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# Folk Attributions of Control and Intentionality Over Mental States

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## Abstract

Influential theories in social psychology, philosophy, and linguistics assume that ordinary people judge many mental states as outside voluntary control, yet few studies have directly investigated these claims. We report four studies suggesting that, contrary to several prominent models, ordinary people attribute at least moderate intentional control to others over a wide variety of mental states. Furthermore, it appears that perceived control may vary systematically according to mental state type (e.g. emotions vs. desires vs. beliefs). These results point to several important directions for future research in behavior explanation and moral judgment.

**Keywords:** mental states; control; intentionality; agency

## Introduction

Mental states are not just used to explain and predict others' observable behavior, they are also often treated much like behaviors themselves in that we talk about them, care about them, and try to influence them (Frankfurt, 2004). For instance, when we learn that someone doesn't like us or respect us, it hurts and we feel angry (Leary, Springer, Negel, Ansell, & Evans, 1998). When we dislike certain attitudes, either our own or someone else's, we try to change them (DeMarree, Wheeler, Briñol, & Petty, 2014). And when we're exposed to someone's highly immoral emotions, desires, and thoughts, we form negative impressions of that person and try to avoid them (Ames & Johar, 2009; Gromet, Goodwin, & Goodman, 2016; Cohen & Rozin, 2001).

Despite the importance of mental state evaluation and regulation in social life, very little research has studied how ordinary people think about others' agency over their own minds. This omission is particularly striking in light of years of research demonstrating that perceptions of behavioral control predict judgments of blame and responsibility, feelings of anger or pity, and helping or punishing behavior (see, Alicke, 2000; Malle, Guglielmo, & Monroe, 2014; Weiner, 1995 for reviews).

One possible reason for this omission is a long-held assumption, based on early work in linguistics, that mental states are perceived as involuntary. In one of the first investigations on this topic, Katz and Postal (1964) argued, based on the observation that mental state verbs seem to be ungrammatical in the imperative form (e.g. compare "Want this pear!" and "Pick up this pear!"), that "being in such psychological states as belief, understanding, wanting and hoping is not subject to a person's will" (p. 77; see also Miller & Johnson-Laird, 1978). Despite other work arguing that many mental states can be used in the imperative form (e.g. Huddleston, 1970), many linguists continued to assume that

mental states are involuntary (e.g., Brown & Fish, 1983; Corrigan, 1988).

This work also influenced social psychology. For instance, Gilovich and Regan (1986) assumed that, unlike actions, mental states "do not necessarily involve any choice on the part of the person from among alternatives; they just *happen*" (p. 349). Similarly, Malle and Knobe (1997a) took as given that "prototypical *actions*... are both *intentional* and observable, whereas prototypical *experiences* (e.g. 'Ben is excited') are both *unintentional* and unobservable" (p. 289; emphasis added). These claims about ordinary attributions of intentionality and voluntariness play an important role in psychological models of behavior explanation. For instance, Malle & Knobe (1997a) argued that people will be less motivated to try and explain others' mental states because they are unintentional. Gilovich & Regan (1986) argued that, because mental states are involuntary and uncontrollable, people offer more dispositional (as opposed to situational) explanations for them (see also Lock & Pennington, 1982). Finally, Malle (2004)'s model of behavior explanation posits that people provide mechanistic cause explanations (as opposed to reason explanations) for emotions, desires, beliefs, and other mental states, on the premise that ordinary people judge these as unintentional.

Scholars in philosophy and anthropology also frequently make assumptions about ordinary people's judgments of mental state voluntarism, but they often differentiate between mental states types. In his 'folk model of mind', D'Andrade (1987) claimed, similarly to Katz and Postal (1964), that people view desires as entirely involuntary and uncontrollable. However, D'Andrade (1987) also claimed that people view emotions as somewhat controllable and beliefs as highly controllable. A similar pattern emerges in philosophical theories. For instance, the idea that ordinary people judge beliefs as voluntary is echoed in Alston (1988), who invoked this point to explain why people blame each other for unjustified beliefs, while the idea that people view desires and other attitudes as involuntary is common in moral philosophy (see, e.g. Adams, 1985; Smith, 2008).

