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The Folk Concept of Intentionality

BERTRAM F. MALLE

University of Oregon

AND

JOSHUA KNOBE

Stanford University

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When perceiving, explaining, or criticizing human behavior, people distinguish between intentional and unintentional actions. To do so, they rely on a shared folk concept of intentionality. In contrast to past speculative models, this article provides an empirically based model of this concept. Study 1 demonstrates that people agree substantially in their judgments of intentionality, suggesting a shared underlying concept. Study 2 reveals that when asked to define directly the term *intentional,* people mention four components of intentionality: desire, belief, intention, and awareness. Study 3 confirms the importance of a fifth component, namely skill. In light of these findings, the authors propose a model of the folk concept of intentionality and provide a further test in Study 4. The discussion compares the proposed model to past ones and examines its implications for social perception, attribution, and cognitive development. © 1997 Academic Press

Judgments of intentionality set the course of social interactions. If considered intentional, a critical remark can be seen as a hurtful insult; a collision in the hallway, as a dangerous provocation; and a charming smile, as a hint of seduction. But if considered *unintentional*, that same remark may be excused; the same

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collision may lead to a new friendship; and the same smile might simply indicate a good mood.

The concept of intentionality thus permeates social behavior. The law relies on this concept as well, most notably in the distinction between intentional murder and manslaughter. Even the world of sports assigns more severe penalties for deliberate misdeeds, such as intentional fouling in basketball and intentional grounding in football. Juries, referees, and social agents alike distinguish between intentional and unintentional behavior; in doing so, they make use of a *folk concept of intentionality.* The present article explores this concept.

Psychology has traditionally studied intentionality as an *objective* fact about the mind (e.g., Fishbein & Ajzen, 1975; Heckhausen, 1991; Libet, 1985; Ryan, 1970; Schneider & Shiffrin, 1977). But intentionality is also a *social* fact. Whether or not intentionality is truly an objective attribute of the mind, people certainly ascribe intentions to each other (Dennett, 1987; Heider, 1958; Shultz & Wells, 1985). Psychology must therefore examine this social role of intentionality—its significance as a shared folk concept that helps people understand each other and themselves.

Early attribution theorists emphasized the importance of intentionality in social perception (Heider, 1958; Jones & Davis, 1965; for a review see Maselli & Altrocchi, 1969), but they did not go further than speculating about this folk concept. More recent discussions of intentionality have also relied on speculative models (Fiske, 1989; Fleming & Darley, 1989; Shaver, 1985). Important empirical work in social and developmental psychology has explored the mediating role of perceived intention in helping behavior (e.g., Ickes & Kidd, 1976; Swap, 1991); aggression (e.g., Crick, 1995; Epstein & Taylor, 1967); relationship conflict (Hotaling, 1980; Fincham, Bradbury, & Grych, 1990); and judgments of responsibility, blame, or punishment (e.g., Armsby, 1971; Karniol, 1978; Piaget, 1932; Shaver, 1985; Shultz & Wright, 1985). This research has documented the ways in which judgments of intentionality influence other psychological processes, but it has not studied people's concept of intentionality itself. Research on children's theory of mind has begun to examine more directly when and how children acquire the concept of intention (e.g., Astington & Gopnik, 1991; Moses, 1993; Shultz, 1980; Wellman, 1990). Surprisingly, no corresponding research exists on the adult concept of intentionality, with the exception of informal interviews with five adults conducted by D'Andrade (1987). The present article therefore investigates the folk concept of intentionality and examines its implications for social perception, attribution, and development.

We first need to demonstrate that people show substantial agreement in judging behaviors for their intentionality. Only if such agreement exists are we justified to search for the folk concept that underlies those judgments.

STUDY 1

Participants rated a set of 20 behaviors for their intentionality. The behaviors were selected to range from clearly unintentional to clearly intentional. They were

described verbally to minimize ambiguities arising from differential chunking, framing, and interpretation of the stimulus material. The format of verbal descriptions also simulates a natural communicative situation in which one person describes a behavior to a conversation partner, who then tries to infer that behavior's intentionality.

To determine whether people spontaneously use their own folk concept of intentionality when completing this rating task, some participants received a working definition of intentionality before making their judgments, while others did not receive such a definition. If people use their own folk concept, agreement should be high in either condition. In addition, we asked some participants to rate the behaviors from an observer perspective, and others, to rate them from an actor perspective. The shared folk concept of intentionality should produce equal agreement from either perspective.

Method

Participants and procedure. Two samples were recruited for Study 1. Sample A consisted of 56 undergraduate students in an introductory psychology class at San Jose State University, who received course credit for their study participation. The questionnaire containing all instructions and measures was administered as part of a larger survey during a mass testing day at San Jose State University. The participants entered the laboratory at their leisure, received the survey booklets, and were tested in groups of 5 to 15. As each student finished the booklet, the experimenter thanked and debriefed that student.

Sample B consisted of 48 undergraduate students in an introductory psychology class at Stanford University, who received course credit for their study participation. The questionnaire containing all instructions and measures was administered at the end of an unrelated experiment (a computerized Stroop test) at Stanford University.

Material. Both samples completed a questionnaire containing 20 verbally described behaviors (see Table 1). The behaviors were selected to cover a wide range of events, such as bodily states, emotions, actions, and accomplishments. Using our own folk knowledge, we attempted to select 10 intentional behaviors and 10 unintentional behaviors.

