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Attention to Behavioral Events During Interaction: Two Actor–Observer Gaps and Three Attempts to Close Them

Bertram F. Malle and Gale E. Pearce
University of Oregon

In social interactions, people must pay attention to many behavioral events unfolding in themselves and the other person—events that can be observable or unobservable, intentional or unintentional. Three studies explored how people distribute their attention to these different event types and, as a result, build up representations of self and partner during the interaction. Relying on basic principles of attention , the authors predict 2 actor–observer gaps: Actors pay more attention to unobservable events and less to observable events than observers; and actors pay more attention to unintentional events and less to intentional events than observers. Study 1 documents both gaps. Studies 2 and 3 explore factors that might close the gaps, such as relational intimacy and empathy. Implications of these results for the role of attention in attribution and interpersonal behavior are discussed.

> The paramount fact about human interactions is that they are happenings that are *psychologically represented* in *each* of the participants. . . We interact with each other . . . via emotions and thoughts that are capable of taking into account the emotions and thoughts of others
>
> (Asch, 1952, p. 142).

> Generally, a person reacts to what he thinks the other person is perceiving, feeling, and thinking, in addition to what the other person may be doing (Heider, 1958, p. 1).

Social interactions can be taxing on people's attention. Interactants must process what others are saying and doing, infer what they are feeling and thinking, and predict impending actions. All the while, they must plan their own utterances, monitor their actions, and confront the vast inner landscape of their thoughts, feelings, and bodily states. How people regulate attention to this complex pattern of behavioral events in themselves and others is largely unknown. Our goal in this article is to explore one aspect of this regulation during social interaction: how people, as actors and observers, distribute attention to various behavioral events (such as actions and experiences) and build up memory representations about these events.[1]

An anecdote helps illustrate how attention to behavioral events may be distributed and influence memory. During a talk on the issue of attention to behavior, one of us asked the audience members (who were undergraduate students) to write down one sentence describing what was going on for them the last time they gave an oral presentation. Typical answers were "I was nervous" or "It was exhilarating and exciting for me." Then the audience members were asked to write down one sentence describing what was going on for the speaker of the last oral presentation they attended. Typical answers were "She made good eye contact" or "He stuttered." In short, from the actor perspective people focused on their own experiences (e.g., how nervous or excited they were) but from the observer perspective they focused on the other person's actions (e.g., making good eye contact or stuttering). To form a working hypothesis, we might therefore postulate an actor–observer asymmetry in attention to behavioral events: As actors, people attend mostly to their own experiences; as observers, they attend mostly to others' actions. To elaborate on this hypothesis, we briefly survey previous research on attention to behavioral events.

Previous Work

In the attribution tradition, much work has been devoted to the way people explain behavior (see Anderson, Krull, & Weiner, 1996, for a review). Less research has been conducted on the various behavioral events (such as actions and experiences) to which people attend. A few hypotheses about attentional processes, however, can be identified.

Jones and Nisbett (1972), in their efforts to account for an actor–observer asymmetry in the domain of causal attribution, also hinted at a possible actor–observer asymmetry in attention. They suggested that observers have access to the other person's behavior but little access to the other's internal states; actors, by contrast, have difficulties monitoring their own behavior but no difficulties accessing their own internal states. Whether or not this assumption explains the traditional actor–observer asymmetry in

Bertram F. Malle and Gale E. Pearce, Department of Psychology, University of Oregon.

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Correspondence concerning this article should be addressed to Bertram F. Malle, Department of Psychology, 1227 University of Oregon, Eugene, OR 97403-1227, Electronic mail may be sent to bfmalle@darkwing.uoregon.edu.

[1] We use the term *behavioral event* in a broad way, including publicly observable events (e.g., greeting, crying) as well as publicly unobservable events (e.g., thinking, feeling).

causal attribution, it seems eminently plausible but has never been directly tested.

More recently, Malle and Knobe (1997b) showed that observers tend to explain primarily others' observable and intentional behavioral events, whereas actors explain primarily their own unobservable and unintentional events. This asymmetry in the kinds of behaviors actors and observers explain may be itself based on an asymmetry in the kinds of behaviors they attend to. However, whether observers pay more attention to observable and intentional events (and actors more to unobservable and unintentional events) has yet to be demonstrated.

Indirect evidence for actors' and observers' asymmetric attention to behavioral events comes from studies outside the attribution tradition. Sheldon and Johnson (1993) asked people to estimate which of several objects they usually think about when speaking with another person. The two most frequently chosen objects of awareness in conversation were people's own thoughts and feelings and the other person's appearance. Similarly, people's long-term memory representations of themselves contain more private aspects (e.g., thoughts and feelings) than public aspects (e.g., actions and appearance), whereas representations of others contain more public aspects than private aspects (Andersen, Glassman, & Gold, 1998; McGuire & McGuire, 1986; Prentice, 1990). People find it especially difficult to accurately track their own observable behaviors (Gosling, John, Craik, Robins, 1998). For example, although actors are acutely aware of their own emotional states, they cannot easily observe their own facial expressions, leading them to overestimate their face's expressiveness and their interaction partner's ability to infer emotional states from those expressions (Barr & Kleck, 1995; Gilovich, Savitzky, & Medvec, 1998). Conversely, observers find it difficult to reliably infer others' internal states, as seen for example in their limited *empathic accuracy* (Ickes, 1993).

Attributions, memory, and judgments are all consequences of attention, so the foregoing studies are consistent with the hypothesis that people attend as actors primarily to their own experiences and as observers primarily to others' overt behavior. What is needed, however, is a theoretical account of this potential asymmetry in attention and a more direct demonstration of its existence, particularly in the context of natural social interaction.

Theoretical Framework

To examine people's attention to behavioral events and the hypothesis of an actor–observer gap in particular, we introduce two pieces of theory. First, we need a framework that outlines the different types of behavioral events to which people direct their attention. Researchers have distinguished between intentional and unintentional behaviors (Heider, 1958; Malle & Knobe, 1997a), between actions and experiences (Gilovich & Regan, 1986), and between external behaviors and internal states (Andersen & Ross, 1984). Malle and Knobe (1997b) offered a framework that integrates these prior distinctions into a 2 × 2 classification of occurrent behavioral events. These events can be either *intentional* or *unintentional*, and they can be *publicly observable* or *publicly unobservable*. The resulting four event types (see Figure 1) can be labeled (a) *actions* (observable and intentional; e.g., asking for a favor, greeting), (b) *mere behaviors* (observable and unintentional; e.g., shivering, crying), (c) *intentional thoughts*

	Intentional	**Unintentional**
Observable	Actions	Mere Behaviors
Unobservable	Intentional Thoughts	Experiences

Figure 1. Classification of behavioral events to which people attend during interaction

(unobservable and intentional; e.g., searching for things to say, imagining Bali), and (d) *experiences* (unobservable and unintentional; e.g., being nervous, feeling angry).

One advantage of this framework is that it classifies behavioral events on the basis of two concepts (observability and intentionality) that are highly relevant to the social perceiver (Andersen, 1984; Funder & Dobroth, 1987; Malle, Moses, & Baldwin, 2001). Moreover, each concept contributes independently to hypotheses about attention regulation in social interaction .

To generate these hypotheses we need a second piece of theory, namely, principles that govern the allocation of attention in social interaction. Among the factors governing attention allocation in general (e.g., Fiske & Taylor, 1991; Posner, 1980), at least two are important in social interaction: *epistemic access* and *motivational relevance* (Malle & Knobe, 1997b). To turn one's attention to a certain event, one needs to have access to it—that is, become in some way aware of its taking place (through introspection, perception, or at least inference). Furthermore, attention to an event increases if the perceiver considers it relevant (i.e., informative, helpful) for processing or coordinating the current interaction (e.g., Cantril, 1947; Jones & Thibaut, 1958; Scott, 1995; Wyer, Srull, Gordon, & Hartwick, 1982). Using these two factors governing allocation of attention and the above classification of behavioral events, we can formulate hypotheses regarding the behavioral events that actors and observers attend to during social interaction.

Hypotheses

Observability

The observability concept specifies whether an event is publicly observable. Whether actors and observers attend to observable or unobservable events is largely based on their differential access to these two types of behavioral events. As observers, people have access to a constant stream of the other person's observable behaviors and never directly perceive the person's unobservable mental states (Andersen et al., 1998; Malle & Knobe, 1997b). This does not imply that people are never interested in others' emotions, thoughts, and goals. They are, and from an early age on (e.g., Eisenberg, Murphy, & Shepard, 1997; Gopnik & Meltzoff, 1997). However, the visual salience of observable events de-mands constant attention (Taylor & Fiske, 1978), whereas mental events often remain hidden. To become known they must be inferred—which is quite difficult and involves attention to many observable behaviors that are the indicators of mental states.

For actors, the situation is reversed. When people interact with others, thoughts pop into their minds and emotions flare up, and they must consider their next move or plan their next utterance. However, actors cannot easily monitor their own facial expressions, gestures, or posture (Bull, 1987; DePaulo, 1992; Gilovich et al., 1998). Compared with the continuous stream of internal events, actors have limited access to their own observable behaviors (Jones & Nisbett, 1972; Lord, 1980; Storms, 1973).

Thus, on the grounds of epistemic access we hypothesize that, in interaction, people attend to observable events more as observers than as actors, whereas they attend to unobservable events more as actors than as observers ("observability gap").

