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Memory for Weather Information in Younger and Older Adults: Tests of Verbatim and Gist Memory

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Abstract

Background/Study Context: Memory for specific, verbatim details tends to decline with age, and reliance on gist-based information increases. However, instructions that direct attention toward certain types of information can benefit memory accuracy for that information. Previous work has examined gist-based and verbatim memory for images, but little work has utilized stimuli that participants may study in their daily lives, such as a weather forecast.

Methods: The current study examined how younger and older adults recall both general, gist-based information and specific, verbatim details of a weather forecast, and whether differences in the task instructions to focus on gist-based information may affect recall. Two study-test cycles with different forecasts were used to determine whether experience with the task may affect performance.

Results: While there was no effect of additional gist-based instructions on recall of gist-based information, participants who received the additional instructions recalled fewer verbatim details than those who did not. There were no age-related differences in recall of the gist of the forecast, but younger adults correctly recalled more verbatim details than older adults did.

Conclusion: Environmental support and use of gist-based processing can allow both younger and older adults to remember information that can be useful in their daily lives. The current study informs future research on prospective memory and memory for everyday information.

Keywords

memory; cognition; learning; cognitive aging; healthy aging

Though older adults tend to exhibit episodic memory impairments (Nilsson, 2003; Zacks & Hasher, 2006), they often maintain the ability to remember certain types of information, including semantic and procedural details (Nilsson, 2003), prior knowledge (Arbuckle, Cooney, Milne, & Melchior, 1994), and information with practical importance (Hess, 2005). There are types of information that both younger and older adults may encounter weekly, or even daily, that they direct attention to but may not be able (or even attempt) to completely remember. We commonly encounter weather forecasts, and the information in these forecasts can be important to remember given our goals. For example, in areas where the

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weather can be quite variable depending on the season, it may be important to remember detailed information about the forecast, for example, “will I need to bring my plants inside to avoid the 30-degree Fahrenheit temperatures on Thursday night?” Sometimes, however, we seek to only commit a general idea about the forecast to memory: “I should bring my umbrella on Wednesday,” or “we should plan that outdoor picnic for Sunday.” Weather forecasts are frequently encountered in real life, and we often have goals to remember both the gist-based and detailed information about those forecasts. However, the information contained in these forecasts may be easily confusable, as many days have similar patterns of weather and the link between the day and its forecast is arbitrary. When the forecast changes or when we view the weather for a new city, our knowledge requires updating, which can be difficult when remembering information that is subject to interference (Kane & Engle, 2000; Lustig, May, & Hasher, 2001). People also frequently discuss the weather, making it a topic of social interest. The current study utilizes a novel in-lab task to examine how younger and older adults remember weather information presented in a seven-day forecast.

Even if our goals are to remember as much as we can about a forecast, it may not always be easy, or even necessary, to remember all of the information presented. Therefore, we may alter our strategies and seek to remember only the general idea of the forecast. As we age, we are more likely to have trouble recalling specific, verbatim details than the general idea – or the “gist” – of a given set of information (Reyna & Brainerd, 1995). Gist-based and verbatim-based processing can be considered to be a hierarchy, such that gist-based knowledge is a higher-level of abstraction and verbatim-based knowledge is a lower level of abstraction, rather than two distinct categories (Craik, 2002; Luo & Craik, 2008). Koutstaal (2006) has provided evidence for “flexible remembering,” in which people switch between more-abstract gist recall and less-abstract verbatim recall, a process that may be helpful when remembering weather information, though younger adults are better at this type of switching than older adults (see also Koutstaal & Schacter, 1997).

While people do rely on verbatim details for later recall in several situations, previous studies suggest that older adults are more likely to accurately recall gist-based information than verbatim information. Castel (2005), for example, showed younger and older adults grocery items that were either overpriced, underpriced, or priced at market value. Participants were then asked to recall the exact price of each item (the verbatim details), and state whether each item was overpriced, underpriced, or market value (the gist). The older adults were just as likely as the younger adults to remember gist-based information (i.e., the milk was overpriced), but the older adults were less likely to recall the verbatim details (i.e., the milk cost $15.99). In another study, when younger and older adults were shown two comparable grocery items (i.e., two different brands of jam), both age groups were about equally as likely to recall which item is the better buy (the gist) when they are presented consecutively, while younger adults outperform older adults when different items are presented in between the two groceries to be compared (Flores, Hargis, McGillivray, Friedman, & Castel, 2016). Older adults also use gist memory when relaying information or stories to other people (Adams, Smith, Nyquist, & Perlmutter, 1997), and when remembering the spatial location of important items (Siegel & Castel, 2018). Further research with younger adult participants has assessed how gist-based and verbatim information is recalled and forgotten using pictorial stimuli (Ahmad, Moscovitch, &

Hockley, 2017; Andermane & Bowers, 2015; see also Yoder & Elias, 1987), but not using stimuli that mirrors something that a participant may actually want to learn in their daily life, such as a weather forecast.

