Journal of Experimental Child Psychology 105 (2010) 273–285

Contents lists available at ScienceDirect

Journal of Experimental Child Psychology

journal homepage: www.elsevier.com/locate/jecp

How focus at encoding affects children's source monitoring

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ARTICLE INFO

Article history:
Received 2 July 2008
Revised 3 December 2009
Available online 22 January 2010

Keywords:
Source monitoring
Children's memory
Encoding focus
Emotional processing
Cognitive development
Source memory

ABSTRACT

Retention of source information is enhanced by focus on speakers' feelings about statements even though recognition is reduced for both adults and children. However, does any focus on another person lead to enhanced source monitoring, or is a particular kind of focus required? Does other-focus enhance source monitoring, or does self-focus detract from it? In Experiment 1, 4- and 6-year-olds watched two speakers make statements in a no-focus control or with focus directed on how they (or a speaker) felt about the statements or on perceptual features about themselves (or the speaker). Source monitoring decisions were enhanced by other-focus in both the perceptual and emotional conditions. However, the effect was larger for the emotional condition, and source monitoring exceeded no-focus controls only for this condition. Experiment 2 showed no effect of other-focus versus self-focus on source monitoring when questions were semantic.

Introduction

Source memory refers to memory for information about the circumstances under which a memory is acquired (Johnson, Hastroudi, & Lindsay, 1993; Schacter, Kaszniak, Kihlstrom, & Valdiserri, 1991). Memory for source may include a variety of details such as perceptual information (e.g., the color of objects one saw during a specific event), temporal information (e.g., the temporal sequence of events), and emotional information (e.g., what one was feeling during the event). Source per se is not always encoded directly as a tag or label in memory (e.g., it was Mary who said she is afraid of thunderstorms). Rather, details surrounding the event at the time of encoding are often evaluated and attributed to particular sources based on decision processes at the time of remembering (e.g., the person who said she is afraid of thunderstorms had short dark hair, or made the remark last week,

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doi:10.1016/j.jecp.2009.12.003

or looked pale and shaky when she said it). This set of processes is known as *source monitoring* (Johnson et al., 1993).

Often, source monitoring decisions are made quite rapidly and nondeliberatively, at least if the various details encoded during the original event are bound together to form a coherent representation of the event (Henkel, Johnson, & De Leonardis, 1998; Johnson et al., 1993). Because source monitoring depends on the memory characteristics available at the time of remembering, accurate source monitoring would seem to rely fundamentally on the amount and quality of the information encoded at the time of the event. However, Johnson, Nolde, and De Leonardis (1996) found that direction of attention (i.e., inward to the self or outward to a speaker) affected recognition memory and source monitoring in opposite directions. In a set of studies, adults were asked to listen to two speakers make various statements on audiotape (Experiment 1) and videotape (Experiment 2) that ranged in emotional intensity (e.g., ''Abused children who kill their parents should not be convicted of murder" vs. ''Da Vinci's Mona Lisa hangs in the Louvre"). As the participants listened to each speaker, they were asked either to rate how *they felt* about what the speaker was saying (self-focus condition) or to rate how they thought the *speaker felt* about what he or she was saying (other-focus condition). After a short delay, participants were administered an old–new recognition test for the statements and a source monitoring test for those items they had identified as old. In both experiments, participants in the other-focus condition performed *better* on the source test but *worse* on the recognition test than participants in the self-focus condition.

Johnson and colleagues (1996) argued that focusing on how the speakers felt led participants in the other-focus condition to process the distinctive features of the speakers with respect to the content of the statements, thereby binding the people and statements together and improving source accuracy. On the other hand, focusing on one's own feelings leads to relating the content of the statements to one's own memories, improving recognition for content but at the expense of processing information that would provide cues to source. In fact, in support of this analysis, the authors found in their Experiment 3 that a subtle change in instructions—asking participants to think about their feelings about each speaker—caused source accuracy to be at the higher levels of the standard other-focus condition rather than at the lower levels of the standard self-focus condition. That is, the central factor in improvements in source accuracy is some degree of focus on the speaker even if the question also involves one's own feelings. In a similar vein, Jurica and Shimamura (1999) found that individuals who generated answers to questions about their likes and dislikes at encoding had excellent recognition memory for the questions asked, but performed quite poorly at discriminating who asked the questions.

Kovacs and Newcombe (2006), using a paradigm similar to that of Johnson and colleagues (1996), showed the same effects for children. They asked 4- and 5-year-olds to listen to speakers make various statements about a range of topics relevant to children (e.g., ''I hate snakes," ''I really like going to the library"). As the children listened to the statements, they were asked either to indicate whether *they felt* the same way about the topic as each speaker (self-focus) or to indicate how the *speaker felt* about the topic (other-focus). As with Johnson and colleagues' (1996) findings with adults, children in the self-focus condition had *better* recognition memory for old statements but *worse* source accuracy. For 5-year-olds, the advantage of other-focus for source accuracy was evident in all conditions studied. For 4-year-olds, there was an advantage only in the easiest source discrimination situation, that is, when the speakers were dissimilar and were on videotape (i.e., both seen and heard). Perceptual similarity between sources results in more source confusion (Ferguson, Hashtroudi, & Johnson, 1992; Johnson, Raye, Foley, & Foley, 1981; Lindsay, Johnson, & Kwon, 1991). It may be that other-focus was insufficient to allow 4-year-olds to discriminate source in a challenging situation. Because 4-year-olds are less able to bind together aspects of a situation in general (Sluzenski, Newcombe, & Ottinger, 2004), the other-focus might not help them when the task is too hard.