Participants rated the 20 behaviors from either of two perspectives. In the actor perspective ($n = 32$), they were instructed this way: ''Please look at the 20 statements below. Each statement describes you doing something. Your task is to rate whether you would do that *intentionally.*'' The behaviors were described as follows: ''I asked somebody out for dinner''; ''I am in a great mood today''; etc. In the observer perspective ($n = 72$), they were instructed this way: ''Please look at 20 statements below. Each statement describes Anne doing something. Your task is to rate whether Anne does what she does *intentionally.*'' The behaviors were described as follows: ''Anne asked Mike out for dinner''; ''Anne is in a great mood today''; etc.

About one-half of the participants in each sample received a working definition of intentionality before they rated the 20 behaviors. In the actor perspective, the definition read: ''What do we mean by *intentional?* This means that you had a reason to do what you did and that you chose to do so.'' In the observer perspective, it read: ''What do we mean by *intentional?* This means that the person had a *reason* to do what she did and that she *chose* to do so.''

All participants rated how intentional they thought each behavior was, using an 8-point scale ranging from ''not at all'' (0) to ''completely'' (7) intentional.

Results

To begin with, we computed people's agreement across the 20 behaviors. In the whole sample, any two people showed an average intercorrelation of r (20) = .64,

TABLE 1
PEOPLE'S AVERAGE RATINGS OF INTENTIONALITY FOR 20 VERBALLY DESCRIBED BEHAVIORS (STUDY 1)

	Mean	SD
Anne is sweating	1.37	1.61
Anne was yawning during the lecture	1.41	1.59
Anne was grinding her teeth during the test	2.00	1.63
Anne had a craving for cherries after dinner	2.23	1.72
Anne believed that she had the flu	2.69	1.99
Anne is in a great mood today	2.70	1.98
Anne is infatuated with Ben	3.20	1.95
Anne was worrying about the test results	3.69	1.91
Anne got admitted to Princeton	3.78	2.19
Anne interrupted her mother	4.58	1.94
Anne ignored Greg's arguments	5.22	1.73
Anne drove way above the speed limit	5.37	1.67
Anne applauded the musicians	5.77	1.49
Anne greeted her uncle politely	5.94	1.31
Anne refused the salesman's offer	6.22	1.28
Anne stole a pound of peaches	6.36	1.19
Anne asked Mike out for dinner	6.39	1.07
Anne invited Sue to have lunch with her	6.40	1.08
Anne watered her new plants	6.53	0.84

and any one persons showed an average correlation of r (20) = .80 with the remaining group, resulting in a Cronbach α of 0.99. Agreement did not differ between the conditions with definition (.79) and without definition (.79), between actor perspective (.77) and observer perspective (.80), or between San Jose (.81) and Stanford (.78).

We also tested the stability of each of the 20 behaviors' average intentionality ratings across school, perspective, and definition. Using three sets of 20 pairwise t tests, we found no differences between schools, perspectives, or definition conditions. Not surprisingly, then, the two sets of 20 average ratings from each school were almost perfectly correlated, $r = .98$, and the same correlations were found for perspective and definition.

Discussion

People's substantial agreement in their differentiation among intentional and unintentional behaviors suggests the influence of a shared folk concept of intentionality. Most importantly, whether the instructions provided participants with a definition of intentionality had no effect on average agreement, suggesting that intentionality is not just a theoretical construct but a folk concept that people spontaneously use to classify behavior. People's high agreement in judgments of intentionality is comparable in size to their agreement in judgments of social desirability (e.g., Edwards, 1957). Both dimensions are deeply ingrained in our culture, so people have been reinforced many times for their stimulus differentiation along these central dimensions.

The results of Study 1 also show that actors and observers make the same distinctions among behaviors. In complex social situations, of course, knowledge and motivation differences between actors and observers may produce disagreement in judging particular behaviors (cf. Malle, 1996).

Having demonstrated that people agree substantially in their judgments of intentionality, we now examine the folk concept that underlies these judgments.

MODELS OF INTENTIONALITY

What might a definition of intentionality look like? A commonly cited model (e.g., Forguson, 1989) holds that to act intentionally one needs to have a desire (for an outcome) and appropriate beliefs (about how the act would lead to that outcome). Initial traces of this model can be found in Aristotle (1892/382 B.C.), but it was first elaborated by Hume (1978/1740). The two-way belief/desire model lies at the core of rational choice theory (Savage, 1954; von Neumann & Morgenstern, 1944) and led to well-known work in modern philosophy of action (e.g., Anscombe, 1957; Davidson, 1963; Goldman, 1970). But two-way models are incomplete. Suppose Anita fouls an opponent during a basketball game. Even if we know that Anita wants to win the game and believes that fouling her opponent would help her win, we still cannot be sure that she committed the foul intentionally. What is missing is Anita's specific intention, her *decision* to act on her desire and belief. To accommodate such cases, philosophers developed three-way models of intentional action, including beliefs, desires, and intentions (e.g., Brand, 1984; Bratman, 1987; Searle, 1983; Thalberg, 1984). Supporting this extension, researchers of children's developing theory of mind have suggested that children's concept of intentional action first includes the concept of desire and belief and later that of intention (Astington & Gopnik, 1991; Wellman, 1990). Similarly, D'Andrade (1987) has confirmed, in a small interview study, that people distinguish between desires and intentions.

Within social psychology, Heider's (1958) model of intentional action also recognizes *intention* as the central factor in personal causality, but it differs in several respects from the above tradition. In his model, *ability* and *trying* are the two personal factors determining intentional action, whereby trying further splits into the critical intention aspect (what a person is trying to do) and an exertion aspect (how hard the person is trying).[1] Heider was somewhat reluctant to draw a distinction between desire and intention (Heider, 1958, p. 110), but he did discuss desire as a precondition of trying (Heider, 1958, Chap. 5). He did not, however, assign a comparable role to beliefs.