Memory performance is often enhanced by successful task experience, especially for older adults (Geraci & Miller, 2013; Ratcliff, Thapar, & McKoon, 2006). However, participants of all ages are susceptible to interference effects in memory from a prior task or list of items. The detrimental effects of interference on memory are often greater among older adults than younger adults (Ebert & Anderson, 2009), as it is thought that the ability to inhibit false or irrelevant information declines with age (Hartman & Hasher, 1991). When given a large amount of information and asked to remember it, such as in a weather forecast for several days, participants may rely upon attentional control mechanisms that have been shown to decline in aging (Milham et al., 2002; Spieler, Balota, & Faust, 1996). There is also evidence that the ability to remember information about frequently-encountered stimuli can change across the lifespan, as older adults are more likely to suffer from deficits in episodic (Loaiza, Rhodes, & Anglin, 2015) and associative memory (Berry, Williams, Usubalieva, & Kilb, 2013; Naveh-Benjamin, 2000). Though they may face potential deficits in memory for interfering information and for source information (Brown, Jones, & Davis, 1995; Ferguson, Hashtroudi, & Johnson, 1992; McIntyre & Craik, 1987), older adults in the current study may benefit from the amount of environmental support provided at encoding by the detailed nature of the forecast display, and thus recall information more accurately than they otherwise would (see Figure 1; Craik, 1983; Craik & Bialystok, 2006; cf. Park & Shaw, 1992).

In addition to the type of information being recalled and the effects of interference, memory performance across the lifespan can also be affected by what the participant expects to encounter on a later test. Loftus and Kallman (1979) found that when participants were told before the study phase to identify specific details that would help them recognize pictures on a later test, they were better able to recognize these same images than people who did not identify specific details. These participants were prompted to remember specific details, which positively influenced whether they were able to retrieve the gist (or perhaps more detailed information) about a particular image at test. In the educational domain, many students base their studying on what type of test they expect. For example, students allocate more time studying information that is associated with higher point values (Dunlosky & Thiede, 1998) and students perform better when they know the format in which they will be tested (Thiede, Wiley, & Griffin, 2011). While older adults may not use effective memory strategies spontaneously, they recognize the effectiveness of such strategies after being told about them, providing more evidence for the possible benefit of task instructions, even if older adults do not implement those strategies as successfully as younger adults do (Flegal & Lustig, 2016; Frankenmolen et al., 2017; Hertzog, Price, & Dunlosky, 2012). Instructing participants that they will be tested on the gist of the forecast may help them perform better on a later test by directing their attention toward the information they will be asked to recall later. In the current study, we presented participants with either what we term a “standard” memory instruction (in which they are asked to “remember as much information” as they can), or a “standard plus gist” memory instruction (in which they are asked to remember as much information as they can, and also to keep in mind that they will later be tested on the

best day(s) to go on a picnic and bring an umbrella). Both groups are asked the same questions during the test, including questions about the picnic and umbrella, but the standard instructions emphasize *quantity* of information remembered while allowing participants to pursue their own study strategies, while the standard plus gist instructions provide participants with more information about the test they will soon encounter.

Prior work suggests that younger adults will recall verbatim details more accurately than older adults will (Castel, 2005), but that there will be less of an age-related difference between younger and older adults' accuracy in recalling gist-based information. We also predict that the additional instructions to remember certain gist-based information will promote gist-based recall more than the standard instructions, as the additional instructions will provide a tool to help older (and possibly younger) adults focus their attention on information that will be tested. However, older participants who received the standard plus gist instructions may not direct as much attention toward recalling exact details, potentially leading to a decline in recall of verbatim details among those who receive the extra gist-based instruction.