Despite the ubiquity of claims about the perceived controllability of mental states, only a handful of studies have been conducted which directly ask people about how they perceive them, and the evidence from these studies conflicts. In one study, Malle and Knobe (1997b) asked participants to rate the intentionality of 20 behaviors, three of which were mental states (e.g. "Anne was in a great mood"). Each of those mental states was rated low in intentionality (e.g.  $M = 2.54$  on a 1-7 scale). In contrast, Schlesinger (1992) asked people to rate how much control (Studies 1-4, 6) or

intentionality (Study 5) the *experiencer* of a mental state had over that state and found that people attributed a moderately high degree of control and intentionality (e.g.  $M = 4.58$  on a 1-7 scale, Study 6). However, Schlesinger (1992) relied on scenarios that were interpersonal and highly abstract (e.g. “A fears B”), making it unclear whether the results reflect prototypical attributional processes.

In light of this, we sought to test how much control and intentionality people typically attribute to others over their mental states. We improved over prior studies by testing a wide range of mental states and, following the possibility raised by D’Andrade (1987) and others, testing for differences between mental state categories. In the studies below, we also include observable behaviors including intentional acts (e.g. *talk, avoid*), accidents (e.g. *slip, fall*), and uncontrollable behaviors (e.g. *sneeze, shiver*), as foils. These foils acted as benchmarks, allowing us to test how judgments of mental states compared with judgments of prototypical controllable and uncontrollable behaviors, while also ensuring that participants used the control measure concepts in a predictable way.

## Study 1

The purpose of Study 1 was to measure prototypical judgments of control for a variety of mental states, and to compare these judgments with those for clearly intentional, unintentional, and uncontrollable behaviors. To obtain ecologically valid materials, we solicited vignettes from one sample of our population (University of Pennsylvania undergraduates), selected frequent examples, and then used them in a rating task for a separate sample from the same population.

## Methods

**Stimulus generation and selection.** We solicited stimuli for 43 items in total. These items consisted of 28 mental states, including four beliefs (*believe that, conclude that, feel that, think that*), four desires (*crave, desire, hope, want*), four emotions (*anger, anxiety, embarrassment, happiness*), four intentions (*goal, intend, plan, resolve*), four deliberations (*consider, deliberate, speculate, think about*), four evaluations (*value, love, hate, appreciate*), two imaginations (*imagine, visualize*), and two memory events (*forget, remember*). In addition to these 28 mental states, we included five intentional acts (*play with, eat, say, search for, avoid*), five accidents (*fall off of, trip over, slip on, run into, drop*), and five uncontrollable behaviors (*sneeze, yawn, sweat, shiver, faint*) as our foils.

80 University of Pennsylvania students participated (57 female) in a sentence completion task for course credit. Participants were provided with sentence fragments containing an ambiguous subject and a mental (or behavioral) verb, but no object (e.g. “He believed that...”, “She wanted...”, “He intended to...”). They were instructed to complete each sentence fragment in a way that made sense given the words provided and to avoid humor. The mental states were split across five lists and combined with

observable behaviors and 12-13 filler trials. Participants were randomly assigned to one of these lists, yielding 13-17 contents per item.

As expected, many of the topics participants wrote about were relevant to their lives as undergraduate students, including concerns about school (e.g. “She felt anxious about her upcoming exam”, “He planned to do better on the next test”), romantic relationships (e.g. “She felt angry with her boyfriend”, “She thought that she wasn’t good enough for him”), and food (e.g. “He craved chocolate”, “She thought about the lunch she would be having soon”). Similar responses appeared across item categories.

We selected five completions for each of the 28 mental states and 15 behavior foils, yielding 215 scenarios total, based on the frequency of similar completions. For items that produced few or no duplicate responses, we selected responses so as to maximize the diversity of content.

**Main rating task.** 143 University of Pennsylvania students (94 female) were recruited for an experiment about “understanding others’ behavior” and completed the task for course credit.

The 215 scenarios were distributed across five lists. Each list contained one scenario from each of the 28 mental states and 15 behaviors yielding 43 trials total. Scenarios were presented on separate pages in a random order. For each trial participants responded to eight questions which, to avoid possible order effects, were presented in a new random order for each trial.

