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Belief Revision in the Context of Hume's Treatise and Contemporary Psychology

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Abstract

This paper examines the emotional and social motivations of belief and belief correction. As beliefs motivate one's actions, one must examine how one revises an erroneous or harmful belief and what methodology one can employ in order to best facilitate this revision, resulting in more conscientious action. This paper examines belief formation and revision in the context of David Hume's 1739-1740 work *A Treatise of Human Nature*, with particular attention to not only Hume's account of belief and belief revision, but also the interaction of passions, the mechanism of sympathy, reason, and probability judgments. It is hypothesized Hume's theory of belief will be reflected in contemporary psychology and cognitive science, with individuals more likely to revise their beliefs based emotional and social factors and experiences proposed by Hume.



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Introduction

David Hume's *A Treatise of Human Nature* maintains a uniquely prescient outlook in philosophy, as well as contemporary cognitive research. As Hume recognized, not only the relationship between philosophy and science, but that science can be used to examine human nature,¹ he set his sights on uncovering the science of the mind, posited as discoverable using a framework established by the sciences of the time: observation and experimentation. We must first understand the mind in order to understand other sciences, as the mind is the foundation upon which all other sciences rest.² Hume hypothesized that this *new* science of the mind is deciphered through "cautious observation of human life," best conducted in their natural environments as they occur, and in all manner of states.³

Considering Hume's empirical framework and dedication to uncovering the natural operations of the mind, he may well have been one of the first psychologists in the contemporary sense of the word, fitting cognitive research into his philosophical objectives rather neatly. It is my intention to assess Hume's account of belief and to further analyze the contributions the *Treatise* may have granted contemporary psychology. In order to explore the subject, it becomes imperative to examine Hume's account of belief, probability, passions, and the mechanism of sympathy. I therefore aim to establish Hume's outlined theory will be reflected in contemporary research, with individuals being more likely to revise beliefs based on emotions, as proposed by Hume.

Hume's Treatise Examined

Belief & Probability

Belief, defined by Hume, is any opinion or recollection that is "a lively idea related with a present impression".⁴ This proposes that beliefs are informed by conceptions of past experiences captured with sensory, cognitive, and passionate faculties. An

¹ David Hume, *A Treatise of Human Nature*, Edited by David Fate Norton and Mary J. Norton (Oxford: Oxford University Press, 2009), T Intro. 4; SBN x.

² T Intro.7; SBN xvi-xvii.

³ T Intro. 10; SBN xviii-xix.
For instance observing others in their pleasures.

⁴ T 1.3.7.5; SBN 96.

idea is a fainter *copy* of the original impression; these copies bear the same passionate and recollected sensory function as the original, but are less forceful in strength and vivacity. They exist in the imagination and memory as a repository from which to draw.⁵ We must first experience impressions to form ideas that lead to judgments and beliefs; it follows that when we make a causal judgment, we are merely assessing based on information gathered from past impressions. This process begins with our initial impressions and the perceived *constant conjunction* between cause and effect.⁶ Repeated experiences result in a custom of belief⁷ which primes our expectations and future judgments.⁸ Memories of impressions are then re-enlivened by similar impressions through factors of likeness: contiguity, resemblance, and proximity. With this, we assume that what we experience in the past will be similar to those of our future. Beliefs, opinions, and expectations of causality are therefore the result of repeated experiences.⁹

It is important to note the weight placed on the *feeling* involved with belief. Belief is not simply an exercise in imagination. Our minds can entertain many things—something he calls a *reverie*¹⁰—but it does not imply that all comprehended is believed.¹¹ To assent, there must be a lively idea related to a present impression.¹² Hume is then asserting that belief is not predicated on reason, but on forceful and vivacious perceptions¹³ which enliven passions and notions of pleasure and pain.¹⁴ This process is attended by memory and imagination.¹⁵ It follows then that a *proper* account of belief includes memory and the recollection of similar instances where the perceived cause occurs prior to the perceived effect, both exist contiguously in time with innu-

⁵ Seppalainen, Tom, and Angela Coventry. "Hume's Empiricist Inner Epistemology: A Reassessment of the Copy Principle." *The Continuum Companion to Hume* (2012): 38-56.

⁶ T 1.3.9.13; SBN 113-114.

⁷ Or habit of belief.

⁸ T 1.3.13.19-20; SBN 153-5.

⁹ T 1.3.13.8; SBN 147.

¹⁰ T 1.4.7.12; SBN 270-1.

¹¹ T 1.3.7.7, T App. 3; SBM 628-9, 624-4.

