Is Autobiographical Memory Ability Related to Social Problem Solving Ability in Older Adults?

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ABSTRACT

Is Autobiographical Memory Ability Related to Social Problem Solving Ability in Older Adults?

Amanda Beaman

Poor autobiographical memory abilities in young, depressed adults have been found to be related to poorer social problem solving ability, supposedly the result of working memory deficits. These relationships were examined in 80 healthy older and younger adults. It was hypothesized that age-related cognitive declines and decreased autobiographical specificity would predict poorer social problem solving ability. Furthermore, increasing memory support by priming autobiographical memory before a social problem solving task was predicted to improve problem solving performance to a greater degree for the older group. Subsequent to three cognitive tests, participants' specific memories were tested using a cued recall task, followed by a social problem solving task. Each age group was tested by two different experimenters. The order of the cued recall task was varied to determine whether primed autobiographical memories improved problem solving performance. Autobiographical specificity predicted social problem solving ability for both age groups. In addition, experimenter effects predicted autobiographical memory specificity. Age related cognitive declines were present but did not predict autobiographical memory specificity or social problem solving ability. Priming autobiographical memories before the social problem solving task did not improve performance for either age group.

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IS AUTOBIOGRAPHICAL MEMORY ABILITY RELATED TO SOCIAL PROBLEM SOLVING IN OLDER ADULTS?

Introduction

The study of autobiographical memory, defined as personal event memories (Pillemer, 2003), has recently become focused on the functions that such memories might serve for individuals across their life span. It is argued that autobiographical memories act to reinforce one's sense of self, aid in the achievement of interpersonal goals, and may provide a directive function, offering guidance for a wide range of present, and future behaviors (Bluck, 2001; Hyman & Faries, 1992; Pillemer, 2003). With respect to aging, the vast reminiscence literature makes a cogent argument for the important role that personal memories play in helping older adults maintain their sense of self in the face of declining roles and activities (see Webster & Cappeliez, 1993 for review; Webster & McCall, 1999). For instance, compared to younger adults, older adults have been found to draw on more examples from their personal pasts in order to validate their current self to others (Sherman, 1991). A distinct example of the importance of memory for this function is the decline in social functioning present in older adults with dementia. Indeed, when caregivers have been trained to use autobiographical memory aids with nursing home residents with dementia, the residents' interpersonal interactions were markedly improved (Allen-Burge, Burgio, Bourgeois, Sims, & Nunikhoven, 2001; Bourgeois, Dijkatra, Burgio, & Allen-Burge, 2001; Hagens, Beaman, & Ryan, 2003). Providing the residents with personal memory cues enabled them to remember their 'self', improving the quality of their interactions with others.

The potential directive function of autobiographical memory has received less attention since it has previously been accepted that it is semantic memory that provides a broad base of general scripts to guide present or future behavior (see Pillemer, 2003; Bluck & Alea, 2002). It has recently been argued, however, that there are often less familiar circumstances for which general scripts are not available, and for which specific information reflecting past experience may be more useful in guiding behavior, such as in solving social problems (Pillemer, 2003). However, few studies have examined social problem solving abilities in older adults. In terms of the consequences of poor social problem solving ability, there is evidence to suggest that negative attitudes towards problem solving are related to depression in older adults, playing a mediational role between everyday problems and psychological distress (Kant, D'Zurilla, & Maydeu-Olivares, 1997). Social problem solving therapy has also been shown to decrease depression in older adults (Arean, Perri, Nezu, Schein, Christopher, & Joseph, 1993). Furthermore, negative interactions between older adults and others have been found to be more predictive of levels of social support than positive interactions, suggesting poor social skills may have deleterious consequences for older adults' well-being (Rook, 2003).

Effective Social Problem Solving and Analogical Reasoning

In order to understand the factors that may impinge on effective social problem solving in older adults, it is helpful to review the processes that have been empirically validated as essential components of this ability. Based on existing research, D'Zurilla and Goldfried (1971) developed a model of social problem solving that proposed five general stages that lead to effective problem solving including: a) problem orientation; b)

problem definition and formulation; c) generation of alternatives; d) decision making; e) verification. These processes have been widely studied, and reflect reliable and valid constructs (D'Zurilla, 1986). Furthermore, problem solving training based on this model has been successfully employed as a form of Cognitive Behavioral Therapy (CBT) with a range of clientele. The current study is most concerned with stage c), since it is hypothesized that this stage may be aided most by autobiographical memory. The following discussion of the literature will highlight the rationale for this proposition.

Studies in the area of creativity have found that the greater the quantity of solutions generated for a particular problem, the greater the likelihood of finding a higher quality solution (D'Zurilla, 1986). This pattern also exists with respect to social problem solving (D'Zurilla, & Nezu, 1980; Nezu & D'Zurilla, 1981; Nezu, Nezu, & Perri, 1989). Autobiographical memories may provide a repository of specific examples that can be drawn upon to aid in generating alternative solutions (Pillemer, 2003; Holyoak & Thagard, 1995 pg.140). From his research in autobiographical memory, Pillemer (2003) has found that specific, personal event memories come to mind repeatedly, providing guidance for behavior in novel situations. Specific memories are those that refer to an event that happened at a particular place, at a particular time, lasting less than a period of one day. The literature discusses general memories in terms of extended and categoric memories. Extended memories are defined as memories that extend over a specific time period (e.g. The time I worked in London). Categoric memories occur when a number of events are clustered into one representation (e.g. I used to go to the beach on Saturdays) (Williams & Dritschel, 1992).

Studies of traditional problem solving (e.g. abstract reasoning) also suggest that past decisions aid present decisions by providing a variety of examples of the possible means, or steps that may be taken to solve a current, similar problem (Bassok, 2003; Holyoak et al., 1995). However, the mere existence of past analogs may not be sufficient to aid in alternative solution generation since there are a number of cognitive processes (i.e. encoding and retrieval) involved in linking specific information from one's memory of the past to the present. Studies with traditional types of problems have found, in general, that the greater the overall perceived similarity between a previous experience and a present task, the greater the degree of transfer (Bassok, 2003; Kimball & Holyoak, 2000). In a recent review of the literature, Kimball and Holyoak (2000) distinguished between surface and structural similarities between past experience and present tasks, and how they affect encoding and retrieval of relevant analogs. Structural similarities refer to functional, or goal-relevant similarities between experiences, while surface items are non-functional or goal-irrelevant aspects of experiences. The authors propose that having practice with previous problems that have varied surface characteristics but similar underlying structures, will improve the likelihood that the structural items will be encoded and recognized in future problems, and that skills will be transferred. Furthermore, positive transfer (transfer of relevant information) increases with the number of examples one has learned previously. Both structural and surface similarities are proposed to guide the retrieval of relevant analogs (i.e. past experiences).

While the evidence outlined above was obtained using traditional problem solving paradigms, we can consider how it may also apply to social problem solving situations. Given the diverse and numerous social problems that are experienced across the life span

that may vary in surface characteristics but have structural similarities between them (e.g. conflicts with different friends over the years), transfer should be especially likely to occur in social problem solving. Furthermore, given older adults' numerous and varied life experiences, it is possible that positive transfer would be more likely to occur and would be increasingly efficacious as one ages. However, given the need for processes such as encoding and retrieval for analog transfer, it is also possible that age-related cognitive declines may negatively affect social problem solving in older adults. Studies with traditional problems have found mixed results with respect to older adults in that they seem less able to transfer knowledge when solving novel problems (Caplan & Schooler, 1990), but also more likely to spontaneously transfer when the surface characteristics of the problems are dissimilar (Caplan & Schooler, 2001). Measures of verbal analogical reasoning in older adults have also revealed that older adults have slower reaction times but that they are not necessarily more error-prone than younger adults (Clark, Gardner, & Brown, 1990). However, these results must be generalized with caution since they are based on traditional types of problems (e.g. abstract reasoning), which may involve different cognitive processes than social problems. A review of the literature regarding autobiographical memory and social problem solving in young adults, and the cognitive declines that are characteristic of older adults, will highlight the putative impact of autobiographical memory on social problem solving ability in older adults.

Autobiographical Memory and Social Problem Solving in Young Adults

Studies examining the social problem solving performance of depressed, young adults offer insight into some of the cognitive processes that may be involved in social

problem solving in older adults. This research has established that depressed, compared to non-depressed samples, perform poorer on social problem solving tasks, and this relationship is upheld even in non-clinical depression (see Goddard, Dritschel, & Burton, 1996; 1997). One hypothesis suggests that depressed individuals' inability to draw on specific autobiographical memories, and their tendency to instead draw on overgeneral memories, have a negative impact on their performance since specific memories may help individuals define and generate alternative solutions to social problems (Williams, 1996). Furthermore, the ruminative self-focus that is characteristic of depression is thought to decrease the working memory capacity available for the search for and the encoding of more specific memories (Williams, 1996). Indeed, depressed adults seem to perform worse on neuropsychological measures of working memory and laboratory measures of episodic memory than non-depressed samples (Ortiz, Perez-Serrano, Saglul et al., 2003; Porter, Gallagher, Thompson, & Young, 2003; Sweeney, Kmiec, Kupfer, 2000). Although the focus of this study is not on depressed samples, the cognitive deficits that are hypothesized to cause poor social problem solving in this population are similar to those that occur with age (i.e. working memory). Thus, reviewing this literature may inform our understanding of the role of cognition in social problem solving in older adults.

In terms of the relationship between autobiographical memory and social problem solving, Goddard, Dritschel, and Burton (1996) found that depressed participants' inability to draw on specific memories and their over-representation of more general memories was negatively related to social problem solving performance. Similarly, participants with bipolar disorder and participants who have attempted suicide have been

found to produce significantly more over-general memories, which is negatively correlated with their social problem solving performance (Pollock & Williams, 2001 Scott, Stanton, Garland, & Ferrier, 2000). In an attempt to establish a causal relationship, one study primed younger, depressed participants' specific autobiographical memory before a social problem solving task to determine whether it improved performance (Goddard, Drischel, & Burton, 2001). There was no improvement in performance on the problem solving task but priming did increase the retrieval of helpful memories as judged by participants, suggesting that the deficit for depressed individuals may reside in the implementation of their knowledge. Thus, although priming helped with the search for useful memories, perhaps declines in working memory impeded participants' ability to "hold on" to memories long enough to apply them to the current problem. Working memory was found to affect social problem solving performance in normal younger participants in that increased cognitive load was associated with poorer retrieval of specific memories, and decreased generation of alternative solutions (Goddard, Dritschel, & Burton, 1998).

Cognitive Aging

While recent data suggest that there is a great deal of heterogeneity among older adults in terms of their cognitive ability (Wilson, Beckett, Barnes et al., 2002), it is also generally accepted that certain memory tasks are more vulnerable to age declines than others (Grady & Craik, 2000; Nilsson, 2003). Thus, it has been found that implicit, compared to explicit memory processes, are relatively unaffected by age. For example, old and young adults' retrieval of information benefits equally from memory priming, which often involves pre-exposing participants to implicit material that is the same or

related (i.e. semantically or phonetically) to the explicit test material (Mitchell & Bruss, 2003). Also, age differences have not been found during recognition tasks, whereby participants are required to recognize previously explicitly encountered information. However, when older adults retrieve memories using free-recall (i.e. no memory cues) or cued recall, or are asked to recall the specific contextual details of an episode, they become more prone to errors and confabulation (Cohen, Conway, & Maylor, 1994; Cohen, Stanhope & Conway, 1992; Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002; Wingfield & Kahana, 2002 also see Anderson, Craik, & Naveh-Benjamin, 1998 for a review). Thus, when less environmental support (i.e. external or internal cues) is available, retrieval performance is negatively affected in older adults (Balota et al., 2000).

Several interrelated theories of cognitive aging suggest underlying mechanisms to account for age changes in memory. First, according to the limited resource perspective, decreased working memory or attentional resources may account for age differences in encoding and retrieval (Balota, Dolan, & Duchek, 2000). Indeed, encoding and retrieval have been found to place greater demands on older compared to younger adults' attentional resources, leaving fewer resources to devote to other cognitive tasks (Anderson et al., 1998; Whiting, 2003). Older adults have also been found to encode information in a more general manner, reducing the specificity, and therefore the efficacy of retrieval cues (Rabinowitz, Craik, & Ackerman, 1982). Second, the speed of processing perspective supposes that the overall age-related declines in information processing speed account for declines in a wide range of cognitive functions in older adults including working memory, reasoning, and episodic memory (Zacks, Hasher, & Li, 2000). Indeed, studies have found that the relationship between age and different

memory abilities is mediated by processing speed (Salthouse, T.A., 1996a; 1996b). Third, it has been argued that reduced inhibitory control over the contents of working memory leads to cognitive decline since it allows goal-irrelevant information to enter working memory and remain longer than necessary, and causes more relevant but weak responses to yield to inappropriate but strong responses (Balota, Dolan, & Duchek, 2000). The end result is a "cluttering" of working memory with goal-irrelevant thoughts or plans. Indeed, older adults have been found to hold on to irrelevant information longer than young adults, which has been found to predict their verbose speech patterns and subsequently, their social functioning (Pushkar et al., 2000; Hasher, 1991).