Four questions assessed how much agency participants attributed to the agent for the ascribed mental state. Two of these questions assessed general control: (1) How much control the agent had over that behavior; and (2) Whether, if desired, the agent could have done otherwise. The other two probed intentionality: (3) Whether the agent acted intentionally; and (4) Whether the agent chose to act/think/feel (etc.) that way.

Two questions probed participants’ evaluations of the mental state, including (5) How good or bad the agent’s behavior was; and (6) Whether the agent should have behaved in the manner described. Two final questions probed judgments of agent themselves: (7) How responsible the agent was for the behavior or mental state; and (8) How revealing it was of the agent. All questions used a 7-point rating scale.

To minimize ambiguity, all questions contained explicit reference to the mental or physical content (e.g., “How much control did she have over believing that she did well on the exam?”). At the end of the experiment, participants reported demographic variables including age, sex, political orientation, religiosity, and religious affiliation.

## Results

We combined our two control (1-2,  $r_s = 0.74 - 0.81$ ), and two intentionality (3-4,  $r_s = 0.83 - 0.89$ ) measures into single measures of control and intentionality (Table 1 shows means and standard deviations for each behavior and mental state

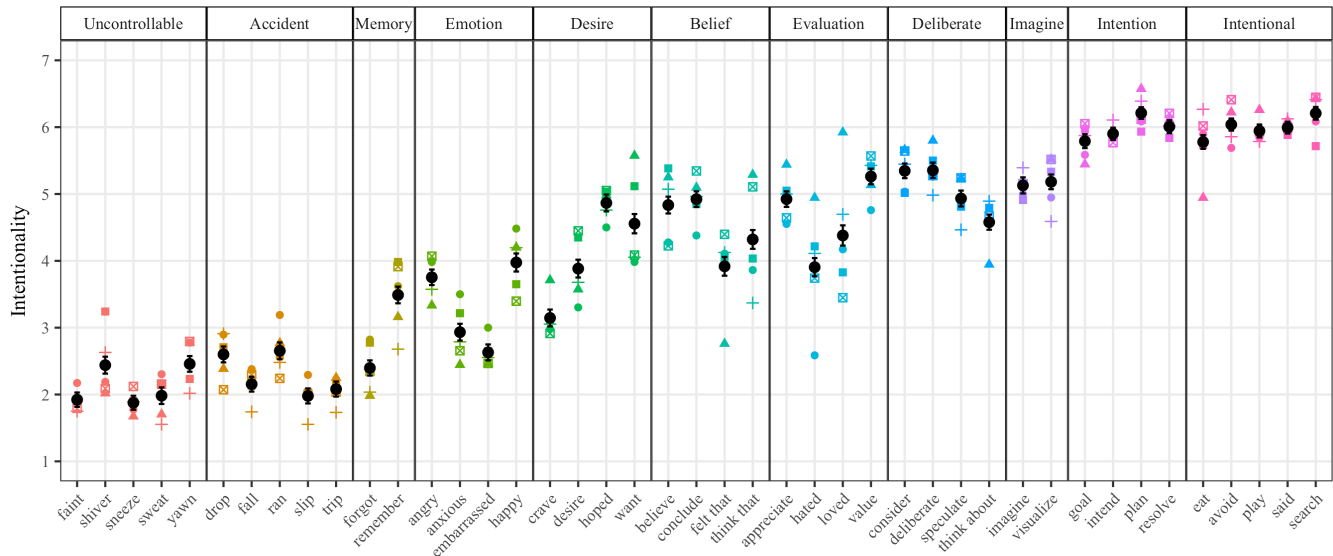


Figure 1: Mean ratings (and standard errors) for each of the 43 item categories (black) with mean rating for each of the five scenarios (color) from Study 1. Each shape represents the mean one of the five scenarios.

category). To test degrees of agency, we ran a series of mixed-effect linear models comparing mental state categories to uncontrolled, accidental, or intentional behaviors, on by-subject means for each category.

