

Empirical Evidence Regarding the Folk Psychological Concept of Belief

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Abstract

This paper presents empirical evidence regarding the nature of our commonsense concept of belief. The findings have significant bearing upon claims made by authors concerned with the Folk Psychology Debate—in particular, they challenge Stephen Stich's (1983) claim that folk psychology is committed to a *broad* account of belief states. In contrast it is found that folk psychology favours a *narrow* account of belief. This result is important in refuting Stich's claim that the folk psychological concept of belief has no role to play in a developed cognitive science. The paper also presents evidence regarding the influence of several factors on folk psychological judgements of belief individuation (*emphasised similarities/differences between the referents of beliefs, nature of past beliefs, goal of classification*), and introduces a methodology by which to investigate further factors. It is argued that the observed conflict between individual speculations about likely folk psychological intuitions within the philosophical literature and actual empirical data regarding subjects' responses highlights the important contribution of experimental psychology in exploring such philosophical issues.

Introduction

The Folk Psychology Debate concerns the issue of the theoretic status of our commonsense (folk psychological) explanations of behaviour. Various positions have been taken on this issue—some authors have claimed that folk psychology is a radically false theory which has no place in a developed cognitive science (Churchland, 1981; Stich, 1978, 1983), whereas others have defended folk psychology as providing a framework of explanation which is essential to many domains within scientific psychology (Horgan & Woodward, 1985; Fodor, 1986). Within this wider issue, several authors have focused on the more specific concern of identifying some of the most central properties and features of our everyday commonsense concept of *belief* (belief having generally been considered to be the most prototypical example of a folk psychological explanatory concept). Most notably, Stephen Stich (1983) makes claims about the commitments of the folk psychological concept of belief which lead him to conclude that this concept "...ought not play any significant role in a science aimed at explaining human cognition and behaviour" (Stich, 1983, p.5). This is a bold and important claim which, if true, has far reaching consequences for the disciplines of psychology and cognitive science, both of which *do* make extensive use of the concept of 'belief' in many of the theories that they postulate (see Hewson, 1993).

The role of this paper is to challenge Stich's claim by sho-

wing that his statements about the fundamental commitments of the folk concept of belief are false. Contrary to Stich, folk psychology often makes judgements about belief individuation (i.e. about whether two beliefs are the same or different) which are in line with a 'narrow causal' account of belief. In addition, folk psychology is also found to take into account information about the past beliefs of believers in deciding whether a pair of beliefs are the same.

Stich's Claims

Stich's fundamental claim is that our everyday commonsense concept of belief possesses certain essential features which are incompatible with the features that must ultimately constrain the best theories in cognitive science. This claim can be broken down into two sub-claims; the first of these is that cognitive science should respect the constraints of a 'narrow causal' theory of the mind (Stich, 1983). For a theory of mind to be 'narrow', it must respect the principle that the only properties relevant in psychological explanation are 'current internal physical properties of the organism'; in other words, if it were possible for there to be two people who were exact physical replicas, a narrow account would state that these two people must also be psychologically identical. Any properties external to the organism (i.e. states of the external world), or aspects of the organism's history, are deemed psychologically irrelevant by a narrow account and are viewed as having no role to play in psychological explanation.

A narrow *causal* account is a particular type of narrow account which, to put it very simply, sees beliefs as internal physical states of the brain, and which identifies any two belief states as the same if they have the same patterns of *potential causal interactions* with other belief states, stimuli, and behaviour. The claim that psychology should obey the constraints of a narrow theory of the mind is deeply controversial (see Burge (1986) for an argument against this position). In this paper, however, I am not concerned with assessing this claim, but rather will be focusing on Stich's second sub-claim, the validity of which is equally essential to his overall position; this is the claim that folk psychology adheres to a 'broad' classification of belief states.

