John J. Park

The Emotion Theory of Concepts

Abstract: *The emotion theory of concepts maintains that concepts may be in part constituted by sentiments and emotions. Very few works in the contemporary concepts literature discuss this possibility that concepts may be sentiments and emotions, and those that do discuss this possibility ultimately fail to establish the viability of this view. However, by in part relying on experimental evidence from psychology and neuroscience, I contend that some concrete and abstract concepts are in part constituted by sentiments and emotions.*

1. Introduction

While there are numerous theories of concepts in the cognitive science and philosophical psychology literature on what concepts may be constituted by or, in other words, on what concepts *are*, less attention within this field has been paid to the view that some concepts may in part be constituted by sentiments and emotions.[1] However, I believe

Correspondence:
Email: john.jung.won.park@gmail.com

1 Given the aims of this paper, I do not have the space to argue for what emotions are. It is controversial what emotions are, but I understand emotions generally to be psychologically made up of appraisal judgments, perceptions of bodily changes, qualia, action tendencies, and dynamical processes. It is typical for theorists to maintain that emotions are constituted by several different psychological states (Prinz, 2004; de Sousa, 2013). Given the complex conjunction of what emotions are, the emotion theory is clearly different from all other theories of concepts that claim that concepts only are constituted by certain cognitive belief-like states. In so far as emotions are in part appraisal judgments — a particular string of concepts that are judgments related to one's well-being — emotions are mental representations that refer, and they can partake in concept combination.

that a variety of our concrete and abstract concepts may in part be so constituted. By the term 'constitution' I mean the 'is' of identity. When a concept is constituted by an emotion, this means that the concept just is the emotion. In this paper, I propound a method for showing that some concepts in part are indeed constituted by sentiments and emotions, which provides evidence for what I call the *emotion theory of concepts*. I will attempt to establish the mere foundations of this theory here, where further later work from other philosophers and psychologists may help to fill out the rest of this view.[2]

Psychological concepts tend to be generally understood as the constituents of thought or, as Locke (1996) states, they are the 'materials of reason and knowledge' and the basis of the human understanding. However, Edouard Machery offers a modern definition that is consistent with Locke's above definition and is one which he believes plays a useful role in the practice of psychology (Machery, 2009; 2015). He gathers this definition by putting puzzle pieces together from the concepts literature from psychologists such as Lawrence Barsalou, Karen Solomon, and Douglas Medin (Komatsu, 1992; Solomon, Medin and Lynch, 1999; Barsalou, Solomon and Wu, 2003). Machery states that psychologists generally understand concepts to be mental representations or bodies of knowledge that are stored in long-term memory and are functionally used by default at many times in most of the higher cognitive competences, where the relevant competences are such things as categorization, induction, deduction, and planning.[3] Throughout this paper, 'knowledge' will be

2 There are several desiderata that a theory of concepts must satisfy. I attempt to only establish the foundations of the emotion theory here and do not attempt to account for every desideratum. Some common desiderata are that a theory of concepts has to account for the cognitive content of a concept, which is the psychological mode of presenting the referent and is responsible for the way we psychologically understand the referent. Other desiderata are that a theory of concepts must account for how we categorize, perform acts of induction, how concepts combine with each other to form more complex thoughts, and how concepts are acquired.

3 Machery initially stated that concepts are used in the higher competences rather than in *most* of the higher competences. However, he later adds in the term 'most' in order to account for Piccinini and Scott's (2006) objection that if concepts are used in all of the higher competences then this will allow such things as phonemes to be concepts. However, Piccinini and Scott argue that not all mental representations used in higher cognition constitute concepts. Thus, taking Piccinini and Scott's lead, Machery can be read as limiting the higher competences in his definition to ones that psychologists normally think concepts play a role in, such as categorization and induction. Furthermore, we

understood conventionally as it is in the concepts literature. The term stands for an information-carrying mental state rather than 'true justified belief'. Here, what knowledge constitutes a concept can be correct or incorrect. By 'default', Machery means that concepts preferentially and presumptively are used at many times in most of the higher competences (2009; 2015; Casasanto and Lupyan, 2015). In other words, kinds of knowledge stored in a concept of x are consciously or subconsciously preferentially used and readily available at many times when thinking or reasoning about x rather than being knowledge that is less available and that generally does not come spontaneously to mind when cognizing about x.[4] Concepts and their structures are theoretical psychological entities that are designed to play a causal/explanatory role in how we make categorization judgments *inter alia*. To note, Locke and other Early Modern philosophers, such as Hume, also understood concepts, or what they called 'ideas', to be theoretical psychological structures that have the function of influencing our decision making. While there are alternate notions of a concept,[5] in this paper we will follow Machery and

more specifically may understand concepts to be constituted by those declarative representations, emotions, and/or perceptual mental states (neo-empiricism) that are used by default in the relevant higher acts of cognition (Barsalou, 1999; Machery, 2005; 2006; 2009; Piccinini and Scott, 2006).

