

Distinguishing the effects of beliefs and preconditions: The folk psychology of goals and actions

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Abstract

Two studies examined lay people's understanding of goals and intentional actions, which are key concepts in folk psychology. The studies show how predictions of goals and actions are affected by actors' beliefs about their abilities and their actual possession of the preconditions required for the actions. In some conditions, the beliefs and the preconditions were contradictory. Actors' beliefs about their abilities shaped observers' goal ascriptions, whereas actual preconditions dominated predictions about action accomplishment. Participants judged the relationship between goals and actions to be stronger when preconditions were present. Participants judged that neither beliefs nor preconditions were necessary for the actor to have action fantasies. These studies clarify how folk psychological concepts of desires, beliefs, and preconditions relate to each other and how they relate to attributions of goals and actions. Copyright © 2005 John Wiley & Sons, Ltd.

For decades social psychologists have recognized that social behaviour is greatly affected by the causes to which people attribute actions (Heider, 1958; Jones & Davis, 1965). Research has shown that people's causal understanding of behaviour reflects their assumptions about actors' mental and motivational states. For example, people draw on the assumed intentions of actors to guide responses to their actions, such as whether to punish, upbraid, or reward those actions (Weiner, 1986). People also draw on others' assumed intentions to predict their actions, even when they lack direct behavioural evidence of the existence of those intentions (Kashima, McIntyre, & Clifford, 1998). Clearly therefore, it is of interest for social psychologists to be able to identify what concepts people draw on when they explain and predict others' behaviour, and also to know how those concepts interrelate in folk theories.

These folk theories are generating strong interest in developmental psychology, where researchers are interested in how children impute states of mind to others and predict their responses (e.g. Ford, 1987; Leslie, 1987; Wellman, 1990). Philosophers are also interested in folk theories, and debate the coherence and veracity of folk theories as well as whether lay people impute states of mind to others by

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drawing on nomothetic theories of mind or rather by empathically ‘simulating’ their actions (e.g. Christensen & Turner, 1993; Dennett, 1987; Mele, 1992). It is important that these debates are informed by empirical evidence about the specific concepts that people use to explain and predict behaviour.

Despite the many reasons to empirically study these folk concepts, until recently few researchers have done so. Folk theories present social psychologists with a means to gain insight into social behaviour, and an opportunity to contribute to a cross-disciplinary literature. The methods and concepts of social psychology are ideally placed to uncover the detail of people’s understanding of behaviour. Indeed, social psychologists have recently begun to do this in earnest (e.g. Fletcher, 1995; Kashima et al., 1998; Malle, 1999, 2003).

Given that this research is to some degree the study of people’s intuitions, some of the findings are likely to seem intuitively obvious. However, this should not deter researchers. While research in social psychology often produces intuitive findings, at other times when apparently self-evident intuitions are put to the empirical test, they turn out to be wrong (e.g. Milgram, 1974). Indeed one of the key insights offered up by experimental social psychology is that to a surprising degree, people are unaware of their own thought processes (e.g. Douglas & Sutton, 2004; Nisbett & Wilson, 1977). Therefore, researchers do not have the luxury of relying on their own intuitions about folk theories, or even asking participants to simply describe their theories of behaviour. There could be no guarantee that these intuitions about folk theories would correspond with the judgements that people actually make when explaining or predicting specific instances of behaviour.

Of direct relevance to the present article, many issues are still not clear in this relatively new area of research, such as the way causal elements combine into overarching folk theories (Malle, 1999). Different researchers have approached the problem from different research traditions and thus have proposed different concepts in their models. The degree of overlap between concepts from different researchers’ models is not always clear. It is possible that by combining concepts from different models, we might more closely approximate an understanding of the theories that lay people employ when making sense of the events in their social lives. Our aim in this article is to arrive at a more fully articulated understanding of relations between folk theoretical concepts, by considering omissions in and tensions between current psychological models. We begin by reviewing some of the key concepts that psychologists have ascribed to folk theories.

KEY CONCEPTS IN FOLK THEORIES OF INTENTION AND ACTION

Recent research on folk psychology has shown that people’s theories of intentional actions consist of a number of elements: desires, beliefs, causal histories, and enabling factors (Kashima et al., 1998; Malle, 1999, 2001, 2004; Malle & Knobe, 1997). The two central concepts in folk theories of intention are desires and beliefs (Fletcher, 1995; Gopnik, 1993; Kashima et al., 1998; Malle, 1999, 2001; Read, 1987). Desires represent any positive outcome, including outcomes that are impossible to achieve, and are unconstrained by planning (Malle & Knobe, 1997). Intentions differ from desires in that intentions specify an outcome the agent tries to produce (Kruglanski, 1996; Malle & Knobe, 1997). Lay people recognize that intentions imply that actors are planning actions, whereas desires do not (cf. Malle & Knobe, 1997; Malle, 2001, 2003).