A broad account of belief states makes essential reference to conditions in the external environment in its usage of the term belief, and is thus incompatible with a 'narrow' account which treats such properties as irrelevant. Stich supports the general claim that folk psychology is committed to a broad account of belief by focusing on a specific instance of this feature of folk psychology: this feature is that folk psycho-

logy will take into account the 'referents' of a pair of beliefs when trying to decide whether these beliefs are the same of different. The referent of a belief can be seen as the thing that the belief is actually *about*—it is an aspect of the external environment; for example, if I think 'this chair I'm sitting in is uncomfortable' than the referent of my belief is the actual chair (the object in the world) that I am sitting on when I express that belief. Stich's claim is that when a pair of beliefs have different referents, folk psychology is likely to classify the beliefs as different, even in instances where the beliefs are identical in terms of potential causal interactions. Clearly, this is inconsistent with a narrow causal account which must necessarily treat beliefs with the same causal potential as identical. If Stich is correct about this feature of folk psychology, then it is indeed at odds with a narrow causal account. Note that Stich's claim is in fact a very strong one; he is not simply saying that folk psychology does not match exactly the requirements of a narrow theory of mind, but that it is fundamentally at odds with such a theory, to the extent that it is not even assimilable to a narrow account.

Stich's Arguments

Stich backs up his claim regarding the 'broad' commitments of folk psychology by presenting evidence about the intuitions of 'hypothetical subjects'. The strategy Stich uses to glean information about such intuitions is to construct 'thought experiments' which allow him to make speculative claims about the intuitions that people would have when presented with these experiments. Stich is carefully explicit in pointing out that he is not concerned with finding out about the nature of the *entities* referred to by our commonsense term 'belief', that is, what 'beliefs' must be if they exist in the world, but rather with trying to describe the nature of the concept itself. He states, "...my aim is to describe our folk concept rather than to elaborate on it" (Stich, 1983, p.78), and "the inevitable strategy is to get as clear as possible on the workings of our folk concept and then assess the prospects of pressing this concept (or some elaboration of it) into service in a serious empirical theory" (Stich, 1983, p.76).

The examples Stich constructs present situations in which two agents are seen to hold beliefs which are identical in terms of potential causal interactions, but different in terms of referent. If Stich's claim about the commitments of folk psychology is correct then people should classify the beliefs of the two agents as different, in contrast to a narrow causal account which would classify the beliefs as the same. Stich predicts that people would classify beliefs as different under these conditions, and thus concludes that his examples show folk psychology to be fundamentally at odds with a narrow causal account, because "a narrow causal account dictates judgements about how beliefs are to be characterised and when they are to count as the same or different, which do not comport with the judgements of folk psychology" (Stich, 1983, p.51). Since a narrow causal account must (according to Stich) ultimately be what constrains successful theories within cognitive science, it follows that if folk psychology is indeed fundamentally at odds with such an account, it is disqualified from becoming a part of cognitive science.

However, Stich's claims about the direction of folk intuitions in the examples he presents are questionable; not only this, but it is possible to construct alternative examples which

obey the constraints Stich imposes but for which it seems far more plausible that folk psychology will come down in favour of a 'narrow' rather than a 'broad' classification of belief states—this suggests that factors other than those considered by Stich will influence folk psychological judgements about belief individuation. If this is the case then Stich's conclusion that folk psychology will classify two beliefs as different when they are identical in terms of potential causal interactions but differ in terms of reference is not justified.

The current research reports an experiment set up to test Stich's specific claim (which continues to be widely accepted), as well as to introduce a methodology which allows investigation of further properties of the folk psychological concept of belief. In this experiment these further properties were investigated by varying several factors that it was thought might influence intuitive judgements about belief individuation. These factors were not taken into account by Stich as features that might be influencing folk psychological intuitions in the examples he presents; however, if these factors do influence intuitive judgements then Stich's conclusions are potentially invalid for failing to take these features into account. That is, the hypothetical intuitions that Stich discusses may be accountable to the influence of these factors, rather than to the influence of features about the referents of the beliefs as Stich claims.