Jones and Davis (1965) extended Heider's model by recognizing the importance of a *belief* component (''knowledge'') in addition to ability. In their model, ascriptions of belief and ability are both necessary conditions for ascriptions of intention, while the role of desire remains unspecified.

[1] Unfortunately, Heider's (1958) treatment of trying and intention is quite equivocal in the original text. Heider at times distinguishes intention from trying (p. 109) but at other times equates the two concepts (pp. 100, 110).

In their conceptual definition of intentional action, Ossorio and Davis (1968) postulated *desire*, *knowledge*, and *skill*, as well as a conventionality condition—that the agent is ''recognizably doing the sort of thing one would do in order to accomplish'' one's goal (p. 358).

Shaver (1985), building on Heider, Jones, and the philosophical literature, suggested yet another way to define intentional action: An action is intentional if the agent has a *desire* for an outcome, *beliefs* about consequences of the action, and *beliefs about his or her ability* to perform the action. This definition does include the desire component but merges intention with intentional action and supplants ability with perceptions of ability.

These models disagree in what they identify as the necessary conditions for intentional action. The models also differ in what they are models of. Whereas Heider tried to explicate *people's* concept of intentional action, Jones and McGillis (1976) call the Jones and Davis (1965) model a ''rational baseline model'' that ''does not summarize phenomenal experience'' (p. 404). Ossorio and Davis (1968) went one step further, claiming that they explicated a conceptual truth that need not be (and cannot be) empirically validated. But it seems curious that different scholars have proposed different definitions for what should be a single conceptual truth. Detecting such a conceptual truth, moreover, would be an idle endeavor if ordinary people did not use the concept of intentionality in accordance with the definition.

Our paper therefore returns to Heider's (1958) goal of explicating people's folk concept of intentionality. Because neither Heider's nor any other model has been based on empirical data, we began our reconstruction of the folk concept of intentionality by asking people directly what it means to perform an action intentionally. We expected these direct definitions to be the first building block of our model.

STUDY 2

Method

Participants. The participants were 159 undergraduate students in introductory psychology classes at San Jose State University ($n = 111$) and Stanford University ($n = 48$), who received partial course credit for their participation.

Procedure and materials. Participants in both samples completed a group-administered questionnaire that contained the following question: ''When you say that somebody performed an action *intentionally,* what does this mean? Please explain.'' Participants wrote their answers on four empty lines printed below the question. The original answers were then transcribed and collected in a small booklet, which was used for coding the responses.

Coding of definitions. First we excluded synonyms for the term ''intentionally'' (e.g., ''on purpose,'' ''purposefully,'' ''deliberately''). After a training session, we classified synonyms with an agreement of 95%. An inspection of the remaining definitions revealed four main components: desire, belief, intention, and awareness. Abstracting from the clearest definitions, we then defined the following precise coding categories. To qualify for the desire category, a definition had to mention ''the desire for an outcome or the outcome itself as a goal, purpose, or aim.'' To qualify for the belief category, a definition had to mention ''beliefs or thoughts about the consequences of the act or the act itself *before* it takes place.'' To qualify for the intention category, a definition had to mention ''the intention to

TABLE 2
THE FOUR EXPLICIT COMPONENTS IN PEOPLE'S DEFINITIONS OF INTENTIONALITY (STUDY 2)

Component	Frequency (%)	Example
Desire	27	He did it in hopes of getting some result.
Belief	39	She thought about the act and its effect.
Intention	51	She made a decision to perform the action.
Awareness	23	He knows what he is doing.

perform the act, intending, meaning, deciding, choosing, or planning to perform the act.'' To qualify for the awareness category, a definition had to mention ''awareness of the act *while* the person is performing it.'' In addition, we coded two infrequent categories: control (''mentioning personal causation or control'') and external causes (''mentioning the absence of external influence such as chance'').

We then independently coded the first two pages of the booklet ($n = 44$) into the six categories and agreed on 88% of the definitions. We discussed disagreements and adopted the following conventions to settle ambiguous cases: (*a*) The expression ''with a reason'' (four occurrences overall) was excluded because it was ambiguous; it could refer either to the desire or the belief component (see Malle, 1996). (*b*) References to ''effort'' (two occurrences overall) were coded in the intention category because effort is a symptom of intention, as pointed out by Heider (1958). (*c*) The term ''premeditated'' is defined in Webster's dictionary as ''characterized by willful intent and a measure of belief'' and was therefore coded both as intention and belief (seven occurrences overall). We then coded the remaining eight pages of the booklet ($n = 115$), reaching perfect agreement on 95% of the definitions. Discussion settled 11 disagreements overall, and a total of 202 definitions was used for analysis.

Results

Twenty participants (13%) provided only synonyms. Of the remaining 139 participants, 54% mentioned exactly one component, 31% mentioned two or more. Table 2 displays how many of these participants mentioned any of the four dominant components, along with sample responses. (The distributions did not differ by school, so we collapsed across this factor.)

The four dominant components (desire, belief, awareness, and intention) accounted for 96% of the definitions. The absence of external causes was mentioned only six times; control was mentioned twice.