Several types of belief are relevant to intentions, but researchers have focused primarily on *outcome* beliefs; that is, beliefs as to whether a given action will fulfill an intention, as in ‘buying that new car will really impress my neighbors’ (see Malle & Knobe, 1997). However, in his seminal work Heider

(1958) also identified a class of beliefs we here define as *ability beliefs*, which comprise actors' convictions about their ability to perform the action, as in 'I really can afford the new car' or more generally 'I can attain that goal' (p. 111). In Heider's theoretical framework, ability beliefs may cause people to form goals they would not otherwise entertain, and through these goals affect their actions. However research has yet to examine the role of ability beliefs in social judgments.

The notion of ability beliefs is relevant to a subtle difference between two approaches to folk understanding of behaviour: the social psychological study of folk theory reviewed thus far, which refers to intentions; and the goal-based approach to attributions, which refers to goals (e.g. Lalljee & Abelson, 1983; Leddo et al., 1984; McClure, 1998, 2002; McClure & Hilton, 1997, 1998; McClure, Lalljee, Jaspars, & Abelson, 1989; Read, 1987; Schank & Abelson, 1977). Goals and intentions are conceptually similar, and in common parlance may be used interchangeably. They may differ in that actors with an intention believe that they are able to accomplish the action, whereas actors with a goal may not *necessarily* believe that they will accomplish an action even though they strongly desire to do so (Malle, 2004; Mele, 1992). For example if we say that Astrid has the intention of going to Paris for the summer, this implies that she believes she is able to get there, whereas if Astrid has the goal of going to Paris for the summer, she may not yet believe that she can do it. In this article, we do not strive to distinguish between goals and intentions, and our predictions are not affected by the distinction.¹

According to both psychological approaches to lay judgments of behaviour, people do not normally see intentions to be sufficient for behaviour. For example, Malle and Knobe (1997) claimed that folk theories of intentional actions recognize the necessity of skills, especially when actions are dexterous or complex. Malle and Knobe (1997) showed a hierarchical relation between intentions and intentional actions, in that people judged that only desires and beliefs are necessary for an actor to hold an intention, whereas they judged that skills are also required for the relevant action to occur. Malle (1999) later extended this claim about skills to other enabling factors, such as money and time (Malle, 2001, 2003; Malle & Knobe, 2001; Malle et al., 2000). However, there has been little research on these enabling factors in folk theories.

The goal-based approach deals with similar issues but refers to preconditions rather than skills (e.g. Lalljee & Abelson, 1983; Leddo et al., 1984; McClure, 1998, 2002; McClure & Hilton, 1997, 1998; McClure, Lalljee, Jaspars, & Abelson, 1989; Read, 1987; Schank & Abelson, 1977). Preconditions comprise the various conditions that are necessary in order for actors to realize their intentions, and include environmental factors in addition to abilities and skills. When going to a restaurant, for example, preconditions include not only the ability to pay the bill and get to the correct location, but also the restaurant being in the proximity of the actor and being open that night (Schank & Abelson, 1977). A goal such as wanting a meal is not classified as a precondition in goal-based approaches, which distinguish conative and enabling factors. Research shows that people usually prefer goals to explain a wide range of common actions, but prefer preconditions to explain actions that are extreme in the sense that they are often not attainable (e.g. Johnson et al., 1994; Lalljee & Abelson, 1983; Leddo & Abelson, 1986; Leddo et al., 1984; McClure, 1998; McClure et al., 1991; McClure & Hilton, 1997; McGill, 1990; N'gbala & Branscombe, 1995; Reeder & Brewer, 1979; Sutton & McClure, 2001). Some causal questions can also lead people to prefer preconditions over goals as explanations (Malle et al., 2000; McClure, 2002; McClure & Hilton, 1998; McClure, Hilton, Cowan, Ishida, & Wilson, 2001).

¹On the basis of the distinction between goals and intentions, we might expect the effect of ability beliefs on ascribed intentions to be somewhat stronger than for goals, for which ability beliefs may not be strictly necessary. However in our experiments the same results were obtained when goals were explicitly equated with intentions (as in Experiment 1) or when they were not (as in Experiment 2).

THE PRESENT RESEARCH: EXAMINING THE ROLE OF ABILITY BELIEFS

As we have noted, ability beliefs have been postulated to play an important role in folk theories since the contribution of Heider (1958), but research has yet to empirically examine their role in people's social judgments. In the present research we aim to address this gap in research. In our experiments, we manipulate preconditions and ability beliefs orthogonally to tease apart their effects on participants' predictions of actors' subsequent goals, fantasies, and actions. In so doing, we aim to cast light on a number of theoretical issues in the study of folk psychology.

One issue on which the present research may cast light is the relationship between preconditions and goals. Previous work on goal-based explanations may be criticized for failing to deal with the potential overlap between goals and preconditions. Preconditions make desirable actions possible, but in so doing they may also contribute to the formation of goals to perform those actions (Heider, 1958). Theoretically therefore, preconditions not only enable actions, but also motivate them. The dual causal role of preconditions is not acknowledged in research on goal-based attribution, which often assumes the distinct operation of causes that make people to want to do things versus those that enable people to do them (e.g. Leddo et al., 1984; McClure & Hilton, 1997; McClure, Lalljee, Jaspars, & Abelson, 1989). Indeed the terminology used by Sutton and McClure (2001), who consider goals to be 'motivating factors' and preconditions 'enabling factors' is confounded by this dual role.