Participants used the control concepts expected: accidents were seen as more controlled ( $b = 0.78$ ,  $SE = 0.11$ ,  $t = 7.26$ ,  $p < 0.001$ ) but not more intentional ( $b = -0.15$ ,  $SE = 0.11$ ,  $t = -1.39$ ,  $p = 0.165$ ) than uncontrollable behaviors. With two exceptions, mental states were seen as more controlled and intentional than the uncontrollable and unintentional behaviors ( $ps < 0.001$ ). Only intentions were not seen as less controlled ( $p = 0.338$ ) or intentional ( $p = 0.832$ ) than intentional action foils (see Figure 1).

We also conducted a set of exploratory analyses to test whether any mental state categories were significantly different from one another. We conducted a regression comparing each mental state category to its adjacent category based on the overall control and intentionality means. Results showed that, on average, most mental state category ratings were different from their adjacent category: emotions were less intentional than desires ( $b = 0.79$ ,  $SE = 0.08$ ,  $t = 10.07$ ,  $p$

$< 0.001$ ), desires were less intentional than beliefs ( $b = 0.39$ ,  $SE = 0.08$ ,  $t = 4.92$ ,  $p < 0.001$ ). Beliefs and evaluations were not significantly different from each other ( $b = 0.11$ ,  $SE = 0.08$ ,  $t = 1.42$ ,  $p = 0.157$ ), however evaluations were different from deliberations ( $b = 0.44$ ,  $SE = 0.08$ ,  $t = 5.58$ ,  $p < 0.001$ ). This pattern was replicated in participants' control ratings.

Finally, we examined item-level means for each of the 28 mental state concepts and found that judgments of control and intentionality were highly correlated with one another ( $r(26) = 0.95$ ), and with judgments of responsibility ( $r(26) = 0.98$  and  $r(26) = 0.92$ , respectively).

## Discussion

Results from this study provide evidence that, contrary to the theories cited above, many ordinary mental states are perceived to be moderately controllable and intentional. It also suggests that perceived agency might differ as a function of the *type* of mental state: emotions were judged as less voluntary than desires, beliefs, and other states.

However, this study has several notable shortcomings. First, the mental state scenarios were presented without the immediate context in which they occurred. It is possible that when possible proximate or situational causes for mental states are made salient, perceived control and choice is diminished. Second, the nature of our design was such that the content of the mental states was not held constant across mental state type: desires tended to be “about” different things than beliefs, evaluations, and so on. It is therefore possible that differences in control were due to what the mental states were about. Study 2 was designed to address these limitations.

## Study 2

Study 2 used a set of experimenter-generated stimuli to investigate judgments of three different measures of

Table 1: Means (and SD) for agency responses in Study 1

Behavior	Control	Intentionality	Responsibility
Uncontrolled Act	2.51 (1.53)	2.13 (1.40)	2.66 (1.70)
Accident	3.30 (1.51)	2.29 (1.41)	3.72 (1.73)
Emotion	3.71 (1.51)	3.32 (1.58)	3.89 (1.68)
Memory	3.53 (1.52)	2.94 (1.52)	4.13 (1.67)
Desire	4.03 (1.63)	4.11 (1.71)	4.28 (1.70)
Evaluation	4.59 (1.63)	4.62 (1.64)	4.70 (1.65)
Belief	4.54 (1.56)	4.50 (1.61)	4.70 (1.60)
Deliberation	4.99 (1.43)	5.04 (1.39)	5.07 (1.43)
Imagination	5.05 (1.35)	5.16 (1.37)	5.03 (1.41)
Intention	5.88 (1.22)	5.97 (1.15)	5.89 (1.19)
Intentional Act	5.98 (1.18)	5.99 (1.13)	5.86 (1.28)

voluntariness with more detailed and comparable vignettes. Because control measures were divided between subjects, Study 2 comprised three separate experiments: Study 2a investigated judgments of *intentional choice*, Study 2b investigated *general control*, and Study 2c investigated the *ability to choose to stop* thinking, feeling, or wanting something once it has started.

We predicted that, despite the additional constraints imposed in this experiment (see below), participants would still view mental states as moderately voluntary – more controllable than passive behaviors such as coughing or sweating – but not as fully controllable as intentional actions and, second, that there would be a step-wise increase in perceived control between emotions, desires, beliefs, and thoughts.