The novel paradigm used in the current study allows for the presentation of information that participants may encounter in their daily lives, and is often difficult to remember or easy to confuse, such as percentages of precipitation and high temperatures. Based on previous work that found that memory for verbatim details declines as people age (Reyna & Brainerd, 1995) while memory for the gist does not (Castel, 2005; Koutstaal & Schacter, 1997), we predict that older adults' performance will be comparable to younger adults in recall of gist-based information, but that younger adults will outperform older adults in recalling verbatim information. We also predict that prompting participants to remember certain (gist-based) information will improve later recall of that information, especially for older adults (Loftus & Kallman, 1979).

Method

Participants

Forty-seven undergraduate students (40 females, 7 males, average age = 19.95 years, SD = 1.58 years) from the University of California, Los Angeles and 40 older adults (21 females, 19 males, average age = 67.58 years, SD = 5.11 years) from the surrounding community participated in this study[1]. Younger adults received course credit and older adults were compensated with $10 per hour for their participation. Sample size was based on power analysis: if using an effect size f of .20, which is small to moderate, the power to detect an effect given this design and sample is .96, which is appropriate (Cohen, 1992); sample size is also consistent with similar previous work (e.g., Brown et al., 1995; Koutstaal & Schacter, 1997).

[1]Original data collection treated the between-subjects variable of type of instructions as two different experiments. Because we are primarily interested in gist-based and verbatim recall, we have now collapsed those groups into one experiment.

Materials and Procedure

The materials consisted of two seven-day weather forecasts that included information for each day about high and low temperatures and likelihood of precipitation. The forecast also included the different types of weather that could occur (e.g., partly cloudy), as represented by an image of a sun, a sun with clouds, dark clouds, lightning, or rain, depending on the weather patterns randomly assigned to that day (see Figure 1 for example stimuli). The forecasts were presented in color on a computer screen. The first forecast participants studied always contained two sunny days and three rainy days, while the second forecast presented always contained one sunny day, three rainy days, and one day with lightning. This mix of different types of weather were included to introduce some variability in the forecast, thus making it more representative of a forecast in a city with relatively variable weather. The order in which the different types of weather occurred within each seven-day forecast was randomly assigned.

Participants were given 120 seconds to study the seven-day forecast. All participants were asked to remember as much information about the forecasts as they could. This instruction is referred to as the “standard” memory task instruction. Participants who receive this instruction were thought to be likely to attempt to remember verbatim information, but the instruction does not have any specific information about the upcoming test. Half of participants received further instruction about what they should expect on the test. In addition to the standard instructions, these participants were also told to pay attention to which days would be best to have a picnic and which days they should bring an umbrella. This group received what we term the “standard plus gist” instructions. After the study phase, all participants were given a test that included cued recall of the forecast details, in which they were asked to write down all of the details they could remember for each day of the week. The test also included gist-based questions to test participants’ memory for which day(s) that week would be best to have a picnic and to bring an umbrella. After the first test, participants repeated this exact study-test process for a second weather forecast. The second study-test cycle was included to determine whether performance might shift with task experience, as strategies and general knowledge about task difficulty and requirements can be improved once one study-test cycle is complete (as has been shown in similar work, e.g., Geraci & Miller, 2013; McGillivray & Castel, 2017; Ratcliff, Thapar, & McKoon, 2006).

Responses to the verbatim memory questions were scored such that a participant was given one point for correctly recalling each of the following: each day’s high temperature, low temperature, likelihood of rain if rain was presented, and whether each day was sunny, cloudy, partly cloudy, rainy, or stormy. Gist and verbatim memory can be considered as ends of a continuum or in a hierarchy rather than two distinct categories (Craik, 2002; Luo & Craik, 2008). Therefore, in the present study, we considered recall of exact temperatures, chance of precipitation, and specific weather patterns to be closer to the verbatim-based level of the hierarchy and therefore combined these items into a composite score for verbatim information. The maximum points a participant could receive for these details totaled 24 for the first forecast and 25 for the second, as a chance of lightning on the second forecast added an additional detail. The scoring was such that if a participant described the image of a sun with clouds as “partly sunny” rather than “partly cloudy,” he or she still received a point.

The tests of gist-based recall were scored separately, such that participants were also given a point for correctly recalling that it would be best to bring an umbrella on days with any chance of rain, and to have a picnic on sunny days. While recalling the day on which to bring an umbrella is certainly a detail, we consider this type of knowledge to be closer to the gist-based level of the hierarchy than the verbatim-based level (as it involves remembering one day of the week, as opposed to a specific number or detail), and thus treat recall of these more general details as relying more on gist-based processing than on verbatim-based processing. If there was more than one correct answer, participants received a point for recalling any of the correct answers. A participant could receive a maximum of five points for this gist-based information in each forecast, as each forecast had a total of five days on which it would be good to have a picnic or to bring an umbrella.