The concept of ability beliefs may be crucial in allowing psychologists to characterize the interplay between preconditions and goals in folk theories. There are theoretical grounds to posit that preconditions are not actually seen to have a direct effect on goals, but rather only an indirect effect, mediated by ability beliefs. Specifically, according to Malle's theory of folk intentionality (e.g. 1999, 2004) mental states such as beliefs and desires, rather than preconditions, proximally cause intentions. Putting Malle's insights together with Heider's (1958) notion of ability beliefs suggests that people will reason that an only an actor's *belief* that 'I can do X', rather than whether this belief is well-founded, will *directly* affect whether he or she intends to do X. In our experiments, when we orthogonally manipulate the presence or absence of preconditions and ability beliefs, we would thus expect that only ability beliefs will have an effect on goals. If this prediction is borne out, we would have evidence that in folk theories, preconditions may serve to contribute to actors' motivation, meaning that the distinction between motivating and enabling factors is in need of revision (cf. McClure & Hilton, 1997; Sutton & McClure, 2001). However it would also show that preconditions' motivating role is not inevitable and is accounted for by those preconditions being represented in actors' minds as ability beliefs.

A further reason for examining this issue concerns the potential effect of discrepancies between beliefs and preconditions. In many everyday situations, actors' beliefs about preconditions are likely to be veridical. Hence the preconditions and beliefs will often co-occur, making the respective roles of these causes difficult for observers to differentiate. However in some cases, actors may believe they have the ability to achieve an outcome, but not actually possess those abilities. They may believe they can raise the credit to buy a car when really they cannot. They may believe they have the ability to complete a graduate course when they do not. Previous research has not shown how lay theories deal with this discrepancy. By contrasting actual preconditions with conflicting ability beliefs, it is possible to create a problem of logic for lay theories. Research has yet to show whether in such circumstances, observers are prepared to dignify such impossible aspirations by ascribing goals to the actors who hold them. If so, the effect of ability beliefs on the perceived likelihood of goals in our studies should not depend on the objective presence of preconditions.

Research on motivation suggests another type of hypothetical mental state that may appear in folk theories, which may be especially relevant when actors are misguided about their abilities, or when they believe their aspirations are likely to be thwarted. Specifically, researchers have found that people

tend to entertain *fantasies*, rather than goals, when they believe they lack preconditions necessary to realize goals (Oettingen, 1996; Oettingen, Pak, & Schnetter, 2001). Fantasies may be distinguished from goals in that they lack the essential planning component whereby people anticipate taking action to realize the desired outcome. Research on fantasies in lay theories suggests that people attribute fantasies to actors regardless of whether the actors possess the relevant preconditions (McClure & Sutton, 2004). However, it is not yet known whether observers judge that fantasies are more likely when people *believe* that they cannot perform a desired action, as might be extrapolated from the research by Oettingen and her colleagues. It is also not known whether in situations when actors possess unrealistic ability beliefs, observers will tend to predict fantasies, which connote a certain detachment from reality and ineffectual co-ordination of action, in preference to goals which may formally depend on actors' beliefs, whether or not they are realistic.

In the present article, we report two experiments in which we examined the effects of ability beliefs, as distinct from and possibly in interaction with, objective preconditions on observers' attributions of goals, fantasies, and actions. We predicted that actors' possession of positive ability beliefs (versus the belief that they cannot achieve the desired outcome) would lead observers to predict that goals are more likely but fantasies less likely. We predicted that objective preconditions available to actors would have no effect on the perceived likelihood of goal formation, nor fantasies (McClure & Sutton, 2004). In contrast to the apparent priority of ability beliefs over preconditions when observers impute goals, we hypothesized that preconditions would have a stronger effect than ability beliefs on predictions of the behaviours that actors actually perform. Research has shown that lay people judge preconditions and goals to be jointly necessary for actions to be performed (McClure & Hilton, 1997, 1998), and specifically that preconditions such as skills need to be available in the period intervening between the formation of an intention and the completion of an action (Malle, 2001; Malle & Knobe, 1997). Thus preconditions ought to predict actions in addition to the variance accounted for by goals alone. For their part, ability beliefs contribute to goal formation and might also be expected to contribute to the perceived likelihood that actions will be accomplished, but should offer little or no predictive power once goals are taken into account.

STUDY 1

Participants read scenarios that varied the actors' beliefs about preconditions and the actual presence of those preconditions. Participants then rated the likelihood that the actor formed a goal or fantasy and that the actor would accomplish the goal. The ability beliefs comprised the actor's beliefs about whether they possess a specific, necessary condition to achieve their intention (e.g. Angela believes she has the necessary qualifications to get promoted). This definition of belief is a specific instance of an actor's general beliefs about their abilities to fulfill the desired outcome. By using specific beliefs, we prevented participants from assuming that the actor had reasonable grounds for believing that they could circumvent an absent precondition. That is, focusing on the precondition belief allowed us to show that the actor's belief about the precondition really was fallacious in the incongruent conditions where the actor believed that they had a precondition which in reality they lacked.

