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Expertise and its embodiment: Examining the impact of sensorimotor skill expertise on the representation of action-related text

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In two experiments, we explored how novice and expert athletes represent the everyday and sport-specific objects and actions that they read about. Novice and expert ice hockey players (Experiment 1) and football players (Experiment 2) read sentences describing everyday or sport-specific situations and then judged whether a pictured item (either matching the action implied in the previous sentence or not) was mentioned in the preceding sentence. The sentences in Experiment 1 consisted of everyday and hockey-specific scenarios. The sentences in Experiment 2 depicted football scenarios implying football-specific or non–football-specific actions anyone might perform. Everyone responded most quickly to items that matched the sentence-implied actions for everyday and non–sport-specific actions. Only athletes showed this effect for their respective sport-specific scenarios. Differentiating between the same item in different action orientations is thought to be driven by embodied knowledge containing the sensorimotor characteristics of what one is reading about. We show that possessing this type of representation depends on experience interacting with objects and performing the actions in question.

In contrast to traditional views of the mind as an abstract information processor, recent work suggests that our representations of objects and events are grounded in action. That is, our knowledge is embodied, in the sense that it consists of sensorimotor information about potential interactions that objects or events may allow (Wilson, 2002).

The notion has been especially well documented in language comprehension. For example, when individuals make sensibility judgments about sentences by pushing a button that is either close to or away from their bodies, the sentence's implied action direction interacts with the direction of the response (Glenberg & Kaschak, 2002). Reading the sentence "Close the drawer" inhibits responses involving movements toward the body (the opposite direction of the implied action), relative to responses involving movements away from the body (the same direction as the implied action). Similarly, sensibility judgments of such sentences as "Can you squeeze a tomato?" are facilitated when participants are primed with an associated hand shape (a clenched hand), relative to an inconsistent hand shape (a pointed finger; Klatzky, Pellegrino, McCloskey, & Doherty, 1989). This interaction between the actions implied by the sentences and actual motor behavior has been taken to suggest that comprehension is interconnected with the systems involved in the understanding and planning of actions (Barsalou, 1999; Glenberg & Kaschak, 2003).

Thus, rather than our representations of objects and events we read about being limited to an amodal or propositional code that is arbitrarily related to the concepts it represents (Pylyshyn, 1986), our knowledge representations appear to be interconnected with the sensorimotor experiences they imply. Despite research demonstrating the existence of an embodied knowledge format, however, there is little work examining how it arises. That is, what is necessary to form such representations?

We explored this question by examining differences in how novice and expert athletes represent both everyday and sport-specific objects and actions they read about. Sensorimotor skills provide a nice test bed for examining the components necessary in forming embodied representations, since individuals vary greatly in the amount of experience they have interacting with objects and performing specific actions in a given domain. Moreover, most conceptualizations of the cognitive control structures governing high-level motor skill performance have been borrowed from traditional views of knowledge representation in which differences between experts and novices are described in terms of variations in the structure of amodal propositional networks (Deakin & Allard, 1991). To the extent that our knowledge is grounded in previous actions and experiences, not only should the organization of knowledge differentiate experts and novices in a given domain, but also

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the format of this knowledge—the extent to which it can be thought of as embodied—may differ as well.

Present Experiments

We employed a framework developed by Zwaan and colleagues (Stanfield & Zwaan, 2001; Zwaan, Stanfield, & Yaxley, 2002) to examine the impact of sensorimotor skill expertise on the representation of everyday and sport-specific objects and actions. Zwaan asked participants to read such sentences as "The woman put the umbrella in the closet" and to decide, as quickly as possible, whether an object depicted in a subsequently presented picture was mentioned in the sentence. Responses were faster when the object's shape matched that implied by the sentence (a closed umbrella) than when it did not (an open umbrella). The participants' representations of the umbrella appeared to contain sensorimotor information about the possible actions it allowed (i.e., a closed shape that fits in a closet) that facilitated responses to the closed versus open umbrella. Note that both pictures (the closed and open umbrellas) were mentioned in the sentences. Differentiating between the umbrellas is thus dependent on one's representation of the sensorimotor characteristics associated with the object. This is something a propositional representation of text comprehension, in which the umbrella might be represented as a list of features or a node in a propositional network that would not differ according to location, cannot easily account for (Zwaan, Madden, Yaxley, & Aveyard, 2004).