Autobiographical Memory and Aging

The suggested links between aging, cognitive processes and social problem solving outlined above provide a useful framework within which the research regarding autobiographical memory and aging may be interpreted. The theories above predict a decline in aspects of autobiographical memory, or what is often called 'episodic memory' ability with age (Nilsson, 2003). Indeed, research suggests that changes do occur with age depending on how the memories are selected. When memories are self-selected, as opposed to being constrained by experimental procedure, few differences are found between old and young with respect to clarity, detail and vividness (for a review see Cohen, 1998). Not surprisingly, vividness is predicted by how often the memories have been rehearsed, and the importance they hold to the participant (Cohen & Faulkner, 1988). However, when designated by experimenters, and therefore not rehearsed as often, there is a loss in detail and clarity, and increased confabulation. Evidence for this effect comes from studies that compare old and young in their recall of flashbulb

memories and eyewitness testimony (Conway & Maylor, 1994; Cohen & Faulkner, 1989), in which older adults produce less accurate and less detailed memories than younger adults. Similarly, a recent study compared older and younger adults' in their reporting of either the specific features of their memories (i.e. time, place) versus the semantic facts surrounding the memory (i.e. facts, extended events). Older adults tended to produce fewer details specific to the experience of the memory and more semantic, external information with respect to the memory, regardless of when the memory was originally encoded (Levine, Hay, Winocur, Moscovitch, 2002). It is well-established that autobiographical memories can be reported in either a general (e.g. days at the beach) or specific (e.g. one day at the beach in the summer of 1942) manner (Anderson & Cohen), and when older adults are unable to draw from their own well-rehearsed pool of memories their reports are often more general in nature (Cohen, 1998).

A general characteristic of the autobiographical memory system is that the reconstruction process is often effortful, typically characterized by false starts and redundant information (Anderson & Conway, 1997). In addition, older adults tend to preferentially draw from memories encoded earlier in their life (10-30 years old) compared to the rest of their life span during tasks that require them to recall a memory in response to a word cue (e.g. happy) (Rubin & Schulkind, 1997). One exception to this trend is a relative increase in the number of more recent memories, but this is thought to be the consequence of recency effects (Anderson & Conway, 1997). The bias towards recalling information from earlier in the lifespan is referred to as the "reminiscence bump", for which three separate categories of explanations have been put forth, including

the cognitive, identity, and life scripts accounts (Bernsten & Rubin, 2002; Rubin, Rahhal, & Poon, 1998).

The cognitive explanation argues that the inherent novelty and importance of the events (e.g. romantic relationships, work) that occur in earlier life (10-30 years) lead to more elaborate processing, including more attention to details and more effort to understand the occurrence, and less proactive interference (Rubin et al., 1998). Furthermore, since events from this time period are often followed by a period of stability they are often used as prototypes or models for future occurrences (Rubin et al., 1998). The identity account argues that this time period is often critical to identity formation. These memories form the beginning of the life narrative, and therefore will be more likely to be retained and elaborated upon (Habermas & Bluck, 2000; Rubin et al., 2002; Staudinger, 2001). Indeed, when asked to describe their most significant, important, or vivid life events, middle-aged and older adults report significantly more events from the reminiscence bump period than from other eras (Elnick, Magrett, Fitzgerald, & Labouvie-Vief, 1999; Holmes & Conway, 1999; Niedzwienska, 2003). Finally, the life script explanation suggests that due to age-changes in episodic memory (see Levine et al., 2002), older adults rely more on semantic memory (i.e. general scripts), such as culturally prescribed norms (e.g. marriage, children). Therefore, since there are more entrenched scripts for this time period an overabundance of memories from the period will have been encoded (Rubin et al., 2002; Rybash, 1999).

Problem Solving in Older Adults

The literature that has been reviewed with respect to analogical transfer, social problem solving in young (depressed) adults, autobiographical memory and age,

combined with evidence of age-related changes in cognition, support contradictory expectations regarding social problem solving ability in older adults. On the one hand, we may expect that older adults, with their wealth of varied experience to draw upon, would perform better than young on social problem solving tasks as they may be better at recognizing the structural similarities between past and present social problems. On the other hand, one might expect that if specific memories provide the most useful analogs for problem solving, and older adults exhibit declines in their ability to retrieve such information, decreased social problem solving ability should result.

Research in aging has mainly examined practical problem solving performance (i.e. how does one deal with situations such as unemployment or a sick pet), which has been found to be correlated with social problem solving ability (Heidrich & Denney, 1994). The correlation is not surprising considering many measures of practical problem solving often include a subset of social or interpersonal problems (Camp, Doherty, Moody-Thomas, Denney, 1989). An overall quadratic relationship between practical problem solving performance and age has been found in the extant literature, with younger and older adults showing poorer performance than the middle-aged on practical tasks (Denney, 1985; Camp, Doherty, Moody-Thomas, Denney, 1989; Denney & Pearce, 1989; Denney & Palmer, 1981). However, one study found a linear increase in practical problem solving with age, as measured by an instrument that also included some interpersonal problems (Cornelius & Caspi, 1987). Furthermore, practical problem solving ability was found to be highly correlated with verbal ability and moderately correlated with traditional problem solving (e.g. abstract reasoning), with older adults exhibiting a significant decline in the latter. The discrepant findings may be the result of

methodological differences and a lack of correlation across different measures of practical problem solving (D'Zurilla, Maydeau-Olivares, & Kant, 1998).

Few studies have specifically examined social problem solving performance in older adults, dissociated from measures of practical problem solving. In the two studies that measured social problem solving performance specifically, age was found to be either uncorrelated with social problem solving ability, or negatively correlated when the social problems employed were personally irrelevant to the older group (Artistico, Cervone, & Pezzuti, 2003; Heidrich et al.,1994). In terms of cognitive and demographic predictors of social problem solving, 'crystallized' intelligence (i.e. verbal skills) and education but not traditional measures of problem solving (e.g. abstract reasoning), have been found to predict older adults' social problem solving ability (Christoph & Li, 1985; Heidrich et al, 1994). Interestingly, older adults report experiencing fewer social problems in their everyday lives than younger adults (Camp et al, 1989). Furthermore, older adults have been found to engage in more emotion-focused (changing internal state) rather than problem-focused (changing the external situation) strategies when solving interpersonal problems compared to when they solve practical problems (Blanchard-Fields, Chen, & Norris, 1997).

A distinction has been drawn in the literature between measures of social problem solving *performance* and measures of *process*. Performance tests, such as the Means-End Problem Solving Procedure (MEPS) that was used in the studies with young, depressed adults, measure actual outcomes on problem solving tasks by quantifying the number of alternative means or solutions generated to problem scenarios (Platt & Spivack, 1975). This measure, and a second very similar performance measure were also used in the two

social problem solving studies with older adults (Artistico et al., 2003; Heidrich et al., 1994) mentioned above. Measures of process such as the Social Problem Solving Inventory (SPSI-R), examine self-reported differences in problem solving ability and attitudes towards problem solving, but do not give an indication of participants' *actual* ability to generate solutions (D'Zurrilla et al., 1998). Similar to performance measures of practical problem solving, but in contrast to performance measures of social problem solving, results from this process measure exhibit a quadratic relationship with respect to age. Compared to older adults, middle-aged individuals report that they tend to approach social problems more optimistically, confronting problems "head on", and they perceive themselves as more likely to apply 'rational' skills such as generating alternative solutions (D'Zurilla, et al., 1998). In addition, age differences have been found in that the *perceived* use of 'rational' strategies (e.g. generating alternative solutions) significantly mediated the relationship between perceptions of everyday problems and levels of distress (i.e. depression and anxiety) in middle-aged, but not older adults (Kant et al., 1997). The SPSI-R is a widely used measure of social problem solving ability, and a therapeutic tool (i.e. Problem Solving Training) that has been developed in accordance with this measure has yielded positive outcomes for older adults with depression. However, no studies have examined the relationship between measures of performance (i.e. MEPS) and perceived ability as measured by the SPSI-R in older adults.

It is apparent that there are some mixed results regarding older adults' perceived and actual social problem solving ability. However, the results suggest that older adults may be, or perceive themselves to be poorer social problem solvers compared to middle aged adults. While there is research that links the decreased cognitive resources to the

poor autobiographical memory performance that is common to depressed individuals and older adults, there are no known studies that have examined how autobiographical memory deficits may impact older adults' social problem solving ability. The purpose of this study is to examine whether the cognitive deficits that limit autobiographical memory specificity in older adults will predict age-related deficits in social problem solving ability.

Hypotheses

Given that poorer autobiographical memory (i.e. less specific) is negatively related to social problem solving ability (number of alternative solutions generated) in depressed compared to normal adults, it is expected that older adults, who exhibit similar memory declines to depressed samples, will show poorer social problem solving performance compared to young adults. Specifically, it is expected that older adults compared to young adults will exhibit less specific autobiographical memory and that these declines in specificity will be predicted by age-related declines cognitive ability. Thus, it is hypothesized that the age-related declines in autobiographical memory specificity and cognitive ability will predict poorer scores on measures of social problem solving performance (i.e. MEPS). Given the three main theoretical mechanisms (processing speed, inhibition, and attentional resources) thought to underlie age-related cognitive changes, each cognitive process will be tested. It is hypothesized that all three processes will predict autobiographical memory specificity and social problem solving performance in older and young adults. However, given Williams' conception regarding the importance of working memory in predicting autobiographical declines, attentional resources are hypothesized to be the strongest predictor of both autobiographical

specificity and social problem solving ability. Furthermore, since research suggests that increased memory supports minimize age differences in memory retrieval, an experimental manipulation will be added to test the hypothesis that older adults will benefit more than younger from performing an autobiographical memory task *before* a social problem solving performance task. Thus, it is expected that this task will prime useful, specific memories to be applied in the social problem solving situation, improving problem solving performance. Finally, an exploratory analysis will be conducted in order to examine whether scores on performance measures (i.e. MEPS) and self-report measures (i.e. SPSI-R) are predicted by the same variables (i.e. cognitive ability, specific autobiographical memories).

Method

Participants

Forty older participants over 60 years of age were recruited through a newspaper advertisement and university registration lists of mature students. Forty younger participants were recruited on the university campus at a booth in a central access point on the campus. All participants were compensated (10 dollars) for their participation in the study. Participants were recruited for a study examining autobiographical memory and problem solving ability across the life span and signed a consent form granting permission to record the working memory, cued recall and social problem solving aspects of the session (Appendix A). Of the 80 participants, 34 were male and 46 were female. Characteristics of the sample divided into the two age groups are summarized in Table 1. There were significantly more women in the older age group (72.5%) compared to young

(42.5%). The young adults ranged from 19 to 25 years (median = 22) and older adults ranged from 61 to 83 years (median = 68). Education was measured using an ordinal scale with five levels (i.e. public school, high school, CEGEP, Undergraduate, Graduate). Six percent of the total sample had completed only public or high school, 60% had CEGEP (equivalent to grade 13), 30% had undergraduate, and 4% had completed graduate degrees. Younger adults had completed either CEGEP (n=34) or already had an undergraduate degree (n= 6). The older adults' education levels were more varied with 5 having completed public or high school, 14 with CEGEP diplomas, 18 with undergraduate degrees and 3 with graduate degrees. Differences in education level for young and old were significant (p =.001) with 52% of older adults compared to 15% of younger adults having already received undergraduate or graduate degrees. Seventy-two percent reported good health, and 26% fair or poor health. A global question asking respondents to rate their overall health (e.g. (1) poor, (2) fair, or (3) very good) revealed non-significant differences between old and young. Since only one of the 80 respondents reported 'poor' health the health responses were re-coded into 2 categories (poor-fair and very good). Fourteen older adults and nine younger adults reported poor-fair health. Ninety-percent of participants reported that English was their primary language. Half of the participants from each age group (N=20) were placed in one of two experimental groups (primed and unprimed).

Materials and Procedure

Experimenters

Four experimenters were employed, two tested older adults exclusively (experimenters 1 and 2) and the remaining two experimenters tested younger adults

exclusively (experimenters 3 and 4). The experimenters for the older group were relatively closer in age to the older adults than the experimenters (two undergraduate students) who tested the younger group. The older experimenters were used for the older age group to attempt to provide as much support as possible, since it was thought that older adults may be less accustomed to both sharing personal memories with younger adults and the testing environment. However, experimenter 1 was significantly younger (29 years old) than experimenter 2 who was middle aged (49 years old). The experimenters were instructed to follow a testing manual to ensure that they each behaved similarly when interacting with the participants.