Adopting a procedure whereby subjects are presented with thought experiments and asked to classify the beliefs described in terms of sameness or difference, three factors that may serve to guide folk intuitions were investigated. The manipulation of these factors gave rise to three experimental hypotheses:

1. When two agents hold beliefs which are identical in terms of potential causal interactions, but these beliefs have different referents, then emphasising either the similarities or differences between those referents will affect folk psychological judgements regarding the sameness/difference of the beliefs in question.
2. When two agents hold beliefs which are identical in terms of potential causal interactions, but these beliefs have different referents, folk psychological judgements about the sameness/difference of these beliefs will be affected by information concerning the past beliefs of the agents involved.
3. When two agents hold beliefs which are identical in terms of potential causal interactions, but these beliefs have different referents, judgements about the sameness/difference of these beliefs will be affected by whether or not it is made explicit that the purpose of the classification is to enable prediction of the behaviour of the persons involved.

Experiment

Materials

The experimental materials consisted of two pairs of stories. The first pair of stories comprised of an example of a thought experiment presented by Stephen Stich (as shown in table 1), and a variation on this thought experiment; these two passages are subsequently referred to as the 'Ike' stories. The second pair of stories comprised of a passage constructed by the author (as shown in table 2) and a variant on this passage; these passages are referred to as the 'Twin' stories.

Below is a short story. Please read this story and then answer the question at the end.

This story is about two men, Tom and Dick. Tom is a contemporary of ours, a young man with little interest in politics or history. From time to time he has heard bits of information about Dwight David Eisenhower. We can assume that most of what Tom has heard is true, though there is no need to insist that all of it is. Let us also assume that each time Tom heard something about Eisenhower, Eisenhower was referred to as 'Ike'. Tom knows that this must be a nickname of some sort, but he has no idea what the man's full name might be and doesn't very much care. Being little interested in such matters, Tom remembers only a fraction of what he has heard about Ike: that he was both a military man and a political figure; that he played golf a lot; that he is no longer alive; that he had a penchant for malapropisms; and perhaps another half dozen facts. He has no memory of when or where he heard these facts, nor from whom.

Dick, in this story, is a young man in Victorian England. Like Tom, he is bored by politics and history. Dick has heard some anecdotes about a certain Victorian public figure, Reginald Angell-James, who, for some reason that history does not record, was generally called 'Ike'. And in all the stories that Dick has heard about Angell-James, the gentleman was referred to as 'Ike'. Angell-James and Eisenhower led very different careers in different places and times. However, there were some similarities between the two men. In particular, both were involved in politics and the military, both liked to play golf, and both had a penchant for malapropisms. Moreover, it just so happens that the few facts Dick remembers about Angell-James coincide with the few facts Tom remembers about Eisenhower. What is more, Dick would report these facts using the very same sentences that Tom would use, since the only name Dick knows for Angell-James is 'Ike'.

Now, suppose that one fine day in 1880 one of Dick's friends asks him what he knows about Ike. Dick replies "He was some kind of politician who played golf a lot." A century later, one of Tom's friends asks him an identically worded question, and Tom gives an identically worded reply.

Question: Do Tom and Dick have the same or different beliefs when they say "He was some kind of politician who played golf a lot"? (If you wish you may give a reason for your answer).

Table 1: Material One (Ike-diff-nogoal)

Each pair of stories was constructed in order to manipulate one variable. For the Ike stories the variable was *emphasised similarities or differences between the referents of a belief*; thus, the passage in Table 1 emphasises differences between the two men referred to as 'Ike', and is named 'Ike-diff', whereas the variant on this passage emphasised similarities between the two men, and is named 'Ike-sim'. For the Twin stories the variable manipulated was *information concerning the past beliefs of the believers in question*; the details of exactly how this factor was varied are complex, hence for present clarity of description these details are left until the discussion section. The two Twin passages are named 'Twin-past' and 'Twin-nopast'.

Below is a short story. Please read this story and then answer the question at the end.