To the extent that our knowledge representations encompass sensorimotor information, those who have had opportunities to acquire such information, via interacting with the objects and performing the actions they read about, may represent information very differently than do those who have not. Indeed, Zwaan (1999) has suggested that "It may depend on the depth of our background knowledge to what extent our representations are embodied" (p. 86). In the present work, we tested this notion by examining the representations that novice and expert ice hockey players (Experiment 1) and novice and expert football players (Experiment 2) formed of objects and individuals performing various actions in both everyday and sport-specific situations.

EXPERIMENT 1

Ice hockey experts and novices read sentences describing hockey and nonhockey situations. The nonhockey situations depicted everyday objects and individuals (e.g., "The child saw the balloon in the air"). The hockey situations were hockey specific (e.g., "The referee saw the hockey helmet on the bench"). A picture of a target object was presented after each sentence. Participants judged whether the target had been mentioned in the preceding sentence as quickly as possible. The target either matched the action implied in the sentence (match) or did not (mismatch; see Appendix A). The correct response to all the target items, whether matches or mismatches, was always *yes* (see below for a description of filler items that equated *yes* and *no* responses). However, the action orientation of the matches corresponded more closely to that implied in the sentences. Thus, if individuals represent perceptual qualities and action possibilities of the information they comprehend, responses should be facilitated for matches, relative to mismatches.

We predicted that both novice and expert hockey players would show the match–mismatch effect (i.e., responding more quickly to matches than to mismatches) for *nonhockey* objects and individuals, because both groups presumably have the same amount of knowledge and experience interacting with such everyday items. This result would replicate Zwaan et al.'s (2002) work, in which only common objects were examined. However, if active knowledge and experience contributes to embodied representations, individuals with hockey expertise should show the match–mismatch effect for the hockey-specific items, whereas hockey novices should not.

There is another prediction one can make regarding the pattern of results for the hockey-specific items. One characteristic of expert performance is flexibility—the ability to act on and anticipate novel occurrences in one's skill domain (Beilock & Carr, 2001). Such flexibility likely depends on the representation of objects and events that are not tied to acting in a specific way. Thus, rather than experts' knowledge representations consisting of specific action possibilities, they may, instead, be amodal and purpose neutral, so as to be applied to any situation one encounters. If so, hockey experts should not show the match–mismatch effect predicted above. Such a finding would still speak to the skill-level boundary conditions of embodied representations, but it would suggest a very different representational scheme than those previously outlined.

Method

Participants. Expert hockey players ($n = 47$) were recruited from Miami University's intercollegiate ice hockey team or the student body, provided that they had at least 2 or more years of varsity high school ice hockey experience and had played some form of organized hockey while in college. Novice participants ($n = 59$) had no previous hockey experience.

Materials. Ninety-six sentence–picture items were grouped to form 48 scenarios of two sentences and two pictures each. These were the experimental items. Half were hockey related, and half were not. All the pictures were black-and-white line drawings created by the experimenters or obtained from a normed picture list (Snodgrass & Vanderwart, 1980).

The sentences and pictures in each scenario depicted the same target, but in different action orientations. For example, the sentences "The child saw the balloon in the air" and "The child saw the balloon in the bag" were paired with pictures of an inflated balloon and a deflated balloon, respectively. Four sentence–picture items were created in each scenario by crossing pictures and sentences. Thus, each picture served as a match for one sentence and a mismatch for the other, ensuring that matches versus mismatches were independent of the stimuli used. The participants saw only one of these four items, creating four versions of the experiment to which the individuals were randomly assigned. All the experimental items required *yes* responses, since the presented pictures were mentioned in the sentences.

Forty-eight additional sentence–picture items served as fillers and were presented to all the participants. Half of the filler items were hockey related, and half were not. All required *no* responses, since the pictures were not mentioned in the sentences (e.g., "The woman saw the hockey stick on the bench," followed by a picture of an elbow pad). Filler sentences equated *yes* and *no* responses and were not analyzed.

Each of the four versions of the experiment included 96 sentence–picture items: 48 filler and 48 experimental items. Items were presented in three blocks of 32 items each, with order randomized across participants.