¹² T 1.3.7.5; SBN 96.

¹³ T 1.3.13.19; SBN 153-4.

¹⁴ T 1.3.10.4; SBN 120.

¹⁵ This includes an impression of the passions and emotions experienced.

merable instances of “cause” and “effect” paired, and when we experience variations in the anticipated cause or effect that run against experience, these differences are explainable by an unknown but discoverable variable.¹⁶

With a standard of proper belief, it follows that there are erroneous beliefs—or *unphilosophical probabilities*.¹⁷ These are mistaken beliefs based on experiences with insufficient information. These include generalizations formed from biases and prejudices. For example, the belief that the Irish are not witty¹⁸ could generalize from one unrepresentative encounter and then be promoted cognitively as a rule.¹⁹ Rather than “that Irishman lacked wit”, it is assumed that all Irishmen lack wit. This tendency to generalize can be illustrated further; Hume explains that when someone develops a liking for something—a certain fruit or type of wine—this tends to extend to similar things: from peaches to melons, white wine to red.²⁰ It is a natural extension based on similarity. But experiences are not always representative of true nature,²¹ and Hume emphasizes the importance of reflecting on the context of experiences in order to be conscientious of ways we could have misinterpreted experiences.²² Upon reexamining an interaction deemed causal, there may be an unknown variable determining causality. The objects were then falsely paired by the imagination.²³

As a spectator, we may witness an interaction and come to an incorrect conclusion.²⁴

¹⁶ T 1.3.9.2, 1.3.15.1-11; SBN 107, 173-5.

¹⁷ T 1.3.13.11-2; SBN 149-50.

¹⁸ T 1.3.13.7; SBN 146-7.

¹⁹ T 1.3.13.8; SBN 147.

²⁰ T 1.3.13.8; SBN 147.

²¹ True nature of a person, experience, thing, etc.

²² T 1.3.13.9; 3.1.1.15; SBN 147-8, 461.
This misinterpretation yields our judgement incorrect.

²³ T 1.3.13.9; SBN 147-8.

An example of such an illusory relationship could be the fear one may feel when standing too close to a precipice. Even if there is a guard rail, one’s imagination may still re-enliven the fear of falling, even when one is rationally aware they are safe

²⁴ T 3.1.1.15; SBN 461.

Hume gives the example of himself being intimate with his neighbor’s wife; the incorrect conclusion is then that the woman is *his* wife and no adultery is taking place.

The opportunity to misjudge extends further to circumstances due to internal states.²⁵ These can sway the course of an interaction, making them unrepresentative.²⁶ With this in mind, we are encouraged to consider contextual factors in situations where we find ourselves immediately reactive before forming judgments.²⁷ Incorrect judgments also affect emotions and subsequent actions,²⁸ as we are willed to action by passions²⁹ informed by perceptions of pleasure and pain.³⁰ He observes that humans naturally gravitate to the pleasant,³¹ and those experiences compel emotional reactions. Hume proposes that both painful and pleasant impressions are necessary in order to “produce an affection of any kind”.³²

Passions & Sympathy

These affections are a cornerstone of Hume's *Treatise*. Our judgment and reason are experienced sensations,³³ rendering them another internal feeling or emotional state. Hume justifies this in that reason alone can often be unconvincing. We may experience a desire that is illogical and the presentation of evidence indicating its absurdity may do little to dissuade us from our objective. Reason by itself does not prevail upon the mind in a thoroughly convincing way.³⁴ We are, however, motivated by what we want.³⁵ The often poorly understood assertion that “[r]eason is, and

²⁵ For example, if the person with whom an interaction took place is tired, ill, or if one simply has an active imagination.

²⁶ Hume, David. *An Enquiry Concerning Human Understanding: With a Letter from a Gentleman to his Friend in Edinburgh and Hume's Abstract of a Treatise of Human Nature*, Edited by Eric Steinberg (Indianapolis: Hackett, 1993), 2.7, 8.14-15; SBN 20, 88-9; T 1.3.10.9; SBN 123.

²⁷ T 3.1.1.12; SBN 459-60.

²⁸ T 3.1.1.12; SBN 459-60.

²⁹ T. 2.3.3.6-7; SBN 415-17.

³⁰ T 2.1.1.1; 2.3.3.3; 2.3.9.1; SBN 275; 414; 438.

³¹ T 2.3.9.2; SBN 438.

³² T 2.3.9.1; SBN 438.

³³ T 1.3.8.12; SBN 103.

Reason is then subsequently the result of an initial impression.

³⁴ T 2.3.3.2-8; SBN 413-17.