None of the participants mentioned all four components, presumably because the instructions to this study (''What does it mean that. . .'') did not encourage exhaustive definitions. However, those who mentioned two or more components drew careful distinctions between them. They distinguished, for example, between intention and desire: ''The person meant to act that way and was motivated to do so''; between belief and intention: ''Someone gave thought to the action beforehand and chose to do it''; between intention and awareness: ''They decided to do something and then did it with full awareness of what they were doing''; and between belief and awareness: ''This person thought about the action before he did it and was fully aware of performing the action while he was doing it.''

Discussion

Study 2 suggests that the folk concept of intentional action includes (*a*) a desire for an outcome, (*b*) beliefs about the action leading to that outcome, (*c*) an intention to perform that act, and (*d*) awareness of performing that act.

The desire and belief components map well onto the classic belief/desire model. In addition, participants identified intention and awareness as two further components of intentionality.

The *intention* component links desire and belief to action. People appreciate that an intentional action does not derive from desire and belief alone but that its direct cause is an intention. The presence of an intention to act implies, however, both a desire for an outcome and a belief that the intended act will lead to that outcome. This hierarchical relation may explain why people more often mentioned an intention component than either a desire or a belief component. The hierarchical relation also highlights an important difference between intentions and desires: Intentions always have as their object an action, whereas desires can take any outcome as their object (even impossible states of the world). Anne may intend to buy a used care even though she wishes she had the money to buy a new one. Moreover, verbs of intention (to intend, plan, try) require an action verb in the infinitive that refers to the same agent as the one who has the intention. Ben may wish that his wife were less busy, but he cannot intend that she be less busy. According to people's folk conception, then, intentions are controllable by the agent whereas desires are not (D'Andrade, 1987).

The *awareness* component specifies the agent's state of mind at the time of acting. Performing an intentional action thus requires at least minimal conscious awareness. This awareness, however, is more subtle and specific than mere conscious wakefulness: "Knowing what one is doing while doing it" (as one participant put it) is a self-reflective state in which the agent performs an act by consciously following the intention for *this* act (cf. Brand, 1984; Searle, 1983). The awareness component is crucial for identifying actions that conform to an intention but are not performed intentionally. Suppose that Ben forms an intention to call his mother. Then he recalls that he also needs to call his sister. So he picks up the phone to call his sister but dials the wrong number and ends up reaching his mother. Even though this behavior conforms to Ben's intention of calling his mother, Ben did not perform the behavior with the *awareness* of following his intention, so he did not call his mother intentionally.

None of the past models of intentionality predicted these particular definitions. First, Jones and Davis (1965) identified the belief and intention components but overlooked desire and awareness. Second, both Ossorio and Davis (1968) and Shaver (1985) identified desire and belief but overlooked intention and awareness. Finally, Heider's (1958) model of intentional action identified the intention and desire components but overlooked belief and awareness. In addition, Heider postulated exertion, along with intention, as an aspect of trying. Our participants, however, did not regard exertion as a necessary component of intentionality (only two people mentioned effort in their definitions). This should not be surprising,

for Heider (1958) was correct that the degree of exertion during an action represents a *clue* to the action's intentionality (p. 114), but exertion is neither a necessary nor a sufficient condition for performing an action intentionally.

Interestingly, all previous models postulated an ability or skill component, whereas this component was absent from people's direct definitions. This absence therefore deserves careful attention. Consider Jerry, who is a novice at darts. He has never played darts before and is not particularly talented at games like this. Surprisingly, he hits triple 20 (a very difficult throw) on his first try. A friend dismisses the throw as a fluke, so Jerry tries again, this time missing badly. We can be confident that he *wanted* to hit triple 20; but would we say that he hit it *intentionally?*

Most people would not, as a pilot study shows: Although 77% of the participants agreed that Jerry *wanted* to hit triple 20 in his first flight, only 16% said that he hit it *intentionally.* In a second condition, however, in which Jerry hit triple 20 twice in a row, 55% of the participants now inferred that he hit it intentionally; χ^2 ($df = 1$, $N = 141$) $= 22.7$, $p < .001$.

Hitting triple 20 twice in a row apparently demonstrates skill, whereas hitting it once (and then missing) does not. Perhaps people only consider an action intentional if there is evidence of the actor's *skill.* Participants in Study 2 may have failed to mention skill in their definitions of intentionality because they only considered interpersonal behaviors, for which skill can be assumed. We therefore tested people's sensitivity to the presence or absence of skill in Study 3.

STUDY 3

In the darts study, Jerry had the *intention* to hit triple 20 (he tried to hit it), but he did not hit it *intentionally.* Judgments of *doing something intentionally* (i.e., judgments of intentionality) may therefore require evidence of skill in addition to evidence of intention. In Study 3 we independently manipulated the presence of desire, belief, and skill (while holding awareness constant) and asked the participants two questions: whether the actor *tried* to perform the particular action (judgment of intention) and whether he performed it *intentionally* (judgment of intentionality). We hypothesized that judgments of *intention* should depend on the presence or absence of desire and belief only. Since one can try without succeeding, skill should not influence these judgments. Judgments of intention should therefore be rare if either belief or desire is absent but considerably more frequent when both are present, regardless of skill. Judgments of *intentionality,* by contrast, should depend on the presence or absence not only of belief and desire but also of skill. Judgments of intentionality should therefore be rare when any of these three components is absent (holding awareness constant) but considerably more frequent if all components are present.

Method

Participants and procedure. The participants were 132 undergraduate students in an introductory psychology class at Stanford University. They received class credit for completing a large survey that included a single-page questionnaire with all instructions and measures for this study.

