Interpersonal Motives in Comprehension of Narratives

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We carried out 4 experiments to explore the influence of motivational knowledge in activating expectations about interpersonal actions in story comprehension. In Experiments 1 and 2, participants read episodes in which the characters' relationships could be close, distant, or superficial, and 1 character was involved in a situation that required giving help to another. We found that the reading times of the phrase that expressed the interpersonal action (i.e., "Rudolph defended Bertha against the jokes") were shorter when readers read this sentence after the helping situation and a close relationship. In Experiments 3 and 4, we measured the naming latency times of the goal linked to the helping situation (i.e., "defend") in different places within the text. The results showed that the characters' relationship directly did not influence the latencies of naming the goal. The results are explained with reference to the debate between the constructionist and memory-based text theories.

The constructionist viewpoint, from its early appearances (Bartlett, 1932; Schank, 1986; Schank & Abelson, 1977) and recent revisions (Graesser, Singer, & Trabasso, 1994; Singer, Graesser, & Trabasso, 1994), has produced extensive research on the causal inferences that readers make from explicit statements about the settings, actions, events, and goals in narratives (Graesser, 1981; Graesser & Clark, 1985; Graesser, Lang, & Roberts, 1991; Trabasso, van den Broek, & Suh, 1989; van den Broek, 1990a, 1990b, 1994). The constructionist view is built around the search-after-meaning principle: Readers establish both local and global causal connections by continually seeking answers to "why" questions as they read.

Graesser et al. (1994) proposed a model of comprehension in which the reader normally constructs a deep representation of the discourse. The reader actively constructs a meaningful situation model that is compatible with the text and for

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which it is necessary to make inferences that explain the reasons for the actions, events, and states that are mentioned. Of the group of possible inferences produced during the course of reading, central importance is given to inferences about the goals of the characters in the stories. A goal represents a state that the character wishes to achieve by performing intentional actions. Examples of goals are helping a friend, buying a house, or becoming a psychologist, and examples of intentional actions to achieve these goals could be lending money, going to a property company, or putting in an application to the university, respectively. There is an extensive body of research that supports the general claim that readers construct these goals online while establishing global text coherence (Bloom, Fletcher, van den Broek, Reitz, & Shapiro, 1990; Dopkins, 1996; Dopkins, Klin, & Myers, 1993; Graesser et al., 1991; Long & Golding, 1993; Long, Golding, & Graesser, 1992; Lutz & Radvansky, 1997; Magliano, Bagget, Johnson, & Graesser, 1993; Myers, 1990; Suh & Trabasso, 1993; Trabasso et al., 1989; van den Broek & Lorch, 1993).

Characters' goals in narratives vary in the degree of specificity. Superordinate goals are triggered by the motivational states of the characters (Gámez, 1995; Graesser et al., 1994; Long, Seely, & Oppy, 1996; Singer & Halldorson, 1996). In the text shown in Table 1, there is an example of an episode from everyday life in which one character would benefit from the help of another because a third character is attacking her. The implicit episodic goal in this story is "to defend," which in the text is expressed by the action described in the phrase "Rudolph defends Bertha against the joke." However, the reader always expects Rudolph to defend Bertha. Why? The only phrase in the text that gives any information to the reader about Rudolph's behavior is "Bertha and Rudolph are attracted to each other." That is, the presence of an affective close relationship represents a good motive for Rudolph to defend Bertha. This type of motive is an interpersonal motive because it involves, at a minimum, two people. In this context, the reader could understand the text using some world knowledge that is not explicit but is linked with the information described in the text. Our main goal in this article is to investigate the role of this type of motivational information on the monitoring of the inferences that readers need in the course of narrative text comprehension.

Trabasso and Magliano's (1996) analysis of thinking protocols aloud during reading segregated three classes of inferences made during story comprehension. The most frequent of these inferences are explanations, followed by predictions and associations. The majority of the inferences (57%) involved newly activated relevant world knowledge, whereas explicit text sentence information was in 36% of thinking-aloud content. Both explanations and many predictions are related to goals. Explanations give reasons for the goals and the actions and states connected to these goals. Predictions frequently are goals in the sense that if a character has a goal, he or she will subsequently initiate plans and subgoals or actions to achieve the goal.

Long et al. (1996) found that readers who received a summary describing the protagonists' ulterior motives (e.g., a woman that wants to murder her husband) used this information to explain their actions. Readers exhibited longer reading

TABLE 1
Sample Stimulus Texts From Experiments 1 and 2

Immediate version
1. In parties for young people,
2. there was never a lack of drinks.
3. (a) Bertha and Rudolph were attracted to each other.
4. Rudolph and Bertha met at a party,
5. Bertha had drunk a lot and another girl
6. began to make fun of Bertha,
7. *Rudolph defended Bertha against the jokes*
8. and they both left.

3. (b) Bertha and Rudolph disliked each other. (distant relationship)
3. (c) Bertha and Rudolph knew each other. (superficial relationship)

Delay version
1. In parties for young people,
2. there is never lack of drinks.
3. (a) Bertha and Rudolph were attracted to each other.
4. Rudolph and Bertha met at a party,
5. Bertha had drunk a lot and another girl
6. began to make fun of Bertha,
7. it was a cold night
8. in the last days of winter
9. and the temperature was very low,
10. *Rudolph defended Bertha against the jokes* (target phrase)
11. and they both left.

Note.   In Experiment 1, Sentences 3(a) and 3(c) and in Experiment 2, Sentences 3(a) and 3(b).

times for actions related to the protagonists' hidden goals than readers who received no prior knowledge. These longer reading times are interpreted as the time the reader needs to establish a causal relation between something read at the beginning of the text (the summary) and the target phrase that appears 7 to 10 pages later.

Singer and his colleagues (Singer, 1994; Singer et al., 1994; Singer, Halldorson, Lear, & Andrusiak, 1992; Singer, Revlin, & Halldorson, 1990) reported that consequences often are bridged to previous distant causes during comprehension. Singer and Halldorson (1996) emphasized the importance of motives when constructing these bridging inferences. In a series of four experiments, they registered the answer time of the readers in questions (e.g., do birthday parties involve presents?) in which the accessibility of motivated knowledge expressed in a phrase at the beginning of the text was tested. For example, participants received either motivated phrase "Valerie left early for the birthday party" or control phrase "Valerie left the birthday party early." The answer time was faster in the motive condition than in the control condition.