This is a story about two identical twins, Sam and Jim. Sam and Jim grow up to have a very close relationship, each is very fond and proud of his brother. Because they are so close, Sam and Jim spend a lot of time together, and, in fact, tend to adopt very similar mannerisms and interests. However, in order to try and maintain some degree of individuality the brothers dress quite differently, Sam being happiest in a suit and Jim preferring to wear jeans. Being very friendly and outgoing young men, Sam and Jim have many good friends. One such friend is Sara. Sara knows both Sam and Jim very well, and though they look identical and mimic each others mannerisms, she doesn't have any difficulty telling them apart, because of their differing styles of dress.

However, one sunny morning Sara looks out of her window and notices Sam walking past, looking rather smart as usual, and thinks to herself "Ah, there goes Sam walking past my window". In fact, she is mistaken since it is not Sam but Jim, dressed up for a job interview. Meanwhile, Sam, as his usual smart self, happens to be walking past his cousin Jane's window, and she also looks out and thinks "Ah, there goes Sam walking past my window".

Question: Do Sara and Jane have the same or different beliefs when they say "Ah, there goes Sam walking past my window"? (If you wish you may give a reason for your answer).

Table 2: Material 3 (Twin-past-nogoal)

For the purpose of extracting subjects' intuitions, a question was presented along with each story. This question simply asked subjects to say whether they thought the agents discussed had the same or different beliefs. For each pair of stories two versions of the question were constructed: 'goal' and 'nogoal'. The role of the two types of question was to create a third variable which it was thought may influence subjects' responses, *explicit goal vs no explicit goal in classifying beliefs*; the goal version of the question made it explicit that the goal of classification was to predict behaviour, whereas the nogoal version did not specify any explicit goal of classification. Tables 1 and 2 both show the nogoal version of the question for these stories; below is the goal version of the question for the story displayed in Table 1:

Question: Imagine you are a scientist who thinks that it is possible to predict the way people will behave by looking at the beliefs they have. For the purposes of predicting their behaviour, would you say that Sara and Jane have the same or different beliefs when they say "Ah, there goes Sam walking past my window"?

Subjects

Subjects were 15 psychology undergraduates, asked to take part in the experiment during a tutorial session, and 135 email respondents. The email respondents replied to an internationally posted call for subjects.

Design and Procedure

Eight questionnaires were constructed from the materials; each questionnaire consisted of one of the two Ike stories plus one of the two Twin stories. For each of the (four) possible combinations of these stories two questionnaires were

produced—one in which each of the stories was followed by the goal version of the question and one in which each story was followed by the nogoal version of the question.

Thus the eight questionnaires produced were as follows:

1. Ike-diff-goal + Twin-past-goal
2. Ike-diff-nogoal + Twin-past-nogoal
3. Ike-diff-goal + Twin-nopast-goal
4. Ike-diff-nogoal + Twin-nopast-nogoal
5. Ike-sim-goal + Twin-past-goal
6. Ike-sim-nogoal + Twin-past-nogoal
7. Ike-sim-goal + Twin-nopast-goal
8. Ike-sim-nogoal + Twin-nopast-nogoal.

For each of these questionnaires, the order of presentation of the stories was reversed for half of the questionnaires. Instructions to subjects were given on the front page of the questionnaire; these instructions asked subjects to read through each story and answer the question which followed. 150 subjects were randomly allocated one of the eight questionnaires; given the way the questionnaires were constructed from the materials this created a design with 3 between-subjects factors. 15 subjects received hard copies of the questionnaire and 135 subjects received a questionnaire by electronic mail. Subjects were allowed as much time as they wished to complete and return the questionnaire.

Results

Each subject's response to each of the two questions on the questionnaire was coded as falling into one of three categories: *yes*, *no*, or *ambiguous*; any subject's response that did not clearly state either that the beliefs were the same or that they were different was coded as ambiguous. If subjects stated both that the beliefs in question were the same *and* that they were different this was coded as ambiguous. Table 3 shows for each experimental condition the proportion of responses in each category.

material	answer		
	yes	no	amb
Ike-diff-nogoal	40%	37%	23%
Ike-sim-nogoal	41%	22%	37%
Twin-past-nogoal	69%	14%	17%
Twin-nopast-nogoal	44%	40%	16%
Ike-diff-goal	39%	26%	35%
Ike-sim-goal	60%	10%	30%
Twin-past-goal	67%	11%	22%
Twin-nopast-goal	34%	32%	34%

Table 3: Percent of responses in each category for each of the experimental materials.

