do not know how I will be able to fulfill my goals in life
(   ) 10) I often think of what I should have done differently in my life
(   ) 11) Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories
(   ) 12) When I want to achieve something, I set goals and consider specific means for reaching those goals
Nostalgia (Holbrook, 1993, 1994)

Please read the following statements carefully. For each statement, use the following scale and write the number that best represents your opinion.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

( ) 1) They don’t make ’em like they used to.
( ) 2) Things used to be better in the good old days.
( ) 3) Products are getting shoddier and shoddier.

( ) 4) Technological change will ensure a brighter future.
( ) 5) History involves a steady improvement in human welfare.
( ) 6) We are experiencing a decline in the quality of life.
( ) 7) Steady growth in Gross National Product has brought increased human happiness.
( ) 8) Modern business constantly builds a better tomorrow