In summary, causal explanations and causal links play major roles in comprehension. The search for global causal connections that produce global coherence is assumed to be made even when a text is locally coherent. It follows from this

general claim that goal and protagonist motives play a central role in the causal structures that contribute to the global coherence of stories. Since the pioneering research of Schank and Abelson (1977) and Schank (1982), researchers have investigated the connections among goals, motives, behaviors, and the "themes" from which we can infer goals in the narratives (Dyer, 1983; Seifert, Abelson, & McKoon, 1986; Seifert, Abelson, McKoon, & Ratcliff, 1986; Seifert, Dyer, & Black, 1986). Goals play an important role in a psychological model of question answering called QUEST (Graesser et al., 1991). The knowledge representation in QUEST includes functional text categories (state, events, goals, and styles), the relations between these categories in the texts (called arc categories: consequence, implies, manner, initiate, reason, and outcome), and conceptual criteria and rules of composition that constrain when and how nodes are connected by the particular category. In this detailed model, goals have a central role that links other categories in the text, and there is a specific classification of the goals. For example, goal initiators include events, character traits, and other states that motivate the goals. The outcome of goals specify whether the goals are achieved or blocked by circumstances.

In this article, we investigate a type of motivational knowledge in the comprehension of the character's interpersonal behavior. Specifically, we suggest that the affective relationships between characters represent a type of motivational knowledge that readers identify during the course of comprehension. These affective relationships help the reader anticipate the behavior of a character in situations in which one character explicitly or implicitly demands help from another. The text shown in Table 1 is an example of such a narrative episode. The text describes an everyday life episode with the following conceptual pattern: (a) *Two characters A and B* (Rudolph and Bertha, respectively) *had a good relationship* (Sentence 3a), (b) *contextual circumstances* (in the example, a third character attacked B) *put B into difficulties* (Sentences 4–6), and (c) *A helped B* (Sentence 7).

Our interest is focused on the link between Sentences 3–7. The information expressed in Sentence 3 allegedly has a special status in the mental representation of the episode narrated. The affective relationships between characters allegedly influences the comprehension of character's behavior. This influence could be reflected in empirical measures and has theoretical implications for the comprehension of narratives.

WHY DOES THE AFFECTIVE CHARACTERS' RELATION HAVE A SPECIAL, MOTIVATIONAL STATUS?

Our motivational approach to comprehension is related to the concept of themes, as proposed by Schank and Abelson (1977). Themes are causal knowledge structures involved in the process of anticipating and explaining behavior. These authors differentiate three types of themes: role, interpersonal, and life themes.

From interpersonal themes, for example, readers could expect that Rudolph defends Bertha in the situation described in Table 1 because readers have a world knowledge structure about relationships from their own experience that permits them to activate an expectation about Rudolph's behavior. There are also studies on the connections among motives, goals, and actions from social cognition (Baldwin, 1992; Birtchnell, 1993; Bowlby, 1969; Heider, 1958; Lewin, 1926; Murray, 1938). Following the analogy of natural space, Birtchnell proposed that the dimension of closeness–distance constitutes a horizontal axis, related to the predisposition to become involved with other persons (closeness pole) or keep at a distance from them (distance pole). Interpersonal closeness and distance provide personal benefits associated with particular types of interaction. Regarding the benefit of closeness, there is giving help in the case of need and defense in the case of aggression by a third party, regarding benefit of distance, there is avoiding and unwanted invitations. For these reasons, their creation, modification, and maintenance constitute basic human motives.

According to constructionist theory, the comprehension of Sentence 7 when readers previously read Sentence 3a will be the consequence of linking the affective relationship with the action that fulfills the goal (Sentence 7). From our point of view, and following the constructionist theory, the information described in Sentence 3a expresses a motive (to maintain a good relationship) that triggers an expectation about the probable action of Rudolph. In the text of Table 1, when the reader reads the helping situation (Sentences 5 and 6), he or she activates an episodic goal (to defend) that is involving in this kind of situation. Immediately, the reader links this goal with the previous knowledge about the affective relationship and confirms that Rudolph has the intention to defend Bertha. This occurs because the reader attributes a motive to Rudolph: to maintain a close relationship with Bertha. With this intention in the reader's mind, every action performed by Rudolph to defend Bertha will be a positive value, even though the action could be considered negative by society (e.g., Rudolph pushes the girl). The action has a positive value because it permits the maintenance of a close relationship.

In summary, an evaluative process is present in the course of comprehension because when the reader finds a phrase that describes a character asking for help from another, then the reader automatically activates an expectation related to an action from the character asked. The reader connects the interaction situation (the helping situation) with previous knowledge about affective relationships. The reader activates an expectation about a type of behavior performed by the character in that context. When the action of a character confirms the expectation (e.g., Rudolph defends Bertha), the text is easy to comprehend. However, if the action performed by the character does not coincide with the expectation (e.g., Rudolph does not defend Bertha), this action is evaluated as negative in relation to the previous motive (to maintain a good relationship) and triggers a difficulty in the text comprehension.

A different theoretical point of view is knowing as memory-based text processing. This alternative view does not require causal categories. This view, from its

early appearances (Kintsch & van Dijk, 1978; McKoon & Ratcliff, 1989, 1992; Sanford & Garrod, 1981) and recent revisions (Albrecht & Myers, 1995, 1998; Albrecht & O'Brien, 1993; Cook, Halleran, & O'Brien, 1998; Dopkins et al., 1993; Gerrig & McKoon, 1998; Klin, 1995; Lea, Mason, Albrecht, Birch, & Myers, 1998; McKoon, Gerrig, & Greene, 1996; Myers & O'Brien, 1998; O'Brien, Rizzella, Albrecht, & Halleran, 1998) have produced a great deal of empirical evidence showing that comprehension is synonymous with retrieval from memory.