4 There is conceptual and linguistic evidence that our concepts store default knowledge (Murphy and Medin, 1985). For example, when we are told that a cheetah can outrun a man, representations of a one-day-old cheetah or an old feeble cheetah normally do not come to mind. Rather, we quickly understand and assent to the statement. This suggests that we have default knowledge stored in our concepts; knowledge that frequently comes readily and spontaneously to mind. More recently, Machery claims that default knowledge that constitutes a concept must be context-independent and retrieved in any context (2015). However, this has the problematic consequence that exemplars and theory knowledge then do not constitute concepts since they are not used in every context. Machery's context-independence requirement is too strict. Rather, I suggest we understand context-dependency as a continuum, where default knowledge is a vague concept that lies more on the context-independent side of the continuum, but it still allows for a degree of context-dependency.

5 Fodor's informational atomism theory of concepts is primarily meant to provide a theory of content for concepts and address publicity or how people can communicate with each other because they share the same meaning to their concepts. However, it does not necessarily provide a view of how concepts partake in the higher competences (Fodor, 1998). See Machery (2009) for an explanation of this common confusion and conflation in the concepts literature where philosophers like Fodor are really primarily interested in providing a theory of reference for concepts rather than giving a theory of how concepts are at work in higher acts of cognition like categorization and induction. Providing a theory of content/publicity and a theory of how concepts play a functional role in higher cognition can be seen as being in principle two different projects,

Locke's lead and understand concepts in the widely understood sense in cognitive science. Here, concepts are the constituents of thought and mental representations used by default at many times in most of the higher competences. Both definitions are consistent since when a concept X stored in long-term memory is used by default in inferring the conclusion that 'X IS LARGER THAN Y', X is a constituent of this conclusion or thought.[6]

While there are numerous theories of concepts such as the prototype, exemplar, and theory views, in which all of these listed theories claim that some concepts only may be decomposed into further concepts and certain cognitive belief-like states, comparatively little in the concepts literature has been said on the possibility of a theory in which some of our concepts may in part be constituted by sentiments and emotions. The view that concepts can be constituted by sentiments and emotions has its roots dating back to at least Hume's *A Treatise of Human Nature*. However, this view has generally been lost or underrepresented in the contemporary concepts literature in cognitive science. Here, sentiments will be understood as being standing dispositions to feel emotions. Emotions are occurrent manifestations of dispositional sentiments. When a concept with emotion theory structure is stored in long-term memory, it is constituted by a sentiment. However, when the concept is brought forth to be used in cognition and the disposition to feel the emotion is actively rendered occurrently, then we may say that the concept is constituted by an emotion.

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although one may pursue trying to provide answers to both projects. As an example of how they can be different, an externalist theory of reference may apply to concepts like DOG, where what mentally constitutes a concept, such as BARKS and WAGS ITS TAIL, has nothing to do with a theory of content and publicity. Meaning just ain't in the head. Yet, what constitutes my DOG concept still influences my decision making that something is a dog or not. I in principle can provide a theory of content/publicity for concepts without providing a view on what constitutes concepts, and vice versa. Also, the notion of a concept used here differs from the idea of a platonic concept that is an abstract object rather than a mental representation. While platonic concepts are focused on what the metaphysically correct features of a category are, the interest in this paper will be on epistemic mental representation concepts in the minds of human beings that may change over time and may be incorrect. Finally, some psychological concepts can be personal states and others can be subpersonal states. In so far as personal states have the function of being intentionally used and subpersonal states do not have this function, psychological concepts can be either of the two kinds of states.