TABLE 3
PERCENTAGE OF "YES" RESPONSES FOR TRYING TO GET TAILS AND GETTING TAILS INTENTIONALLY WITH MANIPULATED COMPONENTS OF INTENTIONALITY (STUDY 3)

Components present	Trying (%)	Intentionally (%)
Desire	21	0
Belief	31	0
Desire + belief	81	3
Desire + belief + skill	96	76

Note. The presence of awareness could be inferred.

Materials. The questionnaire, titled "Heads or Tails," contained a brief story followed by the dependent measures. The story opens with David sitting in a corner, waiting for his friends to decide what to do. He has been flipping a penny, trying to teach himself to make it land on the side he wants. Either "he has not been able to do better than chance" (skill absent) or "by now, he almost always succeeds" (skill present). His friends are trying to decide whether to see a movie. David either wants to see the movie (desire present) or does not want to see the movie (desire absent). Someone suggests flipping a coin to make a decision: "Let's just settle it quickly. We'll flip a coin: Tails, we go to the movie; heads, we hang out here." David either hears this suggestion (belief present) or does not hear it (belief absent). In either case, his friends ask him to flip the coin. He flips the coin and . . . it's tails.

We manipulated the critical information regarding desire, belief, and skill in four conditions: 1. Belief present, desire and skill absent ("belief"). 2. Desire present, belief and skill absent, ("desire"). 3. Belief and desire present, skill absent ("belief + desire"). 4. Belief, desire, and skill present ("belief + desire + skill"). Awareness was present in all four conditions.

After reading the story, participants answered the following questions (by checking a box for either Yes or No):

1. Do you think that David made the coin land on tails *intentionally?*
2. Do you think that David *tried* to make the coin land on tails?

One group of participants ($n = 87$) answered only one of the two questions, permitting a between-subject test. Another group ($n = 45$) answered both questions (counterbalanced across participants), permitting a within-subject test. Since the two tests produced identical results, we collapsed the data across this factor.

Results

Table 3 shows that attributions of *trying* (intention) were rare when either desire or belief was absent but frequent when both desire and belief were present (even when skill was absent). A two-way logit analysis (with adjacent difference contrasts for the condition factor) confirms that the desire condition and the belief condition did not differ from each other, that the desire + belief condition differed substantially from the desire condition ($p < .001$), and that the desire + belief + skill condition differed only marginally from the desire + belief condition ($z = 1.5$, $p < .10$). Attributions of *intentionality,* by contrast, were frequent only when all three components (including skill) were present. In a two-way logit analysis, none of the first three conditions differed from each other, but the desire + belief + skill condition differed significantly from the desire + belief

condition ($p < .001$). These results held up in a three-way logit analysis as well, which introduced *question*—trying versus doing intentionally—as a factor. In the three-way interaction, the critical contrast between the desire + belief condition and the desire + belief + skill condition was significant ($z = 1.97$, $p < .05$).

Discussion

Study 3 thus suggests that people's judgments of intentionality are sensitive to skill information (Heider, 1958; Jones & Davis, 1965). For most social behaviors people may tacitly assume the actor's skill; but for dexterous or complex behaviors they require independent evidence of skill. Participants who provided definitions of intentionality in Study 2 focused on social behaviors, so they did not spontaneously mention skill. If one were to repeat Study 2 with explicit instructions for the participants to consider difficult behaviors from athletics, art, or science, the skill component might even appear in direct definitions of intentionality.

The skill component may lead to interesting actor–observer differences in judgments of intentionality. When an actor ascribes skill to himself (for bringing about a certain outcome), he holds a *self-efficacy belief* (Bandura, 1986). Actors' self-ascriptions of skill are thus indistinguishable from self-efficacy beliefs. Observers, however, can ascribe to the actor either a self-efficacy belief or skill itself (or both). Observers may acknowledge that the actor *thinks* she can bring about an outcome (has a self-efficacy belief), but they may not ascribe to her the actual skill of bringing it about. In judging intentionality, then, observers will often go beyond the actor's declared self-efficacy beliefs and look for evidence of actual skill.

The superstitious operator of a chance device, for instance, may acquire the *belief* that he can control the device's output, hence try to do so, and claim intentionality for this act. But a knowledgeable observer would not consider the person to be intentionally producing a certain outcome, because the person lacks the *skill* to turn an intention into an intentional action. Conversely, the frustrated subject in a learned helplessness experiment has lost her *belief* that she can control the experimental device, hence does not even try to avoid shocks in the follow-up session, whereas a knowledgeable observer would ascribe to her the *skill* to control the device and would grant her intentionality if only she tried.

A MODEL OF THE FOLK CONCEPT OF INTENTIONALITY

In light of the findings of Studies 2 and 3, we now propose a model of the folk concept of intentionality, displayed in Fig. 1.

In people's folk concept of intentionality, performing an action intentionally requires the presence of five components: a desire for an outcome; beliefs about an action that leads to that outcome; an intention to perform the action; skill to perform the action; and awareness of fulfilling the intention while performing the action. For example, we are hereby intentionally writing a self-referential example to illustrate our model—that is, we wanted to provide a vivid illustration

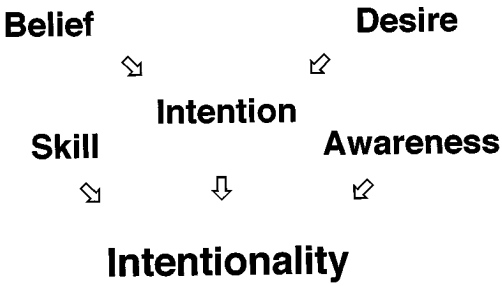

FIG. 1. A model of the folk concept of intentionality.