In a special issue of *Discourse Processes*, Lorch (1998) summarized the assumptions shared in memory-based theories. First, the memory retrieval process is highly automatic and "dumb." This process is one in which concepts and propositions in the discourse representation and the reader's knowledge base resonate as a function of the degree of match to the input Thus, a "passive resonance process" is the primary mechanism by which background information is reactivated (Myers & O'Brien, 1998). Second, subpropositional units (words and modified words) are regarded as the primary triggers of the search process (Sanford & Garrod, 1998). Third, background knowledge is accessed by the same resonance process responsible for accessing information in the episodic text representation. Memory-based theories include, along with the resonance process, a second process that continually evaluates the contents of working memory (O'Brien et al., 1998). This process might register failure in certain circumstances, but the authors do not specify the nature of this evaluation. Another assumption of this memory-based perspective is that the reader can access directly to long-term memory.

In summary, from the memory-based theories, coherence is not the result of a process of building up different pieces of information that have a different status, but rather an emergent process resulting from a waxing and waning flow of activation. The availability of a concept is a function of its overlap with items in working memory (Myers & O'Brien, 1998). General memory processes provide the information infrastructure that allows readers to be prepared for a wide range of literary effects and everyday experiences (Gerrig & McKoon, 1998; McKoon et al., 1996).

From this view, concepts of goals or motives are not necessary. The sentence "Rudolph defends Bertha against the joke" could be understood easily by the reader for at least two reasons: the presence of the name of characters reactivated related concepts, and the proximity of this sentence to the sentence that describes the relationship. According to resonance processes, once causal relations have been encoded, they are not given any special status; their accessibility depends on the same factors that influence accessibility of other discourse elements.

The basic claim that we study in this article is that interpersonal relationships are critical when readers track the goals and actions of the characters in plot. According to constructionist theory (and in opposition to the memory-based view), the starting point is that there is a qualitative difference among the interpersonal information (goals, motives, and action), with different status and different influences in the process of text comprehension. Our goal is to test the class of infer-

ences that show the importance of monitoring such affective relationships in the context of episodes in which one character asks for help from another. The first step in our research (Experiments 1 and 2) was to record the reading times of the interpersonal actions. We wanted to compare different versions of the texts in which the previous relationships between characters could be close, distant, or superficial and the action would be immediately after, versus several sentences after, the helping situation. We also contrasted the prediction from constructionist and memory-based theories in these experiments.

EXPERIMENT 1

In this first experiment, we used short texts like the example shown in Table 1. We examined the reader's comprehension of the sentence that described the interpersonal action when previously he or she had read that the character's relationship was close or distant. We had two versions of the text. In the immediate version, the character's action (Sentence 7) appeared immediately after the helping situation. In the delay version, this sentence appeared three phrases after the helping situation (Sentence 10). Predictions about the reading times of the character's action were different depending on the theoretical framework.

According to constructionist theory, participants would read the target phrase in significantly less time when they had previously read that the relationship between the characters was close, irrespective of the text being in the immediate or the delay version. From this view, there would be increased facilitation in the close-relationship condition because this type of relationship permits the building up of a causal network that links the character's actions with the helping situation and characters' previous relationship. Conversely, when the previous relationship is distant, the causal network was different and the character's action (in the example "Rudolph defends Bertha against the joke") could not link with the distant relationship in the network. Distant relationships are more appropriately associated with nonhelping goals and actions. As a result, readers in this condition could have difficulties in integrating the positive action shown in the text.

According to memory-based theory, reading times of the target phrases would not be significantly different when the relationship between the characters was distant or close. The theory should only predict a possible main effect of the action position. From this view, there was no critical difference between the close and distant conditions because, in both cases, the target sentence showed the name of the protagonist, which permitted a reactivation in the working memory of the previous information necessary for comprehending this new sentence. On the other hand, any causes that share features with a subsequent consequent event will resonate to some degree. Assuming that the level of activation of any element in the discourse model decays as a function of referential distance, then recent causal antecedents are likely to resonate more strongly than early causal antecedents

when the target sentence appeared in the delay version. The recency of the information in the text should reactivate concepts more strongly.

Method

Participants.   Forty-four introductory psychology students (24 women and 20 men) at the University of La Laguna, Spain, participated for partial fulfillment of a course requirement.

Materials.   Forty-three stories were used: 16 experimental, 24 fillers, and 3 training stories. The experimental texts were about episodes from everyday life (taken from texts used in Gámez, 1995) in different contexts (i.e., couples, family, friends, etc.). The first two phrases introduced a setting, and the third phrase expressed an affective relationship—one half of the time close and one half of the time distant. The fourth, fifth, and sixth phrases described the "helping situation" in which, implicitly or explicitly, one character was asked to give help to the other in various contexts (to defend against aggression, give support, keep to a secret, lend money, etc.). The target phrase describing the character's action appeared in Sentence 7 in the immediate version or three sentences after, in the delay version. These three sentences (7, 8, and 9) simply described some aspect of the physical scene or weather in which the interaction developed, delaying the appearance of the target phrase in Sentence 10. Each story was followed by a verification question aimed at encouraging the comprehension of the stories. The questions never referred to the interpersonal topic of the narratives (e.g., "Are the characters at a party?" was the question in the Table 1 example). One half of the comprehension questions had a "yes" answer, and the other one half had a "no" answer.
    Filler stories were similar in structure, content, and length to the experimental texts but were different insofar as no relationship was made explicit. Neither were there interactions that required the characters to become involved with one another. Many of the stories were episodes from everyday life, in which one character wanted something and by chance met another character, but this never affected what they wanted. The reason for these texts was to disguise the patterns of content in experimental texts.

Design.   The experiment was a Type of Relationship (close vs. distant) × Action Position (immediate vs. delay) within-subjects factorial design. The participants were assigned to one of four sets of stories resulting from the counterbalance of the experimental conditions. This ensured that every participant received an equal number of stories for each of the four conditions (close–immediate, close–delay, distant–immediate, and distant–delay), and no participants received
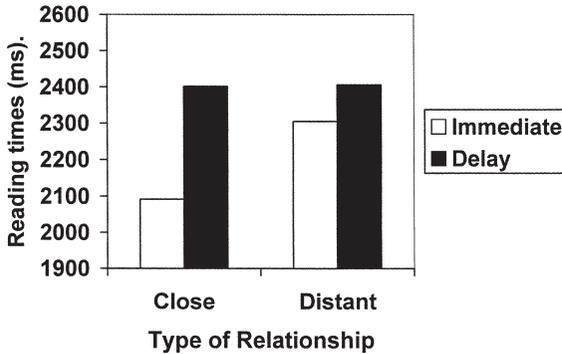
UPDATING SPATIAL SITUATION MODELS

FIGURE 1   Means of the readings times for the target sentence in immediate and delay versions as a function of type of relationship in Experiment 1.

the same stories twice. The dependent variable was the reading time of the target sentence (the character's action).