Procedure. After giving informed consent, the participants were introduced to the task via instructions on the computer. Each trial began with the presentation of a sentence (left justified and occupying only one line of text) that remained on the screen until the participants pressed a key indicating that they had read the sentence. A fixation point (+) then appeared screen center (250 msec), indicating that a picture was about to appear. After a 250-msec white screen, the picture followed, screen center (approximately 3 × 3 in.). The participants judged whether the picture was mentioned by pressing a *yes* or a *no* key. Upon response, the picture disappeared. Following the computer task, the participants reported hockey experience and were debriefed.

Results

Five pictures (four nonhockey, one hockey) were removed from the analyses because individuals were either unable to identify them correctly (three pictures at <50% accuracy across all participants) or because of computer-coding error (two pictures). One hockey sentence–picture scenario was also removed because of unusually long reaction times (RTs) across participants. We also employed an outlier cutoff. Individual RTs longer than 3 sec (and corresponding accuracy scores) were removed. This resulted in the removal of 35 trials across participants (0.7% of all the data).

As can be seen in Table 1, accuracy was high for both novices and experts and did not differ across hockey and nonhockey items as a function of whether the item matched the action implied in the sentence or not. This was confirmed by a 2 (expertise: expert or novice) × 2 (domain: hockey or nonhockey) × 2 (picture: match or mismatch) ANOVA, which revealed no three-way interaction [$F_1(1,104) = 1.93$, n.s.]. Regardless of ice hockey expertise, all the participants possessed some representation of what they read about that allowed them to perform our task at a high accuracy level. We now will examine RTs, to determine whether these representations resulted in the participants differentiating between items that matched the action implied in the text from those that did not and, more important, whether this was dependent on sentence domain and ice hockey expertise.

A 2 (expertise: expert or novice) × 2 (domain: hockey or nonhockey) × 2 (picture: match or mismatch) ANOVA on RTs yielded a significant three-way interaction [$F_1(1,104) = 9.01$, $MS_e = 7.11 \times 10^3$, $p < .01$; $\eta_p^2 = .08$]. To explore this effect, nonhockey and hockey RTs were examined separately (see Table 1).

A 2 (expertise: expert or novice) × 2 (picture: match or mismatch) ANOVA for nonhockey items revealed a main effect of picture [$F_1(1,104) = 40.47$, $MS_e = 6.26 \times 10^3$, $p < .01$; $\eta_p^2 = .28$]. Analysis by item produced a similar result [$F_2(1,43) = 31.75$, $MS_e = 6.31 \times 10^3$, $p < .01$; $\eta_p^2 = .43$]. There was no main effect of expertise [$F_1 < 1$; although novices were faster than experts overall by item, $F_2(1,43) = 7.15$, $MS_e = 6.31 \times 10^3$, $p < .02$; $\eta_p^2 = .14$] and no expertise × picture interaction [$F_1(1,104) = 1.49$, n.s.; $F_2(1,43) = 1.29$, n.s.]. Regardless of hockey skill, everyone responded more quickly to objects that matched the action implied in the sentence than to those that did not. This result replicates previous work (Zwaan et al., 2002) and is not surprising, given that both hockey experts and novices should have ample knowledge and experience with the everyday items and actions in these sentences.

In terms of the hockey items, an expertise × picture interaction obtained [$F_1(1,104) = 7.18$, $MS_e = 9.51 \times 10^3$, $p < .01$; $\eta_p^2 = .07$; $F_2(1,44) = 4.97$, $MS_e = 1.47 \times 10^4$, $p < .04$; $\eta_p^2 = .10$]. Experts responded more quickly to matches than to mismatches [$t_1(46) = 4.01$, $p < .01$, $d = .41$; $t_2(44) = 3.02$, $p < .01$, $d = .48$], whereas novices did not [$t_1(58) = 0.71$, n.s.; $t_2(44) = 1.1$, n.s.].

Discussion

Theories of embodied cognition suggest that our representations of objects and events include sensorimotor information regarding the action possibilities they allow (Wilson, 2002). Accordingly, if individuals have not had the opportunity to acquire such information, they may lack these types of representations. Both novice and expert hockey players were able to comprehend the sentences they read (as indicated by high accuracy levels). In addition, everyone responded more quickly to everyday items that matched the action implied in the preceding sentence than to those that did not—suggesting that participants'

Table 1
Accuracy and Reaction Time Data for Hockey and Nonhockey Items in Experiment 1

	Accuracy (% Correct)				Reaction Time (msec)			
	Match		Mismatch		Match		Mismatch	
Expertise	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Hockey								
Novice	93.8	1.00	87.0	1.30	813.0	26.8	825.2	25.0
Expert	96.7	0.67	87.5	1.70	726.7	24.5	811.2	31.7
Nonhockey								
Novice	97.6	0.56	91.2	1.40	663.8	20.2	746.8	25.8
Expert	95.0	0.93	90.6	1.70	706.5	22.3	762.8	25.0

representations contained information about the sensorimotor qualities of the objects and individuals that they read about. However, only those with hockey knowledge and experience showed this effect for the hockey scenarios.