Overall, these data suggest that focusing on one's emotions promotes processing of the statement, encouraging binding it to one's personal opinions or memories, which in turn improves recognition. However, this type of processing seems to occur at the expense of processing information that would provide better cues to source (e.g., features of the speaker). On the other hand, focusing on the speaker's emotions during encoding may promote the processing of features associated with the speaker (e.g., sound of voice, emotional reaction) and, in turn, provide associations between the features of the speaker and the content of the statement that would allow accurate source judgments. (Note that other approaches to recognition memory and source monitoring exist, but the similarities and differences between the source monitoring framework and other theories are beyond the scope of this article. Readers are directed to in-depth exchanges comparing and contrasting the source monitoring framework with fuzzy trace theory [Lindsay & Johnson, 2000; Reyna, 2000] and with threshold models [Qin, Raye, Johnson, & Mitchell, 1999; Slotnick & Dodson, 2005; Yonelinas, 1999].)

The existing studies do not, however, provide information about two interesting questions. First, they do not tell us whether a difference in source accuracy between directions to focus on the self versus on the speaker would result from *any* attentional shift in the direction of focus (i.e., inward or outward). The manipulations used in research so far all involve emotion. Yet the source monitoring framework also discusses other attributes of speakers, such as their perceptual characteristics (e.g., hair color, voice pitch), as relevant to source decisions. Would asking children to focus on perceptual characteristics of the speaker also improve their source accuracy? Perhaps any attentional shift onto the speaker, regardless of the type of focus (e.g., emotional, perceptual), would improve source monitoring because other-focus encourages the encoding of particular speaker traits that are used for later source monitoring decisions. However, it is also possible that making an evaluative judgment about a speaker's emotions in relation to the statement establishes a stronger association between the content of the statement and the speaker than thinking about other aspects of the speaker. For example, fear of thunderstorms could occur in someone with either dark or light hair, so thinking about hair color does not strongly bind a statement to a speaker in the same way as speculating about why a person is afraid of thunderstorms might establish a link.

Second, the existing research does not tell us whether focusing on one's own emotions during encoding *impairs* source monitoring accuracy or whether focusing on the speaker's emotions during encoding *improves* source monitoring accuracy (or both).

A no-focus control group would be required to answer this question (Mammarella & Fairfield, 2008). The purpose of the two experiments in this article was to address these two questions.

Experiment 1

The experimental technique for the source monitoring task used in the current experiment was similar to the one used by Kovacs and Newcombe (2006). However, in addition to the emotional-self and emotional-other focus conditions in Kovacs and Newcombe's study, three new encoding focus conditions were included. These were a perceptual-self focus condition, a perceptual-other focus condition, and a control condition. Examination of source monitoring accuracy in the perceptual conditions relative to the emotional conditions addresses the possibility that the self–other effect resulted from any attentional shift in the direction of focus without emotional processing being required. More specifically, if the nature of the self–other effect is due specifically to an attentional shift in the direction of focus at encoding (i.e., self or other), there should be no source monitoring differences between the two types of self-focus conditions or the two types of other-focus conditions. In addition, the inclusion of a control group allows examination of the nature of the self–other effect; does self-focus impair source monitoring, and/or does other-focus improve source monitoring?

Method

Participants

This experiment involved 150 children. There were 75 4-year-olds (42 boys and 33 girls, mean age = 52.28 months, range = 47–59) and 75 6-year-olds (39 boys and 36 girls, mean age = 75.04 months, range = 70–83). The children were recruited from suburban preschools in the Philadelphia area, and the majority of children were white and middle class. Informed consent was obtained from the parent or guardian of each child. Participants were randomly assigned to one of the encoding focus conditions.

Design and procedures

Children were tested individually in a quiet setting at their preschool and within regular hours of the school day. A total of 21 statements expressing opinions on topics relevant to children (e.g., preferences for foods or drinks, dislikes and likes of activities) were prepared (see Appendix A). Of the 21 statements, 14 were assigned to Speakers A and B (7 each). The remaining 7 statements were used as new statements for the subsequent source monitoring task. The statements were assigned as to generally equate the topics and emotional level across speakers and new statements. A videotape in which two speakers read the statements (i.e., one speaker read List A statements and the other speaker read List B statements) was made. A second video was made, with the set of sentences assigned to each of the two speakers being switched. The order of the statements on the tapes was random with the restriction that one speaker did not make more than two statements before the other speaker made a statement. The same order was used for both videos. Although the study employed similar speakers, the speakers were perceptually distinguishable. The speakers were two adult women with highly distinguishable perceptual qualities (e.g., shirt color, hair color, hair length, sound of voice).