## Methods

**Participants.** A total of 442 participants were recruited from Amazon’s Mechanical Turk to participate in Study 2. 146 individuals (65 female, 81 male; mean age = 35) participated in Study 2a (“Choice”), 149 (66 Female, 78 Male, 5 unreported; mean age = 34) participated in 2b (“Control”), and the remaining 147 (60 Female, 85 Male, 2 unreported; mean age = 35) participated in 2c (“Choose to stop”). No participants were excluded.

**Stimuli.** To generate contexts, we constructed 30 scenarios describing someone in an ordinary or believable situation (such as repairing a bike, photographing a wedding, walking down the street, and so on). Unlike Study 1, each scenario provided a great deal of context about the person and situation leading up to the mental state or behavior. Our primary manipulation was the last element of each scenario, which was either (1) an observable uncontrollable reaction, (2) an emotion, (3) a desire, (4) a belief, (5) thinking or ruminating on some idea, or (6) an observable intentional action. Below is one of the 30 scenarios with each of the six conditions:

*Katy is nearing the end of her third year in college. She's studying chemistry and biology in order to eventually apply to medical school. Any low grade will hurt her chances at getting into the top medical schools. Today, however, she struggled through the final exam in her chemistry class. She did not complete it in time and had to guess on the entire last page of questions.*

*Walking out of the exam, Katy...*

1. *begins shivering in the cold.* (uncontrollable reaction)
2. *feels angry at her professor.* (emotion)
3. *wants to leave her professor a poor course evaluation.* (desire)
4. *believes that her professor deserves a poor course evaluation.* (belief)
5. *thinks about leaving her professor a poor course evaluation.* (thinking)
6. *fills out a negative course evaluation on her phone.* (intentional act)

As this example illustrates, the context prior to the manipulation was held constant, and the attitudinal content of each mental state (and the intentional behavior) was also held as constant as possible (e.g., in the item above, a negative and retaliatory attitude towards the professor is conveyed in each case). There was, of course, no such content for the uncontrollable foils (shivering, sneezing, coughing, etc.). We varied the kind of emotion experienced by the agent in the scenario: across the 30 sets, the emotion condition featured the agent feeling either *angry, sad, afraid, excited, or pleased*. Given 30 scenarios, each of which split into six behavior conditions, there were 180 items in the whole experiment.

**Design.** The items were distributed across six lists (of 30 items each) using a Latin-square design. Each list had one item category from each of the 30 scenarios, yielding a total of five trials within each list for each item category. We balanced the distribution of emotion trials so that each of the five different emotions appeared in each list.

**Dependent measures.** In Study 2a, the main dependent variable was *whether the agent chose the particular mental state he/she had* at the end of the story. Participants indicated their answer on a rating scale ranging from 1 (*definitely did not choose*) to 7 (*definitely did choose*). As in Study 1, the full content of each item was included in each question and was italicized (e.g. “Did Katy choose to *feel angry at her professor?*”).

Study 2b measured perceptions of *how much control the agent had over whether he/she had the particular mental state (or over the behavior)*. For instance, in the Katy vignette above, participants were asked “How much control did Katy have over whether she *felt angry at her professor?*” on a scale from 1 (*no control at all*) to 7 (*complete control*).

Finally, 2c, measured perceptions of *the degree to which the agent could stop the particular mental state (or behavior) once it had started*. In the Katy vignette above, participants were asked “Can Katy choose to stop *feeling angry at her professor?*” on a scale from 1 (*definitely can not choose*) to 7 (*definitely can choose*).

**Procedure.** At the beginning of the experiment participants were randomly assigned to one of the six stimulus lists. Participants were provided brief instructions that they would read 30 stories about different characters and answer a question about a behavior that the character performed. Each trial was presented on a separate page in a new random order for each participant. At the end of the study, participants filled out a brief demographics questionnaire. No other data was collected.