6 I follow standard convention and put concepts in all capitalized letters.

Regarding the general lack of discussion of an emotion-based theory of concepts in the contemporary cognitive science literature, take for example Daniel Weiskopf's 'The Plurality of Concepts' and Machery's book *Doing Without Concepts* (Weiskopf, 2007; 2009; Machery, 2005; 2009). Both philosophical works survey the general landscape of the concepts field, but both fail to address the fact that some concepts may in part be made up of sentiments and emotions. The large edited volume on concepts by the philosophers Eric Margolis and Stephen Laurence also fails to contain mention of an emotion-based theory of concepts (1999). The psychologist Gregory Murphy, in *The Big Book of Concepts* (2004), does indeed write a rather big book that is a contemporary critical textbook on the overall concepts literature from the beginning of the twentieth century onward, but the absence of an emotion-based theory of concepts in his book suggests that the overall literature likewise generally fails to address the possible view that some concepts may in part be sentiments and emotions. I believe this general absence of discussion of an emotion-based theory of concepts for the most part is the norm in the writings of philosophers and psychologists in the concepts literature.

However, a minority of contemporary theorists have posited that concepts can be made up of emotions. Lawrence Barsalou, Jesse Prinz, Christine Wilson-Mendenhall, Gabriella Vigliocco, and others have claimed that emotions can constitute a variety of different concepts (Barsalou, 1999; Prinz, 2002; Wilson-Mendenhall *et al.*, 2011; Kousta *et al.*, 2011; Moseley *et al.*, 2012; Paivio, 2013; Vigliocco *et al.*, 2013). The above authors claim that a plethora of concepts, concrete and abstract, may be emotions, but this aspect of their theories linking concepts with emotions is substantially undeveloped. For, they largely use or inevitably in part rely on only correlational psychology or neuroscience data to argue that concepts may be constituted by emotions without providing the appropriate causal evidence. For example, many contend for their thesis by using neuroimaging scans to show that there is a correlation between categorization and emotional regions of the brain. With only correlational data, it is still open that emotions are only elicited after the judgment is made rather than before. In so far as they primarily lean on correlational rather than the specified causal data to draw their emotion theory claims, their conclusions are unwarranted because they do not fully realize that concepts are defined as playing a causal role in categorization, *inter alia*. They do not realize that they must establish causation rather

than mere correlation. They must show that emotions cause judgments rather than the other way around.

For example, Kousta *et al.* (2011) crucially rely on brain imaging scans done in different studies that only establish correlation even though they themselves do not run neuroimaging experiments in their particular paper. Paivio (2013) in part claims that emotions influence categorization of pictures as being pleasant because the emotion of being pleased will influence one's categorization of things as being pleasant. However, he does not account for the possibility that emotions may only come into play after the categorization rather than before. There is no establishment of an appropriate direction of causation that emotions causally influence the categorization process. Moreover, there is a huge question as to whether emotions even are experienced at all. There is a multitude of purely cognitive factors that can explain the categorization of things as being pleasant or not which need not rely on the use of emotions. Concepts like BRIGHTLY COLOURED, SMILING FACES, and PEACEFULNESS can lead to the categorization of pictures as being pleasant or not rather than emotions. Paivio does not eliminate or account for these alternate possibilities or interpretations in his study.

It is also important to note that I am not claiming that emotions are the only kinds of knowledge that may constitute certain concepts. For example, if it is shown that emotions constitute my concepts JUST and FILES, I may have other different declarative knowledge that is purely cognitive and decomposes into further concepts for JUST and FILES as well.[7] There is a growing trend in the concepts literature that several theories of concepts may be viable, where we may have several different types of knowledge for a particular concept of X. Concepts may be constituted by a conjunct of different structures. The different kinds of knowledge that constitute a concept can work together in cognition or separately in different contexts and situations (Malt, 1989; Smith and Minda, 1998; Prinz, 2002; Machery, 2009; Weiskopf, 2009). There

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7 In this paper, I take no stance in the pluralism/hybridism debate, although I am a pluralist. Here, I understand pluralism to maintain that there may be several individuated concepts of a category *x* in an individual's mind, where each concept of a category *x* contains different kinds of knowledge. Hybridism claims that there is one super-structured concept of a class *x* that contains parts, where each part contains a different kind of knowledge. Despite being a pluralist, I generally assume the language of a hybridist throughout this paper since it seems to fit more naturally with ordinary language.

even can be contexts where a concept constituent that is used by default in many cases is not used at all. For example, in league with the exemplar theory, my concept FILES may also in part be constituted by exemplars or knowledge that represents the particular members of a class. Here, on the exemplar view, FILES also may in part be constituted by THE YELLOW FILE ON MY DESK NOW, THE SULLINGER ACCOUNT FILE, MY MOTHER'S COOKING RECIPE FILE, etc. When I categorize files at work, emotions and exemplars may both be in play, or perhaps only emotions may be at work. When I simply think about files, my exemplars may come to mind but my emotions may not come into play.