Intentionality

The intentionality concept specifies whether the agent performed the behavior on purpose (on the basis of an intention) or whether it was produced by a lower-level psychological mechanism such as a reflex or an emotion. Actors and observers have roughly equal epistemic access to these two types of behaviors (Malle & Knobe, 1997a). Whether people attend more to intentional or unintentional events is therefore largely based on their perception of the events' differential relevance for coordinating the interaction at hand. Intentional behaviors are relatively more relevant in interactions because they define the main business of the encounter (Goffman, 1974), because they are directed at the other, thereby demanding a response, and because they have powerful effects on the other's emotions and moral evaluations (Shaver, 1985; Vangelisti, & Young, 2000). Sperber and Wilson (1986) argued that intentional actions in conversation already come with the agent's presumption that the action will be relevant to the audience, so observers are likely motivated to attend to those actions.

For actors, relevance is dictated by the successful regulation of their own behavior, which directs their attention more to unintentional than to intentional events. Unintentional events, such as pain, sweating, or intrusive thoughts, are especially puzzling to actors because they did not plan them, so they need to understand why the events occurred and perhaps correct their unwelcome occurrence. By contrast, actors normally feel they know why they are performing an intentional behavior, and its execution frequently relies on automatic action programs (Norman & Shallice, 1986). An intentional action often attracts attention precisely when it fails or when it leads to unwelcome consequences—that is, when it turns unintentional.

Thus, on the grounds of perceived relevance we hypothesize that, in interaction, people normally attend to intentional events more as observers than as actors, and they attend to unintentional events more as actors than as observers ("intentionality gap").

Attention and Memory in Social Interaction

Before we test these hypotheses, we must consider for a moment the complexity of studying attentional processes in natural social interaction. In previous research, attention was postulated to guide social perception (see Fiske & Taylor, 1991) but was rarely directly measured, for understandable reasons. The study of attention as an ongoing cognitive process requires highly controlled procedures in experimental settings (e.g., Raymond, Shapiro, & Arnell, 1992), often using sophisticated apparatus such as eye-trackers or brain imaging. There is no methodology currently available for directly measuring this pure form of attention during natural social interaction. Instead, researchers have compromised by studying the effect of attention on memory immediately after the interaction (e.g., Frable, Blackstone, & Scherbaum, 1990; Smart & Wegner, 1999; Woody, Chambless, & Glass, 1997). The rationale for using such a memory measure is that attention to an event largely determines explicit memory for that event (Cowan, 1995; Johnston, Hawley, Plewe, Elliott, & DeWitt, 1990; Russell & D'Hollosy, 1992). In addition, memory for recently experienced events is reported to be quite accurate (Brewer, 1994) and involves imagery from the original visual perspective (Brewer, 1986; Nigro & Neisser, 1983).

Even more important than the accuracy of these memory representations, or mental models, is their social function (e.g., de Vega, 1996; Dickinson & Givon, 1997). The models provide people with a coherent story of what went on during the interaction (Schank & Abelson, 1995; Trabasso & Magliano, 1996), and this story influences impressions, evaluations, and decisions about future interactions (Nelson, 1988). In addition, the models allow people to communicate about the interaction, as in answering others' questions about what was going on in a job interview or during a first date. Therefore, if experimenters asked participants what was going on during an interaction, they would tap into socially important mental models that are built from attention and inference processes during the interaction.

In the present studies we assessed people's emergent mental models of interaction by administering a surprise recall measure immediately after an interaction: Following a conversation with another person, participants were simply asked to report on what was going on for them (actor perspective) and for their partner (observer perspective). Of course, the content of such reports is not solely based on on-line attentional processes. Retrieval cues, response biases, and on-the-spot inference processes may also have an impact. Our strategy, however, was the same as is used for covert psychological processes in general: Assuming that the reported mental representations at least partially reflect attentional processes, we should be able to predict the contents of these representations from the attentional filters (of access and relevance) hypothesized to operate during the interaction. If the data confirm the theoretical predictions and if we can rule out major alternative explanations (e.g., response biases), we have taken a first step toward the study of attention in social interaction and have described socially functional representations that emerge during interactions.

Study 1

In this first study we examined actor–observer gaps in attention to behavioral events in the context of a getting-acquainted interaction between strangers. Immediately after the interaction, we asked people to report in writing about what was "going on" for them and for the other person during the interaction. We deliberately kept this instruction vague so that people would feel free to write about whatever behavioral events they had noticed during the interaction. The distribution of reported events from the actor and from the observer perspective should then reflect the hypothesized asymmetries in attention.

Because we assessed actor–observer differences within participants, we were able to control for several biases across perspectives (e.g., individual differences in construct accessibility, memory accuracy, and effort in reporting). However, it is possible that people construed the "going on" instruction differently from each perspective and thus adopted different reporting biases, which could account for any asymmetries we might find. For example, people might be reluctant to write, as observers, about another person's experiences (e.g., because they feel uncertain and do not want to sound presumptuous). To rule out such response biases as explanations of our findings, we added two control conditions in which people were specifically instructed to write down their own and the other person's experiences or behaviors. If actor–observer gaps were merely due to response biases during the retrieval phase, actors and observers should report very similar distributions of behavioral events once instructions confine the responses to a specific event type (such as experiences or behaviors). However, if actor–observer gaps were due to attentional processes during the interaction, then the hypothesized asymmetries should hold even if actors and observers are specifically instructed to report about certain event types (see Wyer et al., 1982).

Method

Participants. Sixty-two undergraduate students participated and received credit toward a course requirement. In each session, 2 students were run as a pair. Of the 31 pairs, 9 were all female, 5 all male, and 17 of mixed sex. During a reminder call the night before the experiment we checked the two conditions of participation: fluent English skills and being unacquainted with the session partner. Two participants did not complete the main measure, leaving 60 participants for analysis.

Procedure. On arrival participants were introduced to each other and led to a pleasantly furnished room where they sat down at a small coffee table, facing each other at a 90-degree angle. A female experimenter informed them that they were going to have a 10-min conversation with each other while the experimenter was out of the room. The conversation's purpose was described as "getting to know each other," and participants were encouraged to talk about any topic they liked. With their knowledge and permission, the conversation was audiotaped using flat Pressure Zone Microphones (PZM) by Radio Shack, Fort Worth, TX. They were mounted on the coffee table and covered by a tablecloth. After 8 min, the experimenter returned and took the participants into separate rooms where they completed the post-interaction questionnaire. Participants were then thanked and debriefed.

Materials. The post-interaction questionnaire consisted of the "event report" measure and a few additional questions. On the first page of the event report, participants were instructed to write down the behavioral events that were going on from one perspective (actor or observer, counterbalanced across pairs). On the next page, they completed two global attribution rating scales from the same perspective (with the exact wording taken from Storms, 1973).[2] On the third page, participants wrote an event report from the other perspective (observer or actor), followed on page 4 by the corresponding attribution rating scales.

Instructions for event reports came in three different formulations to control for possible response biases. One third of the pairs were instructed as follows: "Please describe, as best as you can, what was going on for you [your partner] during the previous interaction. Please answer in enough detail so you fill the space provided on this page" (*going on* instruction). Another third were instructed the same way except that the first sentence read "Please describe, as best as you can, your own [your partner's] experiences during the previous interaction" (*experience* instruction). The final third were instructed the same way except that the first sentence read "Please describe, as best as you can, your own [your partner's] behaviors during the previous interaction" (*behavior* instruction). Instructions were assigned randomly across pairs, but in any given pair, both participants received the same instruction.

After completing the event report measure, participants were asked questions such as whether they had ever heard of the actor–observer asymmetry and whether they could describe it.

Coding. Participants' event reports were broken down into verb phrases, and each phrase was coded if it met the following criteria: (a) the phrase referred to a behavioral event that occurred during the 10-min interaction (not before the interaction or in general); (b) the phrase did not refer to a stable trait[3] (enduring beliefs were coded if they were "occurrent" during the interaction, e.g., "She did not know me, so. . ."); (c) the phrase clearly referred to the self or to the other person; statements using the inclusive "we" or the impersonal "you" were excluded (for more details see Malle, 2001).

The codable verb phrases were classified into one of four event types, as defined by our theoretical framework: actions (observable and intentional), mere behaviors (observable and unintentional), intentional thoughts (unobservable and intentional), and experiences (unobservable and unintentional). In addition, each of the behavioral events was coded for perspective—as actor when ascribed to the self and as observer when ascribed to the partner. The Appendix displays actor and observer event reports from a representative participant, with annotations of event codes.

Two coders (unaware of experimental conditions) initially coded all event reports when this sample was analyzed for a senior honor's thesis (Mac Connnell, 1996). They reached an agreement of 80% on whether a statement was codeable[4], 99% (κ = .95) on perspective, and 86% on the actual behavior event code (κ = .79), which broke down into 89% (κ = .83) for intentionality and 93% (κ = .84) for observability. After the remaining two studies reported in this article were completed and the coding scheme refined (e.g., how to distinguish desires, which are unintentional, from intentions; see Malle, 2001; Malle & Knobe, 2001), two coders inspected all previous classifications and independently suggested revisions (i.e., codes for events that had been overlooked). Their agreements were 82% for identifying necessary revisions and 94% (κ = .86) for specific event codes. After they resolved disagreements, a total of 118 codes (11%) were added and 35 (3%) were changed. (The results using the originally coded data showed the same effects as did the revised results reported below.)