Procedure.   Participants were tested individually. They read the instructions on a computer screen and were given three training stories, followed by the experimental and filler stories randomized for each participant. Participants read each story, phrase by phrase, in a self-paced manner. Stories were followed by a yes or no question, which appeared in capital letters on the screen. Participants had to answer the questions by pressing the key assigned to yes or no on the keyboard. The time between two consecutive key pressings (sentence reading time) was recorded by the computer as well as the reaction time and accuracy of responses to questions.

Results and Discussion

A Type of Relationships × Action Position analysis of variance (ANOVA) was performed on the mean reading times for target sentences. Reading times that were 2.5 standard deviations above or below the participant's mean were removed (1.3% of the results). The data were analyzed twice; the error term was based on participants' variability in one analysis (F_1) and on item variability in the other (F_2). All effects were tested at a significance level of $p < .05$ unless otherwise indicated. Figure 1 presents mean reading times in immediate and delay versions as a function of type of relationships.

As we expected from constructionist theory, we found a reliable main effect of the type of relationship, $F_1(1, 43) = 7.48$, $MSE = 69,521$; $F_2(1, 15) = 5.58$, $MSE = 33,879$. Participants in the distant condition ($M = 2,356$) exhibited longer reading

times for target sentences than did participants in the close condition ($M = 2,247$). There was a reliable Type of Relationship × Action Position interaction in the participants analysis, $F_1(1, 43) = 5.87$, $MSE = 81,610$, and a tendency in the items analysis, $F_2(1, 15) = 2.58$, $MSE = 67,605$, $p < .12$. Participants in the close–immediate condition ($M = 2,092$) exhibited shorter reading times for target sentences than did participants in the distant–immediate condition ($M = 2,305$) and the close–delay ($M = 2,402$) and distant–delay condition ($M = 2,406$). An a posteriori least significant difference test (Kirk, 1982),[1] $LSD = 123$, confirmed this result. This interaction is explained later.

As memory-based theory predicted, there was also a reliable main effect of action position, $F_1(1, 43) = 15.4$, $MSE = 121,023$; $F_2(1, 15) = 21.28$, $MSE = 31,836$. Target sentences were read more slowly in the delay version ($M = 2,404$) than in the immediate version ($M = 2,199$).

The results taken together show a pattern of results difficult to explain completely by either the constructionist theory or memory-based theory, whereas both theories accommodate some of the data. The results are partially supported by memory-based theory. The absence of differences in the reading times in the delay condition and the fact that this time was significantly greater than in the immediate condition are congruent with the fact that information availability decreases with the amount of time that has elapsed since it was last used. However, the differences found between close and distant conditions are inconsistent with a general memory process that operates "dumbly" and automatically. The difference between close- and distant-relationship conditions is consistent with the constructionist theory. Participants are sensitive to the status of the character's relationships. However, what is happening, and why is it weakened in the delay condition? The constructionist theory perhaps could account for the interaction in an ad hoc way. When the intervening material occurs (delay version), the reader cannot explain why the writer is bothering to mention the cold weather. This break in pragmatic coherence discourages the reader from consistently trying to maintain global coherence. This process consumes time. Therefore, the reading times in the close and distant conditions are about the same in the delay version of the texts. Readers do not search for all the possible links all the time. When people read of a "helping situation" and have prior knowledge that the characters have a close relationship, then they expect an action that fulfills the character's motive of maintaining the close relationships. The expectation about the action is only in the working memory, whereas the discourse focus is on the interaction. If the focus of the discourse shifts, the expectation tends to disappear. The conservative nature of the motiva-

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[1]According to the least significant difference test, if the F statistic is significant, the least significant difference between two means, $(LSD) = t_{\alpha/2,v}$ * $2MS_{error}/n$, where $t_{\alpha/2,v}$ is the upper $\alpha/2$ percentage point from Student's t distribution, and v is the degrees of freedom associated with MS_{error}, the denominator of the F statistic. If the absolute value of a comparison $=$ $Y_j - Y_j$ exceeds (LSD), the comparison is declared significant.

tional expectation and the text perspective adopted by readers about interpersonal interaction would explain this focusing process.

In Experiment 1, we compared two opposing interpersonal motives (i.e., maintaining closeness or distance). We supposed that in the interpersonal distant condition, readers could be introducing a new knowledge link with a different goal that is implicit from the text (in Table 1, the implicit goal is to defend in the close condition and to attack in the distant condition). For this reason, in Experiment 2, we compared a close relationship with a superficial one. A superficial relationship would represent a control condition to test the presence of a motive of maintaining closeness in the integration of interpersonal action.

EXPERIMENT 2

Using the same texts as Experiment 1, we substituted a distant character's relationship for a superficial character's relationship in Sentence 3. An example can be seen in Table 1. According to constructionist theory, the predictions were the same as in Experiment 1. The shorter reading times of the target sentences would be in the close condition, in both the immediate and delay versions of the text. When reading about a superficial relationship, participants would build up a different causal network than in the case of a close relationship because in the first case there is no motivational link between relationships and the character's action. According to memory-based theory, the predictions were the same as in Experiment 1—that is, only a main effect of the action position. From this view, there was no critical difference between the close and superficial conditions because the names of the characters were identical in both conditions.

Method

Participants. Forty introductory psychology students (22 women and 18 men) at the Educational Center of La Laguna University, Spain, participated for partial fulfillment of a course requirement.

Materials. The materials for Experiment 2 included the 16 experimental and 24 filler stories that were used in Experiment 1. However, in this experiment, Sentence 3 described a close relationship half of the time and a superficial relationship the other half. In fact, the relationship between the characters was so superficial as to be almost nonexistent.

Design. The experiment was a Type of Relationship (close vs. superficial) × Action Position (immediate vs. delay) within-subjects factorial design. The participants were assigned to one of four sets of stories resulting from the counter-

balance of the experimental conditions. This ensured that every participant received an equal number of stories of each of the four conditions (close–immediate, close–delay, superficial–immediate, and superficial–delay) and no participants received the same stories twice. The main dependent variable was the reading times for the sentence containing the interpersonal character's action (target sentence).