³⁵ T 2.3.3.3; SBN 414.

The movement towards what is pleasure and the distancing from painful.

ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them”³⁶ summarizes it quite succinctly: we use reason to suit a purpose; rather than embattled in a rivalry, reason attends passion (as a *calm passion* itself) by determining the best course to achieve goals.

Passions must then be integrated into Hume’s previously laid argument for the temporal precedence of impressions.³⁷ Hume proposes a *double relationship* between ideas and impressions by which passions are derived.³⁸ This can be understood as a psychological mechanism that integrates the separate processing faculties³⁹ resulting in the perception of a seamless experience.⁴⁰ This attention to self, as well as the dual relation of ideas and impressions as an integrated experience, is explained as a natural and protective mechanism.⁴¹

Sympathy is perhaps the most important mechanism within Hume’s theoretical framework. Once we have an experience and develop an understanding of what passions result from it, we are able to extend sympathy to others in similar circumstances.⁴² Using memory,⁴³ we can infer the predicament of others, enlivening our own passions.⁴⁴ While the extension of sympathy may occur more readily with those

³⁶ T 2.3.3.4; SBN 414-415.

Passions are then positioned as the motivation to action.

³⁷ T 1.3.8.12-13; SBN 103-104.

Observation is apprehended by experiences and impressions and sensations.

³⁸ T 2.1.5.5; SBN 286-7.

³⁹ Ideas and impressions.

⁴⁰ When one surveys an impression, one recalls instances within their own memory and ideas that one has categorized as similar. Although impressions and their corresponding ideas (and subsequent memories) are retrieved separately, it occurs in such quick succession that it does not *feel* they are separate.

⁴¹ T 2.1.3.2; 2.2.3.6-7; SBN 280; 350.

Passions pertaining to one’s self stem from a concern for personal well-being that attends to survival.

⁴² Hume grants that these subjective perceptions and the ability to observe others facilitate the ability to understand and feel their emotional weight, with passions stirred by the plight of others. By the observation of impressions, one may gather what another person is feeling based on body language, expressions, and tone.

⁴³ This is achieved through the double relation.

⁴⁴ T 3.3.1.7; 3.3.2.6; SBN 575-6; 595-6.

closest to us,⁴⁵ it is possible to extend sympathy to strangers and even imagined persons.⁴⁶ Sympathy then allows the transference of passions through socializing.⁴⁷ The understanding and transference of like passions is then a natural and unavoidable cognitive mechanism.⁴⁸ With the foundation of impressions, memories, and sympathetic reactions, it follows that new experiences may position one in a state of reflection.⁴⁹ Emotionally compelling experiences therefore have a stronger likelihood of revising judgments,⁵⁰ as beliefs are vested in passions, and sympathy plays a powerful role in communication with others.⁵¹ By tempering judgment and allowing new opportunities to extend sympathy to others, we open ourselves to revising a belief.⁵² This is achieved through the combination of sympathetic passions and social engagement.⁵³

Contemporary Research

Belief, Probability, Emotions & Sympathy

The work of cognitive researchers appears increasingly sympathetic to the hypotheses presented by Hume. The importance of passions (or emotion, in contemporary accounts) on information processing and the formation and correction of beliefs has found support. In order to examine the parallels between Hume's work in the *Trea-*

⁴⁵ T 3.3.1.14; 3.3.3.2; SBN 580-1; 602-3.

⁴⁶ T 2.2.7.3; SBN 369-70.

This also includes the dead.

⁴⁷ T 2.2.7.5; 2.3.6.7-8; SBN 370-1; 426-7.

⁴⁸ T 3.3.3.5; SBN 604-5.

⁴⁹ T 3.1.1.15; SBN 461.

Specifically instances that run counter to previous experiences.

This reflection allows one to integrate new experiences and reappraise previous judgments in a new light.

⁵⁰ Which, in turn, adjusts the belief or judgment.

⁵¹ T 2.3.6.8; 3.2.2.9; SBN 427; 489.

It also follows that perspective taking, emotional appeals, and enlivening passions with situations that are not the common experiences emotionally compelling and sympathetically derived evidence to the contrary of previous conclusion

⁵² T 1.4.1.11; SBN 185-6.

⁵³ T 2.1.11.7-8; 2.3.3.2; 2.3.6.7-8; 3.1.2.11; 3.2.2.9; SBN 318-20; 412-414; 426-7; 475-6; 489.

tise and recent research, I will provide a contemporary account of the pivotal role of emotions in processing information, forming judgments, and actions. The role of social engagement and experience in breaking mental habits that contribute to biases, prejudices, and unphilosophical probabilities will also be examined.