Health Questionnaire and Demographic Information

Participants were contacted by telephone to confirm their participation and were asked to answer general demographic questions and questions about their health (Appendix B). Questions regarding specific health conditions (i.e. Parkinson's Disease, Depression) were asked in order to rule out participants with possible cognitive impairment. The variable chosen for use within the statistical analyses was the global question 'How would you rate your overall health at the present time?' (poor, fair, very good), as described above.

Cognitive Tests

Digit-Symbol Substitution Task. The WAIS-III digit-symbol task was used as a nonverbal measure of information processing speed (Appendix C). This test assesses participants' ability to copy symbols that correspond to numbers as quickly as possible, with a time limit of 90 seconds. This measure was chosen due to its wide use as a brief measure of information processing speed in older adults. Age declines have consistently

been found for this measure in older adults (Anstey, Matters, Brown, & Lord, 2001; Joy, Fein, Kaplan, & Freedman, 2000), and its reliability is well-established for adults over 60 years with a range of Alpha from .84 to .93 (The Psychological Corporation). Thus, the use of this task was meant to reflect the theoretical mechanism of processing speed that is thought to underlie age differences in cognitive ability.

Stroop Interference Test. The Stroop Color-Word test measures selective attention, in that participants are required to inhibit a dominant response (i.e. word reading) in favor of a less dominant response (color-word naming), reporting their answers as fast as possible for 120 seconds (Trenerry, Crosson, DeBoe, & Leber, 1989) (Appendix D). Thus, deficits in inhibition result in a greater number of errors and increased time necessary to complete the task. This task is widely used in cognitive aging research and age differences have consistently been found, with older adults having poorer ability to inhibit interfering information, leading to slower color word naming and increased errors in color-word naming (for a review see MacLeod, 1991). Test-retest reliability has been found to range from (Alpha) .83 to .91 for healthy subjects (Spreen & Strauss, 1998). Thus, this task was chosen to reflect the proposed mechanism of an inhibition deficit that is thought to underlie cognitive declines in aging.

Alphabetic Span. The alphabetic span task measures the participant's ability to both store, and mentally manipulate and rearrange the material held in mind, and has been used as a measure of attentional resources or working memory (Belleville, Rouleau, & Caza, 1998; Craik, 1986). Participants are read progressively longer lists of words in random order and asked to repeat the words back to the experimenter in alphabetical order (Appendix E). Older adults have shown significant impairment on this task

compared to their performance on measures that have only tested a storage but not a manipulation component. Older adults have also shown significantly poorer performance compared to younger adults on this task (Craik, 1986 ; Belleville, Rouleau, & Caza , 2002). This task was chosen to reflect the theoretical mechanism of attentional resources which has been postulated to underlie age-related declines in cognitive ability.

Autobiographical Memory Cueing Test (ACT)

This test required that respondents retrieve an autobiographical memory in response to an oral cue word. This procedure was modeled after that used in many studies measuring the distribution and specificity of autobiographical memory (Goddard et al., 1996; 2001; Rubin & Schulkind, 1997). Five positive (i.e. happy, safe, interested, successful, and surprised), and five negative words (i.e. sorry, angry, clumsy, hurt, and lonely) were used as cues. Before the cues were presented an explanation was given regarding the difference between a specific memory and a general memory (e.g. a specific memory is one that occurred at a particular time, on a particular day, in a particular place) (Appendix F). The cue words were given orally, alternating between positive and negative cues, and the respondents were allowed 60 seconds to respond to the cue, at which time a "no response" was recorded, and the next word was presented. Participants were told to draw from memories in their more recent past (i.e. the last third of their life), but not as recent as the last 2 years. This constraint was used in order to limit the participants' retrieval of memories to those from a time period outside the reminiscence bump since memories from this time period may have been rehearsed more, or more frequently recalled than memories from outside this period, and may not have represented the participants' overall autobiographical memory. In order to give the

participants practice in recalling details, they were probed for missing details (e.g. time, day, place) during the first two cue words. The memories elicited in response to the word cues were coded as either general or specific memories (Williams & Dritschel, 1992). Memories were deemed specific if the participant recalled an event occurring on a particular day. All the responses were coded by Experimenters 1 and 4. Responses were coded as general if they lasted more than one day (extended memory), or if they referred to a series of repeated events (categoric). The two coders were found to have adequate reliability with a kappa value ranging from .68 to 1.0, averaging .86.

Means End Problem Solving Procedure (MEPS)

The MEPS (Platt & Spivack, 1975) consists of 10 vignettes in which a social problem situation (e.g. making new friends) is described followed by the resolution to the problem. Participants were asked to describe the actions they would take in order to move from the problem statement to the end goal (the resolution). The original scenarios outlined by Platt and Spivack (1975) have been assessed for validity and reliability in samples of children, adolescents, and adult psychiatric samples. While these findings may not be generalizable to the older adult population, the task has been found to discriminate well between psychiatric and nonpsychiatric groups. The stories have been found to reflect a single factor, namely, each of the stories have been found to reflect the same quality of thinking (i.e. problem solving in interpersonal situations) (Platt & Spivack, 1975). However, the scenarios were slightly modified in the present study to reflect more contemporary contexts and to make them personally relevant to both older and young adults (Appendix G). The topics of the scenarios were judged with respect to their relevance to young and old participants. Five experimenters agreed that the

scenarios which depicted stories about finding a lost watch (practice), moving to a new neighborhood, hurt feelings, problems with coworker/co-volunteer, and friends avoiding you, would be most relevant to both age groups. Only 5 scenarios were administered, since shorter versions have generally been found to be adequate by previous researchers (see Goddard et al., 1996; Heidrich & Denney, 1994; Marx, Williams & Claridge, 1992). The first scenario was employed as a practice problem to ensure participants understood the purpose of the task.

When giving instructions, Goddard et al. (1996) and others, have asked respondents to "find the ideal strategy" to meet the stated goal. This study also employed these instructions (Appendix G). The problems were read orally by the experimenter and followed on a cue card by the participant. The participants were told to take a couple of minutes to 'think about the actions they would take to solve the problem'. The participants' responses were tape recorded.

Following the procedure outlined in other studies (Heidrich & Denney, 1994; Platt & Spivack, 1975), the responses were coded according to the number of relevant means given. Relevant means were defined as an action (including thoughts) that was taken to get to the end goal of the story. Similar to previous studies, the number of means that were given for each story was tallied to form a total relevant means score (Goddard et al., 1996; Heidrich et al., 1994). Contrary to other studies, judgements were not made regarding the 'effectiveness' of the solution. However, if it was apparent that the solutions given would not reach the end goal of the story they were not included in the relevant means score. Experimenters 1 and 4 coded the responses to the MEPS stories according to criteria outlined above. Interclass correlation coefficients were calculated

with respect to the total means given for each story. The alpha ranged from .86 to .94, with an average alpha of .89. Inter-rater reliability for the number of means given for each story ranged from a kappa of .14 to 1.0, with an average kappa of .77. In addition, after the initial coding, the two experimenters reviewed all of the stories given by each participant again until 100% agreement was reached regarding the number of relevant means given by each participant.

Personal Relevance Questionnaire (PRQ)

A short questionnaire was used to assess whether the participants found the MEPS scenarios to be personally relevant to their lives (Appendix H). Participants were asked to rate each story, from 1 (Totally Irrelevant) to 5 (Very Relevant), in terms of its personal relevance. A chi-square revealed no significant differences between old and young in terms of how relevant they found the stories. Ratings of the relevance of the stories were totaled, revealing that both older and younger adults' mean relevance rating per story was 3.45 out of 5.

Social Problem Solving Inventory Revised (SPSI-R)

A shortened version (52-item) of the SPSI-R was employed to obtain a self-report measure of perceptions of overall social problem solving ability (Appendix I). The inventory consists of five major scales that measure two different problem orientation dimensions (positive and negative), and three different problem-solving proper dimensions (rational problem solving, impulsivity/carelessness style and avoidance style) (Belzer, D'Zurilla, Maydeu-Olivares, 2001). The higher the total score on the SPSI-R, the better the perceived overall social problem solving ability. In total, participants rated 52 statements based on how accurately they reflected (0= not at all true of me to 4=

extremely true of me) their response patterns to problems. For example, they would rate on a scale of 0 to 4, the statement " I spend too much time worrying about my problems instead of trying to solve them". This instrument has been widely used and has been found to be reliable in terms of self-perceptions of social problem solving ability (see D'Zurilla & Maydeau-Olivares, 1995). However, the validity of this instrument as a measure of actual social problem solving performance is unclear since its relationship with measures of actual ability has not been measured.

Order of Tasks

Two orders were employed, which were referred to earlier as primed and unprimed. Half of the participants in each age group were assigned to the primed condition, and completed the cognitive tests followed by the ACT, SPSI-R, MEPS, and PRQ. The other half completed the cognitive tests and SPSI-R, followed by the MEPS, PRQ, and ACT.

Results

Data Screening

Two of the older adults' Stroop Time scores were determined to be univariate outliers. One non-significant (Cook D = .115) multivariate outlier was also found within the older group of participants. Closer examination revealed however, that the participant was only a multivariate outlier when assessed according to the younger sample, but not when assessed with respect to the older group. The scores for Stroop Time and the number of general memories given during the ACT were significantly skewed. A logarithmic transformation was applied to Stroop Time, bringing the outliers within the

normal range, however the transformed scores exhibited approximately the same relationship with the other cognitive measures and substituting them in the factor analysis did not change the factor composition of the Cog 1 factor (see below). Thus, the untransformed scores for Stroop 2 were used in subsequent analyses. The skewness of the number of general memories given (ACT) was reduced to insignificance through the use of a logarithmic transformation, and the subsequent analyses employed the transformed scores of this variable. In the screening of the data to ensure the absence of multicolinearity and singularity among the predictor variables, and to ensure linear correlations between the predictor and dependent variables, no problems were detected.

Preliminary Analyses

The cognitive measures were factor analyzed using an Oblimin rotation and the first of the two factors (Cog1) was employed as a single variable in subsequent analyses (Eigen value = 2.96). The structure matrix indicated that Stroop Time had the highest loading (s^2= .59) on the Cog 1 factor, followed by Digit Symbol (s^2 =.54), and Alphaspan (s^2 =.47). Thus, the Cog 1 Factor was representative of all three of the mechanisms (inhibition, processing speed, and attentional resources) that were reviewed earlier and are thought to underlie differences in cognitive abilities in older adults.

The correlation matrix (Table 2) indicates the correlations among the study variables. A Bonferroni test was conducted to control for the familywise error rate among the 13 variables in the correlation table. An adjusted alpha level of $p < .005$ was subsequently employed. As was expected, age was significantly negatively correlated with the Cog 1 factor, Digit Symbol, and the number of specific memories during the ACT, and positively correlated with the number of general memories generated during

the ACT. As hypothesized, the Cog 1 factor was significantly positively correlated with the number of specific memories generated during the ACT. Furthermore, the number of specific memories given during the ACT was positively correlated with the number of relevant means given during the MEPS task. However, no significant correlation existed between age and the number of relevant means that were generated during the MEPS task. Health was positively correlated with the subjective measure (SPSI-R) of social problem-solving ability. Finally, no significant correlations were found between the Priming condition and the other variables.

Insert Table Two About Here

Age differences in the cognitive variables were assessed using 2 (Age) x 2 (Health) x 2 (Priming Condition) ANOVAs with education as a covariate for the Digit symbol task, the Stroop Task, and Alpha Span task. Significant main effects of age were found with respect to the Digit Symbol task (M_{old} = 44.5, M_{young} = 62.95) $F(1,79)$ = 25.63, $p<.001$, the Stroop Task (# correct) (M_{old} =85.37 , M_{young} = 107.05) $F(1,79)$ = 16.04, $p<.001$, and the Cog1 factor (M_{old} = -.49, M_{young} = .49) $F(1,79) = 12.07$, $p<.001$. A main effect of health was also revealed for digit symbol (M_{fair} = 47.17, $M_{verygood}$ = 56.39) $F(1,79) = 4.29$, $p<.05$. No interactions were found. Thus, after controlling for education, the variance in the cognitive inhibition task was explained by age, and variance in cognitive speed was explained by age and health. However, when the cognitive measures were assessed as a factor, only age accounted for the variance.