Training phase

Because the children would be asked to identify the emotions the speaker felt and the emotions they felt regarding each statement, we wanted to ensure that the children knew the names of the emotions and could identify the expressions associated with each emotion. The children were shown six pictures of an adult woman depicting various facial expressions that represented the emotions shown in the video. The children were asked to name the emotions, and if they were unable to produce a label for a particular emotion, the experimenter labeled the emotion and repeated the question.

Once the children recognized and could name the emotions in the photographs, the experimenter explained to the children that they would be watching a video of two speakers telling them different things about themselves. The children were introduced to the speakers on the video and were subsequently asked to point to each speaker by name in a photograph on the table to ensure that the children could differentiate the speakers. Finally, the children were directed on what they should focus on or think about during the video. To ensure that the children understood the nature of the encoding focus and the type of response to the encoding question, the children listened to each of the speakers make one statement. Before hearing the practice statements, the children were told what to focus on, and immediately following the presentation of the statement, they were asked the encoding question. None of the children showed difficulty in answering any of the practice questions or difficulty in understanding what they should think about during the video.

Acquisition phase

During acquisition, the encoding focus question was asked immediately following the presentation of each statement, at which time a black screen appeared on the video. Children in the *emotional self-focus* condition were asked to indicate how the statement each speaker made would make them feel (i.e., "How do you feel about that?"). Children in the *emotional other-focus* condition were asked to indicate how the speaker felt about what she was saying (i.e., "How does she feel about that?"). To avoid explicit rehearsing of the statement, the experimenter never repeated the statement or referred to the content of the statement while asking the encoding question. Rather, the content of the statement was replaced with "that." The emotion questions were open-ended. None of the children had difficulty in producing an emotion label in either condition.

Children in the *perceptual self-focus* condition were asked to respond to a perceptual question regarding themselves (e.g., "What color is your shirt?"). Children in the *perceptual other-focus* condition were asked to respond to a perceptual question regarding the speaker (e.g., "What color is her hair?").

Children in the *control* condition were asked about the quality and sound of the video (e.g., "Is the sound loud enough for you to hear?") after every other statement. Although asking this question after every statement would seem to be more closely aligned with the other conditions, pilot work showed that children reacted to this constant questioning as if it were odd. Pilot work also showed that a control condition that involved having children listen to statements without any questions at all led to low attention. Because the intent of the control condition was to mimic "natural attentive listening," we chose to ask the question after every other statement.

Delay phase

Following the video presentation, the children were administered a separate binding task, not reported in this article, that took approximately 15 min. This task required the children to look at 10 colored pictures. After a short delay, the children were asked to identify which object was a particular color. At the completion of this task, the children were administered the recognition and source memory measures.

Test phase

Before reading the statements and asking the test questions, the experimenter reminded the children about listening to the speakers on the video and showed the children three pictures (4 × 6 in.) that corresponded to the three response options: Dawn, Elizabeth, and no one. The no one picture was essentially a picture of white light that was used to depict the idea of no one (see Thierry, Spence, & Memon, 2001, for a similar procedure). While pointing to the corresponding photographs, the experimenter said to the children,

> Remember we listened to my friends Dawn and Elizabeth tell us different things on the video? Well, now we are going to see if you can remember the sentences that each of them said. I am going to read you sentences, and I want you to tell me or show me by pointing to the picture who said the sentence. But—guess what—I am going to try to trick you, and some of the sentences I read no one said on the video. So, I am going to put this picture here [holding up the no one picture], and if no one said the sentence, then I want you to say ‘‘no one" or point here to this picture. So, think hard if you heard the sentence on the video so I don't trick you.

To ensure that the children understood the concept of new sentences, each child was given practice questions for each type of response (e.g., ‘‘If Dawn said the sentence, what would you say or where would you point?," ‘‘If Elizabeth said the sentence, what would you say or where would you point?," ‘‘What if no one said the sentence—what would you say or where would you point?"). All of the children understood that the pictures represented the speakers and the idea that the picture of nothing represented no one.

The test phase consisted of 21 statements (14 old and 7 new). The test statements were in an intermixed random order, with the restriction that no more than 2 statements from any one source were presented consecutively. In addition, the test lists were compiled so that either the first or second sentence was a new statement to ensure that the children used the new response. If a child failed to correctly identify the new item, after the third statement the experimenter reminded the child that some of the sentences were new and no one had said them on the video. There were only a handful of children who needed to be reminded to use the new response after the first few sentences, but once reminded these children varied their responses.

Scoring

Corrected recognition scores were computed by obtaining, for each child, the proportion of test items that were correct ‘‘old" responses to old items (hits), regardless of source accuracy, minus the proportion of incorrect ‘‘old" responses to new items (false alarms). Source monitoring scores were the proportion of statements correctly identified as old that were also attributed to the correct source.