Procedure.   This was the same as in Experiment 1.

Results and Discussion

Mean reading times are shown in Table 2. As in Experiment 1, the analysis yielded a significant interaction between Type of Relationship × Action Position in the participants analysis, $F_1(1, 39) = 4.61$, $MSE = 145,710$, and a tendency in the items analysis, $F_2(1, 15) = 2.58$, $MSE = 104,433$, $p < .12$. Participants in the close–immediate condition exhibited shorter reading times for target sentences than did participants in the superficial–immediate condition and the close–delay and superficial–delay conditions. An a posteriori LSD test (Kirk, 1982), $LSD = 171$, confirmed these differences. This interaction again demonstrates that participants activate an expectation about interpersonal action when they previously have read of a close relationship that is focused on the sentence following the description of the helping situation.

As in Experiment 1, we found a reliable main effect of action position, $F_1(1, 39) = 34.9$, $MSE = 93,845$; $F_2(1, 15) = 31.2$, $MSE = 42,091$. Target sentences in the delay condition ($M = 2,562$) were read more slowly than in the immediate condition ($M = 2,276$). There was no main effect of type of relationship, $F_1(1, 43) < 1$; $F_2(1, 15) < 1$.

The results were not consistent with a "strong" constructionist theory, insofar as they replicated the interaction effects found in Experiment 1. The main effect of the action position supports the memory-based theory, as explained earlier. However, from this view, it is difficult to understand the interaction's effect—that is, the shorter reading times in the close–immediate condition. What is different in the close versus superficial version of the text? In Experiment 1, we found that readers differentiated between close and distant relationships, and this had consequences in the reading times of interpersonal character's actions. In Experiment 2,

TABLE 2
Mean Reading Times (in ms) as a Function of Type of
Relationship and Action Position in Experiment 2

	Action Position	
Type of Relationship	*Immediate*	*Delay*
Close	2,190	2,605
Superficial	2,362	2,519

we compared two different degrees of concept elaboration: close and superficial relationships. Perhaps readers find it easier to distinguish close–distant and close–superficial relationships that are supported by the absence of the main effect of the factor type of relationship in Experiment 2.

The results of Experiments 1 and 2 demonstrate that readers more easily integrate actions that fit with an expectation about the behavior of a character in a helping context when the reader is previously aware of the existence of a close relationship between characters. These results also show that the facilitation effect only appears in the immediate version of the text in which the activation of an expectation would be maximized.

In Experiments 1 and 2, we showed that motive has an important influence on the comprehension of the character's behaviors. Our next question is this: What happened with the episodic goal? In Table 1, the episodic goal is to defend and the interpersonal character's action "Rudolph defended Bertha against the jokes." The character's action represents an intentional action always inspired by an agent's goal. In reality, the episodic goal is only a more abstract representation of the action. Following the QUEST representational system of Graesser et al. (1991), an action is an amalgamation of a goal node (to defend) and an event, state, or style node that signifies the successful achievement of the goal (successfully defending).

Previous researchers have shown the central role of goals as causal categories that link different elements in the text (Graesser et al., 1991; Long & Golding, 1993; Long et al., 1992; Lutz & Radvansky, 1997; Magliano et al., 1993; Myers, 1990; Suh & Trabasso, 1993; Trabasso & Sperry, 1985). However, we know much less about the connections among goals, motives, and actions. In the next experiment, we wanted to explore the extent of linking between interpersonal motive (maintaining a close relationship) and episodic helping goals (i.e., to help or defend). What we do not know is whether the information about the presence of an affective relationship could influence the degree of activation of the episodic goal.

EXPERIMENT 3

In this experiment, we examined the extent to which readers activated the interpersonal goal after reading the description of the helping situation. The dependent variable of interest was the time required to name a probe word. The probe word was a single word that represented the interpersonal goal in each text. Word-naming technique has been used widely as a direct measurement of the activation of a specific concept in the course of reading (Calvo & Castillo, 1996; de Vega, Díaz, & León, 1997; Gernsbacher, Goldsmith, & Robertson, 1992; Haberlandt, 1994; Keenan, Golding, Potts, Jenning, & Aman, 1990; Klin & Myers, 1993; Long et al., 1992; Potts, Keenan, & Golding, 1988).

TABLE 3
Sample Stimulus Texts From Experiments 3 and 4

Before the protagonist version
  1. In parties for young people,
  2. there is never a lack of drinks. (a) Bertha and Rudolph are attracted to each other.
  3. Rudolph and Bertha meet at a party,
  4. Bertha has drunk a lot and another girl
  5. begins to make fun of Bertha,
     TO DEFEND (target word)
  6. Rudolph notices the situation
     TO WALK
  7. and takes Bertha out for some fresh air.

  3. (b) Bertha and Rudolph dislike each other. (distant relationship)
  3. (c) Bertha and Rudolph know each other. (superficial relationship)

After the protagonist version
  1. In parties for young people,
  2. there is never a lack of drinks.
  3. (a) Bertha and Rudolph are attracted to each other.
  4. Rudolph and Bertha meet at a party,
  5. Bertha has drunk a lot and another girl
  6. begins to make fun of Bertha,
  7. Rudolph,
     TO DEFEND (target word)
  8. notices the situation
     TO WALK
  9. and takes Bertha out for some fresh air.

Note.   In Experiment 3, Sentences 3(a) and 3(c) and in Experiment 4, Sentences 3(a) and 3(b).

Another hypothesis tested in this experiment is whether the activation of the interpersonal goal is influenced by the goal's appearance immediately before or after mentioning the name of the character who asked for help. An example of the text used in Experiment 3 is shown in Table 3.

Memory-based theory predicts from the resonance model that there would be shorter naming times of the goal after the name of the character is mentioned, despite the fact that the sentence describing a close or distant relationship had been previously shown. The name of the characters is the relevant concept to reactivate the related concepts in the comprehension process. According to constructionist theory, shorter naming times of the goal would appear in the close-relationship condition. Participants activate the goal from the helping situation, and they could link the helping situation with the close relationship that confirms that the character assumes the episodic goal. This theory also predicts shorter naming latencies after the mention of the name of the character, due to the fact that the character and the goal are strongly related in the causal network of the text. The character is the goal's agent.

