

Prior to beginning work on this discussion, be sure to view the [Finding an Article in the AU Library](#) (Links to an external site.)Links to an external site. Review the [Graduate Research Guide for Psychology](#), [Psychology Subject Guide](#), [Academic Voice for Graduate Writing](#), and [Professional Voice and Writing](#) resources provided by the Ashford University Library and the Ashford Writing Center. You will be referencing these resources as you complete this assignment.

Psychology professionals require research and writing skills for their day-to-day work. It is important for those working in psychology to use both academic and professional writing within the appropriate settings since they differ according to the types of items created. It is also of primary importance that all claims be supported with appropriate research within the discipline. This discussion has two components:

Part 1: Visit the Ashford Online Library and find three articles of interest to you from a general area in psychology (Developmental Psychology, Social Psychology, Cognitive Psychology, etc). Develop an [annotated bibliography using the attached template](#)  putting all citations/sources in APA format, and conclude with a summation of the topic overall based on the information from all three articles. Save this as a word document.

Part 2: In your initial post, reflect on the process of finding the articles:

- What specific issues did you encounter?
- What were the challenges in both the research and writing processes?
- How did you work to overcome the challenges in this assignment, and how might you use this experience to inform future research and writing practices?
- How were the resources in the Ashford University Library and the Ashford Writing Center useful to you during the process?
- Are there specific additional resources you would like to have for future assignments?
- Attach the annotated bibliography and summation.

~~Example~~

Annotated Bibliography

Name

University

Annotated Bibliography

Adler, A. (1956). *The individual psychology of Alfred Adler*. New York. Harper & Row.

An annotation is a summary. So here you would simply include a summary of the source you reviewed for your outline and eventually your paper. Basically, you are telling your reader what this article or resource is about. You should also point out how this is applicable to your paper topic. The length will vary, but a good goal would be four or five well-developed sentences.

Klein, E., Herron, T., & Belcher, J. (2013). Attachment in the online classroom. *Educational Psychology, 21*, 101-125. doi: 10.1111/s10538-009-6204-0.

Again, simply include a summary of the source you reviewed for your outline and eventually your paper. Tell your reader what this article or resource is about and how it is applicable to your paper topic. Remember, you want to try and include four or five well-developed sentences.

Perkins, C., & Murphy, E. (2006). Identifying and measuring individual engagement in critical thinking in online discussions: An exploratory case study. *Educational Technology & Society, 9*, 298-307.

Again, simply include a summary of the source you reviewed for your outline and eventually your paper. Tell your reader what this article or resource is about and how it is applicable to your paper topic. Remember, you want to try and include four or five well-developed sentences.

Summation

Here you would simply include a summary of the topic overall based on information from all three articles.

Neglected but Exciting Concepts in Developmental and Neurobiological Psychology

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Abstract

This review provides an evaluative overview of five concepts specific to developmental and neurobiological psychology that are found to be largely overlooked in current textbooks. A sample of 19 introductory psychology texts was surveyed to develop a list, including glial cell signaling, grandmother cells, memory reconsolidation, brain plasticity, and moral judgements by infants. These topics are relatively new, have proven to be of high impact in their respective fields, but are rarely discussed in psychological textbooks or by instructors in the classroom. In addition to a brief, but detailed background on each of the concepts, potential textbook chapters and classroom topics that would benefit from a discussion of these concepts are identified. Finally, this review briefly addresses possible ways for textbook authors to incorporate these new topics in future editions of texts without drastically increasing the overall length of the text.

Keywords

Brain plasticity, glial cell signaling, grandmother cells, infant moral judgement, neglected topics in introductory psychology

Introduction

In 1875, William James brought the field of psychology to America. Within a few years, James contracted to write a textbook on the subject of experimental psychology, which would later be published as *The Principles of Psychology*. Had James completed this textbook in a timely manner, it would have been the first text of its kind. However, other universities were adopting the teaching of psychology, and so the race to publish psychology textbooks began. Today, there are nearly 1.6 million psychology students per year in the market for introductory psychology texts (Steuer & Hamm, 2008) and approximately 98% of instructors use textbooks in their introductory psychology courses (Griggs, 2014). With