Results

An alpha level of .05 was used for all statistical analyses except where noted. For all t tests, the p values are two-tailed. When appropriate, Tukey's HSD post hoc tests were used. Effect sizes are reported as Pearson's r. Initial analyses produced no main effects of sex or sex interactions; thus, the data were collapsed across sex.

Old/New recognition

Recognition scores refer to the children's ability to discriminate old items (statements on the video) from new items (distracters) without regard for correct identification of source. Although recognition memory for the statements was not the main focus of this research, we examined recognition scores to determine whether direction of focus affected memory in the same way as in previous studies, namely greater recognition memory with self-focus, and whether such an effect appeared for perceptual as

Table 1
Recognition scores for age and encoding condition (Experiment 1).

Condition	4-year-olds					6-year-olds				
	Control	ES	EO	PS	PO	Control	ES	EO	PS	PO
Hits	.86 (.04)	.93 (.02)	.92 (.02)	.80 (.04)	.79 (.06)	.89 (.03)	.97 (.02)	.95 (.02)	.79 (.03)	.70 (.04)
False alarms	.32 (.05)	.16 (.07)	.33 (.08)	.47 (.07)	.34 (.08)	.21 (.03)	.06 (.02)	.10 (.04)	.31 (.06)	.21 (.05)
Corrected recognition	.55 (.03)	.76 (.05)	.63 (.05)	.33 (.06)	.44 (.06)	.68 (.03)	.91 (.03)	.84 (.05)	.49 (.04)	.49 (.04)

Note. Standard errors are in parentheses. ES, emotional-self; EO, emotional-other; PS, perceptual-self; PO, perceptual-other.

well as emotional conditions. Table 1 shows the proportions of hits, false alarms (new items mistakenly judged to be old statements), and corrected recognition scores (hits minus false alarms). Chance on this measure is 0. In each section, we first consider the effects of age, type of encoding, and focus and then move on to an analysis comparing scores with the control condition. Analyses of d' scores showed the same pattern of effects as corrected recognition for both experiments; thus, only the analyses on corrected recognition are presented.

Corrected recognition. A 2 (Age: 4-year-olds or 6-year-olds) × 2 (Encoding Condition: emotional or perceptual) × 2 (Focus: self or other) analysis of variance (ANOVA) produced significant main effects of age, $F(1, 112) = 17.10$, $p = .00$, and encoding condition, $F(1, 112) = 99.39$, $p = .00$, with no main effect of focus. The 4-year-olds' recognition scores ($M = .54$) were lower than the 6-year-olds' scores ($M = .68$). Recognition was better with emotional questions ($M = .79$) than with perceptual questions ($M = .44$). In addition, there was an interaction between encoding condition and focus, $F(1, 112) = 5.17$, $p = .03$. As found previously in studies of other- and self-focus using emotional questions, recognition was better with focus on one's own emotions ($M = .84$) than with focus on the emotions of the speaker ($M = .74$), $t(58) = 1.89$, $p = .03$, $r = .24$. However, for perceptual questions, there was no difference between focus on the self ($M = .41$) and focus on the other ($M = .47$), $t(58) = 1.12$, $p = .13$, $r = .15$ (see Fig. 1). Comparison of recognition in each of the encoding-focus groups with controls ($M = .61$) showed that recognition was reliably higher than controls for both emotion groups: emotional-other ($M = .74$), $t(58) = 2.53$, $p = .00$, $r = .32$, and emotional-self ($M = .84$), $t(58) = 5.20$, $p = .00$, $r = .56$. That is, both kinds of emotional questions enhance recognition memory, although emotional questions about the self have a greater enhancement effect than questions about the speaker. By contrast, for the perceptual groups, recognition was lower than in the control group in both cases: perceptual-other ($M = .47$), $t(58) = 3.24$, $p = .00$, $r = .39$, and perceptual-self ($M = .41$), $t(58) = 4.33$, $p = .00$, $r = .49$.

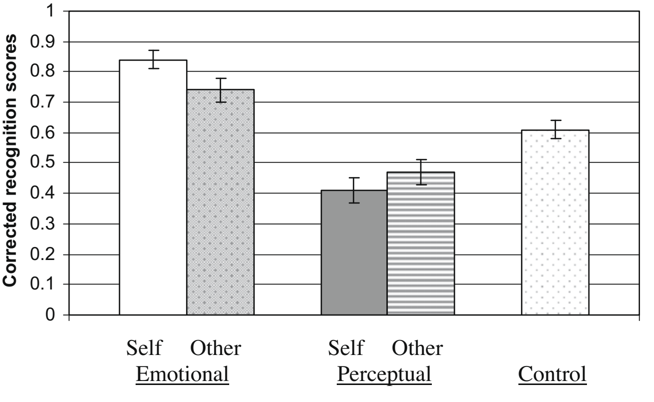

Fig. 1. Corrected recognition scores with standard errors (Experiment 1).