To note, the emotion view differs from the other prominent theories in the concepts literature such as the prototype, exemplar, and theory views in that concepts are actually constituted by sentiments or emotions. The prototype, exemplar, and theory views all claim that concepts are only constituted by certain cognitive belief-like states rather than by sentiments or emotions. For instance, the prototype or family resemblance theory claims that concepts are constituted by prototypes or mental representations of the statistically frequent features of members of a category. Such features are not necessary and sufficient conditions for influencing categorization and decision making. For instance, my DOG concept may be made up of BARKS, PLAYS FETCH, HAS FOUR LEGS, WAGS ITS TAIL, etc. Such prototypes at many times influence my decision making for categorizing an object as being a dog. While other views such as the prototype theory may *mention* emotions by claiming, for example, that RIGHT ACTION is constituted by BRINGS HAPPINESS, ELICITS APPROBATION, and ELICITS JOY, the emotion theory may be thought to *use* rather than *mention* emotions since, on this view, concepts are actually constituted by sentiments or emotions rather than being constituted by concepts that refer to them.

All in all, I attempt to establish the groundwork for potentially adding the emotion theory of concepts as another possible fundamental theory of concepts that may be differentiated from and placed alongside such standard theories as the prototype, exemplar, and theory views. To note, in this paper, the scope of the emotion theory is an empirical matter to be determined later on. While I have stated and will argue that *some* of our concrete and abstract concepts may in part be constituted by emotions, I leave the question concerning the full extent of the impact of the emotion theory for all various kinds of concrete and abstract concepts to future empirical research. Thus, for

instance, if one argues that not all children's relevant concepts are constituted by emotions, then this is perfectly fine, since we will later see that the emotion theory is a viable theory of concepts for a number of adults' concepts. The emotion theory is still a viable theory of concepts in certain domains, and that is what I am mainly attempting to demonstrate in this paper. There simply is not enough empirical evidence at the moment to precisely define the scope of the applicability of the emotion theory to all the various domains of concepts.

2. How Some Concepts are in Part Constituted by Sentiments and Emotions

The emotion theory is primarily motivated by the issue of categorization since, given the evidence in the psychology of emotions and moral psychology, emotions at many times realize the specified functional role of concepts. As previously illustrated in Machery's definition of concepts and as also pointed out by Weiskopf, in psychology, concepts and their constituent structures are significantly responsible for explaining how we perform the relevant higher competences such as categorization, deduction, induction, planning, and analogical reasoning (Weiskopf, 2007; 2009). Concepts play a functional role in many acts of higher cognition, and they are constituted by those psychological structures that realize the causal role.[8]

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8 One may object that a mental phenomenon *p* constitutes a concept *C* iff someone could not have *C* without *p*. An emotion like disgust at times may realize the causal role of my DISGUSTING concept when I categorize an act as disgusting. However, I can still possess the DISGUSTING concept without feeling disgust, such as when I make an offhand casual remark that something is disgusting. Hence, based on the above criterion in this footnote, the emotion of disgust does not in part constitute DISGUST. The problem with this objection is that it depends on a concept constitution criterion that narrowly is in regards to possessing a *correct* concept only. Underneath it all, the objection really is saying that *p* constitutes the correct concept *C* iff someone could not possess the correct concept *C* without *p*. However, as I have mentioned in the text, the focus of this paper is on concepts that can be correct or incorrect. Hence, the objection misses the mark. To see why the above objection relies only on the notion of a correct concept, I may have an incorrect concept WHALE, where I think that whales are fish rather than mammals. Even though it is in part incorrect, I still possess a WHALE concept in my mind and can at many times correctly categorize things as whales when shown pictures, have thoughts about various whales like sperm whales, talk about wanting to go and see whales, etc. FISH still in part constitutes my incorrect WHALE concept even though it is false that someone could not have a WHALE concept in mind without FISH. FISH does not constitute the correct WHALE concept and someone can have the correct WHALE concept without also having the thought that whales are fish rather than mammals. As we can see, the above criterion for (correct) concept possession and constitution does not apply in this