Method

Participants and Design

Participants were 48 undergraduates at Victoria University of Wellington, New Zealand, who were approached within non-teaching areas of the University. Participants were randomly assigned to

conditions, with 24 in the goal condition and 24 in the fantasy condition. Within-subject variables were belief presence and precondition presence. In order to hold desire constant while beliefs and preconditions were varied, desire was held constant across conditions. The design was a 2 (Cognition: goal, fantasy) by 2 (Belief Presence: present, absent) by 2 (Precondition Presence: present, absent) mixed design. Completion of the questionnaire was voluntary.

Materials

The four scenarios chosen for Study 1 were adapted from Kashima et al. (1998, Study 2). Kashima et al. used nine scenarios that were varied according to the strength of the belief and desire ascribed to an actor. Their scenarios addressed such topics as getting a promotion, getting into an Honors program and buying a book.

The four scenarios were selected from Kashima et al.'s scenarios using the following decision rules. First, scenarios had to relate to desirable actions that were difficult to achieve, because people are unlikely to fantasize about events that are mundane or easy to achieve (Ajzen, 1985; Kruglanski, 1996; Oettingen, 1996; McClure & Sutton, 2004). Second, scenarios had to be useful for all the variables examined in this research. In particular, we selected scenarios that could be adapted to include preconditions and two different types of beliefs (outcome beliefs and ability beliefs). Four scenarios were selected on the basis that they did not repeat themes addressed by other scenarios, thereby controlling for potential content effects. The four chosen scenarios addressed the following themes: Lisa wanted a promotion at her company; Harry wanted to find a good job; Melanie wanted to go to Parducci's restaurant; Gary wanted to buy a Toyota.

Three modifications were made to the original scenarios. First, the definition of belief was modified from that used by Kashima et al. (1998, Study 2). Kashima et al. used outcome beliefs in their scenarios, which focus on whether an outcome can be obtained by performing a given action (e.g. for the promotion scenario, she believes strongly that she can get the promotion by working over-time). Heider (1958) proposed that outcome beliefs are less salient to the formation of intentions than precondition beliefs, where the actor thinks they can achieve the action; consequently precondition beliefs were used (e.g. for the promotion scenario, '*She believes she has the qualifications necessary to become an executive*').

Second, preconditions were added to scenarios. Preconditions included skills or abilities directly relating to the beliefs. For example, in Scenario 1 (Lisa's promotion), the same scenario stem was used (*Lisa works for a company on the city*), but the scenarios added the precondition '*Lisa does have the qualifications necessary to become an executive*'.

Third, conjunctions were added between the desire and the belief statements in the scenarios so that the text sounded more natural. When one mental state (desire or belief) was present and the other absent, 'but' was used (e.g. for the scenario '*Lisa works for a company in the city*', the belief and desire statement read: '*she wants to be promoted to an executive position but she does not believe that she can get promoted to an executive position*'). When both desire and belief were present or absent, 'and' was used (e.g. *she wants to be promoted to an executive position and she believes that she can get promoted to an executive position*).

To encourage participants to read the scenarios carefully (because sentences containing beliefs and preconditions were very similar), the '*does*' or '*does not*' used in precondition statements was underlined for emphasis, and the prefixes 'And, in fact' and 'But, in fact' were added to precondition statements that followed belief statements. When both the belief and precondition were present or absent, the precondition statement started with 'And, in fact' e.g. *And in fact, Lisa does have the qualifications necessary to become an executive*; when either the belief or precondition was present

and the other absent, the statement started with 'But, in fact'. (*But in fact, Lisa does not have the qualifications necessary to become an executive*).

The order of the precondition and belief conditions was reversed in half the questionnaires.

Each questionnaire contained four scenarios describing the circumstances of a person, definitions of goals and fantasies, a likelihood scale for goals or fantasies, and a likelihood of action accomplishment scale. The action accomplishment scale was a modified version of Kashima et al.'s (1998, Study 2) likelihood of performing an action scale. Participants rated the action likelihood on a 7-point Likert scale. The order of the belief and precondition conditions was reversed in half the questionnaires.

Definitions of goals and fantasies were presented following the instructions and before the scenarios. The definitions of goals and fantasies were replicated from McClure and Sutton (2004), and were based on relevant theory and research (Ajzen, 1985; Gollwitzer, 1996; Kuhl & Beckmann, 1985; Oettingen, 1996). The definitions read: 'Think of a goal as an intention which, firstly, the person thinks there is a good possibility of accomplishing, and which, secondly, actually motivates the person's action. So a goal should be distinguished from a fantasy, which the person may not think there is a good possibility of accomplishing, and which may not actually motivate the person's action.' In the fantasy conditions, the fantasy definition preceded the goal definition.

The instructions read: 'The following questionnaire contains a few questions asking for your view on scenarios relating to action. Your task is to imagine the situations that are described and then give your response to the following questions'. Other instructions dealt with consent.