Hits. To examine the age effect in corrected recognition, two separate ANOVAs were conducted on hit rates and false alarm rates. These analyses suggest that the effects reported above depend more on false alarm rates than on hit rates. A 2 (Age) × 2 (Encoding Condition) × 2 (Focus) ANOVA for hit rates revealed no main effect of age, $F(1, 112) = 0.023$, $p = .88$, although there was a main effect of encoding condition, $F(1, 112) = 48.95$, $p = .00$. Hits were higher in emotional encoding conditions ($M = .94$) than in perceptual conditions ($M = .77$). There were no significant interactions. Comparison of hits in each encoding condition with the control condition showed that hits were higher in emotional conditions than in the control group ($M = .87$), $t(88) = 3.32$, $p = .00$, $r = .33$, and hits were lower in the perceptual conditions than in the control group ($M = .94$), $t(88) = 2.87$, $p = .00$, $r = .29$.

False alarms. In contrast to the analysis of hits, a 2 (Age) × 2 (Encoding Condition) × 2 (Focus) ANOVA of false alarm rates showed effects more similar to those seen in overall corrected recognition: significant main effects of both age, $F(1, 112) = 14.10$, $p = .00$, and encoding condition, $F(1, 112) = 15.75$, $p = .00$. There were more false alarms from 4-year-olds ($M = .33$) than from 6-year-olds ($M = .17$). There were more false alarms in the perceptual conditions ($M = .33$) than in the emotional conditions ($M = .16$). In addition, there was a significant interaction between focus and encoding condition, $F(1, 112) = 6.82$, $p = .01$. Mirroring the effect on corrected recognition scores, false alarms were lower with focus on one's own emotions ($M = .11$) than with focus on the emotions of the speaker ($M = .22$), $t(58) = 1.97$, $p = .00$, $r = .25$. However, for perceptual questions, there was no difference between focus on the self ($M = .39$) and focus on the other ($M = .28$), $t(58) = 1.61$, $p = .06$, $r = .21$. We also compared false alarm rates in each of the encoding focus groups with the control group ($M = .27$). False alarms were lower in the emotional-self condition ($M = .11$) compared with the control group, $t(58) = 3.75$, $p = .00$, $r = .44$. False alarms were higher in the perceptual-self condition ($M = .39$) compared with the control group, $t(58) = 2.09$, $p = .02$, $r = .26$. None of the other comparisons was significant.

Source monitoring scores

Source monitoring scores were the central focus of this study, and they are shown in Table 2. Chance on this measure is .50. A 2 (Age) × 2 (Encoding Condition) × 2 (Focus) ANOVA revealed a main effect of age, $F(1, 112) = 11.98$, $p = .001$, a main effect of focus, $F(1, 112) = 42.78$, $p = .00$, and a trend toward a main effect of encoding condition, $F(1, 112) = 3.32$, $p = .07$. As expected, 6-year-olds ($M = .71$) showed better accuracy than 4-year-olds ($M = .61$). Confirming prior work, source accuracy was better with other-focus ($M = .80$) than with self-focus ($M = .56$). In addition, the overall mean for perceptual conditions ($M = .63$) was somewhat lower than that for emotional conditions ($M = .68$).

All of these main effects were, however, qualified by significant interactions between age and encoding condition, $F(1, 112) = 6.19$, $p = .01$, and between focus and encoding condition, $F(1, 112) = 5.83$, $p = .02$. The interaction between age and encoding condition resulted from the difficulty that 4-year-olds had with answering source questions when they were in perceptual encoding conditions. Source accuracy in this case ($M = .55$) was not different from chance and was worse than source accuracy for 4-year-olds in emotional conditions ($M = .67$). Source accuracy for 6-year-olds did not differ between the two conditions: perceptual conditions ($M = .71$) and emotional conditions ($M = .69$). Another way of looking at this interaction is to say that there were age-related improvements in source accuracy for perceptual but not emotional conditions.

Table 2
Source monitoring scores for age and encoding condition (Experiment 1).

	4-year-olds	6-year-olds
Control	.61 (.05)	.75 (.04)
Emotional-self	.58 (.03)	.53* (.04)
Emotional-other	.75 (.03)	.85 (.03)
Perceptual-self	.49* (.05)	.66 (.04)
Perceptual-other	.61 (.04)	.77 (.03)

Note. Standard errors are in parentheses. An asterisk (*) denotes scores at chance.

Most theoretically central, however, was the interaction between focus and encoding condition. As found in prior research, source accuracy was higher in the emotional-other condition ($M = .80$) than in the emotional-self condition ($M = .56$), $t(58) = 6.83$, $p = .00$, $r = .67$. In addition, source accuracy was higher in the perceptual-other condition ($M = .69$) than in the perceptual-self condition ($M = .58$), $t(58) = 2.42$, $p = .00$, $r = .30$. However, the difference between focus on self versus focus on other was more marked in the emotional conditions than in the perceptual conditions, $t(58) = 1.84$, $p = .03$ (see Fig. 2).