Analysis. We performed a four-way analysis of variance, with perspective (actor, observer), observability, and intentionality as within-subject factors and instruction (*going on*, *experiences*, *behaviors*) as a

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[2] Analyses of these global attribution ratings (added for exploratory purposes in all three studies) did not replicate Storms' (1973) finding of an actor–observer asymmetry in attributions for the whole interaction. We ran an additional group of 16 participants who filled out the exact same material that Storms used (without events reports) to test person–situation asymmetries in the traditional way, but once more the results did not show any asymmetries ($\eta^2 < 1\%$). (See Uleman, Miller, Henken, Riley, & Tsemberis, 1981 for a similar failure to replicate.)

[3] We also searched the reports for spontaneous trait inferences and found that on average people mentioned only 1.3 traits across the two pages of event reports (0.44 from the actor perspective and 0.85 from the observer perspective). The number of trait inferences was lower among those who reported more experiences (unintentional, unobservable events), both within the actor perspective, $r(62) = -.26$ ($p < .05$), and within the observer perspective, $r(62) = -.25$ ($p < .06$). This suggests the intriguing speculation that attention to traits and attention to mental states may inhibit each other.

[4] In all three studies the codeability was computed conservatively on the basis of only those units that were considered codable by at least one coder, omitting units that were consensually uncodable (the [0,0] cell in the coder crosstabulation). These consensually uncodable units are difficult to count, but an estimation yielded an agreement of 85%.

between-subjects factor.[5] For the primary test of our hypotheses we analyzed all those events that were reported about the self on the actor page (following instructions to write about the self) and those reported about the other person on the observer page (following instructions to write about the other person). As a secondary test, we analyzed the small number of intrusive events—behavioral events that were reported about the other person on the actor page and about the self on the observer page. Because intrusive events were obviously not offered in compliance with instructions, they should be free of demand characteristics and strategic reporting, thus they present a second, stringent test of our hypotheses.

Results

Preliminary analyses showed that only 6 out of 60 participants claimed to know about the actor–observer asymmetry. Of those, only 3 described the classic asymmetry correctly. Exclusion of these participants did not alter the results in any way, so they were retained. Furthermore, sex (or partner's sex, or being in a same-sex vs. mixed-sex dyad) did not have any significant effects on the reporting of behavioral events. Finally, we found no significant order effects: Reporting first about the self did not influence reports about one's partner's behavioral events nor did reporting first about one's partner influence reports about one's own behavioral events. There were, however, positive correlations, for all four event types, between the frequency of reporting an event type from the actor perspective and the frequency of reporting the same event type from the observer perspective (correlations ranged from .19 for intentional thoughts to .45 for experiences). These patterns are best understood as individual differences in attending to some event types more than to others.

On average, people reported 8.4 behavioral events from the actor perspective and 8.5 events from the observer perspective (see Table 1). These reported events contained more unintentional events (M = 5.2) than intentional events (M = 3.2), $F(1,57) = 27.5$, $p < .001$, $\eta^2 = 33\%$, and somewhat more unobservable events (M = 4.6) than observable events (M = 3.8), $F(1,57) = 5.7$, $p < .05$, $\eta^2 = 9\%$.

There was a strong interaction between the observability and intentionality of the events reported, $F(1,57) = 242.6$, $p < .001$, $\eta^2 = 81\%$, indicating that actions and experiences were far more frequently reported than were mere behaviors and intentional thoughts (for a discussion of this pattern see Malle & Knobe, 1997b, p. 298).

Effects of instruction. The manipulation of instructions had a small effect on the overall number of reported events, $F(2, 57) = 3.1$, $p = .05$, $\eta^2 = 10\%$, with the *experiences* instruction eliciting slightly fewer events, and the *behavior* instruction eliciting slightly more events, than the *going on* instruction. Instruction had small (η^2 = 3%–7%) and nonsignificant effects on the reporting rate of observable versus unobservable events and of intentional versus unintentional events. Instructions did, however, affect the rate of reporting actions and experiences as compared with mere behaviors and intentional thoughts (reflected in the three-way interaction with intentionality and observability), $F(2, 57) = 4.8$, $p < .05$, $\eta^2 = 14\%$. This effect was driven by the fact that the *behavior* instruction yielded a greater number of mere behaviors (M = 2.1) than did the *going on* instruction (M = 0.9), $t(57) = 4.7$, $p < .001$.

Actor–observer gaps. Independent of these small variations caused by instruction, the predicted actor–observer asymmetry for observability proved strong and reliable, $F(1,57) = 79.4$, $p < .001$, $\eta^2 = 58\%$. Actors reported 2.2 more unobservable events than did observers, and observers reported 2.2 more observable events than did actors. (These numbers represent the actual interaction effect, computed after removing main effects; see Rosnow & Rosenthal, 1989.) Of 60 participants, 54 (90%) showed this asymmetry, and instruction did not significantly qualify it ($p > .40$, $\eta^2 = 3\%$).

The predicted actor–observer asymmetry for intentionality emerged as well, $F(1,57) = 13.6$, $p < .001$, $\eta^2 = 19\%$. Actors reported 0.8 more unintentional events than did observers, and observers reported 0.8 more intentional events than did actors. Out of 60 subjects, 37 (62%) showed this asymmetry, which was not significantly qualified by instruction ($p > .50$, $\eta^2 = 2\%$).

Intrusive events. We performed the same tests on the intrusive events (see Table 2). Overall, there were only 1.5 such events per page, and more from the actor perspective (M = 2.2) than from the observer perspective (M = 0.9), $F(1, 57) = 17.2$, $p < .001$, $\eta^2 = 23\%$. But even at this low frequency, the distribution of events confirmed our predictions. People reported 0.4 more unobservable than observable events about the self (when instructed to write about the other) and 0.4 more observable than unobservable events about the other (when instructed to write about the self), $F(1, 57) = 6.2$, $p < .05$, $\eta^2 = 10\%$. Similarly, people reported 0.4 more unintentional than intentional events about the self and 0.4 more intentional than unintentional events about the other, $F(1, 57) = 9.5$, $p < .005$, $\eta^2 = 14\%$. Neither of these asymmetries was significantly qualified by instruction (p's $> .50$, η^2s $< 2\%$).

Discussion

Overall, people's event reports showed a preponderance of unintentional behaviors. We expected this pattern for events reported from the actor perspective, but it also emerged—if less strongly—for events reported from the observer perspective. This pattern is likely due to the context of the interaction: Sitting at a table with a stranger during an experiment reduces the variety of (intentional) actions than can be performed, and being audiotaped incites a variety of (unintentional) nervous behaviors. We expect that a more flexible interaction (e.g., a joint problem-solving task) would increase the base rate of noticed intentional actions.

However, both tests of the hypothesized actor–observer gaps (using primary events and intrusive events) demonstrated that people report as actors both more unobservable events and more

[5] All reported tests in all three studies used participants as units of analysis. To assess possible dependence among scores of dyad members we computed the following intraclass correlations: (a) actor dependence: four correlations (one for each event type) between the actor scores of the two members of each dyad, (b) observer dependence: four correlations between the observer scores of the two members of each dyad, and (c) actor–observer dependence: four correlations between one member's actor score for a given event type with the other member's observer score for that same event type averaged with the corresponding correlation between the first member's observer score for that event type and the other member's actor score for that event type. Of the resulting 36 correlations across 3 studies, only three were significant, and their median was .01, suggesting no systematic dyadic dependence. In addition, tests using dyads as units of analysis (averaging the two partners' scores) led to identical results and conclusions in all three studies.

Table 1
Behavioral events reported from the actor and observer perspective in Study 1

	Actor			Observer		
Event type	Intentional	Unintentional	Total	Intentional	Unintentional	Total
Observable	1.9	0.9	2.8	3.2	1.7	4.9
Unobservable	0.9	4.8	5.7	0.4	3.1	3.5
Total	2.8	5.7	8.5	3.6	4.8	8.4

unintentional events than do observers. Our preferred interpretation of these results is that they reflect different mental models that people build up during the interaction, on the basis of attentional filters that favor noticing, processing, and storing of (a) unobservable and unintentional events from the actor perspective and (b) observable and intentional events from the observer perspective. We have to consider alternative interpretations, however. Those that might account for the full pattern of data include differential construal of instructions, differential response biases, and demand characteristics. We address these alternatives in turn.

First, one might be concerned that participants construed the instruction to write about what was going on for them as referring to their experiences and the instruction to write about what was going on for their partner as referring to behaviors that their partner performed. If this interpretation were correct, instructions to report about experiences or behaviors should eliminate this construal difference and, by implication, any actor–observer differences. However, participants did not substantially alter their event reports in line with instructions, and the two actor–observer asymmetries did not significantly interact with instruction effects (η^2's = 2–3%).

The lack of instruction effects also makes a second alternative explanation unlikely: namely, that people are reluctant to talk about another person's mental states. In this case, we would expect that instructions explicitly encouraging participants to write about their partners' experiences should selectively increase reports of such mental states, but they did not.

Finally, participants might have tried to guess what the researcher expected them to say and not reported about what was actually going on during the interaction. To explain both actor–observer gaps, such an account would presuppose a highly sophisticated guessing process on the part of participants. But even if we grant such sophistication, the data do not support this account. While people were trying to complete the task at hand, they mentioned additional (intrusive) events that were task-irrelevant. These event reports thus violated whatever experimenter demands might have been perceived, but they confirmed the predicted patterns just as the primary events did.