Tversky and Kahneman's⁵⁴ preeminent research exploring decision-making found that, when gauging the probabilities of certain outcomes, individuals frequently employ inherent heuristics based on prior experiences. These were found to be useful as categorization and decision making tools⁵⁵ so the conflation of frequently paired impression with rates of actual occurrence was common.⁵⁶ They also found evidence for several cognitive "shortcuts", like the availability heuristic wherein we rely on the illusory correlation of things easily recalled or imagined, as well as the representativeness heuristic which relies on the supposition that past experiences are indicative of what will be experienced. The last "shortcut" proposed by Tversky and Kahneman is adjustment an anchoring: we hold an internal baseline or estimation regarding the judgment of a probability, and we adjust it as we see fit, often in an ineffective way. These heuristics can be understood as expressions of probability judgments within belief formation; we experience an impression or idea, and when confronted with a judgment or situation, draw from past impressions⁵⁷ with varying degrees of success.⁵⁸

Research findings using visual masking⁵⁹ and awareness of perceptions further motivate Hume's hypothesis that forceful and vivacious impressions re-enliven previ-

⁵⁴ Amos Tversky and Daniel Kahneman. "Judgment under uncertainty: Heuristics and biases." *Science* 185, no. 4157 (1975): pp. 1124-1131.

⁵⁵ They are utilized by the mind to make quick decisions and organize information.

⁵⁶ For instance, one may be given information that an individual is quiet and studious, and when that individual is given the choice between three potential career paths for the quiet and studious person, rather than categorizing them as an engineer or a salesman, they may predict that the individual is most likely a librarian.

⁵⁷ Memory.

⁵⁸ T 1.3.9.17; 1.3.13.8; 1.3.13.20; SBN 116, 147; 154-5.

Success can be seen as depending upon the liveliness and strength of the present impression and the similarity and likeness of stimuli.

⁵⁹ Visual masking is when perception of a stimulus is affected by the presence of another stimulus, referred to as the "mask".

ous ones.⁶⁰ It was concluded by researchers that in order for one to be aware or conscious of an impression or stimuli, that impression must have enough strength to be noticed.⁶¹ It was hypothesized that when experiencing an impression, memory calls upon held impressions; the new impression arouses prior with both force and vivacity in order for it to be noticed, thus re-enlivening an idea or memory and bringing the previously unnoticed stimuli to attention.⁶² Based on factors of similarity,⁶³ minor deviations from previous experiences are easily disregarded and integrated into predictive judgments and belief schemas.

The importance of stimuli processing and the employment of memory in recognizing like experiences can also be seen in contemporary research concerning perceptions of and behaviors in reaction to climate change.⁶⁴ When investigating the adaptability of behaviors and practices of private forest owners, it was determined that the belief in local effects, as well as the belief in a personal experience of climate change, contributed to adaptive responses and the adoption of action steps. The strength of belief paired with *perceptions of* experienced local effects were strong factors in willingness to act. The significance placed on the strength of a belief as well as personal experiences lends further credence to the role that strength and vivacity of an impression play in making a judgment, forming a belief, and the propensity towards action.⁶⁵

Similar results expressing the importance of the strength and vivacity of impressions in re-enlivening past impressions and making judgments was mirrored in research regarding the believability of claims.⁶⁶ Participants rated studies containing brain im-

⁶⁰ Sid Kouider and Stanislas Dehaene. "Levels of processing during non-conscious perception: a critical review of visual masking." *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 362, no. 1481 (2007): 857-875.

⁶¹ T 1.3.8.2; 1.3.9.11; 1.4.2.41; SBN 98-9; 112; 208.

⁶² T 1.3.9.11; 1.3.10.3-4; 1.3.10.7; SBN 112; 119-20; 122.

⁶³ Resemblance, contiguity, and cause and effect.

⁶⁴ Kristina Blennow, Johannes Persson, Margarida Tome, and Marc Hanewinkel. "Climate change: believing and seeing implies adapting." *PloS one* 7, no. 11 (2012): e50182.