EXPERIMENT 2

It should be noted that expertise and domain were conflated in Experiment 1; everyday items always occurred in everyday situations, and hockey-specific items always occurred in hockey situations. If an individual's experience acting on a particular object or performing specific actions truly predicts the extent to which representations of such objects and events are embodied, then regardless of the domain in which an object or individual is described, those who have knowledge and experience performing actions or acting on the objects in question should represent sensorimotor information relevant to such actions.

Experiment 2 tested this. Novice and expert football players were presented with pictures of football players performing actions that either matched or did not match actions implied in preceding sentences. Critically, we manipulated the extent to which the action implied in the sentence was football specific (an action one would perform only if one was a football player—e.g., a quarterback handing off to a receiver) versus a non–football-specific action (an action performed by a football player but one that everyone should have performed in the past—e.g., a football player sitting on a bench).

Embedding both football-specific actions and non–football-specific (everyday) actions within the domain of football provides a stronger test of the prediction that experience is necessary to form embodied representations, since even novices in a given domain should show evidence of this type of representation, provided that they have had experience performing the action in question. Under this view, both novices and experts should respond more quickly to a picture of a football player performing an everyday action that matches that implied in a preceding sentence versus an action that does not. In contrast, for football-specific actions, only those who have knowledge of and experience in performing the action should show the effect.

Method

Participants. Expert football players (n = 29) were recruited from Miami University's intercollegiate football team or from the student body, provided that they had 2 or more years of varsity high school football experience and had played some form of organized football while in college. Novice participants (n = 50) had no organized (regular tackle or flag) football experience in high school or college and reported playing unorganized football infrequently: $<$4 on a 7-point scale ranging from 1 (*never*) to 7 (*daily*), with 4 (*once in a while*) as the midpoint. In order to ensure that our novices had little football knowledge and our experts had a lot, all the individuals completed a 26-item multiple-choice football knowledge test (developed by the authors and two coaches). Items assessed the participants' knowledge of rules, positions, and strategies. Experts scored high (M = 96.42%, SE = 1.5%). Novices did not (M = 26.08%, SE = 1.11%).

Materials. One hundred sixty football-related sentence–picture items were used. Forty items were experimental and required *yes* responses to the question of whether the individual shown in the picture was mentioned in the sentence (see Appendix B). All the experimental items consisted of pictures that portrayed football players performing either football-specific actions (20 items) or everyday actions (20 items). The 20 football-specific action items and the 20 everyday action items were grouped into 10 scenarios of two sentences and two pictures each. As in Experiment 1, these scenarios were crossed to form 4 sentence–picture items.

Forty more items also required *yes* responses; however, their associated pictures portrayed personnel (e.g., coaches or trainers), rather than players. These items were included as fillers in order to ensure that the individuals were not biased to respond *yes* whenever a football player was mentioned in the sentence.

All the targets in Experiment 1 were in the same location in each sentence, allowing for the possibility that the participants would anticipate the upcoming target. To address this in Experiment 2, all the sentences mentioned at least two people, and the location of targets varied so that roughly half were mentioned at the beginning and half in the middle of each sentence.

In addition, 80 filler items whose correct responses were *no* were included in order to equate the number of *yes* and *no* responses. Half of the pictures in these filler items portrayed personnel, and half depicted players. This equated the number of *yes* and *no* responses to players and personnel.

Four versions of the experiment were created, to which the participants were randomly assigned. Each version included the same 120 filler items. In terms of experimental items, all the participants saw two of the sentence–picture items (either two matches or two mismatches) from each of the 10 football-specific action and each of the 10 everyday action scenarios, for a total of 40 experimental items per participant. As in Experiment 1, each version of the experiment comprised a unique set of these pairings in order to ensure that sentences and pictures were independent of whether they were matches or mismatches.

Procedure. The procedure was identical to that in Experiment 1, with the exception that individuals completed four blocks of 40 sentence–picture items. The order of the items was randomized across participants.