We also compared each encoding-focus condition with the control condition ($M = .68$) to determine whether there were facilitation or interference effects or both (corrected alpha $p = .01$). Performance in the emotional-other condition ($M = .80$) was better than performance in the control condition, $t(58) = 3.07$, $p = .00$, $r = .37$. Performance in the emotional-self condition ($M = .56$) was worse than performance in the control condition, $t(58) = 2.70$, $p = .00$, $r = .33$. None of the other effects was significant (see Fig. 2).

Discussion

Analyses of recognition accuracy showed the expected effects on recognition. The 6-year-olds' recognition scores were better than the 4-year-olds' scores; more interesting, this difference was due to 4-year-olds committing more false alarms than 6-year-olds. Lloyd, Newcombe, and Doydum (2009) also found this pattern and suggested that younger children's difficulty in avoiding stating that they have seen stimuli similar to those they have seen before is due to their reliance on familiarity for recognition and their insufficient use of (or lack of ability to use) recollection. In addition, children in the emotional-self condition had better recognition than children in the other conditions, primarily due to making fewer false alarms than children in the other conditions. Johnson and colleagues (1996) suggested that focusing on one's own feelings, opinions, and reactions to a particular statement induces the content of that statement to be embedded into meaningful self-relevant information. In turn, this information should lead to better recognition of a particular statement. In the current study, the finding that recognition scores in the perceptual conditions were poor further supports this notion. Thinking about perceptual attributes directs attention away from the content of the statements.

Turning to source monitoring, there were two main aims of the current study. First, this study was designed to examine whether the higher source accuracy found in Kovacs and Newcombe (2006) when children directed attention to the emotions of the speaker was the result of any attentional shift in direction of focus or whether instructions to consider emotion are central to the effect. The data suggest a bit of both. Children who focused on the speaker did better than children who focused on the self in judging source whether in emotional or perceptual conditions. However, the effect was significantly larger for the emotional conditions. This suggests that focusing on the speaker's emotional reactions to the statements was more beneficial to source monitoring than merely focusing on the

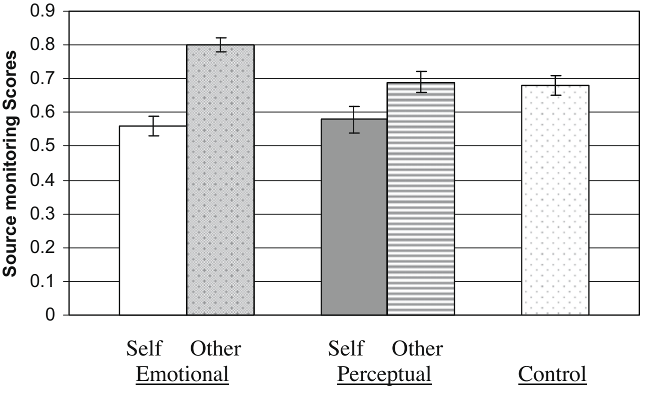

Fig. 2. Source monitoring scores with standard errors (Experiment 1).

speaker in general. This notion is further supported by analyses related to the second aim, namely, determining whether source accuracy is enhanced or hurt relative to a control group given no particular instructions about focus. The data showed that children's performance in the emotional-other condition was uniquely better than children's performance in the control condition. The reason for this unique enhancement is that the instructions ask children to think about the speaker in relation to the statement, thereby binding the two together. By contrast, thinking about perceptual aspects of the speaker helps to "tag" the speaker, but not necessarily in relation to the statement just made.

This analysis still leaves open, however, the question of whether the enhanced effect of focus on the emotions of the other is due to a focus on emotion per se. Children in the perceptual-other condition were thinking about the speaker alone, not the speaker in relation to the statement she made. Perhaps any focus that directs attention to the content of the statement in relation to the speaker would help source accuracy, even if it were not emotional, because a manipulation of this kind would still enhance processing of speaker traits in relation to the content of the statement, binding them together. For example, if a movie reviewer gave "two thumbs up" to a horror movie and a reader spent some time considering whether the reviewer generally enjoys horror films or whether this endorsement is an exception, perhaps the reader's memory for which reviewer endorsed the movie would be enhanced. This possibility was explored in Experiment 2.

Experiment 2

The purpose of this experiment was to examine whether the enhancement in source accuracy in the emotional-other condition found in Experiment 1 was the result of emotional processing in particular or simply the result of focusing on the content of a statement as related to the source of the statement. Three conditions were used in this experiment: semantic-self, semantic-other, and a control condition. If the nature of the self–other effect is due to drawing attention to the content of the statement in relation to the speaker independent of emotional processing, scores in the semantic-other condition should be better than scores in both the semantic-self and control conditions.

Method

Participants

This experiment involved 90 children: 45 4-year-olds (23 boys and 22 girls, mean age = 54.05 months, range = 48–59) and 45 6-year-olds (20 boys and 25 girls, mean age = 76.89 months, range = 72–83). The children were recruited from suburban preschools in the Philadelphia area, and the majority of the children were white and middle class. Informed consent was obtained from the parent or guardian of each child. Participants were randomly assigned to the encoding focus conditions.