⁶⁵ T 1.3.7.7; 1.3.9.1, 11; 1.3.10.3-5, 7; 1.3.14.16; 2.3.3.6-7; 2.3.9.1; SBN 628-9; 106-7; 112; 119-21; 122; 163; 415-7; 438

⁶⁶ David P. McCabe and Alan D. Castel. "Seeing is believing: The effect of brain images on judgments of scientific reasoning." *Cognition* 107, no. 1 (2008): 343-352.

ages⁶⁷ more convincing than those with charts or diagrams.⁶⁸ With the presentation of neural images rather than being cognitively tasked with imagining the data based on charts and diagrams, the impression has the potential to be more strong and vivacious; as brain images are more readily consumable information that are also easily available, they may enliven ideas, making them more readily assented to.⁶⁹ The images can be seen as more simple, as brain images “look” like what one expects when reading information about brain activity and, as such, it could be argued this anticipation primes the reader with a more lively and forceful impression.⁷⁰

While investigating delusions and perceptions, it was again found that one forms beliefs on probability judgments.⁷¹ Observed instances of being incorrect⁷² cause us to adjust probability models and alter beliefs and predictive judgments.⁷³ Interpretations were found to be rooted in previous experiences and observations, the employment of which re-enliven impressions with the force and vivacity of what is perceived to be verifying information;⁷⁴ perceptual instability led to the development of unclear

⁶⁷ Presented as auxiliary information.

⁶⁸ When tested again, trial results showed that, even when compared to trials using topographical maps deemed as visually stimulating, brain imaging was still found to be more convincing. It was hypothesized by the researchers that these images are influential because they are a physical representation of abstract cognitive processes which is, in turn, easier for the participants to process.

⁶⁹ T 1.3.8.2; 1.3.9.2; 1.3.10.8; 1.3.14.17; 1.3.14.19; SBN 98-9; 107; 122-3; 163-4; 164.

It is also noteworthy that with brain images there is less to infer on one's own than when referencing a diagram or chart that contains just as much scientifically accurate information. It could be argued that seeing the imagery regarding neuroscience is more compelling than a bar graph or chart (or even a visually stimulating topographical map) as it is more strongly associated with and a more enlivening representation regarding cognitive phenomenon, and therefore is more likely to lead to assent to scientific arguments regarding neuroscience than the most accurate charts or diagrams.

⁷⁰ T 1.3.7.5; 1.3.8.2; 1.3.14.16; SBN 96; 98-9; 163.

This readiness to assent can also be recognized as compelling based on previous experiences with depictions cognitive imagery in popular culture (news, media, forensic style programming, etc.) and enliven ideas based on expectations and similarity (T 1.1.4.1-.7; SBN 10-3).

⁷¹ Katharina Schmack, Ana Gómez-Carrillo de Castro, Marcus Rothkirch, Maria Sekutowicz, Hannes Rössler, John-Dylan Haynes, Andreas Heinz, Predrag Petrovic, and Philipp Sterzer. “Delusions and the role of beliefs in perceptual inference.” *Journal of Neuroscience* 33, no. 34 (2013): 13701-13712.

⁷² Impressions that are lively and forceful enough to get one's attention.

⁷³ T 1.3.5.7; 1.3.7.5; 1.3.8.2; 1.3.14.16; SBN 86; 96; 98-9; 163.

⁷⁴ T 1.3.14.15-16; SBN 162-3.

beliefs about reality in otherwise cognitively healthy individuals.⁷⁵ When presented with ambiguous stimuli, participants were unable to make accurate judgments or form accurate beliefs. This indicates, again, that we learn from observation and that beliefs and judgments are based on our impressions; the clarity of said impressions leads to either a correct or incorrect belief.⁷⁶ When the impressions appear inconclusive or unstable, we default to established knowledge of similar situations.⁷⁷ Further research examined how erroneous judgments can result in biased expectations of future outcomes and impressions.⁷⁸ It was found that we tend to bias expectations of new impressions in a way that integrates them with familiar experiences. This implies that past impressions weigh on what is noticed in future impressions, biasing us against contrary experiences.⁷⁹

Additional support for the importance of observation and judgments based on prior experiences in forming beliefs as well as the importance of emotions in determining actions was present.⁸⁰ Researchers found that individuals are often motivated by hedonic impulses towards pleasure and away from pain.⁸¹ A lively and forceful impressions can be used 'within trial'⁸² to disambiguate information and prior experiences, as well as attention to context.⁸³ Testing showed that individuals are more likely to be motivated to action in tasks perceived as pleasurable; they also tended to avoid

⁷⁵ T 1.3.10.9; 3.1.1.15; SBN 123, 461; EHU 2.7, 8.14-15; SBN 20; 88-9.

⁷⁶ Or at times delusional beliefs.

⁷⁷ T 1.3.12.11-13, 1.3.14.15-16; 1.3.14.19; SBN 134-5; 162-3; 164.