Results

Gist-Based Recall

The percent of correctly recalled gist-based information for younger and older adults who received the standard instructions or the standard plus gist instructions for each test is shown in Figure 2. We expected that both younger and older adults would perform fairly well in recalling gist-based information across the task, and that receiving the additional gist-based instruction would promote recall of gist-based information. In order to determine the effect that instructions had on younger and older adults' abilities to recall the gist of each forecast, we conducted a 2 (Type of instructions: standard, standard + gist) × 2 (Test 1, Test 2) × 2 (Age: younger adults, older adults) mixed-design analysis of variance (ANOVA) on recall of gist-based information. This test revealed that there was no main effect of type of instruction, $F(1, 83) = 0.57$, $p = 0.43$, $\eta^2 = 0.01$. There was no significant three-way interaction, $F(1, 83) = 1.12$, $p = 0.29$, $\eta^2 = .01$; and there was no significant two-way interaction between age and type of instruction, $F(1, 83) = 0.08$, $p = .73$, $\eta^2 < .01$, nor was there a significant two-way interaction between test and age, $F(1, 83) = 0.39$, $p = .54$, $\eta^2 < .01$. The two-way interaction between age and type of instruction was also not significant, $F(1, 83) = 0.84$, $p = .77$, $\eta^2 < .01$. There was no main effect of age, $F(1, 83) = 0.41$, $p = .53$, $\eta^2 = .01$, such that younger and older adults performed equally well in recalling gist-based information across this task.

There was, however, a significant interaction between test and type of instruction, $F(1, 83) = 6.80$, $p = .01$, $\eta^2 = .07$. Follow-up *t*-tests revealed that type of instruction did have a significant effect on performance in Test 1, $t(85) = 2.08$, $p = .04$ ($M = 52.94$, $SD = 24.60$ for those who received the standard instructions; $M = 63.13$, $SD = 21.31$ for those who received the gist + standard instructions), such that those who received the standard instructions were less accurate in their recall of gist-based details in Test 1 than those who received the standard + gist instructions. However, this difference did not reach significance at $p = .04$ after applying Bonferroni corrections for multiple comparisons (corrected alpha = .0125). Type of instruction did not have a significant effect on performance in Test 2, $p = .37$ ($M = 57.78$, $SD = 24.74$ for those who received the standard plus gist instructions; $M = 52.77$, $SD = 24.91$ for those who received the standard instructions). Further, performance across the task (that is, Test 1 compared to Test 2) did improve among those who received only the

standard instructions, $t(50) = 2.65$, $p = .01$, while performance across the task did not change significantly among those who received the standard + gist instructions, $p = .32$.

Verbatim Detail Recall

Participants were also asked to recall as much exact information from the forecasts as they could, including the chance of precipitation, high and low temperatures, and whether each day was sunny, cloudy, partly cloudy, rainy, or stormy. Recall of these items was combined into a composite score that reflects how well the participant did in recalling verbatim-based information overall. We expected that younger adults would outperform older adults overall in recalling verbatim information, and that this effect might be larger if older adults' attention is drawn away from focusing on the verbatim details with the additional gist-based instruction before study.

The percent of correctly recalled verbatim details for younger and older adults with standard and standard plus gist instructions for each test is shown in Figure 3. In order to determine the effect that the type of instructions had on younger and older adults' abilities to recall the verbatim details associated with each forecast, we conducted a 2 (Type of instructions: standard, standard + gist) × 2 (Test 1, Test 2) × 2 (Age: younger adults, older adults) mixed-design ANOVA on recall of verbatim information. This test revealed a significant main effect of type of instruction, $F(1, 83) = 5.41$, $p = .02$, $\eta^2 = .05$, such that those who received the additional instructional prompt that they would be recalling the best days to bring an umbrella or have a picnic correctly recalled a lower percentage of verbatim details ($M = 33.15$, $SD = 12.52$) than those who only received the instruction to remember as much information as they could ($M = 42.00$, $SD = 17.82$). There was also a main effect of age, $F(1,83) = 25.20$, $p < .001$, $\eta^2 = .22$, such that younger adults recalled a higher percentage of verbatim information ($M = 43.12$, $SD = 10.88$) than older adults did ($M = 28.71$, $SD = 15.49$). There was no significant main effect of test, $F(1, 83) = 1.03$, $p = .31$, $\eta^2 = .01$.