(desire); we thought that a self-referential example might be vivid (belief); we therefore decided to write such an example (intention); we had the skill to do so (skill); and we were aware of fulfilling our intention (awareness) while writing the example.

The model implies that desire and belief are necessary conditions for an intention. Study 3 confirmed this hypothesis, showing that people attributed an *intention* only if both belief and desire were present. The model also implies that, given an intention to act, skill and awareness are necessary conditions for acting *intentionally.* Study 3 confirmed the necessary role of skill. Study 4 now examines the role of awareness and thus provides a further test of the model.

STUDY 4

We hypothesized that awareness would function as a necessary component of intentionality, over and above the components already tested. In Study 4 we manipulated the presence of awareness in two brief stories and examined its impact (in addition to that of other components) on judgments of intentionality.

Method

Participants and procedure. The participants were 225 undergraduate students in an introductory psychology class at Stanford University. They received class credit for completing a large survey that included a two-page questionnaire with all instructions and measures for this study.

Materials. The questionnaire was titled ''Practical Reasoning Task.'' Participants were instructed to read several stories, ''. . . each consisting of a few critical sentences. For each story, please read the sentences carefully and then answer the corresponding question.'' The variations of the two stories (with labels for identification) are described below.

The ''trick story'' consisted of three sentences. The first contained belief information (which was held constant), the second contained skill information, and the third contained awareness information (both of which were manipulated). Desire and intention could be inferred.

1. Jeremy once heard about a way to trick cashiers into giving back too much change. [belief]
2. (a) Jeremy is quite capable of performing this trick correctly. [skill] (b) Jeremy is incapable of performing this trick correctly. [no skill]
3. (a) Jeremy left the store, knowing that he received too much change. [awareness]. (b) Jeremy left the store, unaware that he received too much change. [no awareness]

After reading this story, all participants answered the following question (by checking a box for *Yes* or *No*): ''Did Jeremy *intentionally* acquire too much change?'' Participants were randomly assigned to

TABLE 4
PERCENTAGE OF "YES" RESPONSES FOR ACQUIRING TOO MUCH CHANGE INTENTIONALLY (STUDY 4)

Components present	Intentionally (%)
Control group	5
Skill	7
Awareness	26
Skill + awareness	83

Note. The presence of belief was explicitly stated; the presence of desire and intention could be inferred.

the following information conditions: 1. Neither skill nor awareness present (control group). 2. Only skill present ("skill"). 3. Only awareness present ("awareness"). 4. Both skill and awareness present ("skill + awareness"). We hypothesized that Condition 4 would produce by far the highest frequency of intentionality judgments.

The "car story" consisted of three sentences. The first contained desire information, the second contained awareness information, the third contained belief information (all of which were manipulated). Skill and intention could be inferred.

1. (a) Frank hates George. [desire] (b) Frank likes George a lot. [no desire]
2. (a) Frank was aware of bumping into the blue BMW behind him. [awareness] (b) Frank wasn't aware of bumping into the blue BMW behind him. [no awareness]
3. (a) Frank knew that the blue BMW was George's car. [belief] (b) Frank didn't know that the blue BMW was George's car. [no belief]

All participants answered the question, "Did Frank *intentionally* bump into George's car?" Participants were randomly assigned to the following seven information conditions (omitting the condition in which none of the three components was present): 1. awareness only, 2. belief only, 3. desire only, 4. desire + awareness, 5. belief + awareness, 6. belief + desire, 7. belief + desire + awareness. We hypothesized that Condition 7 would produce by far the highest frequency of intentionality judgments.

Each participant received both stories. Conditions and order of stories were varied across participants.

Results and Discussion

Tables 4 and 5 display the results for the trick story and the car story, respectively. Both confirm the necessary role of awareness in judgments of

TABLE 5
PERCENTAGE OF "YES" RESPONSES FOR BUMPING INTO SOMEBODY'S CAR INTENTIONALLY (STUDY 4)

Components present	Intentionally (%)
Belief	3
Desire	26
Awareness	11
Desire + awareness	6
Belief + awareness	13
Belief + desire	18
Belief + desire + awareness	60

Note. The presence of skill and intention could be inferred.

intentionality. Attributions of intentionality are rare if awareness (or any other component of intentionality) is absent but frequent if all components are present.

To test this interpretation for significance, we computed two-way logit models, with condition as the independent variable and intentionality ascription (Yes vs No) as the dependent variable. We used difference contrasts to examine the impact of increasing numbers of components present. In the trick story, the skill condition and the control condition did not differ from each other; and together they differed somewhat from the awareness condition ($z = 3.2$, $p < .001$); but the greatest difference was between these three conditions and the awareness + skill condition, where all components of intentionality were present ($z = 8.5$, $p < .001$). In the car story, the first six conditions did not differ from each other, but together they differed from condition 7 ($z = 6.2$, $p < .001$), which was the only one that produced high rates of intentionality attributions.

Both stories produced less than perfect intentionality attributions (83% and 60%), probably because the vignettes were very concise and two components had to be inferred in each case. But these imperfect attribution rates also show that the vignettes were not so heavy-handed as to suggest only one correct judgment. Of course, to the theorist who has accepted the proposed model of intentionality the results may seem obvious. To the opposing theorist, however, who believes in unconsciously performed intentional actions (dispelling the awareness component), the results must be surprising, if not damaging.