## Results

All analyses were performed by running a linear mixed-effect model (LMEM) regressing ratings on the within-subject, within-scenario behavior manipulation. We included random intercepts for participant and scenario ratings, as well as

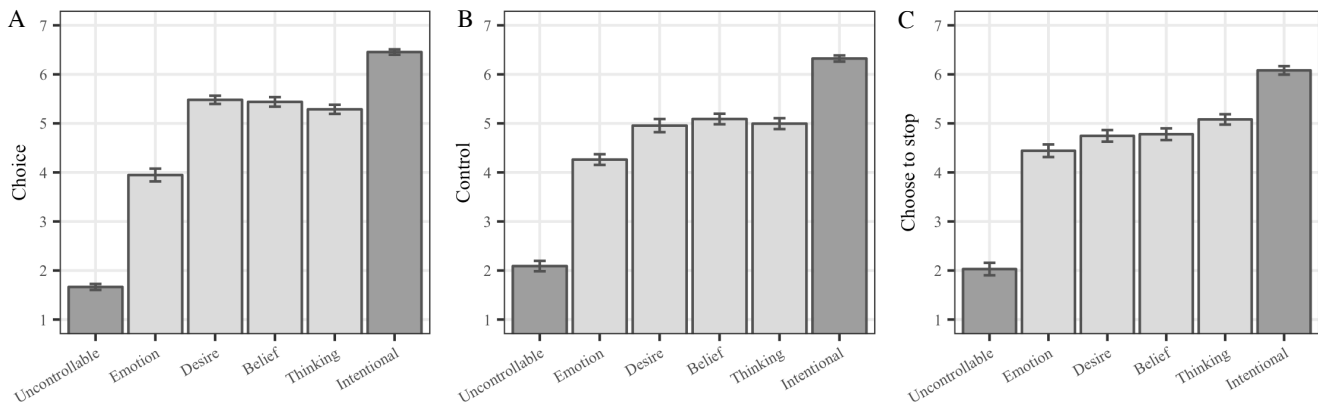


Figure 2: Mean (and SE) ratings for (A) Choice, (B) Control, and (C) Choose to stop measures of agency across behavior conditions in Study 2

random slopes for by-subject and by-scenario variation in the effect of condition. For each control measure, *Intentionality*, *Control*, and *Stopping*, we ran three sets of analyses. One analysis compared the means of the four mental state categories to the uncontrollable behavior foil (dummy coded as the reference level); one analysis compared the means of the four mental state categories to the intentional act behavior foil; and finally one analysis compared mental state categories to each other following our hypothesized step-wise increase in control through emotions, desires, beliefs, and thinking. See Figure 2 for condition means and standard error across control measures.

**2a: Choice.** Replicating results from Study 1, emotions ( $M = 3.95$ ,  $SD = 2.08$ ), desires ( $M = 5.48$ ,  $SD = 2.08$ ), beliefs ( $M = 5.43$ ,  $SD = 1.73$ ), and thinking ( $M = 5.29$ ,  $SD = 1.77$ ) were all judged significantly more intentional than uncontrollable reactions ( $M = 1.67$ ,  $SD = 1.37$ ;  $ps < 0.001$ ). These states were also all judged significantly less chosen than intentional acts ( $M = 6.45$ ,  $SD = 1.13$ ;  $ps < 0.001$ ). Also replicating Study 1, emotions were rated as less chosen than desires ( $b = 1.534$ ,  $SE = 0.08$ ,  $t = 19.243$ ,  $p < 0.001$ ) but, contrary to expectations, there were no differences between desires and beliefs or beliefs and thinking ( $ps > 0.07$ ).

**2b: Control.** Emotions ( $M = 4.26$ ,  $SD = 1.44$ ), desires ( $M = 4.96$ ,  $SD = 1.85$ ), beliefs ( $M = 5.09$ ,  $SD = 1.72$ ), and thinking ( $M = 5.00$ ,  $SD = 1.81$ ) were all judged significantly more controllable than uncontrollable reactions ( $M = 2.09$ ,  $SD = 1.44$ ;  $ps < 0.001$ ) and significantly less controllable than intentional acts ( $M = 6.32$ ,  $SD = 1.23$ ;  $ps < 0.001$ ). Similar to Study 2a, we observed a significant difference between emotions and desires ( $b = 0.692$ ,  $SE = 0.076$ ,  $t = 9.125$ ,  $p < 0.001$ ), but not between desires, beliefs, or thinking ( $ps > 0.07$ ).