There was no significant three-way interaction, $F(1, 83) = 3.02$, $p = .09$, $\eta^2 = .03$, there was no significant two-way interaction between age group and test, $F(1, 83) = 1.91$, $p = .17$, $\eta^2 = .02$, and there was no significant two-way interaction between test and type of instruction, $F(1, 83) = 0.51$, $p = .48$, $\eta^2 = .01$. There was also no significant two-way interaction between age and type of instruction, $F(1, 83) = 0.82$, $p = .37$, $\eta^2 = .01$.

Discussion

While memory tends to decline with age in several domains, older adults may be able to remember gist-based information in certain contexts. The current study examined younger and older adults' abilities to recall gist-based information and verbatim details with a standard memory task instruction ("remember as much information as you can") and a standard plus gist instruction ("remember as much information as you can" and an instruction that they would be tested on the best day(s) to bring an umbrella or have a picnic). Potential age-related differences in recall (e.g., Castel, 2005) were tested in light of previous literature providing evidence that while gist-based memory and detail-oriented memory are thought to be separate entities, older participants especially are better at recalling the big-picture gist than verbatim details (Reyna & Brainerd, 1995). Loftus and

Kallman (1979) found that prompting people to remember specific details about a stimulus promoted later recall. Based on these findings, we sought to determine whether providing additional instructions that participants would be tested on the gist of a weather forecast (stimuli with which participants are likely to be familiar, but have not been used in prior lab-based tasks) would promote gist-based recall, and what effect differences in instruction might have on recall of verbatim information.

We predicted that younger adults would recall verbatim details more accurately than older adults would (Castel, 2005; Craik, 2002), but that there would be a minimal age-related difference between younger and older adults' accuracy in recalling gist-based information, due to older adults' frequent reliance on gist-based processing with age (Koutstaal, 2006; Reyna & Brainerd, 1995. We also predicted that the additional instructions to remember certain gist-based information would promote gist-based recall more than the standard instructions did (as the standard instructions had no mention of umbrellas or picnics), but that older participants who received the standard plus gist instructions may have therefore directed their attention away from verbatim-based information, leading to poorer performance in recall of those exact details.

Gist-Based Recall

As predicted, there was no difference in gist-based recall between younger and older adults (see Castel, 2005). Contrary to our predictions, however, the additional gist-based instruction to participants (i.e., that they would be tested on which days to bring an umbrella or to have a picnic) had little effect on recall of gist-based information. Figures 1 and 2 suggest that when younger adults received the standard plus gist instructions, rather than recalling *more* gist-based information, they seemed to recall *less* verbatim information. This could reflect less efficiency when directed to remember the two forms of information.

Interestingly, those who received the standard instructions performed more accurately in recalling gist-based details on Test 2 than on Test 1, although this pattern did not emerge among those who received standard plus gist-based instructions. The pattern of results in the current study suggest that those who did not receive the gist-based instructions may have learned from task experience (rather than instructions) what to expect from the test presented after the first forecast, and were therefore able to more accurately encode the gist-based information presented on the second forecast. Those who received the standard plus gist-based instruction knew from the beginning of the task that they would be tested on the gist-based information, and did not improve in recalling gist-based information across the task. It may be that the additional component of the instructions (i.e., to remember gist-based information, in addition to the standard instructions) made the task more difficult for participants by suggesting that they focus on two different types of information.

Verbatim Detail Recall

We predicted that younger adults would correctly remember more verbatim details than older adults, due to the general increased reliance on gist-based processing and decreased reliance on verbatim-based processing in older age (Koutstaal, 2006; Reyna & Brainerd, 1995). Interestingly, participants who received the additional prompt to remember which

days are best to bring an umbrella and have a picnic correctly recalled fewer verbatim details than those who only received the standard instruction to remember as much as they could about the forecast. This detriment may reflect participants' allocation of their attention toward the gist-based information based on the instructions, limiting the time and resources they could spend studying the details of the forecast and therefore detrimentally affecting recall of details. While we did not ask participants to report on the strategies they used to remember the forecast, perhaps participants who received the gist plus standard instructions spent some time reviewing the forecast to decide on which day they would want to have a picnic, and did not also attempt (or did not have the time) to remember as much as they could of the high and low temperatures, likelihood of precipitation, and other details.