For instance, the theory view of concepts claims that concepts are constituted by theories or representations of hidden essences, causal laws, explanatory relations, functions, and general background knowledge. In an experiment for the theory view, Frank Keil ran a study where participants were asked whether the animal in a given scenario is a horse or a cow (1989, p. 162). In the situation, there is an animal that is called a 'horse', makes horse sounds, looks like a horse, is strapped with a saddle so people can ride on it, and eats oats and hay. The animal has all the superficial prototypical features of a horse. However, scientists run blood tests and x-rays on it, and they discover that its insides are actually the insides of a cow. In this experiment, Keil found that older children and adults perceived the scientists' discoveries as relevant for determining natural kind membership. These subjects relied not on superficial prototype similarities but on folk biological theories of hidden essences to decide that the animal was really a cow despite its superficial horse appearances. In this case as well as in many other different experiments, since the relevant subjects used theory knowledge by default in making their categorization judgments, such subjects' relevant natural kind concepts are at least in part constituted by knowledge of hidden essences since they realize the functional roles.

As we shall see, the use and influence of emotions in cognition is just like how, in Keil's study, participants used theory knowledge of hidden essences in order to make their categorization judgment that the given animal is really a cow instead of a horse. Notice that it is not the case that, in the above proposed circumstances, theory knowledge and emotions somehow directly guide the acquisition of certain concepts but do not end up constituting them. Nor is it the case that, in the above circumstances, theories and emotions only modulate behaviour in some way but do not constitute the relevant concepts, etc. For, to

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case when dealing with incorrect concepts that one possesses. Hence, in so far as my enquiry is on concepts regardless of whether they are correct or incorrect rather than just on correct ones, we instead will abide by the given functional definition of concepts widely accepted in cognitive science as well as the functional identification of concepts. One way to think about it is that we can first use a functional identification to determine what constitutes an individual's concept by discovering what mental states realize the causal role of concepts. Next, we can use the above criterion for what constitutes a correct concept to help determine what the correct concept of x is and to then see whether the individual has the correct concept or not. To note, I will not be interested in this latter project in this paper.

make such claims would be to fundamentally misunderstand the functional definition of concepts and their functional identification.

We will now examine some appropriate empirical evidence for the emotion theory of concepts. For the below studies showing the influence of emotions in decision making, the connection is not drawn by the authors in the relevant writings that, since concepts are functionally defined, such studies actually provide evidence for the emotion theory of concepts. Hence, the use of such studies to draw conclusions for the emotion theory of concepts is a new contribution to the concepts field. Notice below that I am not merely providing banal causal claims that emotions at many times influence decision making. Rather, I am drawing further inferences by connecting such causal evidence to a functionalist identification, where what mental states constitute a concept are those that realize the concept's causal role. This then allows me to draw emotion-based constitution claims on concepts. Implementing this functionalist identification has not been foreseen in the emotions literature, and thus it allows me to posit an emotion-based fundamental theory of concepts that is largely absent in the contemporary concepts field.[9]

Shaun Nichols (2002; 2004) has run studies on disgusting and non-disgusting violations of etiquette norms. For example, a disgusting etiquette transgression is when a dinner guest snorts then spits into his water glass and drinks from it. A non-disgusting etiquette violation is when a dinner guest drinks soup directly out of his bowl. He found that children believed disgusting transgressions generally to be more serious than non-disgusting etiquette transgressions. Adults generally took such disgust violations to be more serious as well. When asked for the justification to their responses, most explained it based on an appeal to disgust (e.g. 'because that's gross!'). Also, a justification based on appeal to disgust generally was not given for non-disgust violations.

Since disgust is readily and spontaneously used at many times when making decisions concerning etiquette, emotions at many times are used by default in categorization.[10] Just as the prototypes that

9 Peter Railton (2014) discusses the impact emotions have on moral deliberation, but he does not draw constitution claims on moral concepts from them by relying on a functionalist identification. Rather, he focuses only on the very different enquiry as to whether such an emotional influence leads to scepticism in moral epistemology or not.

10 It appears that it is the actual emotion of disgust that is in play here. This is due to the fact that in a subsequent Nichols study he found that those participants deemed to have

constitute one's DOG concept, such as BARKS, PLAYS FETCH, HAS FOUR LEGS, and WAGS ITS TAIL, at times are used by many people to aid in the categorization of something as being a dog, disgust influences participants' judgments by default in the relevant cases for categorizing an act as being one of poor etiquette. Hence, a conclusion for the viability of the emotion theory may be reached from these studies for certain etiquette norm concepts. We can see that emotions at least in part constitute some of our etiquette normative concepts, such as WRONG ETIQUETTE, and, moreover, such emotions play a large rather than minimal role in this particular case of cognition. For, if certain etiquette scenarios do not elicit disgust, then Nichols' studies show that judgments of a lesser severity generally will arise as compared to etiquette cases that do elicit disgust.