Method

Participants.   Forty introductory psychology students (25 women and 15 men) at the University of La Laguna, Spain, participated for partial fulfillment of a course requirement.

Materials.   Forty-five stories were employed: 16 experimental, 24 fillers, and 5 training stories. The experimental stories were the same as in Experiment 1 with the following changes: The probe word to be named could appear between Sentences 6 and 7 when the goal appeared before the name of the character or between Sentences 7 and 8, when the goal appeared after the name of the character. Table 3 shows an example of the experimental text. The predictability of the interpersonal goals used in this experiment had been previously tested (Gámez, 1995). This meant that readers evaluated these goals as being very common in the context of the texts.

Between the last two sentences that ended the narratives, a word appeared unrelated to the story that the participants had to name (in Table 3, the example *TO WALK* appeared between Sentences 7 and 8 in the before version and between Sentences 8 and 9 in the after version). This second word that participants had to name had two goals: first, that they would not recognize the interpersonal nature of the target words (to defend, help, lend, etc.) and, second, that they did not always expect that there was only one word to name.

Filler stories were similar in structure, content, and length to the experimental ones. They described character events and actions in settings familiar to students. However, unlike in the experimental stories, in the filler stories no interpersonal goals appeared. During each filler story, one to three words were presented for the participants to pronounce rapidly. The number of words to name varied from one to three so that the participants did not have to expect a specific number of words. All of the test words in the filler stories were unrelated to their respective stories.

There were 72 test words presented during the filler stories and 16 test words presented during the experimental stories that were unrelated to those stories. There were 16 test words related to the experimental stories. Thus, of the 104 test words presented during the experiment, only 16 were related. This high number of unrelated words ensured that the readers could not identify the interpersonal goals as being associated with the experimental texts.

Design.   The experiment was a Type of Relationship (close vs. distant) × Goal Position (before the protagonist vs. after the protagonist) within-subjects factorial design. The participants were assigned to one of four sets of stories resulting from the counterbalance of the experimental conditions. This ensured that every participant received an equal number of stories from each of the four conditions (close relationship–before the protagonist, close relationship–after the protagonist, distant relationship–before the protagonist, and distant relationship–after

the protagonist) and no participants received the same stories twice. The main dependent variable was the time required by the participant to name the probe word (i.e., naming time).

Procedure.   Participants were tested individually in a session that lasted approximately 35 to 45 min. They read the instructions from a computer screen, which stated that the experiment involved reading several short stories. To encourage their comprehension, the participants were required to write a suitable continuation for some of the stories. They did not know in advance which stories they would have to continue. Participants also were told that in addition to reading each story, they would have to perform a secondary task. They were told that occasionally a word would appear on the screen, in capital letters, flanked by asterisks (e.g., *TO HELP*). When a word appeared like this, their task was to say the word aloud as fast as they could. Participants practiced pronouncing several target words aloud (and triggering the voice-activated relay).

The texts were displayed on the screen phrase by phrase. Each phrase appeared for a period of time proportional to its length plus a constant. The constant was 1,500 ms, and the result of multiplying the number of characters in the phrase by 33.3 ms was added to the display time of the phrase. The target words appeared 150 ms after the offset of a phrase, and they remained on the screen until either the participant triggered the voice-activated relay or 1.5 s had elapsed. The experimenter monitored whether the participants pronounced each target word correctly. This is the same procedure used by Gernsbacher et al. (1992). After the last phrase of each story, either the words "Please continue the story" or "Wait for next story" appeared. Whenever the words "Please continue the story" appeared, participants were instructed to pick up a pencil and write a suitable continuation on a clipboard. Participants wrote continuations for 8 experimental stories and 12 filler stories.

Results and Discussion

A Type of Relationship × Goal Position ANOVA was performed on the mean naming times. Times that were 2.5 standard deviations above or below the participant's mean were removed (1.3% of the data). The data were analyzed twice: The error term was based on participants' variability in one analysis (F_1) and on item variability in the other (F_2). All effects were tested at a significance level of $p <$ .05 unless otherwise indicated.

The analysis yielded a reliable main effect of goal position in the participants analysis, $F_1(1, 43) = 4.04$, $MSE = 19,668$, and a tendency in the items analysis, $F_2(1, 15) = 2.49$, $MSE = 11,581$, $p = .13$. Naming times of the target words in the after-protagonist condition ($M = 862$) were shorter than in the before-protagonist condition ($M = 905$). We found no significant effect of Type of Relationship ×

Goal Position interaction or the effect of type of relationship, $F_1(1, 43) < 1$; $F_2(1, 15) < 1$.

Our results do not support the constructionist predictions. The results showed that the affective characters' relationship did not influence the activation of the interpersonal goal in the course of narrative comprehension, neither before nor after mention of the protagonist. Participants did not link the close relationship with the helping situation and then activate an interpersonal goal related to the character who asked for help.

The results are consistent with the memory-based theory. The name of the character would reactivate a related concept as a contextually relevant goal only by a resonance process. The reader need not know the state of the relationship between the characters (close or distant) because there has been a superficial processing of this information.

The results found in Experiment 3 are difficult to integrate with those found in previous experiments. The results of Experiments 1 and 2 show that when participants read texts with a close relationship, they have an expectation about interpersonal action immediately following the description of the helping situation. However, in Experiment 3 we did not find evidence of the goal's activation. The question that arises is how participants had an expectation about the interpersonal action but not the interpersonal goal. What is happening with the interpersonal goal? A possible explanation according to constructionist theory could be that the helping situation, itself, triggers the activation of an interpersonal goal, such as to defend, and it is therefore not necessary that participants know of the previous relationship between characters. This could mean that when participants read in a text "there is a character in difficulty and another character could help her or him," this situation is always linked with the goal "to help" or "to defend." This means that the affective relationship influences the expectation of a specific action to achieve the goal, but the goal is activated directly from the helping situation.

In the next experiment, we wished to replicate the results found in Experiment 3, comparing the close with the superficial relationships.