Instructions

There was not convincing evidence for a trade-off between the two suggested types of studying, as gist-based recall was not more accurate among those who received the extra instructions than those who received standard memory instructions to remember as much as they could. Therefore, the additional instructions did not seem to be particularly helpful to participants (Test 1 recall of gist-based information was not significantly better among those who received the extra instructions than those who did not after the correction for multiple comparisons was applied, $p = .04$). It is also possible that the gist-based instruction was not distinctive enough to encourage participants to remember the gist of the forecast, as there was no specific incentive to devote attention to the gist-based information. It may be that a different pattern of results would be obtained if the upcoming weather had stronger consequential information (such as severe weather, or if one's house has a leaky roof and rain is in the forecast). The maximum gist-based score was also only five points; perhaps this did not provide participants enough opportunities to demonstrate their memory for the gist of the forecast, or perhaps this small number made it difficult to find significant differences in memory for gist-based information.

The manner in which people expect to be tested can influence encoding operations. For example, there is a large body of research showing that when students expect to be tested one way (recognition) and are actually tested another (free recall), they perform less accurately than if they are tested the way they had expected (e.g., Balota & Neely, 1980; Middlebrooks, Murayama, & Castel, 2017; Thiede et al., 2011). Including the additional instructions to participants that they would need to remember the gist and then testing them on the gist *and* verbatim details may have had a similar effect on verbatim recall in the current study.

Conclusion

There were no differences between younger and older adults' abilities to recall the gist, but younger adults recalled more verbatim details than older adults, regardless of what type of instructions they received. It is possible that age-related deficits in memory for source information (Brown et al., 1995; Ferguson et al., 1992; McIntyre & Craik, 1987) affected recall in the current study, as occasionally older adults reported a particular day's forecast details on another, incorrect day (e.g., Monday's high temperature was reported on

Wednesday). Source errors such as these could have an impact in daily life if one misremembers today's weather as tomorrow's, and if the two days are predicted to have meaningfully different weather. It is possible that source memory deficits contribute to older adults' poorer performance than younger adults in recalling verbatim details in the current study, especially due to the large amount of similar numerical information presented on the screen simultaneously.

It does not appear that prompting participants to remember the gist improves their memory for either the gist or the verbatim details of a weather forecast, regardless of previous practice or experience. The ability to switch between gist recall and verbatim recall is a critical function (Koutstaal, 2006) which participants may utilize in this experiment to study both gist-based and verbatim information. It may be that gist-based processing is a default mode for older adults, especially when they are presented with large amounts of information to remember.

One reason older adults may be able to remember weather information in a gist-based manner is that this information can be incorporated with schemas about weather that have been developed over one's life, as knowledge or experience in a given domain can improve memory for information relevant to that domain (see Hambrick & Engle, 2002). In the present study, both younger and older adults could have used their prior knowledge and experience about weather information when studying the forecasts. While people from both age groups are likely to have experience looking at weather forecasts, older adults may benefit from more years of experience with these reports. At the end of this task, we asked younger and older participants how often they check the weather forecast. The majority of participants reported checking the weather once per day (37% of younger adults and 45% of older adults) or a few times per week (36% of younger adults and 30% of older adults). Schematic support (Craik & Bosman, 1992) and environmental support (Craik, 1983; Craik & Bialystok, 2006) can benefit memory, and the present study shows this may be especially true for gist-based memory, as older adults performed just as accurately as the younger adults in recalling gist-based information.

In a practical sense, memory for the gist of a forecast could be related to prospective memory and future planning. Having a general idea that it will be rainy and windy this month but not next month can help when planning an outdoor party, and remembering that one should take a new medication every morning rather than every evening can assist with healthcare compliance. This novel in-lab memory task is more applicable to real-world experiences than traditional studies that ask participants to remember a list of words or animals (Andermane & Bowers, 2015). Both gist and verbatim memory for a weather forecast have important implications for safety (e.g., I won't swim laps outdoors on Wednesday since there is a chance of lightening), for social reasons (e.g., the snowstorm will prevent me from visiting my family), and even minor nuisances (e.g., I'll walk the dog in the morning before it gets too hot). Also, weather is often a topic of conversation, so there could be social communication benefits to remembering upcoming weather forecasts. Rose, Rendell, McDaniel, Aberle, & Kliegel (2010) found that there are increased age differences in prospective memory for irregular tasks rather than for habitual tasks, as older adults were less likely than younger adults to remember to perform a certain task if the task was not part

of their normal routine. The present study incorporates a type of stimuli that may be encountered quite often, perhaps as part of a prospective memory habit, and could be informative for other prospective memory studies that seek to incorporate planning for future events.