One may object that disgust is used by default in many etiquette judgments, but there are etiquette transgressions that are not disgusting. Hence, since disgust is not used in all cases to make etiquette judgments that a violation has occurred, it does not in any way constitute one's WRONG ETIQUETTE concept. However, recall from above that it has been found in the concepts literature that concepts can be constituted by a variety of different kinds of information-carrying mental states. A relevant mental state can be used by default at many times individually or conjointly with other concept constituents in cognition depending upon the situation. Moreover, there can be

low disgust sensitivity treated disgusting etiquette transgressions to be less serious than high disgust sensitivity subjects (2004). If some cognitive rule that merely talks about disgust such as IF AN ACT ELICITS STRONG DISGUST IN ME, THEN IT IS MORE SERIOUS THAN IF IT ONLY ELICITS WEAK DISGUST IN ME is in play, then such a rule in both low and high disgust sensitivity patients would account for their discrepancies in judgments. Nevertheless, notice that such a rule still requires a natural elicitation and the measuring of the actual emotion of disgust at least in high disgust sensitivity agents; an emotion that does play a relevant causal role in the judgment for such agents. Thus, if this is the case, then both the cognitive rule and the emotion jointly play a causal role in the judgment for such agents, and hence this still provides some concrete evidence for the emotion theory. On the other hand, if the rule is IF AN ACT ELICITS STRONG DISGUST IN OTHERS, THEN IT IS MORE SERIOUS THAN IF IT ONLY ELICITS WEAK DISGUST IN OTHERS, then low and high disgust subjects generally should deem that the given disgust transgressions do typically elicit strong disgust in others, which means that both low and high disgust participants largely should have made the same judgments on disgust transgressions. However, they generally did not make the same judgments. Therefore, on this entertained possibility, we may infer that it is the discrepancy in the degree of the actual emotion of disgust felt in both types of participants that accounts for why they made different judgments on disgust violations. Hence, in this scenario, emotions still do play a relevant causal role, and this provides concrete evidence for the emotion theory.

contexts where this particular concept constituent is not used at all. Remember that concepts and their constituents are functionally defined in order to help explain acts like categorization once subjects are given a relevant functional task to perform. When we categorize and make decisions, experiments have shown that different contexts can bring to bear different kinds of knowledge in what influences us to make a decision. Due to this context-dependent complexity of decision making and given that concept constituents have the function of playing a causal explanatory role in how we make decisions, concept theorists widely have claimed and have had to claim that our concepts are constituted by a variety of different kinds of knowledge. Hence, that disgust is not used in all cases to make etiquette judgments is not an objection against the emotion theory claim, but rather, given the complex contextual nature of decision making, it is to be expected that it is not always so used. However, since disgust has been found to impact categorization of etiquette judgments in many cases by default and it does in fact help to explain such decision making in certain cases, it in part constitutes many of our WRONG ETIQUETTE concepts.

Antonio Damasio argues that patients with lesions to the ventromedial prefrontal cortex (VMPFC) show that psychologically normal agents rely on emotions when making many decisions in real-life scenarios (Eslinger and Damasio, 1985; Damasio, 1994; Blanchette, 2014). Damasio has concluded that patients with damage to the VMPFC have intact reasoning capacities but are considered to have deficiencies in affect. For instance, Damasio describes the case of one of his patients, Elliot, who scores normally and at times above normal on numerous intelligence and cognitive reasoning tests, but exhibits diminished emotions. When discussing the many tragic hardships of his life, the subject displays an unusual emotional detachment from such events with no sign of frustration or sadness. Moreover, when shown visually stimulating and emotionally charged pictures of people drowning and individuals being in gory accidents, the patient showed no emotional response and remained emotionally neutral. This patient's everyday life was generally characterized as one of disaffection, which is opposite to the time period in his life before he suffered damage to the VMPFC. However, when faced with making decisions in the *real world* rather than in the laboratory, Elliot continually has problems making everyday decisions such as how to categorize various client files at work into different subcategories, in deciding which restaurant to eat at, and in purchasing items. For

example, he has difficulty deciding whether to sort the files by date, size of the file, or pertinence of the content of the files. He may spend an entire afternoon trying to make this decision.