GENERAL DISCUSSION

The present studies developed and tested a model of people's folk concept of intentionality. Naturally, these studies have limitations. The data have been collected on a student subject population and need to be replicated in community samples of varying ages and economic and ethnic backgrounds. Also, the vignette techniques, though particularly suitable for identifying conceptual relationships, need to be complemented by other methods, such as video-taped stimulus materials and codings of people's discussion about the intentionality of a given action. Finally, the explicated folk concept may hold only for people of Western cultures. Even if all cultures distinguished intentional from unintentional behavior, the specific conditions for ascribing intentionality might vary. Currently we have no empirical data to decide this issue (cf. Lillard, 1996).

Despite these limitations, the current studies suggest that people's folk concept of intentionality consists of five components (belief, desire, intention, awareness, and skill) that are hierarchically arranged, such that belief and desire are necessary conditions for attributions of *intention* and, given an intention, skill and awareness are necessary conditions for attributions of *intentionality.*

The present model has several strengths. First, it is empirically based. All five components were verified in judgment tasks, and four components were even identified in people's direct definitions of intentionality. Second, our model integrates past analyses of people's concept of intentionality (Heider, 1958; Jones & Davis, 1965; Ossorio & Davis, 1968; Shaver, 1985), which had disagreed about

the particular subsets of components that define intentionality (e.g., belief and desire, belief and ability). The present model unites these past efforts by identifying all necessary components of intentionality as well as their interrelations.

Third, the present model clarifies inconsistencies in past models. For example, Heider's (1958) notion of ''ability'' seemed to subjectivize the skill component and confound it with the agent's perception of her skill (see also Shaver, 1985, p. 122). Many of Heider's (1958) examples of skill are indeed examples of the agent's perception of her skill: ''Will I be able to do the task again?'' (p. 84); ''I can attain that goal'' (p. 111). These subjective perceptions of skill (self-efficacy beliefs) are important from the actor's perspective, but they are not part of the folk concept of intentionality. What is part of this concept is the consideration of the agent's actual skill, as emphasized by Jones and Davis (1965). Perhaps these authors recognized the skill component because they analyzed judgments of intentionality from the observer perspective, where ascriptions of the agent's skill are clearly separated from ascriptions of mere self-efficacy beliefs.

Fourth, the present model clarifies a nagging terminological complexity—the relationship between *intention* (intending) on the one hand and *intentional action* on the other (cf. Bratman, 1987). Typically the concepts of intention and intentional action are treated as synonyms (e.g., Jones & Davis, 1965; Shaver, 1985; Shultz, 1988). Our data suggest, however, that people distinguish between attributions of *intention* (based on belief and desire information) and attributions of *doing something intentionally* (based on intention, skill, and awareness information). People thus apply the term *intention* to persons (who intend to do something) and the term *intentional* to actions (which are performed intentionally). When we speak of *intentionality,* then, we should speak of actions that were performed intentionally. In contrast, when we speak of an action that was *intended* (i.e., preceded by an intention), we should not automatically infer that such an action was performed intentionally; for if awareness or skill were missing, the action would be intended but not performed intentionally.

The folk distinction between intention and intentionality applies most readily to situations where a person has formed an intention but has not yet performed the intended action (Davidson, 1980). The more important test cases for this distinction, however, are those behaviors that were both intended by the agent and actually performed, but were performed accidentally rather than intentionally (because the agent was lacking awareness or skill). For example, John intended to hit the triple 20, ends up hitting it, but does so accidentally (because of luck, not skill). Therefore, a simple match between intention and outcome does not always suffice for an ascription of intentionality (e.g., ''She intended to heal him, and now he is healed'' does not rule out spontaneous healing). Such a matching rule is used by young children (Astington, 1991; Shultz & Wells, 1985), but for adults doing something intentionally requires more than the presence of an intention and its matching outcome. It also requires skill and awareness, two factors that bring about the outcome in the right (nonaccidental) way. For some social behaviors the

presence of skill and awareness can be assumed, so judgments of intention and judgments of intentionality converge. But for other behaviors the presence of skill or awareness is questionable, so intentionality might be denied even if an intention is clearly evident.

This model of the folk concept of intentionality has several implications for social perception, attribution processes, and development, as discussed next.

Social Perception

Knowing the components of people's concept of intentionality, we may begin to investigate the cognitive process of *inferring* intentionality, its conditions of accuracy and bias, and methods of improving judgment sensitivity. For example, how can it happen that mere friendliness is misjudged as an intentional sexual overture? How do people recognize intentionally prolonged eye contact? How do they distinguish between intentional and accidental rudeness? We must also examine crucial individual differences. People may differ in their response thresholds of judging a behavior intentional, and different cultures may impose different social consequences for intentional behavior. Both personal and cultural miscommunication may stem from such subtle differences in judgments of intentionality.

Perceptions of intentionality also influence the evaluations of behavior: Actors receive more praise and more blame for actions that are considered intentional rather than unintentional (Shaver, 1985). Similarly, intentional acts of helping are more prone to be reciprocated than unintentional ones (e.g., Swap, 1991), and likewise for intentional acts of aggression (e.g., Taylor, Sahuntich, & Greenberg, 1979). A careful distinction between attributions of intention on the one hand and attributions of doing something intentionally on the other may lead to new hypotheses about the subtle logic of praise and blame. For example, people may distinguish between intentions and doing something intentionally more for positive behaviors than for negative behaviors because it is easy (and common) to have positive intentions but harder to fulfill them intentionally, whereas a person' negative intention is already deviant (and threatening to others) even before fulfilling it intentionally.