The first question about the data concerned whether for each of the experimental conditions taken individually there was any difference in the total number of responses in each of the three response categories (yes, no, ambiguous). A chi square analysis was carried out on the proportion of responses in each category for each condition. Three of the eight conditions turned out to have significantly different numbers of yes,

no, and ambiguous responses; these were Twin-past-nogoal ($\chi^2(2) = 19.6, p < .01$), Twin-past-goal ($\chi^2(2) = 14, p < .01$), and Ike-sim-goal ($\chi^2(2) = 11.4, p < .01$). In each of these cases there were a lot more 'yes' responses than there were either 'no' or 'ambiguous' responses.

In order to explore each of the three experimental hypotheses a log linear analysis was carried out on the data. Hypothesis 1 predicted that there would be a difference in subjects responses to the Ike-sim and Ike-diff conditions: although there was a marked tendency for subjects to answer 'no' less often and ambiguous more often in the similarity condition than in the difference condition this result did not reach significance. Hypothesis 2 predicted that there would be a difference in subjects responses to the Twin-past and Twin-nopast conditions: it was found that subjects were more likely to say 'yes' and less likely to say 'no' or 'ambiguous' in the Twin-past than in the Twin-nopast conditions ($\chi^2(4) = 10.63, p < .05$). Hypothesis 3 predicted that subjects would respond differently in the goal condition than in the nogoal condition: subjects responses were not found to be significantly different between these conditions.

Discussion

The results displayed several interesting patterns which bear upon discussions within the folk psychology debate. Firstly, the data challenged Stich's claim that people would be most likely to conclude that the beliefs discussed in the thought experiment he constructed about Ike were different; rather, it was found that just as many subjects said that the beliefs were the same as said that they were different. This finding undermines Stich's claim that folk psychology will, in this particular case, reason in accord with a broad account (by classifying these beliefs as different)—subjects are equally likely to adhere to a broad or a narrow account. In addition a substantial proportion of subjects (23%) gave responses to this passage that fell into the ambiguous category. This is interesting in relation to Stich's acknowledgement of the tendency of folk psychology to sometimes "tug in both directions", that is, to be undecided between a broad and a narrow-causal account. The ambiguous category responses can be seen as representative of this tendency of folk psychology to pull in both directions; if treated as such, then the current result (approximately equal proportions of 'same', 'different' and 'ambiguous' responses) demonstrates that for Stich's example folk psychology is about equally divided between a broad account, a narrow causal account, and being undecided. So this example, when tested against real subjects' intuitions, fails to provide any support for Stich's claim about the commitments of the folk concept of belief.

However, Stich also uses his observation about the inconsistency and undecidedness of folk psychology to deem it unsuitable for scientific purposes: not only does folk psychology supposedly veer towards a broad account of belief rather than the preferred narrow causal account, but folk psychology is not even consistent about its views on this matter—in some contexts it will make judgements that comport with a broad theory of belief, in others it will come down on the side of a narrow theory of belief, and sometimes it will not know which way to go. Stich considers this purported context-dependent nature of folk psychology to be good grounds for disqualify-

ing it from being a framework worthy of incorporation into scientific psychology. The results reported above demonstrate that folk psychology is not clearly committed to either a broad or narrow account of belief, and that it can be undecided between the two. However, the leap from this observation about folk psychology to the claim that its concepts cannot be incorporated into scientific psychology is unsupported. As Clark (1987) points out folk psychology has to serve many functions, including providing us with a rough and ready grasp of basic principles which enable us to interact effectively with our fellow beings. We would expect such a body of knowledge to be subject to the influence of various contextual and practical constraints, but this does not warrant the conclusion that there cannot be extracted from the concepts which feature in folk psychological explanations coherent constructs which may play a role in scientific psychological explanation.