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Table 1. Textbooks Examined

<i>Title</i>	<i>Author(s)</i>	<i>Edition</i>	<i>Publisher</i>	<i>Publication Year</i>
Principles of Psychology	Breedlove	1st	Oxford	2015
Discovering Psychology: The Science of Mind	Cacioppo & Freberg	1st	Cengage	2013
Psychology; The Science of Person, Mind, and Brain	Cervone	1st	Worth	2015
Psychology	Ciccarelli & White	4th	Pearson	2014
Psychology: Modules for Active Learning	Coon & Mitterer	13th	Cengage	2014
Psychological Science	Gazzaniga, Heatherton, & Halpern	5th	Norton	2015
Psychology	Gray & Bjorklund	7th	Macmillan	2014
Real World Psychology	Huffman & Sanderson	1st	Wiley	2013
Introduction to Psychology	Kalat	10th	Wadsworth	2013
The Science of Psychology: An Appreciative View	King	3rd	McGraw Hill	2013
Psychological Science: Modeling Scientific Literacy	Krause & Corts	1st	Pearson	2011
Psychology: From Inquiry to Understanding	Lillienfeld et al.	3rd	Pearson	2013
Understanding Psychology	Morris & Maisto	10th	Pearson	2013
Exploring Psychology	Myers	8th	Worth	2010
Essentials of Psychology: Concepts and Applications	Nevid	4th	Cengage	2014
Psychology: Contemporary Perspectives	Okami	1st	Oxford	2013
Psychology	Schacter et al.	3rd	Worth	2014
Psychology: Themes and Variations	Weiten	10th	Wadsworth	2013
Mastering the World of Psychology	Wood, Wood, & Boyd	5th	Pearson	2013

scores of textbook options to choose from, a fair amount of diversity among the texts and the information provided within them would be expected.

Although a number of psychologists have conducted evaluative overviews of the coverage of core concepts of psychology across the last three decades (Brown & Brown, 1982; Christopher & Marek, 1999; Cush & Buskist, 1997; Griggs, 2014; Morawski, 1992; Steuer & Hamm, 2008; Weiten & Wight, 1992), to the best of our knowledge, an evaluation on the inclusion of specific topics has not yet been conducted. To improve the teaching of introductory psychology, a sample of 19 introductory psychology texts (see Table 1) was surveyed

for concepts specific to developmental and neurobiological psychology. Of the 19 texts, each focused primarily on the classic, well-established theories, concepts, and empirical studies of the field. This is how it should be: Students entering the field must understand the foundation upon which psychology is built in order to fully grasp the present knowledge base of behavioral science. A case in point might be classical conditioning. Without an understanding of the basic processes that Pavlov, Watson, and others have delineated, a student would be missing a fundamental paradigm that has been shown to underlie processes in immune responses, emotional behavior, and drug addiction. Nonetheless, a complete focus on historic fundamentals has the potential to come at the expense of new and exciting work taking place in our field, as well as some old research that has been underrepresented in psychology texts.

Based on our experience in research and instruction, we developed a list of concepts in the neurobiological and developmental areas that we considered to be relatively new, have proven to be of high impact in their respective fields, but are rarely discussed in textbooks or instructors in the classroom. This list, which is not intended to be comprehensive, included in the neurobiological domain glial cell signaling, mirror neurons, epigenetics, grandmother cells, brain plasticity, and memory reconsolidation. The developmental concepts included moral judgements by infants, punishment's effect on children's motivation, theory of mind, epigenetics, and brain plasticity. Brain plasticity and epigenetics are included in both groups owing to their importance to both fields.

Following review of the 19 texts, mirror neurons and epigenetics were removed from the neurobiological list and punishment's effects on children's motivations, epigenetics, and theory of mind were removed from the developmental list because they were found to be fairly well represented in most, although not all, of the reviewed texts; the remaining concepts—glial cell signaling, grandmother cells, brain plasticity, memory reconsolidation, and infant moral judgment—were not. Given the popularity of these topics in not only emerging literature, but also literature dating back up to 50 years, it is surprising that these concepts are rarely included in introductory textbooks. For example, since the original introduction of glial cell signaling in psychological journals in 1991 (publications not specific to the role of glial cells in neural signaling date back as far as 1922), there have been over 300 publications on the topic. Of those 300, 251 were published in the last decade, and 34 in the last year, indicating substantial growth of this topic in the field.