Encouraging people to focus their attention on the gist of a given set of information could potentially hinder their ability to remember the details. These forgotten details could lead to dangerous consequences if they relate to important information such as medication dosage, or perhaps annoyance if one's outdoor plants suffer after an overnight frost. While prompting people to remember the gist appears to hinder their ability to recall the details, future work may incorporate a full factorial design using the different types of instructions (and could include detail-oriented instruction conditions) to strengthen interpretations regarding the influence that different types of instruction can have on different types of memory performance. Understanding how instructions influence gist-based and detail-oriented memory could enable people to help both younger and older adults maintain information and promote later recall for everyday information.

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Figure 1.

An example of the weather forecast stimuli. Participants studied a forecast such as this for 120 seconds before they were asked to recall as many details as they could (verbatim information), as well as which days would be best to have a picnic and bring an umbrella (gist-based information).

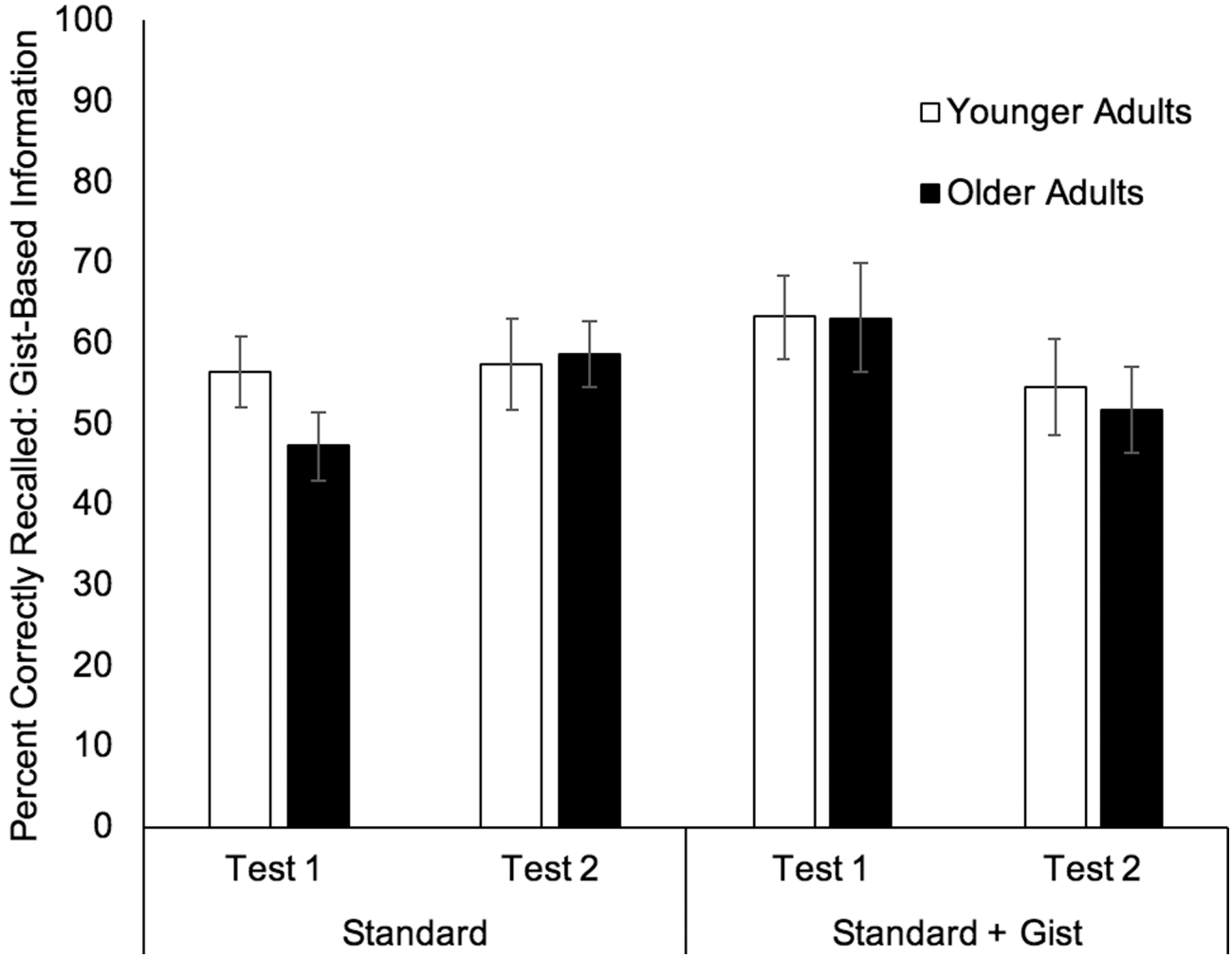

Figure 2.
Percent of correctly recalled gist-based information for younger and older adults who received the standard instructions versus the standard plus gist instructions.