EXPERIMENT 4

In this experiment, the texts were the same as in Experiment 3 except that a distant relationship was substituted by a superficial relationship as in Experiment 2. In Table 3, an example of the text is shown. From memory-based theory, the predictions were the same as in Experiment 3. Only a main effect of goal position could be expected. From constructionist theory, the predictions were similar to those in Experiment 3. If readers link the character's relationship with the helping situation, naming times of the goal in the close relationship version would be shorter than in the superficial condition. It predicts a main effect of type of relationship. Moreover, there should be shorter naming times to the probe word in the close relationships, particularly after the name of the protagonist.

Method

Participants.   Forty-four introductory psychology students (26 women and 18 men) at the University of La Laguna, Spain, participated for partial fulfillment of a course requirement.

Materials and design.   The materials included the same 24 filler and 16 experimental stories as in Experiment 3, with the change that Sentence 3 could express a close or a superficial relationship. The experiment was a Type of Relationship (close vs. superficial) × Goal Position (before protagonist vs. after protagonist) within-subjects factorial design. The participants were assigned to one of four sets of stories resulting from the counterbalance of the experimental conditions. This ensured that every participant received an equal number of stories of each of the four conditions (close relationship–before the protagonist, close relationship–after the protagonist, superficial relationship–before the protagonist, and superficial relationship–after the protagonist) and no participants received the same stories twice. The main dependent variable was the time taken by the participant to pronounce the target word.

Procedure.   The procedure was the same as in Experiment 3.

Results and Discussion

Mean naming times that were 2.5 standard deviations above or below the participant's mean were removed (1.5% of the results).

The analysis yielded a reliable effect of goal position, $F_1(1, 39) = 11.01$, $MSE = 8,798$; $F_2(1, 15) = 16.5$, $MSE = 2,331$. Participants in the after the name of protagonist condition exhibited shorter naming times ($M = 778$) than in the before the name of the protagonist condition ($M = 875$). There was a reliable Type of Relationship × Goal Position interaction in the participant analysis, $F_1(1, 39) = 5.05$, $MSE = 4,814$, and a marginal significance in the items analysis, $F_2(1, 15) = 3.03$, $MSE = 3,207$, $p < .10$. As can be seen in Figure 2, participants in the superficial–after the name of protagonist condition exhibited the shorter naming times of the goal ($M = 758$) in comparison with the other conditions; close–after the name of protagonist ($M = 793$), superficial–before the name of the protagonist ($M = 832$), and close–before the name of protagonist ($M = 818$) condition. An a posteriori contrast of means ($LSD = 27$) confirmed these differences. The factor type of relationship was not significant, $F_1(1, 39) < 2$; $F_2(1, 15) < 2$.

The results from Experiment 4 are partially consistent with memory-based theory. We found a goal-position effect. It is evident that the name of a character has a great capacity to facilitate every goal (e.g., syntax facilitation). However, the data show a significant difference between the close relationship version ($M = 793$) and the superficial relationship version ($M = 758$), both after the name of the
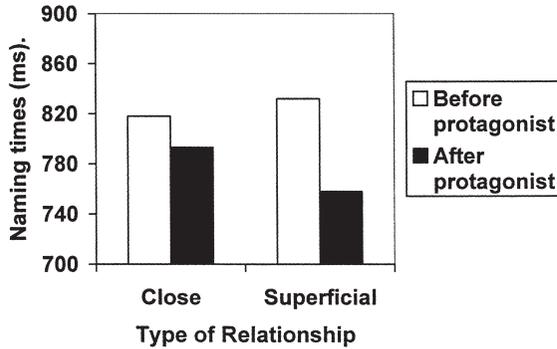
FIGURE 2   Means of the naming times target word in before and after protagonist as a function of type of relationship in Experiment 4.

protagonist. These data support the action of a more-sensitive reader guided by some high-level processes rather than by low-level factors only.

The results of Experiment 4 are difficult to reconcile with a strong version of the constructionist theory. From a strong version of this view, a main effect of type of relationship would have to be found; that is, participants would exhibit shorter naming times in the close version of the text. However, the results showed that participants, in the superficial and after-protagonist conditions, had the shortest naming latencies. How could constructionist theory account for this result? A possible explanation could be the application of the search–after meaning principle (Graesser et al., 1994) that characterizes a nonsuperficial comprehension of the narrative texts. Following this assumption, there are two sources of information that participants have processed when they read the name of the protagonist (i.e., the superficial relationship and the helping situation). In this case, the readers could ask about why a character, without relating to the other, is asked for support by him or her. At this moment, the readers have this contradiction in mind so that, after reading of the helping situation, they still do not exactly know what the story is about. Is the story related to giving help, or is this information irrelevant to know what is going on? In this context, the presence after the helping situation of the name of the protagonist is the key for readers to understand that the text is talking about help. In this way, the name of the protagonist reactivates the episodic interpersonal goal and explains the short latency. Supporting this explanation is the fact that the greater naming times were in the superficial–before protagonist condition in which participants did not expect any action from characters that have a superficial relationship. In addition, the results show no significant differences in naming times when there was a close relationship, before ($M = 818$) or after ($M = 793$) the name of the protagonist (Difference $= 25$, $LSD = 27$). The presence of the name of the protagonist in the close condition did not add new information to the reader's expectation that the protagonist will help the other character.

However, the collected data with the naming latencies must be understood with caution. The latency naming task is very sensitive to the "crest of the wave" effect in the activation, in such a way that the degree of activation of a concept is different at different points of the text. This pattern of activation could explain how the activation of the episodic goal in the superficial condition does not signify that this activation is sufficient to influence the reading time of the sentence that describes the character's action (Experiment 2). Recently, Klin, Murray, Levine, and Guzmán (1999) investigated forward inferences built up by readers when they read high-predictability texts. They also found different results using reading times and a word-naming probe.

GENERAL DISCUSSION

In this study, we examined the extent to which readers use knowledge about the character's interpersonal motives in the course of comprehension of narratives about everyday life. We found that readers seem to integrate more easily a positive interpersonal action (A helped B) when the characters had a close, rather than a distant or superficial, relationship. This is demonstrated by the shorter reading time of the phrase that expresses the interpersonal action of the character who asked for help. This facilitation effect only appeared for the phrase immediately following the helping situation. That is, the reading time of the character's action increased when we introduced three phrases between the "helping situation" and the target sentence (Experiments 1 and 2). The results of Experiments 3 and 4, however, reveal that the affective characters' relation (close or distant) did not have a direct influence on the activation of the implicit interpersonal goal linked to the interpersonal action. Interpersonal goals are activated directly from the "helping situation," and the affective relationships only seem to influence the acceptance (or nonacceptance) of this goal.