Design and procedures

This study was identical to Experiment 1 except that the encoding conditions were *semantic self-focus, semantic other-focus,* and a *no-focus control* condition. The children watched the same video as in Experiment 1, but children in the semantic conditions were oriented to focus on the semantic content of the statement. Children in the semantic self-focus condition were asked to respond to the statement as it related to their own experiences of what the speaker said (e.g., "Have you ever done that?"). Children in the semantic other-focus condition were asked to respond to the statement relating to whether or not the speaker could actually do what she had said (e.g., "Can she really do that?"). For example, if the statement heard was "I rode an elephant at the zoo," children in the semantic self-focus condition were asked whether they themselves had ever ridden an elephant at the zoo (i.e., "Have you ever done that?"). On the other hand, children in the semantic other-focus condition were asked whether the speaker could really ride an elephant at the zoo (i.e., "Can she really do that?"). As in Experiment 1, children in the control condition were periodically asked about the quality and sound of the video (e.g., "Is the sound loud enough for you to hear?") to help redirect their attention if needed. As in Experiment 1, none of the children showed difficulty in answering any of the practice questions or difficulty in understanding what they should think about during the video.

Results

An alpha level of .05 was used for all statistical analyses. For all t tests, the p values are two-tailed. When appropriate, Tukey's HSD post hoc tests were used. Effect sizes are reported as Pearson's r. Initial analyses produced no main effects of sex or sex interactions; thus, the data were collapsed across sex.

Old/New recognition

Recognition scores were calculated as in Experiment 1. Table 3 shows the proportions of hits, false alarms, and corrected recognition. Chance on this measure is zero.

Corrected recognition. A 2 (Age) $\times$ 2 (Focus) ANOVA produced a significant main effect of age, $F(1, 56) = 52.45$, $p = .00$. The 4-year-olds' scores ($M = .48$) were lower than the 6-year-olds' scores ($M = .87$). There was neither a main effect for focus, $F(1, 56) = 3.42$, $p = .07$, nor an interaction between age and focus, $F(1, 56) = 0.498$, $p = .483$. Comparison of recognition in each of the focus groups with controls ($M = .66$) showed no differences for either the self-focus group ($M = .62$), $t(58) = 0.44$, $p = .33$, $r = .06$, or the other-focus group ($M = .73$), $t(58) = 0.82$, $p = .207$, $r = .15$.

Hits. Separate analyses of hits and false alarms suggested that the age effect reported above depends more on false alarm rates than on hit rates. A 2 (Age) $\times$ 2 (Focus) ANOVA for hit rates revealed no age effect, $F(1, 56) = 0.679$, $p = .413$, no focus effect, $F(1, 56) = 0.043$, $p = .837$, and no interaction effect, $F(1, 56) = 2.45$, $p = .123$. Comparison of hits in each encoding condition with the control condition showed that hit rates in the control group ($M = .91$) were higher than hit rates in both the semantic-self group ($M = .82$), $t(58) = 2.26$, $p = .01$, $r = .28$, and the semantic-other group ($M = .85$), $t(58) = 2.13$, $p = .02$, $r = .27$.

False alarms. A 2 (Age) $\times$ 2 (Focus) ANOVA of false alarm rates showed an age effect, $F(1, 56) = 20.32$, $p = .00$. The 4-year-olds ($M = .28$) committed more false alarms than the 6-year-olds ($M = .04$). None of the other effects was significant. We also compared false alarm rates in each of the focus groups with the control group ($M = .25$). There were no differences between the self-focus group ($M = .20$) and the control group, $t(58) = 0.725$, $p = .24$, $r = .09$. False alarm rates were lower in the other-focus group ($M = .12$) than in the control group, $t(58) = 1.68$, $p = .05$, $r = .22$.

Source monitoring scores

Source monitoring proportions are shown in Table 4. Chance on this measure is .50. A 2 (Age) $\times$ 2 (Focus) ANOVA revealed no significant effect for age, $F(1, 56) = 0.68$, $p = .41$, no effect for focus, $F(1, 56) = 0.04$, $p = .84$, and no interaction effect, $F(1, 56) = 2.45$, $p = .12$. We also compared each focus condition with the control condition ($M = .76$). Scores in the semantic-self group ($M = .68$) were lower than scores in the control group, $t(58) = 1.69$, $p = .05$, $r = .22$. There were no differences between scores in the semantic-other group ($M = .69$) and scores in the control group, $t(58) = 1.36$, $p = .09$, $r = .18$.

Table 3
Recognition scores for age and encoding condition (Experiment 2).

Condition	4-year-olds			6-year-olds		
	Control	SS	SO	Control	SS	SO
Hits	.88 (.03)	.72 (.05)	.79 (.03)	.94 (.02)	.92 (.03)	.91 (.02)
False alarms	.35 (.09)	.31 (.06)	.24 (.08)	.14 (.07)	.08 (.03)	.009 (.009)
Corrected recognition	.53 (.09)	.41 (.06)	.55 (.08)	.80 (.07)	.84 (.05)	.91 (.01)

Note. Standard errors are in parentheses. SS, semantic-self; SO, semantic-other.