The term "grandmother cells" did not yield more than 30 results in psychology-related journals. However, the early seminal paper by Gross, Bender, and Rocha-Miranda (1969) (which discusses grandmother cells under the term visual receptive fields) has been cited over 1,300 times in psychological journals, of which 627 occurred in the last 10 years and 93 in the last year. Memory reconsolidation, a topic not introduced in psychological journals until 1993 (Rodríguez, Phillips, Rodríguez, & Martínez, 1993) yielded 780 results, 732 of which were published in the last 10 years and 179 in the last year.

The concept of moral judgement by children, first developed by Piaget (1932) and more thoroughly by Kohlberg and Kramer (1969), is outlined in every textbook reviewed for this paper. However, Hamlin and colleagues (2007, 2010, 2011) have focused on moral behaviors in *infants* for the last decade and have published a plethora of data regarding infant moral capabilities. Their initial findings (2007) have been cited in 823 different psychological publications. To provide a comparison, the original paper that outlines Kohlberg's theory (1969) has been cited by only 741 different psychological publications.

Finally, brain plasticity as a general topic yields more than 3,300 results and specific divisions of structural and functional plasticity generate 940 and 960 results, respectively. Of the 960 functional plasticity results, 172 were published between the initial publication year of 1969 and 2006, with 788 appearing in the last decade and 181 in the last year. This means that more literature on this topic was published in the last year than was published in the first 36 years following the initial discussion of the topic. This trend is also paralleled by structural plasticity publications.

To provide a comparison between these identified topics and one of the most well-known topics in psychology, classical conditioning yields 16,000 results. Of those, 4,081 were published in the last decade and 429 in the last year. Although these are substantial numbers (and definitely influential enough to justify maintaining this topic's place in introductory texts), there is not an increasing trend to indicate popularity growth as has been found in our suggested topics. Below, each of the concepts that we found to be largely overlooked is discussed in order to highlight their importance to the field of psychology and promote awareness of topics that may not be discussed in introductory psychology courses.

Glial Cell Signaling

Virtually all introductory psychology textbooks discuss glial cells. This discussion is invariably about the role that glial cells play as the insulating myelin sheath that helps speed up neural transmission. Few texts go beyond this, and if they do, the janitorial duties of glial cells are typically what are mentioned. The term *glia* itself encapsulates this diminutive concept because it means "glue" in Greek.

Douglas Fields, Chief of the Section on Nervous System Development and Plasticity at the National Institute of Child Health and Human Development, is determined to rehabilitate the reputation of glial cells. Fields has founded a journal, *Neuron Glia Biology*, and published a book titled *The Other Brain* (2009) in an attempt to disseminate research findings from the past two decades that have shown that glial cells are more than "mental bubble wrap" (p. 7).

Fields begins his book with an intriguing story about how Marian Diamond, the renowned neuroanatomist from the University of California – Berkeley, examined four slices of cerebral cortex from the brain of Albert Einstein. Diamond compared Einstein's brain to those of 11 other men, finding that the average number of neurons was the same for Einstein's cortex as it was for the others. Where Einstein's brain differed was in the number of glial cells: Einstein's cortex had twice as many as the other brains. Although this discovery does little to prove that glial cells formed the basis of Einstein's genius, Fields uses this story to introduce what he feels is one of nature's best-kept secrets.

Perhaps the most important point that Fields (2009) makes is that glial cells, especially astrocytes, contribute significantly to neural signaling. The old model of the synapse included only neurons: On the transmitting side was the presynaptic membrane from which neurotransmitters such as glutamate were released. On the receiving side was the postsynaptic membrane in which were receptors to bind the glutamate, thus causing depolarization in that neuron and the subsequent transmission of information between neurons. However, recent research has shown that each synapse typically involves, in addition to neurons, a type of glial cell called an astrocyte, which also has receptors for glutamate as well as the ability to release glutamate into the synapse (Volterra & Meldolesi, 2005). These processes allow the astrocyte to modulate neural transmission in synapses. Consequently, the

old model of the synapse that considers only neurons has been replaced by one which includes astrocytes. Hence, the term “tripartite synapses” has been coined to represent this new concept (Pannasch & Rouach, 2013).