The hypotheses for all of the experiments were examined from both the constructionist and the memory-based theories. We anticipated support for the constructionist theory, which assumes that readers build a mental causal representation that includes implicit and explicit information from the text. This meaningful and coherent representation also includes the motives, goals, and actions that are narrated in the text but in which different categories have a different status in mental representation. However, the predictions from a "strong" version of both theories have problems predicting all of the data.

The memory-based theory is unable to explain the significant differences in reading times between the close and distant versions in immediate cells (Experiments 1 and 2). A weak version of this theory could be that there are some futures in the text that differentiate close and distant versions, but until the memory-based theory defines them, the theory is ad hoc and unsatisfactory. A weak version of

the constructionist theory also can accommodate the data relating to the nondifferences between close and distant versions in the delay cells. The texts may be viewed by readers as textoids that do not have interesting coherent messages, so the reader quickly gives up trying to establish global coherence; particular goals therefore are monitored for a short time rather than a long time.

Our view in this article also integrates some points that the memory-based theory had raised previously. From this view, low-level memory processes (Albrecht & Myers, 1995, 1998; McKoon et al., 1996; Myers & O'Brien, 1998; O'Brien & Albrecht, 1991) could explain many important effects in text processing. With a very parsimonious explanation, concepts and propositions may wax and wane depending on the presence in the text of various cues (e.g., name of character or words that overlap with words in memory). Memory-based processing is not goal directed. Information is made ready only as a function of the associations among cues. It is not difficult to believe that in many cases, text comprehension must be the result of an automatic and nonselective process that efficiently utilizes the limited resources of the reader—a process much more economical than the search-after-meaning principle. However, a drawback of this perspective is that all is explained merely by a question of increase or decrease of activation, and it does not identify the conditions under which memory-based text process influences the waxing and waning of information in readers' working memory. An example of this is our difficulty in identifying precise predictions in these experiments.

The results from Experiments 3 and 4, as in Experiments 1 and 2, are partially consistent with memory-based and constructionist theories. The data from Experiment 4 agree with the memory-based view because the effect of the character's name can support a fast-acting activation of the cues associated with a proper name. However, in Experiment 4, we found an interesting result in which the shorter naming latency times of episodic goals were in the superficial condition. Apart from the limitations of the measurement techniques that we commented on previously, this result supports the role of the evaluative process that readers perform when they build a mental model of the situation in the text. According to constructionist theory, the superficial conditions might have a short latency (see Figure 2) because the reader is trying to explain why the writer is bothering to mention that Bertha and Rudolph know each other and in what sense they know each other. When the helping situation occurs, the reader deduces "Ah hah, they not only know each other, they like each other, and I bet Rudolph will act in Bertha's defense." This type of inference makes proximity very salient in the reader's mind and explains the short latency.

Our results also provide support for the prediction–substantiation model (Bower et al., 1979; Dyer, 1983; Schank, 1982, 1994; Schank & Abelson, 1977). In this model, readers generate expectations about future events in the story. Expectations are formulated at a superordinate abstract level and guide the interpretation of clauses in a top-down fashion. These expectations come from knowledge struc-

tures such as scripts, themes, or motives. We also would add interpersonal motives as a knowledge structure connecting goals and concrete actions in the experiential domain of interpersonal relationships (Gámez, 1995; Marrero, Gámez, Castillo, & Espino, 1995).

The reader's expectations in the texts studied here are a type of evaluative inference (Özyürek & Trabasso, 1997)—that is, an inference in which readers need to assign a positive or negative valence to the categories of the episodes. The readers differentiate whether actions fulfill interpersonal goals and whether this is positive for the maintenance of a close interpersonal relationship between the characters. It also should be noted that the evaluative nature of the motivational information in the interpersonal realm not only refers to the fact that readers evaluate the predisposition of the characters to act: The evaluative process is related to reader assigning a positive or negative valence to the interpersonal action. Closeness or distance could be considered as dimensions related to the interest of characters, and characters' actions could be positive or negative depending on how the action benefits or prejudices the dimension involved. This would be a type of cognitive processing clearly related to the adaptive nature of human behavior. This is also a type of "prediction" (Trabasso & Magliano, 1996) because the reader, due to the presence of a close relationship and an interaction between the characters, expects something to happen (i.e., "Rudolph defends Bertha").

In an interesting work, Rizzella and O'Brien (1996) concluded

> That global information can become readily available through a fast-acting, passive resonance process that is consistent with the minimalist hypothesis and can certainly be viewed as consistent with the constructionist model. Under this view, the debate between the minimalist and constructionist positions shifts from whether readers have access to global information to questions concerning the factors that influence the availability of global information, the types of information that are likely to become available, and the extent to which readers make use of that information. (p. 1217)

We believe that a complete understanding of text comprehension requires a further examination of the role of the motives of characters in stories as evaluative knowledge structures.

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APPENDIX

Another Text Example Used in Experiments 1 and 2
(Spanish Version Is in Parentheses)

Immediate version

1.   The exam dates were drawing near, (Las fechas de los exámenes se acercan,)
2.   and the students were ready to do them. (y los estudiantes se disponen a superarlas.)
3(a) María and Lola got on very well together. (María y Lola se quieren bien.)
3.   María had all the necessary notes for the exam (María tuvo todos los apuntes necesarios para un examen)
4.   when she met Lola, who was very worried (cuando se encuentra con Lola, que está muy apurada)
5.   because she did not have some notes for the exam. (parque le faltan algunos apuntes para el examen.)
6.   María helped her get the notes that she needed (María la ayuda dejándole los temas que le faltan)
9.   before the exam. (antes del examen.)

Delay version

7.   On the faculty stairs (En las escaleras de la facultad)
8.   that were in the main entrance (que corresponden a la entrada principal)
9.   and were very spacious (que es muy amplia)
10. María helped her get the notes that she needed (María la ayuda dejándole los temas que le faltan)
11. before the exam. (antes del examen.)

3(b) María and Lola didn't get on well. (María y Lola se quieren mal.)
3(c) María and Lola didn't know each other very well. (María y Lola se conocen poco.)