Table 4
Source monitoring scores for age and encoding condition (Experiment 2).

	4-year-olds	6-year-olds
Control	.70 (.06)	.81 (.03)
Semantic-self	.62 (.04)	.73 (.04)
Semantic-other	.71 (.05)	.67 (.05)

Note. Standard errors are in parentheses.

Discussion

The purpose of Experiment 2 was to explore whether any focus that encourages binding between the speaker and content of the statement improves source monitoring or whether emotional processing is the key. The data showed no differences between the semantic-self and semantic-other focus conditions for either age group. Furthermore, the semantic-other focus condition did not enhance source monitoring compared with the control condition unlike in Experiment 1, where the emotional-other focus condition improved source monitoring. In addition, the improvement in recognition memory scores with the self-focus group was not found with a semantic focus.

General discussion

There were two aims to the experiments in this article. First, we examined whether the self–other effect was due to any attentional shift in the direction of focus (i.e., inward or outward) or whether particular aspects of these instructions are central to the effect. Second, we examined whether focusing on the other facilitates source monitoring or whether focusing on the self impairs source monitoring. In Experiment 1, source monitoring scores in the emotional-other condition were better than scores in the perceptual-other and control conditions. In Experiment 2, scores in the semantic-other condition showed no improvement over the scores in the control condition. These results suggest that directing attention during encoding to emotion as it relates to the content of the statement may be a particularly successful condition for enhancing source monitoring for either or both of two possible reasons.

First, it is possible that considering emotions about a statement is special in some way. For example, knowing what makes other people “tick” (e.g., why they like broccoli but hate horror films) may be very important for social relations with that person. Second, however, the emotional-other condition may simply be a particularly efficacious way to direct simultaneous attention toward the speaker and the content of the statement. Asking participants to consider the speaker’s possible emotions seems to be ideal for encouraging binding between the speaker and various characteristics of the statement. The perceptual-other condition used in Experiment 1 focuses attention only on the speaker and not on the speaker’s relation to the statement. The semantic-other condition used in Experiment 2 focuses attention on the statement but not (enough) on the person.

It is still an open question whether there are nonemotional ways to encourage such binding that have not yet been tried. For example, speculating on *why* the speaker does not like broccoli might work and yet be relatively nonemotional. This might be especially true if the speaker were talking about an unusual state of affairs (e.g., claiming to eat ice cream with a fork). However, it can also be argued that the vividness added by emotion seems likely to make binding easier than many cognitive tasks. The image of the horror on the speaker’s face and in her voice as she is asked to contemplate eating a hated vegetable creates a stronger association between speaker and statement than can easily be created by other means and is, arguably, emotional. The importance of emotion is also suggested by the fact that recognition memory is uniquely enhanced by thinking about one’s own emotions about statements, although again there may be nonemotional manipulations that could have this effect. Subsequent work on nonemotional focus should involve manipulations that are vivid and motivating and that require more processing of the relation between statements and aspects that differentiate particular speakers (e.g., age, strength, profession). This research could help to clarify whether emotional processing is special or merely a natural and effective way of encouraging processing either of a statement (enhancing recognition memory) or of a speaker's relation to the statement (enhancing source monitoring).

Acknowledgments

A portion of this research was supported by the Temple University Research Incentive Fund and the Thaddeus Lincoln Bolton Dissertation Research Award. The second experiment was conducted as an honors thesis by the third author. We thank the children, parents, teachers, and school directors for their participation in this research. We also thank Meredith Jones, Meredith Meyer, Natalie Hansell Sheridan, Wendy Shallcross, and Ayzit Doydum for their assistance in data collection and thank Marianne Lloyd, Karen Mitchell, Kathy Hirsh-Pasek, Larry Steinberg, Jason Chein, Bob Weisberg, and Julia Sluzenski for their helpful comments on this research. These data were presented at the meeting of the Psychonomic Society, Long Beach, CA, November 2007.

Appendix A. List of statements used in the source monitoring task

Speaker A
My Dad gave me a present today.
Worms are my favorite food.
I lost my favorite shirt at the park.
I had to eat broccoli today.
I flew in a helicopter.
My best friend doesn't like me anymore.
All the kids at my camp laugh at me.
Speaker B
I can't ride my bike today because it is raining.
My teacher said I am the smartest one in the class.
I touched a dolphin at the aquarium today.
I rode an elephant at the zoo.
I went to the library today.
I had alligator meat for dinner last night.
My sister hit me in the face.
New statements
I dropped all my money at the store today.
I take my cat for walks every day.
My brother put a snake in my bed last night.
My grandmother makes me eat carrots.
I came in first place in a race today.
I had my favorite potato chips for dessert.
I am not allowed to play outside with my friends.

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