Due to the fact that each of the four experimenters tested *either* only young or only older participants, confounding age with experimenter, two separate MANOVAs

were conducted for each age group to assess the effects of the two experimenters from each group on the study variables. Experimenter effects were tested with respect to the cognitive factor, the number of specific memories given during ACT, the log of the number of general memories given during the ACT, the number of relevant means given during the MEPS, and the total scores on the SPSI-R. A non-significant multivariate effect of experimenter was found in the older group using Wilk's criterion, $F(12, 27) = 1.79$, however, significant univariate effects were found for the number of specific ($M_{exp1} = 5.14$, $M_{exp2} = 7.46$) $F(1,38) = 9.78$, $p < .01$, and the log of the number of general memories ($M_{exp1} = 1.52$, $M_{exp2} = .93$) $F(1,38) = 12.24$, $p<.01$, given during the ACT. For younger adults, a significant multivariate effect $F(11, 28) = 2.22$, $p < .05$ was found using Wilk's criterion, and a significant univariate effect ($M_{exp3} = 8.53$, $M_{exp4} = 7.0$) $F(1, 38) = 8.33$, $p <.01$ was found for the number of specific memories given during the ACT. Roy Bargman Stepdown analyses (see Tabachnick & Fidell, 1989) for both groups revealed no experimenter effects for the number of relevant means after controlling for the experimenter effects found in the number of specific and general memories given during the ACT.

Main Analyses

Multiple regression analyses were performed with respect to the three main dependent variables, including the number of specific memories given during the ACT, the number of general memories given during the ACT, and the number of relevant means given during the social problem solving task (MEPS). It should be noted that the categorical variable of experimenter (with 4 levels: exp = 1, 2, 3, or 4) was dummy coded into 4 minus 1 dummy vectors (3). One group (experimenter 1)

received codes of all zeros on the vectors. Every other experimenter was dummy coded in reference to experimenter 1 such that the Betas for each experimenter represented the difference between the means for the experimenter coded 1 on each vector and the experimenter coded 0 on each vector. Thus, all of the experimenter variables were dummy coded in reference to Experimenter 1.

Furthermore, for each of the three dependent variables of interest (specific memories, general memories, and number of relevant means), two separate hierarchical regressions were performed for each of the age groups (young and old), and a third regression was generated for the entire sample. Conducting regressions with the age groups separated and then combined determined whether experimenter effects existed without the confounding effect of age group.

Specific Memories

Table 3 indicates the results of the two separate hierarchical regressions that were performed within each of the young and older age groups with respect to the number of specific memories given during the autobiographical memory cued recall task (ACT). The only time that multiple R was significantly different from zero for the older group was at the end of step 3 ($R = .55$, $F(6, 33) = 2.43$, $p < .05$), with all of the independent variables in the equation. However, for the younger group Multiple R was significantly different from zero at the end of all the steps. With all of the independent variables entered in step 3 for the young group, $R = .65$, $F(6, 33) = 3.97$, $p < .01$. The demographic variables of sex, age, health, and education were entered on the first step. This step was significant for the young age group ($F_{inc}(4, 35) = 3.49$, $p < .05$), explaining 28% of the variance in the number of specific memories given, and education was found to be a

significant predictor ($t = 3.49$, $p < .01$) in the younger sample. This step was not significant in the older age group. In step two, the effect of the experimenters that were unique to each age group were added. Thus, for the older group the effects of experimenters 1 and 2 were tested, and for the younger group the effect of experimenters 3 and 4 were tested. The experimenter effects were found to be significant predictors in both age groups (Old, $t = 2.67$, $p < .05$; Young $t = 2.8$, $p < .01$), and for both age groups the change in R squared was significant (Old, $F_{inc}(5,34) = 6.95$, $p < .05$; Young, $F_{inc}(5,34) = 7.87$, $p < .01$). This step explained an additional 16% of the variance in specific memories for the older group, and 13% for the younger group. Education remained a significant predictor ($t = 3.43$, $p < .01$) in this step for the younger sample. In the final step the predictive value of the cognitive ability factor was assessed after controlling for the demographic variables and the experimenter effects. It was not found to be a significant predictor in either the old or the young sample, and the step was not significant for either sample. However, for both samples, the experimenter variables remained significant predictors (Old, $t = 2.87$, $p < .01$; Young, $t = 2.65$, $p < .05$), and for the younger sample education was a significant predictor of the number of specific memories given ($t = 3.32$, $p < .01$).

Due to the confound of age with experimenter mentioned earlier, a hierarchical regression was performed for the entire sample (young and old), using the same predictors as above, including the experimenter variables from each age group with respect to the number of specific memories given. Thus, the effects of experimenters 1, 2, 3 and 4 were tested, controlling for age. Multiple R was significantly different from zero at the end of each step. Multiple R was significantly different from zero after all of

the independent variables were entered in step three, R = .63, F (8,71) = 5.72, p < .001. Step one was found to be significant, explaining 22% of the variance in the number of specific memories given (F_{inc} (4, 75) = 5.35, p < .001). Age was a significant predictor (t = -4.47, p < .001). Education, although previously found to be significant in the younger sample, was not significant for the combined sample. After the experimenters were entered in step two, age was no longer significant, and the experimenter variable from the older age group became a significant (t = 3.21, p < .01) predictor of specific memories. Thus, the effect of age was removed once the experimenter effects were entered. Step two was significant, explaining an additional 15% of the variance in the dependent variable (F_{inc} (7, 72) = 5.68, p < .01). Finally, the cognitive factor was entered in step three, the step was not significant, and the cognitive variable was not found to be a significant predictor, however the experimenter variable remained a significant predictor (t = 3.36, p < .01).

Insert Table 3 About Here

General Memories

Table 4 indicates the results of the two separate hierarchical regressions that were performed for both the young and older age groups with respect to the number of general memories given during the Autobiographical Memory Cued Recall Task. Multiple R was only significantly different from zero after the second and third steps for the older sample. Multiple R was significantly different from zero after all of the variables were entered in step three for the older sample, R= .67, F (6,33) = 4.38, p < .01. Demographic

variables including sex, age, health and education were entered in step one and for both samples, education was found to be a significant predictor (Old, $t = 2.39$, $p < .05$; Young $t = -2.47$, $p < .05$). However, this step was not significant for either sample. In step two experimenter effects were entered in the same manner as described for specific memories for both samples. The step was significant for the older age group, F_{inc} (5,34) = 10.92, explaining an additional 19% of the variance in the (log) number of general memories given. Experimenter effects were only found to be a significant predictor for the older sample ($t = -3.30$, $p < .01$). Education remained a significant predictor for the both age groups (Old, $t = 2.50$, $p < .05$;Young, $t = -2.30$, $p < .05$). In the final step, the effect of cognitive ability was assessed for both age groups. The step was not significant for either group, however, the significant predictors of education (Old, $t = 2.66$, $p < .05$; Young, $t = -2.13$, $p < .05$), and experimenter (Old, $t = -3.50$, $p < .01$), that were found in the previous steps were maintained.

In order to test the confound of age with experimenter, a hierarchical regression was performed employing the entire sample (both old and young), including the experimenter effects from both groups, with respect to the number of general memories given during the ACT. Thus, the effects of experimenters 1, 2, 3, and 4 were tested, controlling for age. An identical pattern to that found for the analysis of specific memories was found. Multiple R was found to be significantly different from zero at the end of all three steps and after all the independent variables were entered in step 3, $R = .59$, $F(8,71) = 4.82$, $p < .001$. In the first step, age was found to be a significant predictor ($t = 3.46$, $p < .001$), and the step was significant, explaining 21% of the variance in the (log) number of general memories given F_{inc} (4,75) = 4.92, $p < .01$. In step two, the

experimenter variables were added and the step was found to be significant, explaining an additional 12% of the variance F_{inc} (7,72) = 4.97, $p < .01$. The experimenter variable from the older group was a significant predictor ($t = -2.74$, $p < .01$), however, age became non-significant. Finally, step 3 added the cognitive ability variable and this step was non-significant, however the experimenter variable from the older group remained a significant predictor ($t = -2.9$, $p < .01$).

Insert Table 4 About Here

Relevant Means

Table 5 indicates the results of the two separate hierarchical regressions for the old and young adults with respect to the number of relevant means given during the MEPS task. Multiple R was significantly different from zero for all 4 steps for the older sample, but non-significant for all of the steps for the younger sample. Multiple R was significantly different from zero after all of the independent variables were entered in step 4 for the older sample, $R = .72$, $F(8,31) = 4.10$, $p < .01$. Demographic variables, including sex, age, health, and education were entered in step one. This step was significant for older adults, explaining 29% of the variance in the number of relevant means given, F_{inc} (4,35) = 3.57, and health was a significant predictor ($t = 3.0$, $p < .01$) for the older age group. Experimenter effects were entered in the manner described earlier in step two for each age group, and the step was non-significant for both groups. However, health remained a significant predictor in the older group ($t = 2.78$, $p < .01$). The cognitive factor was entered in step three in both age groups, however, the step was not

found to be significant for either group. Health maintained significance as a predictor for the older group ($t = 2.77$, $p < .01$). In step 4 the predictive ability of the number of specific and general memories was assessed for both age groups. This step was significant for both age groups (Old, F_{inc} (8,31) = .65; Young, F_{inc} (8,31) = 4.68), explaining an additional 20% of the variance for both age groups. The number of specific memories acted as a significant predictor for both old and young (Old, $t = 3.60$, $p < .01$; Young, $t = 2.54$, $p < .05$). Health also remained a significant predictor for the older group ($t = 3.03$, $p < .01$). Priming condition, and the interaction between priming condition and age was also analyzed in a subsequent step but was found to be non-significant, and as such, was not reported in Table 5.

In order to explore the confound of age with experimenter, similar to the previous analyses with specific and general memories, a hierarchical regression was performed on the entire sample (old and young) with respect to the number of relevant means given, using the same predictors as the old and young samples. A similar pattern was found in the combined sample to the older sample. Multiple R was found to differ significantly from zero for all 4 steps. Multiple R was found to be significantly different from zero after all of the independent variables were entered in step 4, $R = .45$, $F(7,72) = 2.62$, $p < .05$. With the entry of the demographic variables in step one, only health was a significant predictor ($t = 3.13$, $p < .01$), and the step was significant, explaining 18% of the variance in the number of relevant means given, F_{inc} (4,75) = 4.27, $p < .01$. In step two, the experimenter variables from both groups were entered (i.e. the effects of experimenters 1, 2, 3, and 4) and the step was non-significant. However, health remained a significant predictor ($t = 2.85$, $p < .01$). The cognitive variable was entered in step three

and the step was non-significant, however health remained a significant predictor ($t = 2.78$, $p < .01$). In step four, the number of specific memories and general memories were entered. This step was significant, explaining an additional 18% of the variance (F_{inc} $(10,69) = 10.18$, $p < .01$), and health ($t = 3.04$, $p < .001$) and the number of specific memories given ($t = 4.10$, $p < .001$) were significant predictors. Since the correlation between the number of specific memories and the number of general memories given was quite high (see Table 2), two additional hierarchical regressions were performed. The regression was different from the previous regression in that step 4 contained *either* the number of specific memories, or the number of general memories, in order to determine the separate effect of each on the number of relevant means. The same results were found in that the greater the number of specific memories generated the greater the number of relevant means given ($t = 4.45$, $p < .001$).

Insert Table 5 About Here

Additional Analyses

All nine regression analyses predicting the number of specific and general memories given during the ACT, and the number of relevant means given during the MEPS task were conducted again substituting Stroop Time, Alpha Span, and Digit Symbol in the step that contained the Cog 1 Factor. None of these cognitive variables significantly predicted the number of specific or general memories given during the ACT, nor the number of relevant means given during the MEPS task.

Table 6 summarizes the results of a hierarchical multiple regression (N=80) employing the total score on the 52-item SPSI-R as the dependent variable. Multiple R was significantly different from zero for all three steps. Multiple R was significantly different from zero after all of the independent variables were entered in step three R= .45, $F(8, 71) = 2.23$, $p < .05$. Sex, age, health and education were entered on the first step. Perceived health significantly predicted ($t = 3.88$, $p < .001$) overall, self-report social problem solving ability (i.e. total score on SPSI-R), and the step was significant, $F_{inc}(4, 75) = 4.10$, $p < .01$. In step two, priming condition and cognitive ability were added. The step was non-significant, however health remained a significant predictor of total SPSI-R scores ($t = 3.82$, $p < .001$). The number of specific and general memories were added as predictors in step 3. In contrast to the predictors found for social problem solving *performance* (MEPS), the specificity of autobiographical memory did not act as a predictor, however health remained a significant predictor ($t = 3.78$, $p< .001$) of total SPSI-R scores. The last step, with all of the predictors entered, was non-significant.