The data are thus consistent with the interpretation that both actor–observer gaps rely on attentional processes. But the two gaps differ in the extent to which these attentional processes can be altered. The observability asymmetry is based on access. If observers do not have access to an event, they will not store it in their mental model, nor can they possibly report about it even when encouraged to do so. The observability asymmetry is thus relatively rigid and difficult to alter because its source is early in the cognitive processing chain. The intentionality asymmetry, by contrast, is based on perceived relevance, influencing not only attention but also memory storage and retrieval. Irrelevant events may be ignored from the outset or may be noticed but then not integrated into the mental model of the interaction. Even if some irrelevant events are integrated into the mental model, they may not be retrieved or reported in response to the question about what was going on during an interaction. The intentionality asymmetry might therefore be easier to change because its source lies in selective processes that occur throughout the cognitive processing chain and are more under the person's control.

In the remaining studies we examine the persistence and boundary conditions of both actor–observer gaps, searching for ways to close the gaps. We chose two factors that have been shown to influence related self-other asymmetries—intimacy of relationship (Andersen et al., 1998) and instructions to empathize with another person (e.g., Regan & Totten, 1975). We also added a third factor potentially relevant in the context of conversational interactions: how personal the conversation topic is. For these factors, we derive heuristic predictions from our conceptual framework, fully aware that more research is needed before that framework can offer precise predictions for a broader range of conditions. Study 2 examines the impact of personal

Table 2
Intrusive Events in Study 1

	Actor			Observer		
Event type	Intentional	Unintentional	Total	Intentional	Unintentional	Total
Observable	0.6	0.2	0.8	0.5	0.1	0.6
Unobservable	0.3	1.1	1.4	0.1	0.3	0.3
Total	0.9	1.3	2.2	0.5	0.3	0.9

Note. Intrusive events are those behavioral events reported about oneself (actor perspective) while writing about the other person and events reported about the other person (observer perspective) while writing about oneself.

conversation topic and relational intimacy; Study 3 examines the impact of empathy instructions.

Study 2

One factor that might constrain the actor–observer gaps we identified in Study 1 is conversation topic. In the getting-acquainted conversations of Study 1, people did not disclose much personal information but rather talked about where they came from, where they lived, and which classes they were taking. Such conversations reveal few experiences, limiting the observer's access mostly to observable behaviors. By contrast, a more personal conversation topic might encourage people to talk more about their unobservable states (e.g., emotions) and might even lead them to display more unintentional behaviors (e.g., emotional facial expressions), which in turn might shift observers' attention to the other's unobservable and unintentional events.

A second factor that may moderate the actor–observer gaps is the relationship between the interactants. Perhaps attentional asymmetries occur only among strangers, who are reluctant to reveal their own experiences and find it difficult to infer their partner's experiences. Close relationships may blend representations of self and other (Aron, Aron, Tudor, & Nelson, 1991) and may increase observers' access to the other's experiences—either because the actor explicitly reveals such events or because the observer makes sophisticated inferences about them using privileged background knowledge (Stinson & Ickes, 1992).

To examine relational intimacy we invited pairs of strangers and pairs of friends to have a conversation and report about the behavioral events that were going on in the interaction. To create a comparable situation for strangers and friends we replaced the getting-acquainted task from Study 1 with a conversation about upsetting and confusing life experiences. This task promised to elicit personal conversation topics even among strangers, so the comparison of strangers in Study 2 and strangers in Study 1 tested the moderating role of personal conversation topic, whereas the comparison of strangers and friends in Study 2 tested the moderating role of intimacy.

Method

Participants. Seventy-six undergraduate students at the University of Oregon participated in the study, receiving either partial credit toward a course requirement or $5. Of 36 participants in the stranger group (recruited as in Study 1), 4 did not correctly follow instructions (3 provided uncodeable[6] observer event reports, 1 provided an uncodable actor event report), leaving 32 strangers (14 women, 18 men) for analysis. We rectuited pairs of friends by having one introductory psychology student sign up for the experiment and bring a friend along. Sign-up criteria specified that friends had to have known each other for at least 5 months. In fact, the pairs of friends who signed up were primarily long-time friends who had known each other for a median of 5 years. Of 40 participants in the friends group, 8 did not follow instructions correctly (4 with entirely uncodable event reports, 3 with uncodable observer reports, and 1 with an uncodable actor report), leaving 32 participants (27 women, 5 men) for analysis in this group.

[6] In these uncodable reports, participants described the content of their own or their partner's past life experience rather than behavioral events that went on during the interaction.

Procedure. Participants were welcomed to the laboratory and told that we were "interested in the communicative processes that allow people to understand each other." One person in each pair was told to relate an upsetting life experience, whereas the other person was told to relate a confusing life experience. After a preparation phase of 2 min, the first person began to describe his or her experience and was allotted about 8 min to do so. The other person was instructed to "simply understand that event as best as you can. You should listen, ask questions, make comments." Then the roles were switched. The order of topics (confusing or upsetting) was counterbalanced across pairs. (Related life experiences ranged in seriousness from missing a final, seeing a UFO, and having an unfair supervisor to accidents, illness, parents' divorce, and death of a loved one.) After the interaction, participants were separated and asked to fill out an event report measure and a brief questionnaire. Participants were then thanked and debriefed.

Materials. The event report measure was the same as in Study 1, with one exception. The instructions included an *action* condition instead of a *behavior* condition ("Please describe, as best as you can, your own/your partner's actions in the previous interaction") so that we could examine whether this instruction would more successfully bias event reports.

In another part of the questionnaire, participants were asked whether they had heard about the actor–observer asymmetry (10 said they had) and whether they could describe it (3 described Jones & Nisbett's (1972) classic thesis, and 2 described some other asymmetry). Exclusion of either group did not alter the results in any way, so they were retained in the analyses. Finally, a few additional questions were asked, including to what extent participants felt close to and liked their partner, how well they understood the other person's life experience, and whether they had any remaining questions about the life experience their partner had described (each participant was instructed to write down up to five such questions).

Coding. As in Study 1, two coders (unaware of each pair's intimacy) classified participants' event reports into codable units and then coded them for intentionality and observability. Agreement rates were 84% for codeability, 100% for perspective, and 88% (κ = .82) for the specific behavior event code, which broke down into 90% (κ = .80) for intentionality and 96% (κ = .92) for observability. Disagreements were resolved by discussion.

Results

We could not perform analyses among intimates by participant's or partner's sex because the sample of intimates contained only 5 men. However, we found no significant effects involving sex in the sample of strangers, and mixed-sex and same-sex pairs in the whole sample did not significantly differ in their event reports. As one would expect, intimates felt significantly closer to their partner (M = 7.0) than did strangers (M = 5.7), $F(1, 61)$ = 6.8, η^2 = 10%.

People reported, on average, 9.5 codable behavioral events, with no difference between actor reports and observer reports. As in Study 1, we found no significant order effects, but we again found positive correlations, for all four event types, between frequency of reporting an event type from the actor perspective and the frequency of reporting the same event type from the observer perspective (correlations ranged from .27 for actions to .67 for mere behaviors). Comparable to Study 1, reports of observable events only slightly dominated reports of unobservable events, $F(1,58)$ = 3.1, p = .08, η^2 = 5%, whereas reports of unintentional events (M = 5.7) dominated reports of intentional events (M = 3.8), $F(1, 58)$ = 22.7, $p < .001$, η^2 = 28%.

More so than in Study 1, instruction affected the overall rate of reporting observable versus unobservable events, $F(2, 58)$ = 9.6, $p < .001$, η^2 = 25%. This effect was limited to the new instruction calling for actions eliciting relatively more observable than unobservable events, $F(1, 58) = 17.6$, $p < .001$. Instruction did not affect the rate of reporting intentional versus unintentional events ($\eta^2 < 1\%$).

Reports of actions and experiences (see Figure 1) again dominated reports of the other two behavioral event types, as indicated by a strong Intentionality × Observability interaction, $F(1, 58) = 113.7$, $p < .001$, $\eta^2 = 66\%$. Instruction interacted with this pattern, $F(1, 58) = 5.2$, $p < .01$, $\eta^2 = 15\%$, such that *action* instructions elicited relatively more mere behaviors and intentional thoughts than the other two instructions, $t = 4.2$, $p < .001$. This effect, along with the one reported earlier (that action instructions elicited relatively more observable events) resulted in a substantially higher cell mean of mere behaviors in the action instruction ($M = 2.9$), compared with all other instructions ($M = 0.9$). The *action* instruction thus created essentially the same pattern as the *behavior* instruction did in Study 1.

Actor–observer asymmetries. A strong asymmetry for observability emerged, $F(1, 58) = 50.6$, $p < .001$, $\eta^2 = 47\%$. When we controlled for main effects, we found that actors reported 1.8 more unobservable events than did observers, and observers reported 1.8 more observable events than did actors (see Table 3 for cell means). Out of 64 participants, 49 (77%) showed this asymmetry. The effect did not interact with instruction ($\eta^2 < 1\%$), but it did interact with intimacy, $F(1, 58) = 6.6$, $p < .02$, $\eta^2 = 10\%$, showing a partially closed actor–observer gap among intimates: Out of 32 strangers, 27 (84%) showed the effect, whereas out of 32 friends, 22 (69%) showed the effect.

In the entire sample, the actor–observer asymmetry for intentionality was weak ($\eta^2 = 2\%$) and not significant ($p > .20$). Out of 64 participants, only 35 (55%) showed the asymmetry. The effect did not interact with Instruction ($\eta^2 < 1\%$), but it tended to interact with Intimacy, $F(1, 58) = 2.7$, $p = .10$, $\eta^2 = 5\%$. Out of 32 strangers, 20 (63%) showed the effect as in Study 1, whereas out of 32 intimates, 15 (47%) showed the effect.