Procedure

Participants were approached in non-teaching areas of the University and asked to complete the questionnaire. After completing the questionnaire, participants were thanked and offered a small confectionery item in appreciation of their participation.

Results

Goal and Fantasy Ratings

The ratings of goals, fantasies, and action accomplishment are presented in Table 1. Separate analyses were performed for the goal and fantasy ratings and the accomplishment ratings. A 2 (goal, fantasy) by

Table 1. Study 1: Mean ratings of probability of goals, fantasies, and action accomplishment ($n = 48$) (standard deviations in brackets)

Condition	Rating Cognition	
	Goal	Fantasy
Belief present/precondition present	6.00 (1.14)	4.83 (2.16)
Belief present/precondition absent	5.83 (0.87)	5.33 (1.86)
Belief absent/precondition present	3.88 (1.78)	5.17 (1.46)
Belief absent/precondition absent	3.21 (1.79)	5.33 (1.55)
	Action accomplishment	
Belief present/precondition present	5.50 (1.18)	5.96 (1.16)
Belief present/precondition absent	3.54 (1.69)	2.46 (1.67)
Belief absent/precondition present	4.00 (2.13)	4.04 (1.60)
Belief absent/precondition absent	2.04 (0.91)	2.08 (0.97)

2 (Belief present, absent) by 2 (Precondition present, absent) mixed design ANOVA on ratings of goals and fantasies showed an interaction between Belief Presence and Cognition, $F(1, 46) = 17.78$, $p < 0.001$, $\eta^2 = 0.28$. Planned comparisons on the effects of beliefs and preconditions on ratings of goals and fantasies showed that as predicted, participants rated goals more likely when belief was present than when it was absent, $t(94) = 7.98$, $p < 0.001$; however, they rated fantasies equally likely when beliefs were present or absent $t(94) = 0.46$, *ns*. As predicted, the presence of preconditions had no effect on goals, $t(94) = 1.09$, *ns*, or fantasies, $t(94) = 0.92$, *ns*. There was a main effect for Belief Presence, $F(1, 46) = 13.21$, $p < 0.001$, $\eta^2 = 0.22$, but no other significant effects.

Action Accomplishment Ratings

A 2 (goal or fantasy) by 2 (Belief present, absent) by 2 (Precondition present, absent) mixed design ANOVA on ratings of the likelihood of action accomplishment showed main effects for Belief Presence, $F(1, 46) = 71.91$, $p < 0.0001$, $\eta^2 = 0.61$, and Precondition Presence, $F(1, 46) = 102.40$, $p < 0.0001$, $\eta^2 = 0.69$. There were no other significant effects. A within-subjects ANOVA showed that as predicted, preconditions had a larger effect on the perceived likelihood of action accomplishment ($M = 2.30$) than did beliefs ($M = 1.28$), $F(1, 47) = 10.45$, $p < 0.002$.

We conducted hierarchical regression analyses to test the prediction that perceivers tacitly judge that preconditions have an additional effect on action accomplishment over and above their influence on goal formation. Put differently, our predictions reflect the idea that when predicting actions, lay people judge that it is not enough to know whether the actor has the goal. Rather, they also need to know whether the actor has the requisite preconditions (McClure & Hilton, 1997; Sutton & McClure, 2001). This prediction implies that if goals are entered first as predictors of action accomplishment, entering preconditions second will add to the explained proportion of variance in action accomplishment. Consistent with the assumption that regressions should be used on independent observations, we conducted separate analyses for each scenario across all the goal conditions. The results of these analyses are summarized in Table 2. As predicted, adding preconditions in Step 2 of the regression increased the amount of variance in action accomplishment that was explained by goals alone. The exception to this was the Melanie scenario in which the increase in the proportion of variance explained was not significant.

Discussion

The results of Study 1 show that both beliefs and preconditions influence judgments about goals, fantasies, and action accomplishment. As predicted, participants rated goals more likely when target

Table 2. Study 1: Hierarchical regressions assessing ability of preconditions, over and above goals, to predict action accomplishment ($n = 24$)

Scenario	Step 1 Goals alone as predictors of action accomplishment		Step 2 Goals and preconditions as predictors of action accomplishment		
	Beta	R^2	Beta (Goals)	Beta (Preconditions)	R^2 change
Lisa	0.573**	0.328**	0.503***	0.551***	0.299***
Harry	0.380	0.144	0.286	0.607***	0.360***
Gary	0.305	0.093	0.247	0.546**	0.294**
Melanie	0.584**	0.341**	0.568**	0.239	0.057

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

actors believed that they had the necessary preconditions than when actors lacked that belief. Previous research has shown that lay people regard beliefs and desires as being necessary for intentions (Kashima et al., 1998; Malle, 1999; Malle & Knobe, 1997), but none has shown that specific beliefs about preconditions influence participants' judgments about goals or intentions. The findings here clarify this issue.