Insert Table 6 About Here

Discussion

This study investigated whether older adults' social problem solving ability would mimic the pattern found in young, depressed adults, namely, that decreased autobiographical memory specificity would be related to poor social problem solving ability. The results of this study did mimic the pattern found in young adults, supporting the claim that autobiographical memory serves a 'directive' function with respect to both

older adults' and young adults' social problem solving ability. Specifically, the participants' ability to produce specific memories in response to ten emotion word cues (ACT) predicted their ability to generate alternative solutions during the social problem solving task. Furthermore, the number of general memories (i.e. extended or categorical memories) generated during the ACT did not predict problem solving ability, and general memories were also negatively correlated with the number of specific memories given. This result is generally consistent with the notion that semantic memory may be less useful than specific memories in guiding present behaviors in certain everyday circumstances (Pillemer, 2003), such as in the present case of social problem solving.

The results lead one to question *why* the specific memories that were elicited seemed to be more predictive of generating solutions to social type circumstances than general memories. It was assumed that specific memories would be more helpful as analogies for solving present problems since social situations tend to be distinctive and varied, making it less likely that a generalized script exists that may adequately guide behavior in such situations (Pillemer, 2003). For example, if a conflict arose at one's work, it would presumably be much more helpful to remember the detailed account (the specific actions taken to solve the problem) of how one dealt with a similar previous problem than simply a 'categoric' or 'gist' account (e.g. when social conflicts have arisen in the past they've been resolved by talking it out), or no account at all. However, the positive, predictive relationship found between the number of specific memories generated and the number of relevant means generated may not be as straightforward as initially hypothesized (i.e. a direct relationship). Thus, a brief discussion of the findings

regarding the effects of priming on the participants' problem solving ability may shed light on the nature of the relationship found between the ACT and the MEPS task.

Despite the fact that a greater number of specific autobiographical memories predicted the number of solutions generated to social problems, priming the participants' specific autobiographical memories by having them perform the ACT *before* the social problem-solving task did not increase solution generation. There was also no interaction between age and priming condition with respect to the number of relevant means generated. This suggests that participants did not apply the contents of the autobiographical memories that were generated in the ACT task directly to the latter task of generating solutions to social problems. Thus, even though the ACT involved generating a wide range of memories, these may not have corresponded to the social problems that were to be solved, making them irrelevant analogies. Furthermore, these memories did not act as increased environmental support for older participants, improving their performance on the problem solving task. These findings suggest that there may be a third common factor that accounts for the positive relationship between the two tasks.

Research has found that memories associated with emotion are often remembered more vividly (for a review see Reisberg & Heuer, 2004). This is thought to occur because emotional situations are more likely to elicit increased attention and they are more likely to be rehearsed after they occur (Reisberg & Heuer, 2004). The autobiographical memory cue words that were employed in this study were emotion words (e.g. angry, happy), and most of the social problem solving scenarios that were used depicted situations of conflict in which strong emotions (e.g. anger, frustration) were described

(E.g. 'you were very upset'). Furthermore, the social problem solving scenarios made the participant the subject of the story, potentially increasing the likelihood that the feelings that were described in the stories were internalized by participants. The ACT required participants to remember detailed memories in response to the emotion words, and as such, participants' performance may have been facilitated by their level of emotional engagement in the task. Participants who did not perform well on this task may not have been emotionally engaged, leading to a decreased ability to recall vivid or detailed memories. Similarly, the social problem solving task required participants to generate a number of fairly specific solutions (i.e. describe the 'actions you would take') to a set of affect-laden problems. Thus, similar to the ACT, individuals who were inclined to internalize the emotional cues in the problem scenarios may have experienced vivid recollections of past, relevant situations, leading to better performance on the task than those who were less emotionally engaged.

Thus, the tendency or ability to become emotionally engaged may improve one's ability to think in more specific terms about memories and about past instances that are relevant to current circumstances. This third variable may have confounded the relationship between the number of specific memories recalled and the number of relevant means generated, in that those who were more likely to become emotionally engaged during the tasks had an increased ability to think in specific terms for both tasks, increasing their performance.

It should be noted here that D'Zurilla and Maydeu-Olivares (1995) argue that the 'means' in the MEPS task cannot be equated with the concept of 'alternative solutions' since they reflect subsequent steps *within* a solution. However, it is apparent that the

means given are indeed inherently also alternative *solutions*, since it is not often possible to distinguish between a 'mean' (or step) and a 'solution'. For example, if an individual is experiencing problems with a coworker, they may decide to talk to the coworker, or discuss the problem with their boss. While an individual may employ both solutions if one doesn't work (which could be conceived as two steps), either of the 'means' on their own may result in resolving the problem, and should therefore be conceptualized as alternative solutions. Thus, 'means' and 'solutions' were conceptualized as one in the same for the purposes of this study.

The finding that neither age nor cognitive ability predicted autobiographical memory specificity is surprising considering previous research has established that older adults reliably produce less specific autobiographical memories than younger adults. Furthermore, age-related deficits in cognitive abilities and frontal lobe functioning predict decreased episodic memory function (Hertzog, Dixon, Hultsch, & MacDonald, 2003; Hultsch, Hertzog, Dixon, & Small, 1998; Tulving, 2002). Despite age differences in cognitive abilities, this study did not replicate the common finding that decreased cognitive abilities predict less specific autobiographical memory. However, age related declines in working memory and processing speed have recently been found to predict changes in older adults' episodic memory in both cross-sectional and longitudinal studies (Hertzog et al., 2003; Hultsch, et al., 1998). Moreover, although both of these processes predict episodic memory, working memory has been found to explain more variance than perceptual speed longitudinally, using a latent change model (Hertzog, et al., 2003). Surprisingly, in this study working memory was the only cognitive ability in which significant age differences were not found. All of these results disconfirm the original

hypothesis that working memory would be the strongest predictor of autobiographical specificity.

The notion that it is possible to develop cognitive tasks that map directly onto distinct cognitive processes, and therefore, that each cognitive process is measurable, has been criticized. It has been argued that many cognitive tasks share underlying, complex processes, and that their predictive power may change depending on the measurement tools employed (Hertzog et al., 2003; Tulving, 2002). In order to combat these problems it has been proposed that comprehensive test batteries, with multiple measures of each construct be used. Thus, the lack of converging measurements for each of the three cognitive processes in this study suggest that any conclusions about the differential role of the three proposed processes in accounting for age differences in autobiographical memory should be made with caution. Perhaps, had a more comprehensive battery been used, working memory differences would have been found to predict autobiographical memory ability. Furthermore, a cognitive construct that was not included in this study, which has been found to change with age and predict episodic memory, is verbal memory (Lamar, Resnick, & Zonderman, 2003). Given the verbal nature of the tasks, this may have been an appropriate measure of cognitive ability to add to the test battery, and it may have shown some predictive power with respect to autobiographical memory and social problem solving.

However, it is also important to note that despite their important role, cognitive factors do not typically explain all of the variance in older adults' episodic memory. Other, contextual factors may be important. The finding in this study that experimenter effects predicted the number of specific autobiographical memories retrieved is worth

considering further. Factors related to the social context such as the age or attentiveness of a listener, or the presence or absence of an experimenter, have been found to influence memory recall. For example, Adams, Smith, Pasupathi, and Vitolo (2002) asked older and younger adults to learn a story in order to retell it to either an adult experimenter or a young child. Younger adults recalled more propositions (meanings) from the story than older adults did when the story was being told to the adult experimenter. However, the age differences in propositional recall disappeared when the story was told for a young child. Other studies have found that older adults often tell less emotionally negative stories depending on the age of the listener (Pasupathi, Henry, & Carstensen, 2002). In the present study, although there were experimental controls (e.g. scripts) for the ACT, the listener/experimenter predicted the degree of specificity of the autobiographical memories recalled by participants. Importantly, in this study it was the effects of the oldest experimenter, who tested only older adults, which explained the most variance in the number of specific memories given. The older experimenter was initially employed for the purpose of increasing the comfort level of the older participants since it was thought that her similarity in age, and warm, friendly style would put older participants at ease in a 'testing' environment. This was an attempt to offset the greater familiarity that the undergraduate students might have with a testing situation compared to older adults. However, it may have had the additional effect of making the older participants feel more comfortable becoming emotionally engaged, leading to increased ability to recall vivid memories. Thus, perhaps the cognitive declines present in the older participants in this study, that are usually found to predict poorer episodic memory performance, were offset by the social context within which the task was performed. The older adults may have

adapted their recall or felt freer to engage their emotions depending on the age, or the perceived attentiveness of the listener. Older adults have been found to be more susceptible to interviewer effects than younger adults (Groves & Magilavy, 1986). Also, experimenters have been found to be more likely to diverge from standardized procedures when interviewing older respondents (Belli, Weiss, & Lepkowski, 1998). Their cognitive performance and conversational skill has also been found to be sensitive to other contextual factors. For example, older adults exhibit decreased memory performance when their own negative stereotypes about older adults are implicitly activated (Levy, Hummert, & Zebrowitz, 2003), or when their conversational partner uses less self-disclosure (Langer, Rodin, Beck, Weinman, & Spitzer, 1979). It should also be noted however, that given the greater degree of experimenter-participant interaction inherent in the ACT procedures compared to the other tasks, it might have incorporated a higher likelihood of experimenter error, leading to significant experimenter effects.

Higher levels of education in the younger sample (i.e. those who had already obtained an undergraduate degree) were found to predict the number of specific memories they retrieved in response to the word cues. Also, less education predicted more general memories in this age group. One explanation for this effect is that the younger adults who reported that they had already received an undergraduate degree had been in school longer, and had more experience following instructions in a testing situation than those who were in their first or second year of undergraduate studies. However, it was also found that older adults with more education were more likely to give more general memories in response to the word cues. Since it is likely that the older adults would have completed their education many years prior to this study, the potential

facilitative effect of being in the school environment longer (i.e. familiarity) may not have applied to the older group. The dissociation between young and old with respect to the effect of education on autobiographical memory is a question that could be answered through research that examined education and occupation more closely. Thus, given the greater amount of time and the numerous experiences (e.g. numerous occupations) that the older adults may have encountered between the time they attended university and when they participated in the study, it is difficult to speculate about the effect that education may have had on the quality of their autobiographical memories.

Perceived health was also found to significantly predict not only objective problem solving performance, but also the participants' subjective perceptions of their social problem solving ability. This effect was only indicated for the older sample. While there is evidence that older adults' perceptions of their health influence broader constructs such as everyday competence (for a review see Diehl, 1998), few studies have examined the relationship between perceived health and objective and subjective measures of social problem solving in particular. In one study, older adults reported a preference for collaborating with others to solve everyday problems, within both specific (e.g. health, finances) and general problem solving domains, when they had less positive perceptions of their health status. This suggests that their health perceptions may have made them feel less competent in solving problems (Strough, Cheng, & Swenson, 2002).

Many studies have examined the relationship between perceived health and social problem solving from a different angle, assuming that social problem solving predicts health outcomes. Indeed, self-reported social problem solving skills have been found to predict longitudinal psychosocial adjustment and motivation in college students, adults'

perceptions of the frequency of daily hassles, and health promoting behaviors (Baker, 2003; Bond, Lyle, Tappe, Seehafer, & D'Zurlla, 2002; Godshall & Elliott, 1997). The relationship that was observed between health and social problem solving in this study may also be considered in the opposite direction. This would lend support to previous studies' findings that older adults with poorer perceived problem solving ability exhibit greater depression and anxiety, and poorer adjustment to chronic disease (Elliott, Shewchuk, Miller, & Richards, 2001; Kant et al., 1997). Furthermore, social problem solving training has been found to decrease depression and anxiety, presumably improving perceptions of older adult's perceptions of their overall health (Arean et al., 1993).

It should be noted that health was the only significant predictor that was common to both *perceived* and *actual* social problem solving ability. The dissociation between the two measures in terms of their predictors suggests that individuals' perceptions of their ability, and their actual ability are two distinct processes. However, much of the research that employs the SPSI-R seems to imply that perceived ability may be used as an indicator of actual ability. Future research in social problem solving should make the dissociation between the two types of measures more explicit.

The assumption that traditional, laboratory measures of problem solving (e.g. abstract reasoning) and memory are predictive of everyday functioning has been regarded as overly simplistic. It is argued that this approach has neglected to consider the relevance of the task to the older adult's everyday life and the importance of the social context within which functioning often occurs (Allaire et al., 1999; Blanchard-Fields & Chen, 1996; Cornelius et al., 1987). Researchers have developed more 'relevant',

objective measures of problem solving, such as 'practical' problems, which have included both instrumental (e.g. dealing with a broken appliance) and interpersonal problems (e.g. conflict with a friend). The test problems used in these studies have often been developed from the reports of older adults themselves making them more personally relevant (Denney & Pearce, 1989; Camp et al., 1989). Despite using more 'relevant' problems, age-related declines similar to those found for traditional tasks, were often found. However, the criteria used in many studies (see Camp et al., 1989) to rate the solutions were based on the participants' ability to consider both causes of, *and* the relevant solutions to the problem (p.212). In addition, the 'safeness' and 'effectiveness' of the solution was assessed, using vaguely defined criteria, which determined whether or not the solution was relevant.