Results

Only experimental items were analyzed. As in Experiment 1, one sentence–picture scenario (everyday action) with unusually long RTs across participants was removed. Thirty-three individual RTs (and corresponding accuracy scores) were counted as outliers (1.1% of all the data). Finally, 1 novice and 1 expert were excluded because their overall accuracy fell below 60%. No participants met this criterion for exclusion in Experiment 1.

As can be seen in Table 2, accuracy was high for both novices and experts and did not differ across football-specific and everyday actions as a function of whether the item matched the action implied in the sentence. A 2 (expertise: expert or novice) × 2 (action: football or everyday) × 2 (picture: match or mismatch) ANOVA revealed no three-way interaction ($F_1 < 1$). As in Experiment 1, the fact that both novices and experts were able to complete the task at a high accuracy level indicated that they were able to form representations of what they were reading.

A similar ANOVA on RTs revealed an expertise × action × picture interaction [$F_1(1,77) = 3.92$, $MS_e = 13.02 \times 10^3$, $p = .05$; $\eta_p^2 = .05$]. The everyday action and the football-specific action items were next examined separately (see Table 2).

A 2 (expertise: expert or novice) × 2 (picture: match or mismatch) ANOVA on the everyday actions performed by a

Table 2
Accuracy and Reaction Time Data for Football-Specific Action Items and Everyday Action Items in Experiment 2

	Accuracy (% Correct)				Reaction Time (msec)			
	Match		Mismatch		Match		Mismatch	
Expertise	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
				Football Action				
Novice	95.3	1.1	93.8	1.6	920.7	38.3	931.7	40.7
Expert	96.6	1.3	89.7	3.3	763.4	32.7	888.4	47.6
				Everyday Action				
Novice	93.7	1.5	91.5	1.6	961.9	37.3	1,016.1	42.3
Expert	94.7	1.6	89.6	3.1	793.7	31.2	856.5	36.1

football player revealed a main effect of picture [$F_1(1,77) = 9.67$, $MS_e = 12.99 \times 10^3$, $p < .01$; $\eta_p^2 = .11$]. Analysis by item produced a similar result [$F_2(1,17) = 3.43$, $MS_e = 6.54 \times 10^3$, $p = .08$; $\eta_p^2 = .17$]. Regardless of expertise, everyone responded more quickly to matches than to mismatches. There was also a main effect of expertise [$F_1(1,77) = 8.80$, $MS_e = 1.12 \times 10^5$, $p < .01$; $\eta_p^2 = .10$; $F_2(1,17) = 90.67$, $MS_e = 6.54 \times 10^3$, $p < .01$; $\eta_p^2 = .84$], in which experts responded more quickly than novices to everyday action items. Despite the fact that everyone presumably had experience performing the everyday actions, because these actions were depicted in a domain in which experts had significant familiarity with the stimuli, it is not surprising that experts responded more quickly overall. Importantly, however, there was no expertise $\times$ picture interaction (F_1 and $F_2 < 1$), indicating that novices and experts did not differentially respond to pictures of football players that matched the everyday actions implied in the sentences versus those that did not. Moreover, independently of the main effect of picture match seen above, the differences between matches and mismatches were significant for both experts and novices (ps $< .05$) considered separately, despite the fact that these everyday action items were presented within a domain with which novices were unfamiliar.

A similar ANOVA on the football-specific actions revealed an expertise $\times$ picture interaction [$F_1(1,77) = 4.80$, $MS_e = 2.49 \times 10^4$, $p < .04$; $\eta_p^2 = .06$; $F_2(1,19) = 6.97$, $MS_e = 1.03 \times 10^4$, $p < .02$; $\eta_p^2 = .27$]. Football experts who had knowledge and experience in executing the types of movements implied in the sentences responded more quickly to pictures of individuals performing actions that matched that implied in the sentence than to those that did not [$t_1(27) = 2.8$, $p < .01$, $d = .55$; $t_2(19) = 3.56$, $p < .01$, $d = .72$]. Novices' RTs did not differ [$t_1(49) = 0.36$, n.s.; $t_2(19) = 0.01$, n.s.].