Of particular interest is the finding that preconditions have no effect on ratings of either goals or fantasies. These results suggest that participants' judgments about intentions are based on the actors' beliefs about preconditions, as opposed to their actual possession of the preconditions. Previous research may have confounded the presence of actual preconditions with beliefs about preconditions. The present research clarifies this issue by showing that lay judgments about goals take more account of the agent's beliefs than whether the actor objectively possesses those preconditions. These results deal with predictions rather than explanations, but they are consistent with research showing that explanations of common actions tend to cite goals more than preconditions (e.g. Johnson et al., 1994; Malle, 1999; Malle & Knobe, 1997; Malle et al., 2000; McClure, 2002; McClure & Hilton, 1997, 1998; Sutton & McClure, 2001).

With regard to fantasies, participants rated fantasies no differently when actors believed they possessed the preconditions than when they did not. This result suggests that observers predict fantasies are equally likely when actors believe they can achieve their desire. This finding may suggest a difference between lay theories and research on actual motivation, which suggests that people fantasize only about desires that they are unable to achieve (Ajzen, 1985; Kuhl & Beckmann, 1985). We suspect, however, that the result here might be paralleled if equivalent conditions were applied to actual motivation, and that people would fantasize about actions after acquiring a precondition and before expending that resource (McClure & Sutton, 2004).

The results of Study 1 support our predictions regarding the accomplishment of actions. As predicted, participants rated actions more likely to be accomplished when beliefs and preconditions were both present than when they were absent. Both preconditions and beliefs affect ratings of action accomplishment, with preconditions being the strongest predictor. This suggests that participants think that actors will achieve desired actions when they believe they possess the necessary preconditions and actually do possess those preconditions. These findings parallel research on actual goal attainment that shows that people who have both intentions and preconditions are more successful at achieving their goals (Gollwitzer & Brandstatter, 1997; Taylor & Pham, 1996). Previous research on folk concepts of intention shows that both intentions and skills are seen as necessary conditions for judgments of intentional action (Malle, 1999, 2001; Malle & Knobe, 1997). It appears that people draw on similar reasoning to predict whether actions will be accomplished, by taking account of whether actors actually possess the relevant preconditions.

STUDY 2

Study 2 was designed to see whether the results in Study 1 would be replicated when participants received no definitions of goals and fantasies. Definitions of these terms were given in Study 1 because each concept has different meanings and the studies were designed to indicate which meanings were being examined. However, the results may reflect our chosen conceptual definitions rather than the participants' own intuitive definitions. Previous research suggests that there are few differences in people's attributions about intentionality when definitions are present and absent (Malle & Knobe, 1997; McClure & Sutton, 2004). However, because the present research examined different concepts to those previously studied, it is useful to address this issue with those concepts.

To assess whether definitions influenced attributions, data from Study 1 (definitions present) were compared with data from Study 2 (definitions absent). The predictions were the same as for Study 2 except for the additional hypotheses relating to definitions. For Study 2, we hypothesized that definitions would not interact with any of the other variables to influence ratings of goals, fantasies, or actions.

Method

Participants and Design

Participants were 48 undergraduates at Victoria University of Wellington, New Zealand, who were approached within non-teaching areas of the university grounds. Participants were assigned to conditions randomly and their completion of the questionnaire was voluntary. Twenty-four participants completed the goal condition and 24 participants completed the fantasy condition. Within-subject variables included belief presence (present or absent) and precondition presence (present or absent). Desire presence was kept constant in all conditions. The design was a 2 (Cognition: goal, fantasy) by 2 (Belief Presence: present, absent) by 2 (Precondition Presence: present, absent) mixed design.

Materials and Procedure

Materials were the same as for Study 1 except that the questionnaires gave no definitions of either 'goals' or 'fantasies'. Each questionnaire contained four scenarios describing the circumstances of a person, a goal or fantasy scale and a likelihood of action accomplishment scale. The order of the belief and precondition conditions was reversed in half the questionnaires. The instructions were the same as those in Study 1.

Results

Definitions versus no Definitions

To assess whether the presence of definitions of goals and fantasies influenced ratings of goals, fantasies, or action accomplishment, ANOVAs were performed on the data from Study 2 (definitions) and Study 3 (no definitions). A 2 (Definition present, absent) by 2 (goal, fantasy) by 2 (Belief present, absent) by 2 (Precondition present, absent) mixed design ANOVA was performed on ratings of goals and fantasies. A similar ANOVA was conducted on ratings of action accomplishment. As predicted, in both analyses, definitions did not interact with any other variable to affect ratings, all F s < 1.