A second set of analyses examined intimates and strangers in Study 2 as well as strangers in Study 1 ($N = 124$). We first tested the actor–observer asymmetries for observability and intentionality in the entire sample, with a three-level factor (strangers–Study 1, strangers–Study 2, and intimates) split into two orthogonal contrasts: (a) differences between strangers–Study 1 and strangers–Study 2 (to assess any effect of personal conversation topic), and (b) differences between strangers in Studies 1 and 2 and intimates (to assess the reliability of the relational intimacy effect).

The observability asymmetry did not differ among the two groups of strangers ($\eta^2 < 1\%$), but it differed between intimates and strangers ($p < .01$). Intimates, like strangers, showed an actor–observer asymmetry for observability, but the effect among intimates was half the size ($\eta^2 = 27\%$) of the effect among strangers in Study 1 ($\eta^2 = 58\%$) or Study 2 ($\eta^2 = 61\%$). Whereas among strangers, actors reported 2.3 more unobservable events than did observers, among intimates, actors reported only 1.2 more unobservable events than did observers.

The intentionality asymmetry also did not differ between the two groups of strangers ($\eta^2 < 1\%$), but it did differ between intimates and strangers ($p < .05$). Intimates did not show an actor–observer asymmetry for intentionality ($\eta^2 < 1\%$), whereas strangers showed such an asymmetry in both Study 1 ($\eta^2 = 19\%$) and Study 2 ($\eta^2 = 14\%$). Among strangers in both studies, actors reported 0.8 more unintentional events than did observers.

In summary, we replicated the actor–observer gap for observability identified in Study 1; thus the gap held up among strangers even when they discussed personal life experiences. The gap also held up when participants were intimate friends, but its effect size was smaller, about half that of strangers. The actor–observer gap for intentionality held up among strangers but vanished among intimates. Finally, different reporting instructions affected only the base rates of reported events without qualifying any actor–observer gap (η^2s $< 1\%$).

Intrusive events. Next we examined the two actor–observer gaps within “intrusive” event reports as in Study 1. Across instructions and intimacy levels, intrusive events confirmed the actor–observer differences for both observability and intentionality. Actors reported 0.6 more unobservable than observable intrusive events, whereas observers reported 0.6 more observable than unobservable intrusive events, $F(1, 58) = 14.7$, $p < .001$, $\eta^2 = 20\%$. Similarly, actors reported 0.4 more unintentional than intentional intrusive events, whereas observers reported 0.4 more intentional than unintentional intrusive events, $F(1, 58) = 9.7$, $p < .005$, $\eta^2 = 14\%$. None of these asymmetries interacted significantly with Instruction or Intimacy. Instruction merely affected the overall rates of intentional versus unintentional intrusive events, $F(2, 58) = 4.8$, $p < .02$, $\eta^2 = 14\%$.

Table 3
Behavioral Events Reported by Strangers and Intimates in Study 2

	Actor			Observer		
Event type	Intentional	Unintentional	Total	Intentional	Unintentional	Total
			Strangers			
Observable	2.1	0.8	2.9	3.2	1.9	5.1
Unobservable	0.9	5.1	6.0	0.5	3.0	3.5
Total	3.0	5.9	8.9	3.7	4.9	8.6
			Intimates			
Observable	2.7	1.7	4.4	3.1	2.0	5.1
Unobservable	1.8	4.3	6.1	0.8	3.8	4.6
Total	4.5	6.0	10.5	3.9	5.8	9.7

Exploratory variables. Of the six exploratory questions, three showed significant associations with event reports (across strangers and friends). First, people who reported fewer observable events from the observer perspective had fewer questions left after the interaction ($r = -.44$, $p < .01$), suggesting that attention to an observable event may raise more questions about the partner than it answers. Second, people who reported fewer experiences from the actor perspective (i.e., who were less internally self-focused) had a stronger sense of having understood the partner's life experience ($r = -.31$, $p < .01$) and judged that life experience as making more sense ($r = -.36$, $p < .01$). Together, these exploratory findings suggest that less attention to the others' observable events and less attention to one's own experiences—that is, bridging the actor–observer gap of observability—may be associated with greater interpersonal understanding (see Fichten, Robillard, & Sabourin, 1994; Steins & Wicklund, 1996).

Discussion

This study examined two potential moderators of actor–observer gaps in attention during interaction: personal conversation topic and relational intimacy. The results suggest that personal conversation topic has no measurable effect on the actor–observer gaps for strangers (the effect sizes for each asymmetry in Study 1 were closely replicated in Study 2). At least in the context of the present procedure, talking about a personal life experience does not make a person's ongoing mental states more transparent. The content of the life experience might highlight mental states, but this gain may be counteracted by a greater focus on past than present states and a one-sided conversation structure, in which one person relates the life event while the other mostly listens and watches—encouraging ample attention to the other's observable behavior. The lack of a moderating influence of conversation topic strengthens the conclusions drawn from Study 1, as we can now be confident that the documented actor–observer gaps did not result from the specific content of people's conversation but rather from cognitive processes during the conversation.

The second potential moderator, relational intimacy, yielded more impressive results: Among friends, the effect size of the observability gap was half that of strangers and the intentionality gap disappeared. We briefly discuss each of these results.

Intimacy and the observability gap. The weaker observability differences among intimates were reflected in both observers' and actors' attentional patterns (see Table 3). As observers, intimates paid somewhat more attention to their partner's unobservable events ($M = 4.6$) than did strangers ($M = 3.5$). This pattern can be explained in at least two ways: According to a self-expression hypothesis, intimate friends benefit from a direct and intimate conversation style in which both interactants tend to express their thoughts and experiences verbally, thus making them available to their partner in the observer role. According to an inference hypothesis, intimate friends have privileged background knowledge that allows them as observers to make more sophisticated inferences about their partners and hence successfully take their perspective (Colvin, Vogt, & Ickes, 1997; Funder, Kolar, & Blackman, 1995; Stinson & Ickes, 1992). The expression hypothesis was testable in our data. We searched through two thirds of the tape-recorded conversations ($N = 43$) for interactants' first-person statements about their mental states (unobservable events) that were later included in their partners' event reports. Within each observer report, we then computed the proportion of reported mental states that had their source in the other person's explicit self-expressions. The results did not support the self-expression hypothesis. For intimate observers, only 6 out of 110 (5%) reported mental states were based on partners' explicit verbalizations, compared with 2 out of 66 (3%) for strangers. We therefore attribute intimates' increased attention to their friend's unobservable events to their greater ability to infer their friend's mental states given their intimate background knowledge about the person.

Intimates also showed a different attention pattern in the actor role, attending more to their own observable events ($M = 4.4$) than did strangers ($M = 2.9$). This effect has not een previously reported in the literature and is more difficult to explain. A first hypothesis is that intimates' distinct actor pattern is a result of their distinct observer pattern. That is, intimates attend as observers more to their partner's mental events, and included among these attended mental events might be the partner's monitoring of the observer's own observable behavior—leading to a form of public self-awareness in which the person (now in the actor role) sees his or her own behavior through the other's eyes (Hass, 1984). Being close to one's interaction partner might increase this public self-awareness by increasing perspective taking for the partner's mental states, which eventually turns attention back to one's own behavior.

A second hypothesis is that people are more at ease with their intimate friends and therefore attend less to their own feelings of distance, nervousness, and discomfort than do strangers. Consistent with this hypothesis, we found in additional coding that the friends' reports included fewer references to their own comfort or discomfort ($M = 1.6$) than did the strangers' reports ($M = 2.5$). Thus, as people free up attention that is normally devoted to negative experiences, they may become relatively more mindful of their own observable behaviors.

Intimacy and the intentionality gap. Among intimates, the intentionality gap disappeared. This gap is small to begin with, so it does not require powerful shifts in intimates' attention to eliminate it. The shift occurred primarily in actors, who reported 0.8 fewer unintentional experiences and 0.9 more intentional thoughts after interacting with an intimate rather than with a stranger. This shift was almost entirely based on intimates' reporting less about their own comfort or discomfort ($M = 1.6$) than did strangers ($M = 2.5$) and reporting instead more about their own intentions and deliberate thoughts. A tentative interpretation is that intimate conversations may allow people to take more control of their minds because they are less distracted by the monitoring of discomfort that accompanies interactions with strangers. Future research might explore whether interactions among intimates expand people's mental resources for deliberation, perhaps even on issues unrelated to the interaction at hand.

We should emphasize that even though the intrusive event patterns replicated both actor–observer gaps, relational intimacy did not interact with any of these patterns (η^2s < 1%). We presume that intrusive events reflect the default objects of interpersonal attention (i.e., experiences for actors, actions for observers). These default objects capture attention quickly and automatically, whereas it takes effortful cognitive processes (e.g., inferences and rehearsal) to overcome the defaults and close the actor–observer gaps in attention. Moderating variables such as relational intimacy are likely to influence these effortful processes (e.g., by providing more background knowledge for inferences and incentives for rehearsal), while leaving the automatic default objects of attention unchanged. Future research might apply cognitive methodologies (e.g., dual-task procedures, implicit memory) to examine this hypothesis.