On the other hand, similar to the present study, studies that have used the number of relevant means or solutions as the sole indicator of performance, without judgements of effectiveness, have found no age differences. No age differences have been found despite declines in measures of the participants' traditional problem solving skills (Heidrich & Denney, 1994; Artistico et al., 2003). Withholding judgement about the 'effectiveness' of the solution, as long as the solution seems to reach the end goal, is consistent with the principles of Problem Solving Training (PST). It is argued that, while one solution may not seem to be as effective as another it may often be combined with other solutions, which may ultimately produce a higher quality solution (D'Zurilla, 1986). Thus, it is argued that it is important to generate as many solutions as possible without judgement.

A recent series of studies (Artistico et al., 2003) tested whether participants' perceived self-efficacy about solving certain problems, and their actual performance (number of relevant solutions) would exhibit age differences. Furthermore, level of self-efficacy was tested as a mediator of the level of social problem solving performance. The ecological validity of the test problems to older adults was improved in this study compared to previous work. An in-depth diary study was conducted with old and young samples (double the size of previous studies) reporting on relevant problems (Denney & Pearce, 1989). The five most frequently reported problems by older adults, all of which happened to be interpersonal in nature (E.g. coping with feelings of disapproval for daughter's lifestyle), were employed as the test problems most relevant to older participants. Only two of the five most frequently reported problems for younger adults were interpersonal, while the remaining reflected more practical problems (E.g. dealing with a computer crash). These five were employed as problems most relevant to younger adults. Traditional problems (E.g. the Tower of Hanoi) were also examined. When the problems were tested, older participants exhibited greater self-efficacy and better subsequent performance compared to younger adults on the problems that were judged to be most relevant to the older age group. The opposite pattern resulted when the problems relevant to younger adults, or traditional type problems were tested. Furthermore, both older and younger adults' self-efficacy mediated their performance levels on all of the traditional and everyday tasks. Thus, it was reasoned that the older adults' sense of mastery with personally relevant problems, compared to the lack of self-efficacy they felt for personally irrelevant problems (i.e. those relevant to young, or traditional) led to both better performance, and a much more ecologically valid measurement of their everyday

functioning. In addition, it is apparent that older adults found social type problems to be particularly relevant to their lives compared to younger adults who found more practical problems to be most relevant.

In the present study, no age differences were found with respect to the perceived relevance of the social problems that were employed or the ability of older and younger adults to generate solutions to solve the problems. Thus, since the social problems were judged to be just as relevant to the older adults as the younger adults, both may have experienced an adequate level of perceived self-efficacy or mastery regarding their ability, leading to a lack of age differences in both perceptions of ability and actual performance (i.e. the number of means generated). Also, returning to the concept of emotional engagement, personally relevant problems may be more likely to trigger emotional engagement, leading to more vivid, helpful recollections during the social problem solving task. Finally, it is apparent that while these results suggest that relevant problems may be more likely to lead to increased generation of alternative solutions, it is unclear how a problem's personal relevance may facilitate the other stages of the problem solving process (e.g. problem definition). Future research should examine the effect of problem relevance on the other stages of the problem solving process to gain a more holistic picture of age differences in abilities.

Future Research and Practical Implications

Future Research

Despite the apparent heightened relevance of interpersonal type problems to older adults, seniors have reported experiencing fewer social problems than young adults, and fewer negative interpersonal interactions than positive interactions (Camp et al., 1989;

Stephens, Kinney, Norris, & Ritchie, 1987; Akiyama, Antonucci, Takahashi, & Langfahl, 2003). This is not to suggest that studying social problem solving in older adults is not important. Indeed, older adults' social skills, and the quality of the interactions (e.g. positive or negative) they experience, are associated with a host of factors including increased life satisfaction, decreased depression and distress, and increased social support (Arean, Perri, Nezu, Schein, et al., 1993; Christoph & Li, 1985; Krause, 1995; Newsom, Nishishiba, Morgan, & Rook, 2003; Rook, 2003; Stephens, Kinney, Norris, Ritchie, 1987). Furthermore, social factors (i.e. social support) *and* cognitive abilities have been found to affect each other and contribute uniquely as predictors of everyday functioning in older adults (Baltes & Lang, 1997; Zunzunegui, Alvarado, Del Ser, & Otero, 2003).

Research with respect to the influences on older adults' social support has typically focused on the numerous contextual factors (e.g. gender, education, and socioeconomic status) (see Antonucci, 2001). Future research should examine how older adults' social problem-solving skills may influence the amount and quality of the social support they receive. Furthermore, the role of factors such as emotional engagement and autobiographical memory abilities should also be examined in terms of whether they predict social problem solving ability longitudinally. Those with poor skills may experience more negative interactions due to recurring unresolved conflicts, potentially reducing opportunities for positive interactions. Thus, family and friends may consistently limit their contact with an older person for whom there is a greater likelihood of experiencing a negative interaction. Indeed, research shows that negative interactions in late life tend to be stable over time and generalize to different relationships (e.g. family, friends) suggesting that characteristics of the older person may play an important

role in perpetuating patterns of interactions that lead to reduced social support (Krause & Rook, 2003; Rook, 2003). Social skills may influence one's ability to create and maintain social support, which is especially important during the retirement transition when social connections from work are generally lost and retirees must engage in novel activities, to rebuild their social network (Mor-Barak, Scharlach, Lourdes, Sokolev, 1993).

Practical Applications

Consideration of the results of this study in a therapeutic context highlights the importance of adapting some existing therapeutic techniques to the needs of older adults. Cognitive Behavior Therapy (CBT) has been criticized for the lack of consideration of the therapeutic relationship (i.e. client-therapist interactions), as a potentially influential 'process' in therapy that may affect treatment outcome (Leahy, 2001). Indeed, many of the treatment models that fall under the rubric of CBT, including problem-solving training, do not explicitly include factors related to the therapist, or reactions of the client to the therapist in their models. In addition, research generally controls for therapist factors statistically, providing very little information about how characteristics of the therapist may influence treatment outcomes. The results of this study suggest that a listener/therapist's characteristics may indeed be very influential in predicting older adults' performance during certain memory tasks, and may influence the likelihood that an older adult will engage emotionally, both of which may influence therapeutic gains. Although CB therapies are generally concerned with the 'here and now' rather than retrospective reports from clients, memory ability may still act as an important moderator of treatment outcome, especially in the context of problem solving training (PST). Indeed, the ability to generate specific memories was found to predict one's ability to

generate a greater number of alternative solutions, and it is known that the greater the number of solutions generated, the more likely it is that the client will derive a better quality solution (D'Zurilla, 1986). In using the PST technique, CB therapists often collaborate with the client to generate alternative solutions (D'Zurilla, 1986). However, while the client is in therapy, autobiographical memory search should be emphasized as a useful strategy for generating solutions since clients can rely on it after therapy is terminated and they no longer have the contributions of the therapist. Highlighting the usefulness of emotional engagement in vivid memory recollection may also facilitate solution generation. However, in order to ensure sufficient specificity, the therapist may wish to pay special attention to the therapeutic 'process', namely, how their behavior may impede or facilitate the older adult's autobiographical memory performance. The influence of the therapist is crucial since the client's perceptions of their performance in therapy may influence their motivation to use the strategy after therapy is discontinued.

The results of this and the other studies reviewed also highlight the importance of 'contextualizing' unfamiliar problems for all age groups. Thus, in training a client to solve problems that are from a less familiar domain, it may be useful to help the client reframe the problem such that it will become more personally relevant, which may increase the likelihood that they will find useful analogies to draw upon. Finally, taking into consideration the perceived health status of the client may be especially important during treatment with older adults in elevating their perceptions of their ability as well as their actual abilities.

Summary and Conclusions

Contrary to the predictions made at the beginning of this study, age did not predict social problem solving performance (the number of relevant means given), despite age differences in cognitive abilities. However, the specificity of autobiographical memory did predict social problem solving performance for both the young and older age groups, and autobiographical memory ability seemed to depend on the experimenter with whom the participants were tested. Providing memory support by priming autobiographical memory before the social problem-solving task had no effect on the number of relevant means generated for either age group. These findings suggest that like younger adults, older adults' ability to generate specific autobiographical memories serves a directive function in that it predicts their ability to generate alternative solutions during social problem solving tasks. However, the vividness of the autobiographical memories may depend on one's level of emotional engagement. The findings also underscore the importance of considering the effects that the listener or therapist may have on emotional engagement, memory performance or treatment outcomes. Future research should examine the broader implications of poor social problem solving skills for older adults.

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{Concordia University Letterhead}

January 2003

Dear Participant,

You are being asked to participate in a research project being conducted by Drs. Dolores Pushkar and Michael Conway of the Centre for Research in Human Development at Concordia University. This research project is funded by the Social Sciences Research Council of Canada. The purpose of this research is to investigate the different ways that people use their memory of past experiences to help them in performing activities across the lifespan. Participants of different ages will be invited to Concordia University, for one individual session, where they will meet with a researcher to perform tasks that involve using their memory, and additional brief tasks involving problem solving. The session will last approximately one hour and a half.

All of the information regarding you will be kept confidential and no information will be released or published by the researchers that would identify you. The memories discussed during the session will be tape-recorded. All information will be coded and stored separately from your identification. The researcher will not discuss the information from the session with anyone but you. However, you may share your experience with whomever you choose after the study is completed. You may withdraw from the project at any time and you may refrain from participating in any activities asked of you during the one-hour and a half session.

You will be compensated 10 dollars for your participation in this study.

Please do not hesitate to ask any questions regarding this study. You may direct your inquiries to Amanda Beaman at the Centre for Research in Human Development, Concordia University at 848-2258.

Thank you for your participation,

Sincerely,

Dolores Pushkar Ph.D.
Michael Conway Ph.D.

Participant Code_____

CONSENT

I acknowledge that the research procedures described above have been explained to me, and that any questions I have asked have been answered to my satisfaction.

I have been given the names and phone numbers of the researchers involved in this project who will be able to discuss any concerns or questions I may have about this project.

I hereby consent to participate in the above project.

X_____

Name (Please Print) Signature Date

In signing below, I acknowledge that I have described the project to the best of my abilities, and the participant who signed above has agreed willingly to take part in the project.

X_____

Student Researcher Signature Date

If you would like a summary of the general results please print your postal address below (and your e-mail address if you have one) and they will be mailed to you.

Phone Script for Outgoing Calls & History Questionnaire

Interviewer: Date: Participant Code:

Source:_____

Phone Script for Outgoing Calls

Hi! May I please speak to _____? _____

If not available:

My name is _____ _____ and I am calling from the Psychology Department at Concordia University. _____?_____ indicated that they were interested in participating in some research we are conducting. Do you know when the best time to reach him/her would be? *If they are interested and want to know about the study tell them the brief details about each one.*

If available (or speaking to the person who originally called in):

My name is _____ and I'm calling from the Psychology Department at Concordia University. We are contacting you because you expressed some interest in our research studies.

Right now we are conducting a study concerning how people's memories help them across the lifespan. The study lasts about 1 hour and a half. Do you think you would be interested in coming to the Loyola campus at a convenient time for you?

If they answer "NO" then ask them: I understand that you are unavailable for this study but would it be okay if we call you back at a later time for another study? If they still aren't interested thank them for their time and make a note not to call them again.

If yes then proceed to screening:

Before discussing the study, I would like to ask you a few brief questions.

Demographics

Name:_____
Phone #:_____ Date of Birth:_____
Gender: (please circle) M F
Type of Residence: Single Family Home__ Apartment/Condo__ Senior's Residence__

Language

Place of Birth:_____
Languages Spoken:_____ Written:_____
Primary Language (Language of choice):_____

Education

Level of formal education completed:_____
Previous/Current Primary Occupation (including homemaker)_____

Medical History

- Do you have right now, or have you had in the past:

  Trouble Hearing? NO__ YES__

  If Yes, Do you use a hearing aid? Left__ Right__

- How would you rate your overall health at the present time?

  Very Good___ Fair___ Poor___

- Compared to 5 years ago, is your health?

  Better___ About the Same___ Worse___

- Have you been seriously ill or hospitalized in the past 6 months? YES__ NO__

  If yes, with what?_____

- Are you currently taking any medications? YES___ NO___

  If yes, for what?_____

- How much do your health problems stand in the way of things you would like to do?

  Not at all___ A little___ A great deal___

- Do you have, or have you had in the past:

  Stroke YES___ NO___

  If yes, how long ago?
  High Blood Pressure YES___ NO___

If yes, is it controlled?