Since Elliot's cognitive capacities have generally been determined to be intact, if not at times exceptional, Damasio claims that Elliot's deficiencies in affect are responsible for his inability to make many real-life decisions in the real world. It is the ability to experience normal emotions and the actual experiencing of such emotions in ordinary agents that allows such agents to function in the real world by being able to make decisions in certain cases when presented with a number of various options. As can be seen, emotions play a significant role in such circumstances for normal individuals. On the other hand, Elliot and other relevant VMPFC patients have problems making decisions since they have blunted affect. Here, we can see that emotions influence decision making, categorization, planning, and other higher competences at many times by default in normal agents. It may be understood that concrete concepts for normal subjects such as WORK FILES, RESTAURANTS TO EAT AT, CEREAL TO BUY, CHAIR TO BUY, and APPLE TO BUY, especially when concerning decision making judgments that arise when various options are presented, are constructed with concepts that are at least in part constituted by sentiments or emotions. Just as hidden essence knowledge is used by subjects in Keil's above discussed study to categorize a certain entity as being a cow rather than a horse, Damasio's work demonstrates that emotions likewise are spontaneously and readily used by default in many cases for normal subjects in order to make many decisions.

To note, I am not using Damasio's studies to draw constitution claims for his patients' concepts. Rather, I am relying on his work to first infer what psychological factors influence normal subjects' timely decision making processes when various options are presented to them. From Damasio's work we may infer that when normal subjects make relevant decisions and are given certain categorization tasks, they must at least be in part influenced by emotions. Damasio's work on VMPFC patients provides direct evidence for an emotion-based structure that in part constitutes some natural and artefact kind concrete concepts for normal subjects. Furthermore, such emotions play a non-trivial role in that, without emotions, it would take us hours to make certain everyday decisions in which various options are at play, if any decision is even made at all. In many cases, emotions allow for the normal timely functioning of the human higher competences, without which our lives would be radically altered.

There have been several objections to Damasio's general thesis. Gerrans (2007) contends that VMPFC patients have a 'myopia of the future' and cannot imagine themselves in future scenarios. Being able to project to the future is crucial for making decisions in the real world. Damasio does not take this into account. However, Gerrans still concludes that emotions at many times play the relevant causal role in normal decision making, and hence, for our purposes, we still get our conclusion for the emotion theory. Gerrans writes, 'I have endorsed the general idea that the VMPFC does play a role in coordinating the retrieval and manipulation of information, including affective information, required for decision-making...' (*ibid.*, p. 472). Linquist and Bartol (2013) claim there are various stages in an act of deliberation. They argue against Damasio that emotions are not relevant to all stages of deliberation, but they do acknowledge that emotions likely play a role in eliminating the indecisiveness that VMPFC patients usually portray. For our purposes, this still demonstrates that emotions play the requisite causal role in normal decision making in crucially allowing for the final decision to actually be made between competing options at the end of the deliberation process, and hence the emotion theory still is a viable view.[11]

One may object that emotions do play the specified functional role of concepts in many cases of decision making, but other psychological structures, such as prototypes, are also used. For example, in deciding to vacation in the Caribbean in order to relax, emotions allowed me to make the final judgment rather than not being able to make any decision at all. However, prototype components of my VACATION SPOTS concept, such as BEACH, WARM, and BEAUTIFUL, also may have played a role in making my decision. The response to this objection is that this is fine, and it is not an objection at all. Recall that concepts are generally held to be constituted by a variety of different kinds of knowledge, where such knowledge in certain cases may work together in decision making. Therefore, it is no problem at all for emotions to

11 Colombetti (2008) primarily objects that, concerning Damasio's relevant hypothesis that emotions are needed to make a decision, Damasio defines somatic markers or emotions so vaguely that his theory of emotions is difficult to falsify. Damasio in part holds a perceptual-based theory of emotions, and it is towards this perceptual-based aspect that Colombetti's objection applies. While Colombetti's criticism may be apt, there have been other theorists who have provided a more narrow definition of the perceptual-based component of an emotional state, such as Prinz (2004). Hence, alternate works in the literature may be used as a more precise definition of the perceptual-based aspect of an emotion in order to get around Colombetti's criticism.

be playing the specified functional role along with prototypes or other kinds of knowledge in an act of cognition. Both prototypes and emotions can jointly constitute VACATION SPOTS. At times, decision making is complex, and concept constituents are designed such that they must help to explain this complexity once subjects are given a functional task and the deliberation process begins. For instance, Keil and company (1998) found that prototype and theory knowledge frequently can work together in cognition. For example, when given a newly learned animal to categorize, a participant may begin the deliberative process by using theory knowledge to decide what weight of importance is possessed by certain prototype features of the animal. Then the more heavily weighted prototype components kick in at the end of the deliberative process to lead to the final decision. These studies show that both prototypes and theories jointly constitute the relevant natural kind concept. It likewise can be the case at many times, for example, that prototypes are used early in the deliberative process, but emotions come in to play at the end of this process to make the actual final decision.