Finally, exploratory analyses indicated that greater self-rated interpersonal understanding surfaced when people shifted their attention away from the other's observable behaviors and/or away from their own experiences—both major components of the actor–observer asymmetry for observability. Such a finding must of course be replicated, but it encourages future studies comparing attentional asymmetries before versus during a conflict or in happy versus unhappy couples. In particular, our results suggest that successful interactions may be fostered not only by increased attention to the partner's mental states but also by less attention to one's mind and more to one's behavior. Such behavioral self-awareness may help agents identify and neutralize potentially misleading or harmful actions (such as an angry gesture or an overly sarcastic remark) and, thus, it may be an effective tool for preventing conflict.

Study 3

We have seen so far that observers normally attend more to others' observable behavior than to their unobservable mental states. One technique that may direct attention more to others' mental states has been studied under the labels of *empathy* (Hodges & Wegner, 1997; Ickes, 1997; Mendoza, 1996), *perspective taking* (Davis, Conklin, Smith, & Luce, 1996; Eisenberg et al., 1997), and *simulation* (Goldman, 1989; Gordon, 1986). Because the literature is not entirely consistent in using these terms, we adopt a broad working definition of empathy as a perceiver's attempt to represent another's mental state (leaving open whether that representation is primarily cognitive or affective, controlled or automatic, accurate or inaccurate). Currently it is still unclear exactly how people represent others' mental states. Some argue for theory-guided inferences (Gopnik & Meltzoff, 1997) or inferences from behavioral cues (Eisenberg et al., 1997), others argue for a sort of projection of one's own real or imagined states onto the other person (Goldman, 1989; Gordon, 1986; Harris, 1992), perhaps using a set of transformation rules (Karniol, 1986). Either way, it seems reasonable to expect that empathy instructions will shift the observer's attention toward the other's mental states. Such a shift may then help explain the variety of positive social effects empathy has, including reduced aggression (Richardson, Hammock, Smith, & Gardner, 1994), increased prosocial behavior (Batson & Oleson, 1991), and mutual feelings of understanding (Mendoza, 1996).

However, one might also question this technique's effectiveness in reducing the fairly strong observability gap documented in the previous two studies. For one, it is not easy to empathize with others. Children only gradually learn to explicitly take other people's perspective (Eisenberg et al., 1997), and in situations of disagreement and conflict people often show a "naive realism" that leaves little room for considering the other person's unique experiences and perceptions (Ross & Ward, 1996). In addition, during conversation a number of important activities may interfere with empathy, such as planning one's next utterance, monitoring one's feelings, and tracking the other's overt behavior. Conversation partners are under constant cognitive load and therefore have limited processing capacity for effortful representations of others' mental states. Most important, when acts of empathy do occur, they constitute a new mental state in the perceiver (of trying to represent the other mind), so empathy instructions may elevate not only attention to others' minds but also attention to one's own mind. Indeed, instructions to empathize might even backfire if people focus on their own minds to monitor representations of the other person's thoughts and feelings and this monitoring reduces their capacity to attend to their partner's mental states (see Fenigstein & Abrams, 1993; Hodges & Wegner, 1997). Finally, if people infer mental states from behavioral cues, then for each new mental state attended to, the perceiver likely attends to at least one observable event as well — the one on which the mental state inference was based. Empathy may thus elevate attention not only to other people's minds but also to their observable behavior.

Our paradigm allows us to examine these various hypotheses. Observers instructed to empathize with their conversation partners might (a) generally increase their attention to the other person's both observable and unobservable events, because empathy for mental events relies on a careful analysis of behavioral cues; or (b) generally increase attention to all unobservable events (both the other person's and their own) because empathy for others' mental events leads to heightened awareness of one's own mental acts of empathizing or (c) specifically increase their attention to the partners' unobservable events.[7]

To examine these hypotheses, we recruited pairs of strangers to have a getting-acquainted conversation and to report on their own and their partners' behavioral events. In the empathy condition, one partner in each pair was instructed to pay close attention to the other's thoughts and feelings during the interaction. The partner who received no instructions served as a within-dyad comparison. By instructing only one participant within each pair we hoped to minimize the impact of the instruction on the natural dynamics of the interaction. Nevertheless, interacting with an empathy-instructed participant might be unusual and alter someone's attention and memory for behavioral events, so we also included a control condition in which no partner received special instructions. As before, we analyzed people's event reports following the interaction, looking for differences between actors and observers and between empathy-instructed and control participants. Finally, to explore possible associations between actor–observer differences in attention and habitual patterns of self-directed attention, we administered a measure of dispositional self-consciousness (Fenigstein, Scheier, & Buss, 1975).

Method

Participants. Ninety-four undergraduate students at the University of Oregon participated in the study and received partial credit toward a course requirement. Two students signed up for each time slot, with the restriction that they not know each other. Of these 47 pairs, 25 constituted

[7] None of these hypotheses, incidentally, predicts an effect of empathy on the actor–observer asymmetry for intentionality, because empathy aims at increasing access to unobservable events while the relatively greater relevance of intentional events for observers compared to actors remains intact.

the experimental group (in which one person received empathy instructions) and 22 constituted the control group. One participant in the experimental group failed to provide a codable observer event report and was excluded from all analyses.

Procedure. In each of the 25 experimental pairs, 1 of the 2 participants was instructed in private as follows:

> Pay close attention to your partner's thoughts and feelings during this interaction. While you are engaged in the conversation, try to guess and imagine what your partner is thinking and feeling. Without letting your partner know, put yourself in his/her position and try to identify his/her ongoing thoughts and feelings.

Empathy-instructed participants were informed that their interaction partner was not aware of these instructions. The remainder of the procedure was identical to that of Study 1.

Materials. The event report measure was identical to the one used in Studies 1 and 2, with one exception. The *going on* instruction used in the previous studies may invite reports of unobservable events, perhaps especially for actors, and may therefore inflate the observability gap. This time, we asked participants to recall "what you noticed about yourself [your partner] during the previous interaction."

After completing the event reports measure, participants were asked whether they had heard of the actor–observer asymmetry. Only 6 out of the 94 participants could accurately describe the classic actor–observer asymmetry, and exclusion of these participants did not significantly alter the results, so we retained them. Participants were also asked whether they remembered any special instruction they had received.

At the end, all but 10 participants completed the Self-Consciousness Scale (Fenigstein et al., 1975), which contains three subscales measuring the dispositional tendency to focus on one's private self, to focus on one's public self, and to experience social anxiety. Only scores for private and public self-consciousness were computed. The private self-consciousness scale did not have adequate internal consistency (α = 0.55), so we excluded the two reverse-scored items (which had correlations of $r = -.13$ and $r = -.22$, respectively, with the remaining items despite reverse scoring), yielding an alpha of .69. The public self-consciousness scale had an alpha of .88.

Coding. Two coders (who were unaware of empathy instructions) classified participants' event reports into codable units (86% agreement) and these units into four event types (agreement = 89%, κ =.84) as well as perspective (agreement = 99%, κ =.96). The event type reliability broke down into 93% (κ =.84) for intentionality and 95% agreement (κ =.90) for observability.

Results

After conducting initial analyses we detected a potential bias in the event reports. The instructions that contained the word *notice* appeared to have primed some participants to use this very word to reference their own mental state of noticing (e.g., "I noticed that …"). Coding these acts of noticing would artificially increase actors' number of unobservable, unintentional events (inflating the predicted observability gap). To test our hypothesis conservatively we designated *I noticed* statements as uncodeable.

Event reports by the uninstructed partners within empathy dyads did not significantly differ from event reports by control group interactants (all p's > .20). Interacting with an empathy-instructed partner apparently had no unique effect on attention or recall of behavioral events. To gain statistical power in the main analyses, we collapsed the uninstructed partners and the control group interactants and henceforth refer to them as *control participants*.

People reported on average 9.1 behavioral events, with actors (M = 10.2) reporting significantly more behavioral events than observers (M = 8.0), $F(1, 91) = 14.7$, $p < .001$, η^2 = 14% (see Table 4). As in Studies 1 and 2, unintentional events (M = 5.9) dominated reports of intentional events (M = 3.2), $F(1,91) = 58.2$, $p < .001$, η^2 = 39%. Reports of observable and unobservable events were even. None of these overall patterns was significantly qualified by empathy. Once again, we found correlations, for all four event types, between the frequency of reporting an event type from the actor perspective and the frequency of reporting the same event type from the observer perspective (correlations ranged from .25 for actions and experiences to .47 for mere behaviors). No significant order effects emerged.

Actor–observer Asymmetries. The two actor–observer gaps identified in Study 1 were replicated. When we controlled for main effects, we found that actors reported 2.4 more unobservable events than did observers, whereas observers reported 2.4 more observable events than did actors, $F(1, 91) = 93.2$, $p < .001$, η^2 = 51%. In addition, actors reported 1.4 more unintentional events than did observers and observers reported 1.4 more intentional events than did actors, $F(1, 91) = 21.6$, $p < .001$, η^2 = 19%. Finally, the familiar dominance of actions and experiences over the other two event types (η^2 = 60%) was more pronounced for actors than for observers, $F(1, 91) = 10.6$, $p < .005$, η^2 = 10%.