Serious Illness (e.g. liver disease)	YES___	NO____
Neurological Disorders	YES___	NO____
Depression	YES___	NO____

If they sound inappropriate for the study you can say:

OK, thank you for your patience.

The questions you answered will be very helpful to us. Would you mind if we contacted you at a later date if we need participants to come into Concordia for the second part of the study?

If they sound appropriate for this study you should now set an appointment.

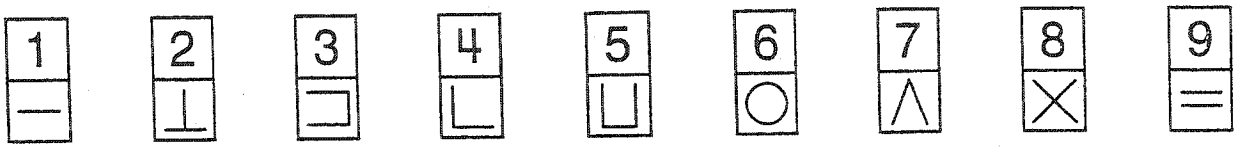
Thank you for your patience.

How soon are you available to come in?

We generally test on ? *(Lindsay and Sarah's schedules)*

Take the appointment and ask them if they need directions. Be thorough with the directions.

Thank you for your participation and we look forward to seeing you on (REPEAT DATE). We will call you the day before to confirm the appointment. If you have any other questions or you need to reach us, you can call 848-2258. Anyone who answers can help you. Thanks for your time and have a wonderful day.



Sample Items

2	1	3	7	2	4	8	2	1	3	2	1	4	2	3	5	2	3	1	4

5	6	3	1	4	1	5	4	2	7	6	3	5	7	2	8	5	4	6	3

7	2	8	1	9	5	8	4	7	3	6	2	5	1	9	2	8	3	7	4

6	5	9	4	8	3	7	2	6	1	5	4	6	3	7	9	2	8	1	7

9	4	6	8	5	9	7	1	8	5	2	9	4	8	6	3	7	9	8	6

2	7	3	6	5	1	9	8	4	5	7	3	1	4	8	7	9	1	4	5

7	1	8	2	9	3	6	7	2	8	5	2	3	1	4	8	4	2	7	6

RED	BLUE	GREEN	RED	BLUE
GREEN	GREEN	RED	BLUE	GREEN
BLUE	RED	BLUE	GREEN	RED
GREEN	BLUE	RED	RED	BLUE
RED	RED	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	RED
RED	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	RED	GREEN	RED
GREEN	RED	BLUE	RED	BLUE
BLUE	GREEN	GREEN	BLUE	GREEN
GREEN	RED	BLUE	RED	RED
RED	BLUE	RED	GREEN	BLUE
GREEN	RED	BLUE	RED	GREEN
BLUE	BLUE	RED	GREEN	RED
RED	GREEN	GREEN	BLUE	BLUE
BLUE	BLUE	RED	GREEN	RED
RED	GREEN	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	BLUE
RED	BLUE	RED	GREEN	RED
GREEN	RED	GREEN	BLUE	GREEN

ALPHA SPAN TEST

No. Words: _____ No. _____

I will read you several lists of words, one at a time. After I have read a list, I would like you to repeat back the words in alphabetical order. I'll start off with a very short list and then I'll gradually make it more difficult by using longer and longer lists [Note: when they fail on one list, go to the other of this length - quit if they fail both of them]. [REPEAT instructions !!]

list 1: edge bag

(2) 2: leg cup

[Ok good, now I'll say 3 words]

list 1: earth cake girl

(3) 2: wife gate bone

[Ok good, now I'll say 4 words]

list 1: plant group shop egg

(4) 2: kiss box tree war

[Ok good, now I'll say 5 words]

list 1: arm lake pen horse voice

(5) 2: fruit class hat pick stone

[Ok good, now I'll say 6 words]

list 1: milk hall queen stick rose bed

(6) 2: men truck bone cook knee ice

[Ok good, now I'll say 7 words]

list 1: oak street king cloud dog wine rock

(7) 2: wave oil hand storm act road coat

[Ok good, now I'll say 8 words]

list 1: eye flag grain boy snow park watch moon

(8) 2: date cap year tail smoke glass wheel feet

Instructions for the Cued Recall Task

1. Before the participant arrives make sure the cue cards are in the correct order. There are numbers on the back of each card and the practice cue has "practice" written on the back. Also ensure that the tape recorder is ready to go.

2. After the participant is seated you can sit across from them at the table and explain what you are about to do and what is expected of them:

I am going to present some words to you on these cue cards and I would like for you to think of a specific memory as quickly as possible in response to the cue. You will have a maximum of 60 seconds to begin your response, and then you can take a couple minutes to describe the memory to me. If you can't think of a memory we will move onto the next cue. I would like you to focus on memories from the last third of your life, avoiding very recent memories (i.e. approximately the last two years). So, since you were born in ____ you should focus on memories of events from ? to ?.

A specific memory is one that occurred on a particular day, at a particular time, in a particular place. For example, in response to the word LEISURE a specific memory would be "I remember one Sunday morning in 1986 I won a bridge tournament at the YWCA". A general memory would sound like: "When I was 50 I used to play bridge". Just try your best, you may not come up with a specific memory for each cue word. I will present a practice cue and then we will go through 10 more cues. While this session will be taped, anything you say is strictly confidential, and there will not be any identification on the tape indicating that it is you speaking. Do you have any questions?

3. Turn the tape recorder on. (HAVE YOU TESTED IT TO MAKE SURE IT IS WORKING?)

4. You may now present the practice cue (Freedom) to ensure the task is understood.

    Do you have any questions before we begin the task?

5. After the practice cue, start with the real cues. Before EACH cue REITERATE the instruction that you would like for them to think of a SPECIFIC memory. Remember to time the responses. Participants have 60 seconds to respond to each cue. Once they have responded they will not be timed but you should try to limit the amount of time you spend on each cue. If they haven't thought of a memory in time they receive 60 seconds as a score. If participants respond with a general memory (i.e. "On Sundays I used to go to the beach"), use the following prompts:

ONLY ask any of these four questions depending on the information that is missing. If the respondent gives general memories in response to more than two cues, DO NOT prompt them for the remaining cues as it may make them self-conscious.

1. **Do you remember a specific instance when.... 2. Do you remember what time of day**
3. **Do you remember what year it was that you ...4. Do you remember the specific placewhere ....**

Instructions for MEPS Task

1. If this participant has been designated to the primed (P) condition, you should have already conducted the AMS and the cued recall task. If they are participating in the unprimed (U) condition, you will conduct the AMS and the cued recall task after this one.

2. Make sure the tape recorder is ready. (DID YOU TEST IT?)

3. Before giving the practice scenario, explain SLOWLY to the participant what is expected of them:

I am going to read aloud a story where you are the main character. You will be given a copy of the story in order to read along with me. Only the beginning and the end of the story are given, and it is your job to describe the ideal strategy in terms of the actions you would take to get from the beginning to the end. You should take a few minutes to think about your actions and then tell me your answer. While you are thinking about your answer, I would like you to pay attention to the thoughts that come to mind. We will practice this task with one story, and then we will go through 4 more stories.

Do you have any questions?

4. **We will now go through the practice story to make sure you understand.** Give them the story.

You came home after shopping and realized that you had lost your watch. You were very upset about it. The story ends with you finding your watch and feeling good about it. The story begins at the point where you realized that you had lost your watch.

Can you think about, and then tell me the actions you would take to get from the beginning of the story to the end of the story? Remember to try to pay attention to the thoughts that come to mind when you are thinking about your answer.

.....

What were the thoughts that came to mind while you were thinking about your response?

5. Press record on the tape recorder. **I will now read the rest of the stories.**

6. Give them the story. ***You had just moved into a new apartment and didn't know anyone. You wanted to have friends in your new community. The story ends with you having many good friends and feeling at home in your new community. The story begins at the point where you are in your apartment immediately after arriving to the community.***

Can you think about, and then tell me the actions you would take to get from the beginning of the story to the end of the story?
Remember to try to pay attention to the thoughts that come to mind when you are thinking about your answer.
.....
What were the thoughts that came to mind while you were thinking about your response?

7. Give them the story. ***One day you were standing around with some other people when one of them said something very nasty to you. You got very upset. You decided you needed to resolve the situation. The story ends with you feeling better. The story begins at the point where you decide to resolve the situation.***

Can think about, and then tell me the actions you would take to get from the beginning of the story to the end of the story?
Remember to try to pay attention to the thoughts that come to mind when you are thinking about your answer.
.....
What were the thoughts that came to mind while you were thinking about your response?

8. Give them the story. ***You are having trouble getting along with one of the other volunteers where you work. You are very unhappy about this. The story ends with your peer liking you. The story begins at the point where you aren't getting along with the volunteer.***

Can you think about, and then tell me the actions you would take to get from the beginning of the story to the end of the story?

Remember to try to pay attention to the thoughts that come to mind when you are thinking about your answer.

.....

What were the thoughts that came to mind while you were thinking about your response?

9. Give them the story. ***You noticed that your friends seemed to be avoiding you. You wanted to have friends and be liked. The story ends when your friends like you again. The story begins at the point where you first notice that your friends are avoiding you.***

Can you think about, and then tell me the actions you would take to get from the beginning of the story to the end of the story?
Remember to try to pay attention to the thoughts that come to mind when you are thinking about your answer.

.....

What were the thoughts that came to mind while you were thinking about your response?

10. Label the tape with the participant code

Participant Code_____

Personal Relevance Questionnaire

This questionnaire contains four questions with respect to the story task you just completed. Please rate on a scale of 1 (totally irrelevant) to 5 (very relevant), how PERSONALLY relevant the stories were to you. You may consult the story again if you need to. Circle the best answer.

1. How relevant was the story regarding moving to a new community to you?

1	2	3	4	5
Totally Irrelevant	Fairly Irrelevant	Neutral	Fairly Relevant	Very Relevant

2. How relevant was the story regarding nasty remarks to you?

1	2	3	4	5
Totally Irrelevant	Fairly Irrelevant	Neutral	Fairly Relevant	Very Relevant

3. How relevant was the story regarding getting along with the other volunteer to you?

1	2	3	4	5
Totally Irrelevant	Fairly Irrelevant	Neutral	Fairly Relevant	Very Relevant

4. How relevant was the story regarding friends avoiding you to you?

1	2	3	4	5
Totally Irrelevant	Fairly Irrelevant	Neutral	Fairly Relevant	Very Relevant

SPSI-R

Below are some ways that you might think, feel, and act when faced with PROBLEMS in everyday living. We ar not talking about the common hassles and pressures that you handle successfully every day. In this questionnaire, a problem is something important in your life that bothers you a lot but you don't immediately know how to make it better or stop it from bothering you so much. The problem could be something about yourself (such as your thoughts, feelings, behaviour, appearance, or health), your relationships with other people (such as your family, friends, teachers, or boss), or your environment and the things that you own (such as your house, car, property, money). Please read each statement carefully and circle one of the numbers (0 tp 4) below which best shows how much the statement is true of you. See yourself as you usually think, feel, and act when you are faced with important problems in your life these days.