⁷⁸ Philipp Sterzer, Chris Frith, and Predrag Petrovic. "Believing is seeing: expectations alter visual awareness." *Current Biology* 18, no. 16 (2008): R697-R698; T 1.3.9.17; 1.3.12.13, 20; 1.3.14.15-16; 1.3.14.19; SBN 116; 135; 154-5; 162-3; 164.

⁷⁹ T 1.3.12.7; 1.3.12.12-13; SBN 133; 135.

⁸⁰ Katia M. Harlé, Pradeep Shenoy, and Martin P. Paulus. "The influence of emotions on cognitive control: feelings and beliefs—where do they meet?" *Frontiers in human neuroscience* 7 (2013): 1-16. These results indicated that one draws from past experience when making probability judgments.

⁸¹ Harlé, Shenoy, and Paulus, "The influence of emotions".

⁸² This can also be understood as experience 'impression by impression', or 'experience by experience'.

⁸³ Harlé, Shenoy, and Paulus, "The influence of emotions". Context, denoted as *flanker stimuli*, is definable as situational circumstances or the environment. Flanker stimuli is posited to either support or contribute to the correct a belief.

painful conditions quickly.⁸⁴ If an individual has an appetite for something, the individual considered that judgment to have a lower cost than it may actually have;⁸⁵ thus, evidence determined that if we have a passionate desire for something, we are motivated to action in a way that may go against rational judgment.⁸⁶ It was also found that emotions moderate and buffer the interpretation of new impressions and physiological processes: if we are sad, good things seem less so and our pain tolerance decreased; if we experience positive emotions, those buffer the impact of negative experiences and our pain tolerance increases.⁸⁷ This work provides quantifiable evidence for the importance of force, vivacity, and the overall moderation of actions by passions.⁸⁸

It has been established that when making judgments involving desires or wants, we often are willing to overlook risks and reduce judgments of harm; we can be motivated by desire to go against reason and evidence.⁸⁹ In some instances, when presented evidence that runs counter our beliefs, we may reject it and double down on our established belief;⁹⁰ recent research has found evidence of a relationship between the experience of negative epistemic emotions and the presentation of disconfirmatory evidence.⁹¹ Results showed that when participants were presented text refuting something they regarded as an integral part of their self-concept, it led to feelings of confusion, frustration, and anxiety.⁹² Contemporary research has also found that when we are confronted with an interaction or piece of evidence that runs against

⁸⁴ T 1.3.9.1; 1.3.12.11-13; 1.3.14.16; 2.3.3.6-7; 3.1.1.12; SBN 106-7; 134-5; 163; 415-7; 459-60.

⁸⁵ T 2.3.3.3; 2.3.3.6-7; 2.3.9.1-2; 3.1.1.12; SBN 414; 415-7; 438.

⁸⁶ T 2.3.3.6-7; SBN 415-7.

⁸⁷ This lends further evidence that one is emotionally motivated to action based on motivation towards pleasure and away from pain, as well as the proposition that judgment is, overall, an exercise in passion.

⁸⁸ T 2.3.3.4-6; SBN 414-16.

⁸⁹ Harlé, Shenoy, and Paulus, "The influence of emotions".

⁹⁰ Gregory J. Trevors, Krista R. Muis, Reinhard Pekrun, Gale M. Sinatra, and Philip H. Winne. "Identity and epistemic emotions during knowledge revision: A potential account for the backfire effect." *Discourse Processes* 53, no. 5-6 (2016): 339-370. This phenomenon has been dubbed the Backfire Effect.

⁹¹ Trevors, Muis, Pekrun, Sinatra, and Winne, "Identity and epistemic emotions during knowledge revision."

⁹² T 2.3.2.7; SBN 411-12.

prior experiences, the delivery of the evidence is important.⁹³ We are more receptive to disconfirmatory evidence when it is presented in a deliberative manner.⁹⁴ Further, the simple presentation of evidence and reason does not motivate us to correct a belief—it is the pairing of evidence with certain social interactions and emotional contexts that was found to be effective.⁹⁵

Hume's proposition that the mechanism of sympathy as natural or reflexive is also reflected in recent research.⁹⁶ The communicability of emotions and their role in information processing has found support. Not only do results indicate that we utilize observable emotional expressions when forming beliefs,⁹⁷ but that these observable emotions are used as cues for developing our own attitudes and beliefs.⁹⁸ In line with Hume's mechanism of sympathy,⁹⁹ research indicates that this emotional informational and sympathetic processing was present regardless of the communication medium, be it written, pictorial, non-verbal, or audibly.¹⁰⁰ The importance of passions and sympathy in correcting beliefs was also reflected in work regarding

⁹³ T 2.3.6.7; 3.2.2.9; SBN 426-7; 489.