Further Stich's claim that folk psychological judgements are 'inconsistent' may be unwarranted. In terms of being wholly committed to either of a broad or narrow account of belief individuation, folk judgements *are* inconsistent (the current study demonstrates this); however, there may well be a set of principles guiding these intuitions with respect to which they are consistent. There has been little attempt to systematically investigate the influence of various factors on folk psychological judgements of belief individuation, and hence the factors which do guide peoples' intuitions in thought experiments like the one presented by Stich are poorly understood. To introduce a framework for this type of investigation was a prime concern of the current study. Identification of these factors is important if examples like the one Stich presents are to be used to make inferences about the fundamental commitments of folk psychology. Stich attributed the speculated folk intuitions in his example to features about the referents of the beliefs of the agents discussed, but even if subjects do conform to Stich's predictions it is still questionable whether their intuitive judgements can be wholly accounted for in terms of the features he suggests. Some other characteristic(s) of his thought experiment may be driving folk intuitions about belief individuation; the current study investigated the effects of three potential factors.

Similarities/differences between the referents of beliefs.

One of the factors investigated was emphasis of similarities or differences between the two distinct referents of a pair of beliefs which are identical in terms of potential causal interactions. It was noted that in the thought experiment presented by Stich (as shown in Table 1) differences between the referents of each of the beliefs in question were emphasised; it was thought that this may have encouraged subjects to say that the beliefs were different more than would have been the case if similarities between the referents of each belief had been emphasised. Thus a variant on Stich's original example was constructed which emphasised similarities in this way. As can be seen from the figures in Table 3, the results show a marked trend for subjects to classify the two beliefs as different less often in the passage which emphasised similarities (Ike-sim-nogoal) than in Stich's original passage (Ike-diff-nogoal). A similar trend was apparent for these stories when they were presented with the goal version of the question, and for this case there was also a marked increase in 'yes' responses between the difference and similarity condition. However,

these trends were not significant. Interestingly the similarity version of the story combined with the goal version of the question elicited significantly more 'yes' responses than 'no' or 'ambiguous' (even though neither of these factors had an effect individually). The above results suggest that this factor is worth investigating further.

The role of past beliefs about a referent. Another factor—*information concerning the past beliefs of the believers in question*—was found to have a significant effect on subjects responses; in the Twin-past conditions subjects were more likely to classify the two beliefs as the same than in the Twin-nopast conditions (see Table 3). A brief description of the two passages which varied with respect to this factor will help clarify its nature. Both passages concerned two women, each of whom happened to glance out of her window one day and upon seeing a passer by expressed a belief by uttering the sentence "Ah, there goes Sam walking past my window." In each story one of the women uttered this sentence in response to seeing Sam pass by her window, while the other woman uttered the sentence in response to seeing Jim walk past. The key distinction between the passages was as follows: in the Twin-past condition both of the women knew Sam very well, and normally used the term 'Sam' to refer to Sam; thus even though one of the women in this story is currently using the term in response to seeing Jim, she has in the past used this term to refer to Sam. Thus both women have had past beliefs about Sam. This contrasts with the Twin-nopast version of the story in which only one woman has had past beliefs about the twin called Sam; the woman who actually sees Sam walking by has never met him and does not know of his existence, she normally uses the term 'Sam' to refer to Jim whom she happens to know by that name. The woman who sees Jim walking by does know Sam and has in the past used the term 'Sam' to refer to Sam, even though in this case she utters this term in response to seeing Sam's twin brother Jim. To summarise, in the Twin-past story both women have used the term that they currently utter—'Sam'—to refer to the twin named Sam, and normally use the term this way; in the Twin-nopast story one of the women has used the term 'Sam' to refer to the twin named Sam, but the other woman has always used this term to refer to the twin named Jim.