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
1. I spend too much time worrying about my problems instead of trying to solve them.	0	1	2	3	4
2. I feel threatened and afraid when I have an important problem to solve.	0	1	2	3	4
3. When making decisions, I do not evaluate all my options carefully enough.	0	1	2	3	4
4. When I have a decision to make, I fail to consider the effects that each option is likely to have on the well-being of other people.	0	1	2	3	4
5. When I am trying to solve a problem, I often think of different solutions and then try to combine some of them to make a better solution	0	1	2	3	4
6. I feel nervous and unsure of myself when I have an important decision to make.	0	1	2	3	4
7. When my first efforts to solve a problem fail, I know if I persist and do not give up too easily, I will be able to eventually find a good solution	0	1	2	3	4
8. When I am attempting to solve a problem, I act on the first idea that occurs to me.	0	1	2	3	4
9. Whenever I have a problem, I believe that it can be solved.	0	1	2	3	4
10. I wait to see if a problem will resolve itself first, before trying to solve it myself.	0	1	2	3	4
11. When I have a problem to solve, one of the things I do is analyze the situation and try to identify what obstacles are keeping me from getting what I want.	0	1	2	3	4

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
12. When my first efforts to solve a problem fail, I get very frustrated.	0	1	2	3	4
13. When I am faced with a difficult problem, I doubt that I will be able to solve it on my own no matter how hard I try.	0	1	2	3	4
14. When a problem occurs in my life, I put off trying to solve it for as long as possible.	0	1	2	3	4
15. After carrying out a solution to a problem, I do not take the time to evaluate all of the results carefully.	0	1	2	3	4
16. I go out of my way to avoid having to deal with problems in my life.	0	1	2	3	4
17. Difficult problems make me very upset.	0	1	2	3	4
18. When I have a decision to make, I try to predict the positive and negative consequences of each option.	0	1	2	3	4
19. When problems occur in my life, I like to deal with them as soon as possible.	0	1	2	3	4
20. When I am attempting to solve a problem, I try to be creative and think of new or original solutions.	0	1	2	3	4
21. When I am trying to solve a problem, I go with the first good idea that comes to mind.	0	1	2	3	4
22. When I try to think of different possible solutions to a problem, I cannot come up with many ideas.	0	1	2	3	4
23. I prefer to avoid thinking about the problems in my life instead of trying to solve them.	0	1	2	3	4
24. When making decisions, I consider both the immediate consequences and long-term consequences of each option.	0	1	2	3	4
25. After carrying out my solution to a problem, I analyze what went right and what went wrong	0	1	2	3	4

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
26. After carrying out my solution to a problem, I examine my feelings and evaluate how much they have changed for the better.	0	1	2	3	4
27. Before carrying out my solution to a problem, I practice the solution in order to increase my chances of success.	0	1	2	3	4
28. When I am faced with a difficult problem, I believe I will be able to solve it on my own if I try hard enough.	0	1	2	3	4
29. When I have a problem to solve, one of the first things I do is try to get as many facts about the problem as possible.	0	1	2	3	4
30. I put off solving problems until it is too late to do anything about them.	0	1	2	3	4
31. I spend more time avoiding my problems than solving them.	0	1	2	3	4
32. When I am trying to solve a problem, I get so upset that I cannot think clearly.	0	1	2	3	4
33. Before I try to solve a problem, I set a specific goal so that I know exactly what I want to accomplish.	0	1	2	3	4
34. When I have a decision to make, I do not take the time to consider the pros and cons of each option.	0	1	2	3	4
35. When the outcome of my solution to a problem is not satisfactory, I try to find out what went wrong and then I try again.	0	1	2	3	4
36. I hate having to solve the problems that occur in my life.	0	1	2	3	4
37. After carrying out a solution to a problem, I try to evaluate as carefully as possible how much the situation has changed for the better.	0	1	2	3	4
38. When I have a problem, I try to see it as a challenge or opportunity to benefit in some positive way from having a problem.	0	1	2	3	4

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
39. When I am trying to solve a problem, I think of as many options as possible until I cannot come up with any more ideas.	0	1	2	3	4
40. When I have a decision to make, I weigh the consequences of each option and compare them to each other.	0	1	2	3	4
41. I become depressed and immobilized when I have an important problem to solve.	0	1	2	3	4
42. When I am faced with a difficult problem, I go to someone else for help in solving it.	0	1	2	3	4
43. When I have a decision to make, I consider the effects that each option is likely to have on my personal feelings.	0	1	2	3	4
44. When I have a problem to solve, I examine what factors or circumstances in my environment might be contributing to the problem.	0	1	2	3	4
45. When making decisions, I go with my "gut feeling" without thinking too much about the consequences of each option.	0	1	2	3	4
46. When making decisions, I use a systematic method for judging and comparing alternatives.	0	1	2	3	4
47. When I am trying to solve a problem, I keep in mind what my goal is at all times.	0	1	2	3	4
48. When I am attempting to solve a problem, I approach it from as many different angles as possible.	0	1	2	3	4
49. When I am having trouble understanding a problem, I try to get more specific and concrete information about the problem to help clarify it.	0	1	2	3	4
50. When my first efforts to solve a problem fail, I get discouraged and depressed.	0	1	2	3	4
51. When a solution that I have carried out does not solve my problem satisfactorily, I do not take the time to examine carefully why it did not work.	0	1	2	3	4
52. I am too impulsive in making decisions.	0	1	2	3	4

Table I

Descriptive Statistics for Dependent and Predictor Variables by Age

	Old		Young	
Variable	**M**	**SD**	**M**	**SD**
Age	69.91	5.59	22.85	1.92
Cogs1 Factor	-.49	.85	.49	.90
Alpha Span	24.65	10.3	28.45	8.98
Stroop Time	116.35	11.97	107.6	14.65
Digit Symbol	44.52	10.44	62.95	14.94
# of Specific Memories (ACT)	5.77	2.31	7.65	1.80
# of General Memories[a] (ACT)	1.36	.55	.78	.68
# of Relevant Means (MEPS)	10.02	3.81	11.0	4.28
SPSI-R Total Score	11.76	2.34	11.32	2.25
Personal Relevance Score	13.77	3.91	13.80	2.86

[a]log of general memories

Table II

Correlations Between all of the Predictor and Dependent Variables (N=80)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1) Age	1.0	.28	.23	-.17	-.50***	-.20	.32	-.63***	.44***	-.43***	-.13	.08	-.02
2) Sex	_	1.0	-.10	-.11	-.11	.07	-.09	.09	.15	.04	-.15	-.06	-.10
3) Education	_	_	1.0	.05	-.07	-.04	.10	-.04	.18	-.04	.20	.02	-.06
4) Health	_	_	_	1.0	.11	-.06	-.06	.27	-.15	.10	.37	.38***	.19
5) Cog 1 Factor	_	_	_	_	1.0	.69***	-.77***	.19	.19	.40***	.19	-.03	-.08
6) Alpha Span	_	_	_	_	_	1.0	-.26	.27	-.01	.29	-.01	-.02	-.11
7) Stroop Time	_	_	_	_	_	_	1.0	-.49***	-.09	-.21	-.09	.12	.08
8) Digit Symbol	_	_	_	_	_	_	_	1.0	-.41	.46***	.23	.10	-.01
9) # General Memories[a] (ACT)	_	_	_	_	_	_	_	_	1.0	-.61***	-.24	-.01	.06
10) # Specific Memories (ACT)	_	_	_	_	_	_	_	_	_	1.0	.43***	-.13	-.05
11) (MEPS) # of Relevant Means	_	_	_	_	_	_	_	_	_	_	1.0	.05	.00
12) SPSI-total	_	_	_	_	_	_	_	_	_	_	_	1.0	.17
13) Priming	_	_	_	_	_	_	_	_	_	_	_	_	1.0

[a] log

*** $p < .005$

Table III

Summary of Hierarchical Regression Analysis for Variables Predicting the Number of Specific Memories Given by Old and Young During the Autobiographical Memory Cued Recall Task

	Old (N = 40)				**Young** (N = 40)			
Variable	**B**	**SEB**	**ß**	**ΔR^2**	**B**	**SEB**	**ß**	**ΔR^2**
Step 1				**.09**				**.28***
Sex	1.12	.89	.22		.67	.53	.19	
Age	-.06	.07	-.15		-.17	.16	-.18	
Health	.54	.72	.13		-.75	.63	-.17	
Education	-.02	.44	-.01		2.86	.82	.57**	
Step 2				**.16***				**.13****
Sex	.54	.85	.10		.70	.49	.19	
Age	-.06	.06	-.15		-.14	.14	-.15	
Health	.21	.68	.05		-.48	.58	-.11	
Education	.05	.41	.02		2.59	.76	.52**	
Experimenter Effects [a]	2.12	.81	.42*		1.34	.48	.37**	
Step 3				**.06**				**.00**
Sex	.09	.86	.02		.70	.52	.19	
Age	-.05	.06	-.11		-.14	.15	-.15	
Health	.27	.66	.06		-.48	.61	-.11	
Education	-.01	.40	-.01		2.59	.78	.52**	
Experimenter Effects [a]	2.26	.79	.44**		1.35	.51	.37*	
Cogs 1 Factor	.74	.42	.28		-.01	.30	-.01	

* $p < .05$ ** $p < .01$ *** $p < .005$ ****p<.001

[a] all experimenters were dummy coded in reference to experimenter 1. The experimenter variable includes only the effects pertinent to either the old or young group

Table IV

Summary of Hierarchical Regression Analysis for Variables Predicting the Log of the Number of General Memories Given During the Autobiographical Memory Cued Recall Task in Old and Young

	Old (N=40)				**Young** (N=40)			
Variable	**B**	**SEB**	**ß**	**ΔR^2**	**B**	**SEB**	**ß**	**ΔR^2**
Step 1				**.21**				**.17**
Sex	-.02	.19	-.02		.14	.22	.10	
Age	.02	.01	.21		.04	.06	.11	
Health	-.15	.16	-.15		.08	.26	.05	
Education	.23	.10	.37*		-.83	.34	-.44*	
Step 2				**.19****				**.07**
Sex	.13	.18	.11		.13	.21	.09	
Age	.02	.01	.21		.03	.06	.09	
Health	-.06	.14	-.06		.01	.26	.00	
Education	.21	.09	.34*		-.76	.33	-.40*	
Experimenter Effects [a]	-.56	.17	-.46**		-.36	.21	-.26	
Step 3				**.04**				**.01**
Sex	.21	.18	.18		.18	.23	.13	
Age	.02	.01	.18		.03	.06	.07	
Health	-.07	.14	-.07		.05	.26	.03	
Education	.22	.08	.36*		-.72	.34	-.38*	
Experimenter Effects [a]	-.58	.17	-.48**		-.31	.22	-.29	
Cogs 1 Factor	-.13	.09	-.21		-.09	.13	-.12	

* $p < .05$ ** $p < .01$ *** $p < .005$ ****p < .001

[a] all experimenters were dummy coded in reference to experimenter 1. The experimenter variable includes only the effects of the pertinent to either the old or young group

Table V

Hierarchical Regression Analysis for Variables Predicting Number of Relevant Means (N=80)

	Old (N=40)				**Young** (N=40)			
Variable	**B**	**SEB**	**ß**	**ΔR^2**	**B**	**SEB**	**ß**	**ΔR^2**
Step 1				**.29***				**.12**
Sex	.19	1.29	.02		-1.0	1.41	-.12	
Age	-.09	.10	-.13		-.05	.41	-.02	
Health	3.13	1.05	.44**		2.07	1.66	.204	
Education	1.08	.64	.25		2.61	2.16	.22	
Step 2				**.01**				**.01**
Sex	-.11	1.34	-.01		-1.01	1.42	-.12	
Age	-.09	.10	-.13		-.07	.41	-.03	
Health	2.97	1.07	.42**		1.90	1.70	.19	
Education	1.11	.65	.25		2.78	2.20	.23	
Experimenter Effects [a]	1.05	1.27	.12		-.85	1.40	-.10	
Step 3				**.00**				**.01**
Sex	-.33	1.41	-.04		-1.27	1.51	-.15	
Age	-.08	.10	-.12		-.04	.42	-.02	
Health	3.00	1.08	.42**		1.68	1.76	.16	
Education	1.09	.65	.25		2.54	2.25	.21	
Experimenter Effects [a]	1.11	1.29	.13		-1.09	1.47	-.13	
Cogs 1 Factor	.37	.69	.08		.51	.88	.10	
Step 4				**.20***				**.20***
Sex	-.71	1.26	-.08		-2.14	1.45	-.25	
Age	-.06	.09	-.09		.15	.39	.07	
Health	2.85	.94	.40**		2.33	1.61	.23	
Education	.78	.63	.18		-1.11	2.36	-.09	
Experimenter Effects [a]	-.22	1.36	-.03		-2.98	1.46	-.35	
Cogs 1 Factor	-.14	.64	-.03		.48	.81	.10	
# of Specific Memories	.95	.26	.57**		1.32	.52	.56*	
# of General Memories	1.38	1.24	.20		-.32	1.20	-.05	

$p < .05$ ** $p < .01$ [a] all experimenters were dummy coded in reference to experimenter 1. The experimenter variable includes only the effects pertinent to either the old or young group.

Table VI

Summary of Hierarchical Regression Analysis for Variables Predicting SPSI-R Total Score (N=80)

SPSI-R Total Score				
Variable	**B**	**SEB**	**ß**	**ΔR^2**
Step 1				**.18****
Sex	-.32	.51	-.07	
Age	.02	.01	.18	
Health	1.95	.50	.41****	
Education	-.15	.37	-.04	
Step 2				**.01**
Sex	-.41	.55	-.09	
Age	.02	.01	.21	
Health	1.94	.51	.41****	
Education	.-.20	.38	-.06	
Priming Condition	-.34	.49	-.08	
Cognitive Factor	.07	.30	.03	
Step 3				**.02**
Sex	-.26	.57	-.06	
Age	.02	.01	.17	
Health	1.93	.51	.41****	
Education	-.11	.39	-.03	
Priming Condition	-.26	.50	-.06	
Cognitive Factor	.11	.30	.05	
# of Specific Memories (ACT)	-.17	.14	-.17	
# of General Memories (ACT)	-.30	.49	-.09	

* $p < .05$ ** $p < .01$ *** $p < .005$ **** $p < .001$