⁹⁴ Christa S.C. Asterhan and Miriam Babichenko. "The social dimension of learning through argumentation: Effects of human presence and discourse style." *Journal of Educational Psychology* 107, no. 3 (2015): 740-755.

It is of note that this deliberation allows for the extension of sympathy via social interaction, as opposed to argumentative approaches which do not.

⁹⁵ Asterhan and Babichenko, "The social dimension of learning through argumentation".

⁹⁶ Gerben A. Van Kleef, Helma van den Berg, and Marc W. Heerdink. "The persuasive power of emotions: Effects of emotional expressions on attitude formation and change." *Journal of Applied Psychology* 100, no. 4 (2015): 1124-1142.

⁹⁷ T 2.1.11.1-4; 3.3.3.2; SBN 316-18; 602-3.

⁹⁸ T 1.3.12.12.-13; 1.3.12.19; 1.4.1.11; SBN 135; 137-8; 185-6.

⁹⁹ T 2.1.11.1-2; 2.1.11.7-8; 2.3.6.7-8; SBN 316-17; 319-20; 426-27.

¹⁰⁰ Participants were found to be moved to sympathy with emotional expression through written words, pictures of facial expressions, as well as film clips with vocal and facial expressions of fictitious persons, and when viewing emoticons/emojis.

belief and anti-vaccination attitudes.¹⁰¹ Individuals assigned to an intervention with emotionally appealing materials were more likely to revise their belief.

Similarly, while researching prejudicial belief and transphobia, it was found that participants more readily corrected a belief in conditions involving perspective taking.¹⁰² Those assigned to the emotionally compelling condition were asked to consider a time where they felt they had been judged negatively.¹⁰³ This resulted in individuals reporting less transphobia post-intervention.¹⁰⁴ As participants were approached through their passions sympathetically rather than by their reason alone, these results lend further support to a hypothesis that passions motivate beliefs and, subsequently, actions.¹⁰⁵

More support for the importance of sympathy and socializing can be derived from work with the Contact Hypothesis.¹⁰⁶ A recent meta-analysis concluded that expo-

¹⁰¹ Zachary Horne, Derek Powell, John E. Hummel, and Keith J. Holyoak. "Countering antivaccination attitudes." *Proceedings of the National Academy of Sciences* 112, no. 33 (2015): 10321-10324. Participants were assigned to either the disease risk perspective, autism correction condition, or control group. Those in the emotionally compelling condition received an information packet containing a paragraph written from the perspective of a mother whose child contracted measles, a picture of a child with measles, a child with mumps, and an infant with rubella, as well as three short warning about the importance of vaccinating children. Those in the autism correction condition received refutational evidence. Finally, individuals in the control group received unrelated reading materials.

¹⁰² David Broockman and Joshua Kalla. "Durably reducing transphobia: A field experiment on door-to-door canvassing." *Science* 352, no. 6282 (2016): 220-224. Researchers employed a canvassing technique with interviewers going to the houses of the selected participants for brief face-to-face encounters. The participant pool was selected using an ongoing online survey gauging belief and attitudes. This survey allowed the researchers to establish an individual's baseline attitudes prior to the intervention and following it longitudinally.

¹⁰³ Perspective taking was coupled with active consideration of the target group and issues they faced (in this instance, transgendered individuals).

¹⁰⁴ Reports were taken up to six months later and remained consistently decreased.

¹⁰⁵ Passions, in conjunction with sympathy.

¹⁰⁶ Gordon Allport. *The Nature of Prejudice* (New York: Addison, 1954); T 1.3.13.9; 2.1.11.8; 2.3.6.7-8; SBN 147-8; 319-20; 426-7.

The Contact Hypothesis is a contemporary psychological model that stresses the importance of exposure and experience in revising prejudicial beliefs and increasing tolerance between groups

sure and contact generally reduces prejudice and intolerance.¹⁰⁷ In positive interactions, new experiences generalize and reduce previous biases. Not only does this indicate that exposure allows us to extend sympathy to individuals judged in haste, but it also allows an opportunity to realize that our previous experienced was not representative,¹⁰⁸ correcting an unphilosophical probability to be more in line with proper belief. The Contact Hypothesis has found continued support with work investigating the practice of social-distancing from HIV-positive individuals in Africa.¹⁰⁹ It was concluded that increasing opportunities for meaningful interaction was a viable means of countering discrimination.¹¹⁰ This new experiences allowed participants to extend sympathy to HIV-positive individuals in their community; their enlivened passions and sympathy resulted in increased tolerance and a reassessment of discriminatory beliefs. This process was contingent on arousing the passions of participants. It also indicated that uncertain feelings contributed to intergroup anxieties.¹¹¹ Evidence supported the hypothesis that attending to this uncertainty with further exposure¹¹² will ameliorate anxiety and fear that stems from this uncertainty.¹¹³ As increased contact with individuals runs contrary to previous experiences reduces negative feelings and anxiety,¹¹⁴ it follows that one's *feelings* regarding the contact