Empathy effects. The manipulation check showed that all empathy-instructed participants remembered and correctly described their instruction. We also found that scores on the two (correlated) self-consciousness scales decreased as a result of empathy instructions, multivariate $F(2, 80) = 4.2$, $p < .02$, η^2 = 5%. This is surprising given that these scales are presumed to

Table 4
Behavioral events reported by control and empathy-instructed participants in Study 3

	Actor			Observer		
Event type	Intentional	Unintentional	Total	Intentional	Unintentional	Total
			Control participants			
Observable	2.2	1.8	2.9	2.9	2.4	5.3
Unobservable	1.0	5.4	6.3	0.3	2.1	2.4
Total	3.1	7.2	10.3	3.2	4.5	7.7
			Empathy-instructed participants			
Observable	2.2	1.8	4.0	3.2	2.0	5.2
Unobservable	1.1	4.9	6.0	0.5	3.0	3.5
Total	3.3	6.7	10.0	3.7	5.0	8.7

measure traits, not states. When we controlled for public self-consciousness, the effect on private self-consciousness remained (η^2 = 5%), but not vice versa. Empathy instructions thus lowered people's private self-awareness (M = 4.0) compared with that of the control group (M = 4.8). We interpret these results as indicating that the private self-consciousness scale has a substantial component of state variance and that our empathy manipulation significantly decreased scores on this component.

We next examined three possible effects of empathy on event reports (see Table 4). First, empathy-instructed participants might attend more to everybody's mental states—both their partner's and their own. This hypothesis was clearly not supported by the corresponding Empathy × Observability interaction, $\eta^2 < 1\%$. Second, empathy-instructed participants might attend more to the other person's behavioral events (both observable and unobservable), compared to control participants. In its general form, this hypothesis was not significantly supported by the corresponding Empathy × Perspective interaction, $\eta^2 < 2\%$. However, a specific version of this hypothesis emerged more strongly: The dominance of actions and experiences over the other two event types increased for empathy-instructed observers, $F(1,91) = 4.4$, $p < .05$, $\eta^2 = 5\%$. Thus, when instructed to empathize with their partner, participants attended more strongly to those two event types that people generally attend to the most—actions and experiences. Third, empathy-instructed participants might specifically attend more to the other person's unobservable events. The means in Table 4 indicate that empathy-instructed participants showed a slightly weaker observability asymmetry than did control participants, but the hypothesis was only tentatively supported by the corresponding interaction term, $F(1,91) = 2.5$, $p = .11$, $\eta^2 = 3\%$

Self-consciousness. Correlations between contrasts for the actor–observer gaps on the one hand and private as well as public self-consciousness scores on the other showed that for people with higher private self-consciousness the observability gap was wider, $r(83) = .35$, $p < .001$.

Intrusive events. Overall, there were 1.9 intrusive events per page, and more from the actor perspective (M = 2.4) than from the observer perspective (M = 1.4), $F(1,91) = 15.9$, $p < .001$, η^2 = 15%. The distribution of intrusive events replicated the now familiar actor–observer asymmetries. When we controlled for main effects, we found that actors reported 0.6 more unobservable events than did observers whereas observers reported 0.6 more observable events than did actors, $F(1,91) = 29.5$, $p < .001$, η^2 = 25%. Similarly, actors reported 0.6 more unintentional events than did observers, whereas observers reported 0.6 more intentional events than did actors, $F(1,91) = 25.8$, $p < .001$, η^2 = 22%. None of these asymmetries was significantly qualified by empathy instruction (η^2s < 2%).

Discussion

In this study we explored whether empathy instructions moderate the actor–observer gap for observability identified in Study 1. Empathy instructions yielded two relatively small effects. First, empathy showed a trend of moderating the observability asymmetry such that empathic observers tended to report more unobservable events than did control observers. Second, empathy instructions had an effect on the preponderance of actions and experiences relative to the other two event types such that empathic observers attended to both more actions and more experiences than did control observers.

It appears that either the empathy instructions were too weak to create substantial changes in attention, or the actor–observer gaps we have documented were fairly resistant to change. Several facts contradict the claim that the instructions were too weak. First, the experimenter's urging (repeated twice) to pay attention to the other's thoughts and feelings was relatively heavy handed, and the manipulation check showed that every single participant remembered these instructions correctly. In addition, empathy instructions significantly lowered scores on a private self-consciousness questionnaire, indicating that the instruction made people at least think they were focusing less on themselves. Nevertheless, the actor–observer gaps largely held up under empathy instructions, and we believe that this result attests to the resilience of these gaps.

One might wonder, however, why past studies that used similar empathy instructions were more successful in producing effects on their dependent variables (e.g., Batson, Early, Salvarani, 1997; Davis et al., 1996; Regan & Totten, 1975; Mendoza, 1996). It is significant that in those studies participants were instructed to empathize with another person while reading about or watching the person—a far easier task than empathizing with another while keeping up a conversation (Fussell & Krauss, 1992; Keysar, Barr, & Horton, 1998). Indeed, participants in our study seemed to have trouble heeding their empathy instructions precisely because of the attentional demands of the interaction. One participant commented, "It was a little difficult because I had to talk to her and try to think about how she felt." Another wrote, "I found that I needed to remind myself [of the instruction] and not just run willy-nilly into the conversation." Apparently, some participants were so swept up in the conversation that they temporarily forgot their empathy instructions, prohibiting a strong impact of empathy on their attentional processes. Future studies might include training sessions or offer cues that continuously remind people of their empathy goal during the conversation. We believe, however, that this need for unusually heavy manipulations points to the power of attentional asymmetries in social interaction.

Even though the effects of empathy instruction were small, our confidence in their validity is strengthened by the fact that we did not find any effect of empathy where we did not expect it: in the context of the intentionality asymmetry (where none of the empathy hypotheses predicted an effect) or in people's intrusive event reports (which likely represent default patterns of attention and therefore should be insensitive to controlled attentional regulation).

If the effects of empathy instructions are valid, their interpretation is relatively straightforward. First, as a trend the observability gap was slightly smaller among empathy-instructed participants. These participants reported more unobservable events from the observer perspective than did control participants, presumably because they attempted to monitor the other person's mental states and formed more robust memories of those states. Second, a more reliable effect was the greater preponderance of actions and experiences in observers' reports when instructed to empathize. Apparently, participants with empathy instructions tried to infer their partners' experiences by attending to their observable actions (Davis et al., 1996; Klein & Hodges, 1999). Just as psychologists use external responses to infer internal processes, participants seem to use their partners' actions and verbal statements to infer internal experiences. One participant, for example, noted that she had "tried to evaluate [her partner's] outer behavior for nervousness and signs of feelings."

It is not clear, however, why empathy-instructed participants monitored their partners' intentional observable events (i.e., actions) rather than their unintentional observable events (i.e., mere behaviors) for indicators of experiences. Our data cannot rule out the possibility that empathy-instructed participants did increase their attention to mere behaviors but failed to report them (perhaps because they were more quickly forgotten in light of the more salient actions and experiences). Alternatively, the observer's default heuristic of attending to the partner's intentional actions during conversation may have been co-opted to provide an evidence base for inferring the person's mental states. Future studies might examine whether people reliably use intentional observable behaviors to infer mental states and if so, why. Other studies might examine whether participants who are instructed to use mere behaviors as an evidence base for inferring their partners' experiences are more successful in inferring mental states than are participants who are instructed to use intentional actions as their evidence base.

General Discussion

Three studies support the hypothesis that interactants attend to different behavioral events in themselves (as actors) than in their interaction partners (as observers). Specifically, we identified two actor–observer gaps among interacting strangers: When we controlled for main effects, we found that actors attended on average to 2.4 more unobservable events than did observers (and observers attended to 2.4 more observable events than did actors). In addition, actors attended on average to 1.0 more unintentional events than did observers (and observers attended to 1.0 more intentional events than did actors). We explored three potential factors that might close these actor–observer gaps. Among intimates, the observability gap was cut in half and the intentionality gap disappeared. Personal conversation topic had no impact on either gap. Finally, empathy instructions slightly reduced the observability gap but left the intentionality gap intact.

These studies advance our understanding of cognitive processes during interpersonal interaction in several respects. First, the results suggest that the emerging mental models people form of themselves in interaction differ substantially from the mental models they form of their partner: Models of the self contain significantly more unobservable and unintentional behavioral events than do models of the partner, a result that both supports and extends past work. Previous studies have documented that long-term representations of the self contain more private aspects (such as thoughts and feelings) than do representations of others (Andersen et al., 1998; McGuire & McGuire, 1986; Prentice, 1990). Our studies suggest that this difference already exists in the early stages of representing interpersonal interactions and, furthermore, that the behavioral events actors and observers represent differ not only in their observability but also in their intentionality.

Second, the asymmetric mental models people form of themselves and others reflect, at least in part, asymmetries in attention during the interaction itself. Specific patterns of results within our studies support this interpretation. Explicit attempts to bias people's reporting in Studies 1 and 2 did not alter the actor–observer gaps we found, and intrusive behavioral events that people mentioned counter to instructions reliably showed both actor–observer gaps. Furthermore, the literature suggests that autobiographic episodic memories are directly retrieved rather than reconstructed (Herrman, 1994) and typically are quite accurate (Brewer, 1994). Reports directly following an interaction are considered especially reliable reflections of attentional processes during that interaction (Frable et al., 1990; Smart & Wegner, 1999). Thus, the event reports collected in our studies may be fairly representative samples of the behavioral events that people actually attended to during the interaction.

Still, there are limitations. Even though explicit recall is firmly based (barring reporting biases) in attentional processes during encoding (Cowan, 1995), not all attentional processes lead to explicit recall. It is likely that interactants first attend to but then forget certain behavioral events (e.g., those that they consider irrelevant or are motivated to forget), and that those events were neglected by our methodology. Alterations of this methodology might complement the present findings by examining in more detail the relation between ongoing attention and emerging mental models. For example, cued recall or recognition memory procedures may help uncover representations of behavioral events that normally would not be included in spontaneous, explicit reports. Highly specific instructions (perhaps with reminders throughout the conversation) may be used to guide attentional processes. Also, observer instructions to count the instances of attending to certain behavioral events on-line during the interaction may increase the accuracy of assessing attention. The drawback of such a procedure is, of course, that it might disrupt the natural flow of interaction.