Goal and Fantasy Ratings

The ratings of goals, fantasies, and action accomplishment are presented in Table 3. A 2 (goal, fantasy) by 2 (Belief present, absent) by 2 (Precondition present, absent) mixed design ANOVA on ratings of goals and fantasies showed an interaction between Belief Presence and Cognition, $F(1, 46) = 6.91$, $p < 0.01$, $\eta^2 = 0.13$. Planned comparisons tested the effects of beliefs and preconditions on ratings of

Table 3. Study 2: Mean ratings of probability of goals, fantasies, and action accomplishment ($n = 48$) (standard deviations in brackets)

Condition	Rating Cognition	
	Goal	Fantasy
Belief present/precondition present	5.75 (1.45)	5.79 (1.22)
Belief present/precondition absent	5.83 (1.05)	5.58 (1.44)
Belief absent/precondition present	4.02 (1.45)	5.25 (1.80)
Belief absent/precondition absent	3.86 (1.89)	5.08 (1.64)
	Action accomplishment	
Belief present/precondition present	5.63 (1.31)	5.38 (1.31)
Belief present/precondition absent	3.00 (1.47)	2.42 (1.28)
Belief absent/precondition present	3.81 (1.55)	3.88 (1.48)
Belief absent/precondition absent	2.29 (1.16)	2.21 (1.25)

goals and fantasies. As predicted, participants rated goals more likely when belief was present than when it was absent, $t(94) = 6.16$, $p < 0.0001$; however, they rated fantasies equally likely when beliefs were present or absent $t(94) = 1.67$, *ns*. As predicted, the presence of preconditions had no effect on goals, $t(94) = 0.12$, *ns*, or fantasies, $t(94) = 0.59$, *ns*.

There were main effects for Belief Presence, $F(1, 46) = 22.24$, $p < 0.0001$, $\eta^2 = 0.34$, and Cognition, $F(1, 46) = 4.53$, $p < 0.01$, $\eta^2 = 0.9$, but no main effect for Precondition Presence, $F(1, 46) = 0.28$, *ns*, and no other significant interactions.

Action Accomplishment Ratings

A 2 (goal or fantasy) by 2 (Belief present, absent) by 2 (Precondition present, absent) mixed design ANOVA was performed on ratings of the likelihood of action accomplishment. There were main effects for Belief Presence, $F(1, 46) = 25.93$, $p < 0.0001$, $\eta^2 = 0.36$, and Precondition Presence, $F(1, 46) = 140.83$, $p < 0.0001$, $\eta^2 = 0.75$, but no effect for Cognition, $F(1, 46) = 1.49$, *ns*. There was an interaction between Precondition Presence and Belief Presence, $F(1, 46) = 3.42$, $p < 0.01$, $\eta^2 = 0.15$. As predicted, action accomplishment ratings were more likely when both beliefs and preconditions were present than when they were absent. There were no other significant interactions. As in Study 1, a within-subjects ANOVA determined whether preconditions or beliefs had the larger effect on action accomplishment. As predicted, preconditions had a greater effect on the perceived likelihood that actions would be accomplished ($M = 2.20$) than did beliefs ($M = 1.05$), $F(1, 47) = 20.08$, $p < 0.001$.

As in Study 1, we conducted hierarchical regressions to assess whether the presence of preconditions predicts action accomplishment ratings over and above the ability of goal ratings to do so. As in Study 1, we conducted regressions only for those participants who rated goals. The regressions are summarized in Table 4. As predicted, preconditions uniquely explained accomplishment ratings for all four scenarios when entered after goals.

Discussion

The results of Study 2 show that the effects of beliefs and preconditions on judgments obtained in Study 1 are replicated without definitions of goals and fantasies. No variables interacted with

Table 4. Study 2: Hierarchical regressions assessing ability of preconditions, over and above goals, to predict action accomplishment ($n = 24$)

Scenario	Step 1 Goals alone as predictors of action accomplishment		Step 2 Goals and preconditions as predictors of action accomplishment		
	Beta	R^2	Beta (Goals)	Beta (Preconditions)	R^2 change
Lisa	0.189	0.036	0.198	0.758***	0.574***
Harry	0.461*	0.212*	0.375*	0.623***	0.381**
Gary	0.338	0.114	0.373*	0.588***	0.344***
Melanie	0.485*	0.235*	0.494*	0.401*	0.161*

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

definitions to influence ratings of goals, fantasies, or action accomplishment. This finding suggests that the results of Study 1 were not artefacts of the particular definitions used. When participants in Study 2 judged the likelihood of goals, fantasies, and action accomplishment, they did so using their own understandings of those terms. These findings are consistent with previous research that found no differences in ratings of goals and intentions when definitions of the concepts were unavailable (Malle & Knobe, 1997; McClure & Sutton, 2004).

GENERAL DISCUSSION

Goal Attributions

This research clarifies people's theories about the way that desires, beliefs, and preconditions combine to affect actors' goals, fantasies, and actions. The results show that participants rate goals more likely when actors have the relevant desires and beliefs. These findings complement research in folk psychology that shows that lay people define intentions in terms of desires and outcome beliefs (e.g. Malle & Knobe, 1997). The present findings extend this research by demonstrating similar relationships with goals and with precondition beliefs (actors' beliefs that they have the preconditions required to achieve the goal). This type of belief reflects that proposed by Heider (1958), who claimed that actors' beliefs about their ability to reach their goal influences their formation of intentions. Research on actual motivation has shown that actors' beliefs about their abilities influence their goals (e.g. Bandura, 1986; Shaver, 1985); few researchers, however, have examined folk concepts of these beliefs. Participants' responses suggest that lay people's inferences about goals parallel the idea held in some cultures that people will pursue any aspiration if they simply believe that they can achieve it.