¹⁰⁷ Thomas F. Pettigrew and Linda R. Tropp. "A meta-analytic test of intergroup contact theory." *Journal of personality and social psychology* 90, no. 5 (2006): 751-783.

It was initially hypothesized that in order for the interaction to be effective, individuals needed be of an equal status, have a common goal that necessitated intergroup cooperation, as well as support of the law or popular custom. This was found to be unnecessary.

¹⁰⁸ T 1.3.12.12-13; 1.3.13.9; SBN 135;147-8.

¹⁰⁹ Brian T. Chan and Alexander C. Tsai. "Personal contact with HIV-positive persons is associated with reduced HIV-related stigma: cross-sectional analysis of general population surveys from 26 countries in sub-Saharan Africa." *Journal of the International AIDS Society* 20, no. 1 (2017): 1-8. Social-distancing is the act of intentionally disassociating oneself from another individual or group. Their work indicated that contact with HIV-positive individuals resulted in a reduced desire for social-distance in the future.

¹¹⁰ This, again, supports Hume's postulations regarding unphilosophical probabilities, the importance of experience, as well as the extension of sympathy.

¹¹¹ Chan and Tsai. "Personal contact with HIV-positive persons".

¹¹² As Hume would suggest, giving individuals greater experience and more opportunities to socialize.

¹¹³ T 2.3.9.20-31; SBN 444-8.

¹¹⁴ Pettigrew and Tropp. "A meta-analytic test of intergroup contact theory".

and the new experience¹¹⁵ take the lead in motivating the correction of beliefs. These positive experiences that predicate a reduction of uncertainty and anxiety in judgments¹¹⁶ move an individual with more pleasant and sympathetic impressions and ideas that further generalize as a restraint in judgments in future situations.¹¹⁷ The combination of experience, sympathy, and the socialization breaks one's prior mental-habits or customs of belief,¹¹⁸ allowing for a new judgment based on new experiences and passions via the mechanism of sympathy.

Conclusion

The importance of passions,¹¹⁹ understanding through sympathy¹²⁰ granted by experience, as well as the role of socializing in tempering judgments and their contributions to the correction of beliefs cannot be overlooked. Hume positions socializing as a key component necessary for the correction of belief and tempering of future judgment.¹²¹ Not only is social experience and extension of sympathy necessary for one to revise a belief in the *Treatise*, but contemporary work reaffirms these connections. It was also found that the presentation and interpretation of evidence is an integral component in the process one must undergo to correct a judgment. Passion must be aroused; simply appealing to rational capacities does not motivate the correction of a belief.¹²² The importance Hume placed on individual perception coupled with his empirical philosophical methodology provides a more nuanced and tolerant framework sympathetic to cultural differences. With the initial hypothesis supported, it is possible to utilize a contemporary account of Hume's theory of belief in reference to current social problems.

¹¹⁵ Rather than strictly reasoning or previously formed probability judgments.

¹¹⁶ Pettigrew and Tropp, "A meta-analytic test of intergroup contact theory"; T 2.3.9.19; SBN 443-444.

¹¹⁷ Pettigrew and Tropp,; T 2.3.6.7-8; 3.1.2.11; SBN 426-7; 475-6.

¹¹⁸ T 2.1.11.7-8; 2.3.6.7-8; SBN 318-20; 426-7.

¹¹⁹ Horne, Powell, Hummel, and Holyoak, "Countering antivaccination attitudes"; Van Kleef, van den Berg, and Heerdink, "The persuasive power of emotions."

¹²⁰ Allport, *The Nature of Prejudice*; Broockman and Kalla, "Durably reducing transphobia"; Chan and Tsai, "Personal contact with HIV-positive persons"; Pettigrew and Tropp, "A meta-analytic test of intergroup contact theory".

¹²¹ T 1.4.1.11; 3.1.1.15; SBN 185-6; 461.

¹²² Horne, Powell, Hummel, and Holyoak, "Countering antivaccination attitudes"; Van Kleef, van den Berg, and Heerdink, "The persuasive power of emotions"; T 2.3.3.2; SBN 413-14.

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