Another possible counter is that emotions may be only performing negligible work in certain cases, so it is undeserving of being a concept constituent. It could be the case that, in certain situations when emotions actually do in part constitute the relevant concept, emotions will only play a minimal role. For instance, if it is the case that my DOG and CAT concepts in part are constituted by the same emotion, such an emotion cannot account for how I act differently towards my dog and cat. Rather, the purely cognitive elements of my concepts account for why, for example, I take my dog on a walk but not my cat. In this circumstance, the emotion does very little work, while the purely cognitive components do most of the work. As various kinds of knowledge stored in concepts can play different roles in different circumstances of cognition (Malt, 1989; Smith and Minda, 1998), in this case it is the purely cognitive elements that will also allow me to distinguish between dogs and cats and perhaps at times have random dog and cat thoughts. However, in response, the emotions may be more prominently at work in different contexts concerning dogs and cats, as in some other form of thinking when various options are presented, such as in choosing which dog to adopt from the pound. A proposed concept constituent may vary in playing a big, little, or no role in cognition depending on the context. Nevertheless, as has been shown, emotions do play a significant role by default at many times in cognition when various options are presented. Therefore, such cases

demonstrate that emotions are legitimate concept constituents for the relevant concepts even though, in other contexts, emotions may play only a small role. In this paper, I attempt to provide studies in which the emotions can be said to do a significant degree of the concept work that explains decision making and behaviour in particular circumstances.

While there are many studies showing that emotions are used in moral decision making,[12] we will only discuss three of them here. Mendez and colleagues (2005) have shown that frontotemporal dementia patients who have intact reasoning capacities but who have blunted affect or severely diminished emotions tend to make more utilitarian-like moral judgments as compared to normal subjects, where utilitarian-like judgments may be understood as decisions made based on taking into account the greatest happiness for the greatest number. Moreover, Koenigs *et al.* (2007) as well as Ciaramelli and colleagues (2007) have demonstrated that patients with lesions to the VMPFC who have blunted affect also tend to make more utilitarian-like judgments in laboratory settings than normal participants. These three studies indicate that emotions are at least in part used in making some moral judgments for normal subjects in that one may infer that it is because normal subjects do not have blunted affect that is responsible for why they do not make as many utilitarian-like judgments as compared to frontotemporal dementia patients and those patients with lesions to the VMPFC. Having normal emotions and using them in certain moral cases leads to the fact that normal subjects generally make less utilitarian-like judgments as compared to our emotionally blunted patients. These studies provide concrete evidence for the emotion theory in a variety of moral cases for many people, and they show the importance of the emotion theory for certain moral concepts such as MORALLY RIGHT in this situation, where the experiencing of emotions is responsible for the overall diminished number of utilitarian-like judgments that are made as compared to emotionally blunted patients. Just as prototypes, exemplars, and theories are at times used to make decisions, emotions are spontaneously and readily used by default at many times in a variety of cases for moral decision making as well.

12 See also Seok (2013).

3. Conclusion

I have argued for the emotion theory of concepts. Although the above experimenters have not drawn the connection between their studies and the functional identification of concepts in their writings, the aforementioned causal rather than merely correlational studies establish the viability of this view in relation to categorization, decision making, and planning in the specified aspects of the concrete and abstract normative domains. Emotions at many times are used by default in decision making, just as prototypes, exemplars, and theories of hidden essences at times are so used to arrive upon conclusions. This allows me to posit a novel argument for the emotion theory of concepts.

While I only hope to establish the foundations of this theory in the contemporary concepts literature, more studies need to be run on various other aspects of this view to further fill it out. For instance, more work needs to be done in order to realize the scope of this theory in relation to all of the various different kinds of concepts. Moreover, empirical work needs to be done on examining the emotion theory in relation to concept combination, induction, and analogical reasoning. If the emotion theory of concepts is shown overall to be correct and it applies generally to the concrete and abstract domains, then I suggest that the emotion theory should be understood as being a fundamental theory of concepts that should be added and placed alongside the other standard fundamental theories in the contemporary concepts field.

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