Discussion

Novices responded more quickly to pictures of football players performing actions that were implied in the text than to actions that were not—provided those actions depicted everyday events they had experience with (e.g., sitting down on a bench). In contrast, experts showed this effect for *both* everyday and football-specific actions. Thus, the ability to differentiate between different action orientations (suggesting one is representing sensorimotor information associated with the objects and individuals they are reading about) is not just a function of general domain knowledge but is dependent on specific experience in performing the actions and interacting with the objects in question.

GENERAL DISCUSSION

In two experiments, we assessed the impact of sensorimotor skill expertise on the representation of objects and actions one reads about. In Experiment 1, novice and expert hockey players read sentences describing hockey and everyday situations and judged whether a subsequently presented target item was mentioned in the sentence. In Experiment 2, novice and expert football players were presented with pictures of football players performing actions that either matched that implied in a preceding sentence or did not. Both novice and expert athletes responded more quickly to items that matched the actions implied in previously presented sentences than to those that did not—provided that these sentences depicted everyday scenarios or actions anyone might perform. Only athletes showed this effect for their respective sport-specific scenarios. Although further work is needed to tease apart the relative contribution of perceptual versus motor learning in these effects, this work establishes that experience is a necessary ingredient in forming representations that differentiate the sensorimotor qualities of what one reads about. As researchers continue to highlight the impact that perceptual and motor activity has on cognition, it is essential to constrain theories of embodied cognition (Markman & Brendl, 2005). This work demonstrates the importance of taking previous knowledge and experience into account.

One characteristic of high-level performance is the ability to act flexibly. Thus, one might conclude that expertise breeds amodal, purpose-neutral knowledge representations within one's skill domain. The fact that the present work highlights the role that knowledge and experience plays in depicting sensorimotor qualities of what one reads about seems to work against this idea. However, one component of embodied representations may be the ability to mentally simulate (perceptually and/or motorically) events offline (Wilson, 2002). Thus, embodied knowledge may free up skilled performers' attentional resources so that they are able to act flexibly when unexpected circumstances arise.

Embodied theories suggest that our understanding of the world is not limited to an abstract network of knowledge but, rather, is grounded in sensorimotor systems (Barsalou, 1999; Glenberg, 1997; Zwaan et al., 2002). Little work, however, has explored how these representations arise or the type of knowledge and experience that supports them. The present work addresses this notion by empirically demonstrating that without experience, such representations may not be as differentiated.

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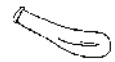
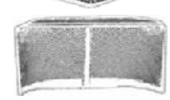
APPENDIX A
Examples of Experimental Stimuli Used in Experiment 1

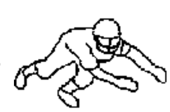
Picture A serves as a *match* for Sentence A and as a *mismatch* for Sentence B. Picture B serves as a *match* for Sentence B and as a *mismatch* for Sentence A.

Sentence		Picture
Nonhockey		
Scenario 1		
A. The child saw the balloon in the air.	(A)	
B. The child saw the balloon in the bag.	(B)	
Scenario 2		
A. The woman put the umbrella in the air.	(A)	
B. The woman put the umbrella in the closet.	(B)	
Hockey		
Scenario 1*		
A. The referee saw the hockey helmet on the player.	(A)	
B. The referee saw the hockey helmet on the bench.	(B)	
Scenario 2**		
A. The fan saw the hockey net after the player slid into it.	(A)	
B. The fan saw the hockey net after the puck slid into it.	(B)	

*The helmet has a different configuration, depending on whether or not it is on a player. **The net is either knocked over or upright, depending on who or what collides with it.

APPENDIX B
Examples of Experimental Stimuli Used in Experiment 2

Picture A serves as a "match" for Sentence A and as a "mismatch" for Sentence B. Picture B serves as a "match" for Sentence B and as a "mismatch" for Sentence A.

Sentence		Picture*
Everyday Action		
Scenario 1		
A. The coach saw the football player on the bench.	(A)	
B. The coach saw the football player in the huddle.	(B)	
Scenario 2		
A. The coach saw the football defenseman during the team prayer.	(A)	
B. The coach saw the football defenseman during the coin toss.	(B)	
Football-Specific Action		
Scenario 1		
A. The trainer saw the offensive lineman protect the quarterback.	(A)	
B. The trainer saw the offensive lineman protect the ball.	(B)	
Scenario 2		
A. The coach saw the defenseman stop the offensive lineman.	(A)	
B. The coach saw the defenseman stop the kick.	(B)	

*The players are in different positions, depending on the action they are performing.

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