A third insight suggested by the present studies is that the actor–observer gaps in attention to behavioral events may be fairly resistant to change. Attempts to close the gaps by way of conversation topic, intimacy of conversation partners, and empathy instructions were met with only partial success. We do not want to suggest, however, that empathy is a generally ineffective method for observers to increase attention to their partner's mental states. Perhaps empathy instructions have to be repeated throughout an interaction to overcome the powerful attentional demands of conversations. Empathy instructions may also require additional incentives to be sustained. One such incentive is intimacy. Not only may people be more capable of inferring their friend's mental states (Ickes & Stinson, 1992), but they may also be more motivated to do so. That is, instructions to empathize might lead to a more substantial weakening of the actor–observer gap when interacting with a friend than when interacting with a stranger. Other potential incentives include the attractiveness of the partner (Ickes, Stinson, Bissonette, & Garcia, 1990; Mulford, Orbell, Shatto, & Stockard, 1998), certain forms of outcome dependency or manipulative intent (e.g., Byrne & Whiten, 1986), and even money (Klein & Hodges, in press).

Implications for Attribution Phenomena

In light of the present results, theories about the attentional foundation of attribution processes may need to be reconsidered. First, the classic assumption that actors attend to the situation and observers attend to the other person (Heider, 1958; Ross & Nisbett, 1991; Storms, 1973) is somewhat misleading. If one defines, as seems appropriate, the actor perspective and the observer perspective by reference to the object of attention—which is the self for the actor and another person for the observer—then people pay attention to the situation from neither the actor nor the observer perspective but rather from a neutral perspective. By contrast, when people seek to explain their own or another's behavior, they may search for potential causes in the situation. A differential focus on the situation depending on the actor or observer perspective therefore makes good sense when we speak of people searching for potential causes (i.e., trying to explain a behavior), but not when we speak of attention to behavioral events unfolding in the self or the other in the first place (Malle & Knobe, 1997b).

Heeding the distinction between attention to behavioral events and searching for potential causes of those events helps clarify the relation between attention and attribution. For example, Jones and Nisbett (1972) argued that people have far more access to their own experiences than they do to other people's experiences. A simple attention-attribution link would therefore predict that this greater access to experiences should lead actors to explain their own behavior primarily with reference to experiences, which is contradicted by the literature. When we separate attention to events from explanation, this contradiction is resolved. We find that people indeed attend to their own experiences more than to others' experiences and also wonder about their own experiences more often than about others' experiences (Malle & Knobe, 1997b). But when actually selecting explanations for these experiences they mention a variety of causes, not just experiences. Thus, classic formulations of the attention-attribution link have confounded the behavioral events attended to with the causes used to explain them (Malle, 1999).

A similar revision appears necessary for the treatment of actor–observer differences, traditionally cast in terms of a dichotomy between person/disposition causes and situation causes. We have seen that actors and observers already differ in the very events they attend to and also in the events they find worth explaining (Malle & Knobe, 1997b). These asymmetries, carved out by the observability and intentionality distinctions, are not captured by the traditional person–situation dichotomy. In addition, once we take seriously the distinction between intentional and unintentional events, another phenomenon emerges that is incompatible with person–situation models. We have shown elsewhere (Malle, 1999; Malle, Knobe, O'Laughlin, Pearce, & Nelson, 2000) that it is inappropriate to classify people's explanations for intentional events into person and situation attributions, because such a classification does not consider the multiple conceptual distinctions people themselves make when explaining intentional actions (e.g., three distinct explanatory modes of *reasons*, *causal histories of reasons*, and *enabling factors*). Moreover, recent studies in our laboratory suggest that multiple actor–observer asymmetries exist both at the level of modes of explanation and at the level of specific features of a given mode (Malle, Knobe, & Nelson, 2001; see Malle, 1999). It is interesting to note that even these patterns of explanations reflect the fundamental principle of epistemic access. For example, actors are aware of their reasons for acting and therefore use them more frequently than do observers, who have to work harder to infer those reasons.

The picture that emerges, then, distinguishes between actor–observer asymmetries at multiple levels of analysis—which events they attend to, which ones they try to explain, and how they explain them—but all levels connect in one way or another to the fundamental problem of access to other minds. A glance at the recent literature suggests that an empirical examination of this old philosophical problem is indeed becoming a major agenda of interdisciplinary research (e.g., Baron-Cohen, Tager-Flusberg, & Cohen, 2000; Ickes, 1997; Malle et al., 2001).

Interpersonal Implications

The current paradigm examines the mental models that emerge in the course of social interaction and that are accessible to conscious reporting. These mental models likely shape reports to others about the interaction itself, long-term impressions of the partner, and decisions about subsequent interactions with the partner. Future studies might track these important social consequences and the specific role that actor–observer asymmetries play in them. For example, we might ask whether interactants who attend more to the other person's mental states feel closer to their partner and seek out that partner again. One might also wonder whether the amount of attention paid to unintentional (rather than intentional) behaviors decreases the likelihood of blame, given that unintentional behaviors are far less often subject to blame than are intentional ones. Another line of research might explore individual differences that regulate actor–observer asymmetries in attention. Variables that may help close the actor–observer gap in observability include dispositional empathy and self-monitoring (to the extent that it fosters attention to one's own observable behaviors); variables that may widen the gap include depressed affect, which is associated with rumination and self-preoccupation (Nolen-Hoeksema, 1998), and youth, which is associated with incomplete mental-state inference skills (e.g., Boyes & Chandler, 1992).

As a next step, the present insights could be applied to the study of failed interactions, where actor–observer gaps in attention may be amplified. For example, in conflict situations people often seem to attend to the other person's actions (e.g., "He yells) and to their own feelings (e.g., "I am hurt") more than to the other person's feelings and their own actions (Steins & Wicklund, 1996; Vangelisti, 1994). The well-known expression of people "talking past each other" captures quite well the problem of interactants who attend to their own mental states and to the other's behavior, thus each neglecting what their partner is most attentive to. In negotiations and arguments, for example, people often fail to fully grasp the other person's thoughts and feelings (Ross & Ward, 1996), and excessive attention to one's own internal states seems to be detrimental to interactions (e.g., Flory, Raeikkoenen, Matthews, & Owens, 2000; Woody et al., 1997). Given the exploratory finding in Study 2 that the actor–observer gap for observability is negatively related to feelings of interpersonal understanding, we might expect that techniques to close this actor–observer gap could increase feelings of understanding.

Among these techniques to close the observability gap, attempts to empathize rank highly (e.g., Mendoza, 1996; Odegaard, 1996). But another, perhaps overlooked tool to facilitate successful interactions is the increase of attention to one's own behaviors. By doing so, actors may detect misleading communications, offer explanations where needed, and thus avert misunderstandings and conflict. This technique should be especially effective if actors try to perceive their own behaviors through their partner's eyes—a form of empathy that marries increased attention to the other's mental states with increased attention to one's own behavior.

The present studies examined people's representations of mind and behavior without considering the accuracy of such representations. In this sense, they are orthogonal to recent research on empathic accuracy (Ickes, 1993). However, both our approach and Ickes' empathic accuracy paradigm target social perception processes embedded in the natural flow of interactions. Whereas Ickes' method focuses on the perceiver's accuracy at inferring the partner's mental states, our method tries to assess observable as well as mental events that interactants spontaneously notice, both in others and in themselves. Once could add measures of empathic accuracy (with respect to the partner's actual thoughts and feelings) to our paradigm by asking participants to watch a videotape of the interaction and make precise inferences about the other's mental states. It would be interesting to explore whether people are more accurate for those events that they spontaneously noticed during the interaction and whether their degree of showing an actor–observer asymmetry for observability is related to their overall empathic accuracy.

In conclusion, the present studies provide a first step toward understanding the allocation of attention and the formation of mental models in social interaction. Already at an early processing stage, models of the self and others show reliable asymmetries for intentionality and observability, of which at least the observability gap persists in long-term person representations (Andersen et al., 1998; McGuire & McGuire, 1986; Prentice, 1990). Both actor–observer asymmetries, but especially the observability gap, may be fairly resistant to change and may have powerful implications for communication and conflict. Theoretically, the present findings (along with those by Malle & Knobe, 1997b) cast serious doubts on classic conceptions of the attention–attribution link and connect social–psychological work on social perception to a growing interdisciplinary interest in people's inferences about other minds.

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Appendix

Event Reports From one Representative Participant

Actor perspective (writing about self)

Started off very nervous [4]. Confused [4] about what was going on. Just started talking [1]. Had a little attack of nervous energy [4]. Then was just relaxed [4]. It was very pleasant. Played with my hands a lot [2]. Just started to chat [1] about whatever came to mind [4]. Very aware of being taped [4].

Observer perspective (writing about partner)

Very relaxed [4]. Eyes looked down a lot [2]. Smiled [2]. Relatively calm [4]. Pleasant, nice [1]. Very alert [1/3][a] and responsive [1]. Just normal average stuff. Nothing in particular to write about. She seemed young. Very together though.

Note: Transcription is verbatim. Numbers in square brackets denote behavioral event codes. 1 = action (observable/intentional); 2 = mere behavior (observable/unintentional); 3 = intentional thought (unobservable/intentional); 4 = experience (unobservable/unintentional).

[a] Final code was 1.

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