Attribution Processes

The concept of intentionality is essential to people's descriptions and explanations of behavior (Heider, 1958; Malle, 1996). Since Heider's book, however, most research on explanations omitted issues of intentionality (cf. Buss, 1978). One might suspect that, within attributional theories, the notion of controllability has taken the part of intentionality. But how exactly does controllability relate to intentionality?

Intentionality and Controllability

To examine the relation between these two concepts, we need to distinguish between two meanings of controllability. In one sense, controllability refers to

types of *causes*, an attributional dimension introduced by Rosenbaum (1972) and Weiner (1979). A controllable cause of good grades would be effort; an uncontrollable cause would be test difficulty. But only among unintentional behaviors does the controllability of causes make a relevant distinction—Ben might regard the causes of his tiredness as controllable (hence he will sleep more) but the causes of his sadness as uncontrollable (making it worse). Intentional behaviors, in contrast, have by definition a controllable cause (i.e., an intention).

In this first sense, then, controllability and intentionality are distinct concepts because they apply to different objects—controllability applies to causes whereas intentionality applies to behaviors (Weiner, 1985). But the distinction between controllable and uncontrollable causes presupposes the distinction between intentional and unintentional behaviors, because only unintentional behaviors can have either controllable or uncontrollable causes.

Occasionally, controllability has been used in a second sense, referring to behaviors themselves (see Stratton *et al.*, 1986). Controllable behaviors are those that can be performed intentionally, whereas uncontrollable ones are those that can never be performed intentionally. Once a behavior is performed, however, people judge whether it was actually done intentionally, and their interest in explaining that behavior depends importantly on its intentionality (Malle & Knobe, in press).

Task Difficulty and Coercion

Heider's (1958) analysis of action also referred to environmental forces that hinder or facilitate action, namely task difficulty and coercion. Both of these factors *influence* certain components of people's judgments of intentionality, but they are not *necessary components* of the intentionality concept itself. Task difficulty is one of the clues that the perceiver may use to infer whether the actor has an intention or not. If an actor faces a difficult task, for example, perceivers may not expect the actor to try to accomplish it. More importantly, task difficulty can also be used to infer whether the actor has skill or not (Heider, 1958). But while skill is a necessary component of the folk concept of intentionality, task difficulty (or ease) is not. That is because performing even a very difficult task will be seen as intentional if the actor has the appropriate skill (along with the other four components); and performing even a very easy task will not be seen as intentional if the actor lacks the appropriate skill.

Similarly, perceived coercion influences judgments of intentionality. However, an analysis of this influence is complicated by an ambiguity in the term itself. Coercion sometimes means *physical coercion*, such as when A pushes B to the ground. In this case B's falling is unlikely to be seen as intentional because B had apparently no intention of falling to the ground. Perceived physical coercion thus often discourages the ascription of an intention and, in turn, of intentionality. More typically, coercion means *psychological coercion*, such as when C holds a gun to D's head and demands that D hand over his wallet. In this case D's handing

over his wallet may well be seen as intentional: D decided to do it, however unwillingly, with the goal of saving his life. Shaver (1985) pointed out that coercion mitigates attributions of responsibility and blame but does not undermine an attribution of intentionality. We side with Shaver in arguing that (the absence of) coercion is not a necessary component of the concept of intentionality; but we hope for more research into the specific *effects* of perceived coercion on judgments of intentionality and responsibility.

Perceivers thus take task difficulty and coercion into account when they infer the actor's intention or skill; by implication, the two factors influence people's judgments of intentionality. But neither ease of task nor absence of coercion seems to be itself a necessary component of people's folk concept of intentionality.

Developmental Aspects

In an important sense, the adult concept of intentionality is the target toward which the child's concept of intentionality evolves. The present studies of the adult concept of intention and intentionality therefore generate research questions on children's acquisition of these concepts. For example, children initially use a simple desire psychology to make sense of other people's actions (Baldwin & Moses, 1994; Meltzoff, 1995; Tomasello, 1995; Wellman & Woolley, 1990; Wellman, 1991). This early desire concept, however, does not distinguish between desire and intention in the adult sense, so an important question is when children begin to make this distinction and what consequences it has for their judgments of action.

Furthermore, if children master the relationship between belief, desire, and intention, they must learn that a desired, foreseen, and intended act is not necessarily intentional. For one, the actor must fulfill her intention by having awareness of acting with the intention of doing so. This awareness is self-reflective, and it implies the capacity for subtle action identification processes (Wegner & Vallacher, 1986). Moreover, a desired, foreseen, and intended act can be a lucky strike—it takes skill to deserve an attribution of intentionality, even if the attribution of intention is beyond doubt. So another question is when children discover that both awareness and skill are important for making judgments of intentionality.

The process of internalizing the shared folk concept of intentionality may well reach into adolescence (Kugelmass & Breznitz, 1968). In such a long-ranging learning process, many things can go wrong. An abusive childhood, for example, may seriously disturb a person's evolving ability to make accurate judgments of intentionality. These disturbances may have further social consequences, such as when an overreadiness to ascribe intentionality to potentially aggressive acts may result in retaliatory aggression on the part of the perceiver (Crick, 1995; Graham & Hudley, 1994).

CONCLUSION

Process distinctions such as that between ‘‘automatic’’ and ‘‘controlled’’ behavior (e.g., Schneider & Shiffrin, 1977; Uleman & Bargh, 1989) have helped illuminate objective mechanisms of cognition and action. But many *social consequences* of behavior depend on people’s (not psychologists’) distinctions and concepts. Folk concepts such as intentionality guide people’s social behavior. If, as psychologists, we want to account for this behavior, we must understand its guiding folk concepts.

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