Taking the Twin-nopast story in isolation, there was no significant difference in the number of responses in each category, thus confirming the finding that folk psychology favours neither a broad or narrow account of belief; however the significantly higher proportion of yes responses in the Twin-past passage provides support for the claim that folk psychology favours a narrow account of belief. These two conditions compared identify a factor that influences folk psychological judgements about sameness and difference of beliefs. How can the effect of this factor be interpreted in terms of the properties of the folk psychological concept of belief? A plausible theory is that folk psychology allows beliefs which have different referents (where 'referent' is defined as the immediate physical cause of a belief, i.e. 'Sam' or 'Jim' in the current example) to be classified as the same only if they are both *about X*, and a belief can *only* be about X if the believer has at some point had beliefs in which X was the referent. This is a tentative account which appears to fit with the above example; however, it may well demand elaboration and modi-

fication when tested against other data regarding intuitive folk psychological judgements. This preliminary result shows that folk psychology does take into account believers' past beliefs when making judgements about individuation; this is an interesting finding which presents an avenue for further research.

Effect of goal of classification. The third factor investigated was *goal of classification*. In Stich's example no explicit goal of classification was specified; however, it is a feasible idea that folk psychology may differ in the way it classifies beliefs depending on the purposes of the classification. Thus, sometimes a narrow construal of belief states may be opted for, and other times a broad construal may be chosen, depending on whether the aim is description, prediction of behaviour, or some other goal. Since a major goal of scientific psychology is to predict and explain behaviour this was chosen as an explicit goal to test the effects of on subjects responses, in contrast to providing no explicit goal. However, this study found no effect of goal of classification on subjects' responses.

Conclusions

Overall, the data strongly suggest that folk psychology favours a narrow rather than a broad account of belief. In none of the passages presented to subjects was a response in line with a broad account of belief individuation preferred, yet for three of the six conditions the response demanded by a narrow account was preferred. This result is in complete contrast to Stich's statement that folk psychology favours a broad account of belief. Since Stich's claim about the commitments of folk psychology has been widely accepted this is a very important finding. Further, the observed discrepancy between speculations about subjects' intuitions and actual data regarding these intuitions emphasises the essential role of empirical studies in testing such speculative claims.

The different experimental conditions reveal that folk psychology is not consistent in adhering to a narrow account—depending on various factors intuitive judgements will vary. Identification of the factors affecting folk psychological judgements is an important project; the current study shows that information concerning the past beliefs of believers can affect these judgements.

By undermining Stich's claim that folk psychology is committed to a broad account of belief, the current study disputes the conclusion that the folk concept of belief cannot play a role in a cognitive science which respects the constraints of a narrow theory of the mind. In contrast, it is found that the folk concept of belief often makes judgements which *do* comport with a narrow causal account. Extra support for the claim that folk psychology favours a narrow account of belief comes from subjects' explanations for their responses: often subjects who classified a pair of beliefs as different justified this decision not by stating that these beliefs have different referents, but by pointing out that each of the beliefs must interact with other beliefs held by the agent in different ways. Thus, in response to the experimental material presented in Table 1 a common explanation for counting Tom's and Dick's beliefs as different was that each man would have very different related beliefs about the relevant facts that they both knew about 'Ike'—they would both, for example, have very different ideas about 'golfing' because they come from very different cultures where golfing conventions vary. This indi-

cates that subjects are claiming that Tom's and Dick's beliefs are not the same in terms of potential causal interactions, and thus are not even the same under a narrow causal conception (Hewson, 1994). Given this it is not possible to conclude that subjects who answered in this way are taking into account external factors in classifying beliefs, since these subjects perceive the beliefs to be different even on the basis of purely internal factors.

Another interesting feature of subjects' explanations for their answers was that a substantial proportion of subjects emphasised that without more information about the rest of the belief system of the agents in question, it was just not possible know whether their beliefs were the same or different; this suggests that people take something like a holistic attitude towards beliefs, and do not treat them as isolated modular entities. This point provides direct support for Double's (1985) claim that Stich is incorrect in claiming that folk psychology is committed to a modular view of belief states. Overall, the factors explored in this study show that folk psychology is most likely to make judgements which accord with a narrow theory of belief. This finding is unexpected given assumptions within the Folk Psychology Debate. Further studies should follow up this preliminary result, and examine the effect of further factors on folk psychological intuitions.

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