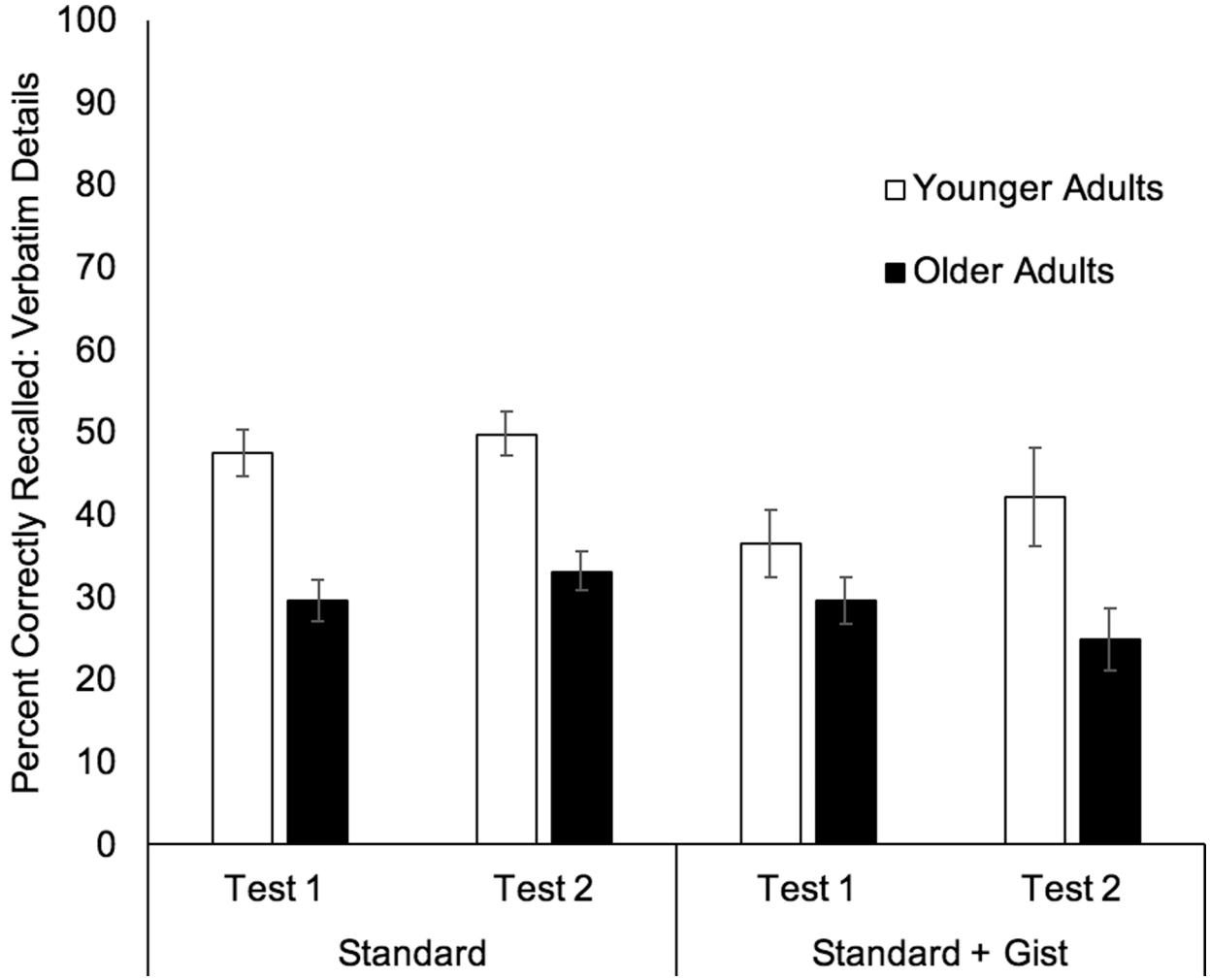

Figure 3.
Percent of correctly recalled verbatim details for younger and older adults who received the standard instructions versus the standard plus gist instructions.