This research also shows how people handle contradictions between beliefs about preconditions and actual preconditions, and shows that precondition beliefs lead to goal attributions even when circumstances contradict those beliefs. Participants think that actors will have the relevant goal if the actors believe that they possess the relevant preconditions, even if they actually lack those preconditions (e.g. 'Lisa believes that she has the qualifications necessary to become an executive. In fact, Lisa does not have the qualifications necessary to become an executive.') Participants' inferences about goals are no different when preconditions were lacking than when they are present. In short, observers see even unrealistic aspirations as goals and not as fantasies, so long as they think that actors believe their aspirations to be realistic. In terms of theory of mind, this suggests that the participants' theory of

mind is taking account of what the actor knows about the circumstances, not just what they as observers know (Wellman, 1990).

Action Attributions

A different pattern of results is seen with attributions about actions. Participants judge that actions are likely to be accomplished only when both preconditions and goals are present. Thus when judging whether actors fulfill their desires, people take account of both goals (which incorporate beliefs) and preconditions. The regressions show that preconditions, goals, and beliefs all affect ratings of action accomplishment. Participants who rate goals likely only rate action accomplishment likely when preconditions are present. This finding suggests that the influence of beliefs on actions is subsumed by the presence of goals, and that the relationship between goals and accomplishment strengthens when actors possess the relevant preconditions. This finding is novel in research on folk theories, but it is consistent with research on actual goals that shows that people who possess the relevant preconditions are more likely to engage in intentional action (Gollwitzer, 1996; Shah, Friedman, & Kruglanski, 2002; Taylor & Pham, 1996).

Previous studies on folk theories showed that people predict that intentions lead to actions when the actor has the relevant skills (Malle & Knobe, 1997; Malle, 1999). The present results extend these findings, in that preconditions include other factors in addition to skills. Specifically, they show that participants take account of environmental circumstances that are consistent with the actor's beliefs and the goal (e.g. 'I have the money to buy that car'); these circumstances thus contribute to the realisation of the goal. These findings suggest that preconditions mediate between goals and actions in a similar way to skills, even though many preconditions, such as a restaurant being open, are very different from skills.

These findings also suggest that preconditions are seen as causes that only *indirectly* influence the formation of goals (rather, ability beliefs proximally do this), and serve as factors that facilitate the translation of goals into actions. These findings thus refine and clarify the concept of preconditions, and suggest that preconditions do not conceptually overlap with motivating factors. This is a useful extension of the research literature on goal-based explanations, which has not examined the interplay of goals and preconditions (e.g. Leddo et al., 1984; McClure & Hilton, 1997).

Fantasy Attributions

This research clarifies when people infer that actors are more likely to have fantasies than goals. Both studies show that people can attribute fantasies even when actors believe that they *can* attain their desire. This differs from findings with actual motivation but is consistent with previous findings on lay theories (McClure & Sutton, 2004). In some circumstances, people judge that actors have fantasies even when the actors believe their action is possible. We suspect that this situation may also apply with actual motivation, because there are some everyday situations where people may form fantasies rather than goals despite believing the events are attainable. One example is a goal conflict situation, where achieving the desired end-state interferes with the attainment of another goal (Emmons, King, & Sheldon, 1993; McClure & Sutton, 2004). For example a person might want to eat a piece of chocolate cake and be able to buy the cake, but because of conflicting goals (e.g. they want to lose weight), forms a fantasy about the action rather than a goal.

Alternatively, fantasies can emerge rather than goals when gratification is delayed, or when a decision as to how to expend a precondition such as money has not yet been made (McClure & Sutton,

2004). For example, someone may want to travel and have the money to do so, but delay forming a goal until they feel they deserve a holiday. People may also generate fantasies rather than intentions when they know that their desires will be realized without their efforts (Knobe, 2004). In all these situations, actors possess both a desire and the relevant belief but may form fantasies rather than goals. The findings here show that lay theories recognize this quality of fantasies. This difference from research with actual fantasies reflects the fact that fantasies have two meanings: either totally unrealistic events that are impossible by definition, or future events that may be possible but which the actor has not yet committed to undertake (and may never do so). Research on actual fantasies has focused on the former meaning of fantasy, whereas the present research on lay theories has tapped the latter notion.

Conclusions

This research shows that lay people's judgments about goals reflect the actor's desires and beliefs, whereas their predictions about actions take account of the presence of preconditions. These findings contribute to both folk theory and goal-based attributions. Previous studies on the folk psychology of intentions have shown how desires and outcome beliefs relate to judgments of intention and action (e.g. Kashima et al., 1998; Malle, 1999, 2003). The studies here add to this research in several ways: First, they provide the first findings demonstrating how precondition beliefs affect judgments about goals and actions. Second, they show how people weight beliefs and preconditions when these two elements are in conflict. Third, they show the effects of beliefs and preconditions on attributions of fantasies, including the counterintuitive finding that people infer fantasies when preconditions are present. Finally, they extend links between concepts of intentional action in folk psychology (desires, beliefs) and goal-based explanations (goals, preconditions) (Knobe, 2004; Malle, 2001, 2003, 2004; McClure, 2002).

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