**2c: Choosing to Stop.** Again, Emotions ( $M = 4.44$ ,  $SD = 1.99$ ), desires ( $M = 4.74$ ,  $SD = 1.98$ ), beliefs ( $M = 4.77$ ,  $SD = 1.93$ ), and thinking ( $M = 5.08$ ,  $SD = 1.84$ ) were all judged significantly easier to stop than uncontrollable reactions ( $M$

$= 2.03$ ,  $SD = 1.58$ ;  $ps < 0.001$ ) and significantly harder to stop than intentional acts ( $M = 6.08$ ,  $SD = 1.54$ ;  $ps < 0.001$ ). Participants judged emotions as more difficult to stop than desires ( $b = 0.306$ ,  $SE = 0.084$ ,  $t = 3.662$ ,  $p < 0.001$ ), and beliefs more difficult to stop than thinking ( $b = 0.305$ ,  $SE = 0.084$ ,  $t = 3.638$ ,  $p < 0.001$ ) but did not distinguish between beliefs and desires ( $b = 0.03$ ,  $SE = 0.084$ ,  $t = 0.359$ ,  $p = 0.72$ ).

## Discussion

Study 2 replicated the main findings from Study 1: people attribute moderate to high agency to others over their emotions, desires, beliefs, and deliberative thoughts, whether that agency is conceptualized as “choice”, general “control”, or an ability to “choose to stop”. This finding replicated in spite of more explicit portrayals of relevant situational constraints. We also replicated the finding that this control is not perceived as *complete*: individuals were granted less agency over all mental states (even traditionally “active” processes such as thinking) compared to observable intentional acts.

We also found that emotions were perceived as less voluntary than desires. Unexpectedly, once holding mental state content constant, the other differences in perceived agency, namely, those between desires and beliefs, and between beliefs and thinking, did not replicate except in the “choose to stop” condition. This may reflect the improved design in this study (i.e., the fact that background context and focal content were held constant), but suggests that some variation in general control may come from the kinds of content different mental states are usually about.

## General Discussion

Our results pose a challenge to a common assumption in linguistics, anthropology, and social psychology, namely that people view others’ mental states as largely *uncontrollable*. Contrary to this assumption, we report that people judge many mental states to be quite controllable: they clearly do not perceive mental states as just *happening* (cf. Gilovich & Regan, 1986), completely outside voluntary control (cf. Katz

& Postal, 1964), nor as uniformly unintentional (cf. Malle & Knobe, 1997a).

In line with models like those proposed by D'Andrade (1987), our results also suggest that people attribute different degrees of voluntary control to different mental state categories (even holding context and content constant). However, as D'Andrade (1987) never empirically tested his model, his specific predictions were wrong: for instance, we found that people viewed desires as moderately controllable, more controllable, on average, than emotions, whereas D'Andrade (1987) posited that desires were uncontrollable (while emotions were partially controllable). Future work should investigate the sources of variation in control both between (e.g. why beliefs easier are to control than emotions), and within mental state categories (e.g., why particular beliefs differ in their perceived controllability).

Finally, a great deal of work has shown that people are held accountable for their moral wrongs (e.g. Alicke, 2000; Malle et al., 2014). To date, however, notwithstanding some related work inferring poor character from knowledge of noxious mental states (see, e.g. Ames & Johar, 2009; Gromet et al., 2016), no one has investigated the possibility that people hold each other accountable (i.e., blameworthy) for their immoral beliefs, desires, or emotions. Given that people apparently do attribute agency to others over everyday mental states, and control predicted judgments of responsibility in Study 1, future work should investigate whether these results replicate for immoral mental states, and whether perceived agency predicts blame, anger, and punishment.

To conclude: assumptions about the perceived agency of mental states are common, yet direct empirical investigations are rare. Across several studies, we found that these assumptions fail to track ordinary judgments of the controllability of mental states. Accordingly, our results may have important implications for a range of debates in social and cognitive psychology, and open up new questions about the sources of variation in perceptions of mental control.

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