Fields (2009) and others (Pannasch & Rouach, 2013; Volterra & Meldolesi, 2005) have also noted other recently discovered functions for glial cells, including calcium signaling, regulation of blood flow, and their roles in chronic pain and neurodegenerative diseases. Fields predicts that as understanding of glial cells advances, understanding of the brain and its functions will also radically change. We agree and feel that students of psychology should begin learning about this new brain from their earliest introduction to our discipline.

Glial cells are almost exclusively referred to only in the neurobiological chapter. A second occasion to present this concept might be in the sensation and perception chapter for their contribution to pain regulation and the treatment of chronic pain. Fields (2009) also notes that learning is influenced by the way that glial cells help to increase the formation of new synapses. Memory, too, is contributed to by release of the neurotransmitter glutamate by glial cells in the hippocampus, a crucial structure for the encoding of new experiences. Fields’ statement that Einstein’s cortex was found to have twice as many glial cells dovetails with animal studies that have found that the brains of rats raised in enriched environments have up to 33% more glial cells than those raised in impoverished environments. Although exactly how this abundance of glia might improve intelligence is not yet known, it likely has to do with the way that these cells help to integrate neuronal functioning within and between large areas of the cerebral cortex.

Grandmother Cells

Grandmother cells, yellow-Volkswagen detectors (Weisstein, 1973), or Halle Berry neurons as they have been referred to in the popular media (Sanders, 2009), are neurons in the cerebral cortex thought to respond to highly specific stimuli (Gross, 2002). Early discovery of grandmother cells can be credited to Gross and colleagues (1969), who found that a macaque monkey’s inferior temporal cortex contained visual neurons that selectively responded to hands and faces. Named grandmother cells because these cells appear to become active only when an individual is presented with a specific, complex stimulus, their role in the neurobiology of perception has often been interpreted to imply that a single cell in the brain can distinguish and react to the image of one’s grandmother or Halle Berry, even though one has never met Ms. Berry in person (Weisstein, 1973). One alternative explanation for these findings is that a given grandmother cell in and of itself has no specific features to which it responds, but does so only as part of a large neural ensemble, made up of perhaps thousands of neurons. This ensemble serves as the neural representation of one’s grandmother; recording from just one cell in that ensemble might make it appear that this individual neuron alone is responding to a unique, complex stimulus but that neuron is a small part of a group of cells that fire in a particular pattern in response to a particular face.

There is a middle ground, of course. The Nobel-prize-winning work of Hubel and Wiesel (1959)—research that is well represented in introductory psychology textbooks—has shown that neurons in the mammalian visual system do respond preferentially to specific features, although these tend to be elementary features such as line segments at certain orientations, rather than stimuli as complex as a face. Thus, the middle-ground hypothesis is that complex stimuli (specific faces) are represented in the brain by neural ensembles, but each neuron contributes a specific feature to that ensemble.

After several decades of debate, Freiwald, Tsao, and Livingstone (2009) carried out an investigation that attempted to settle the matter, albeit with non-human primates. Using functional magnetic resonance imaging (fMRI), Freiwald et al. (2009) first identified an area in the temporal lobe of macaque monkeys that responded to faces; they then verified that cartoon faces activated this area nearly as often as real faces. Cartoon faces allowed the experimental control of seven facial features, including face outline, eye outline, eyes, mouth, hair, nose, and eyebrows. Freiwald et al. then searched for individual cells that responded to at least one of these seven varied features. Perhaps their most important finding was that no neuron responded to all seven of the facial features, i.e., no grandmother cells were found. Although it is impossible to prove a negative without recording from every neuron in the brain, nevertheless there was no evidence in support of the grandmother cell theory. On the other hand, many neurons responded systematically to variations in at least one of the seven facial features and several neurons responded to up to four such features. This rules out the model of face perception that relies solely on neural ensembles without feature detectors; the data from this study support the middle ground. As the authors conclude, "[t]he mechanism for distinguishing faces appears to rely on a division of labor among cells tuned to different subsets of facial features" (Freiwald et al., 2009, p. 1194). In other words, a face is represented by a group of neurons, many of which have fairly high specificity for important facial features.

Perhaps one reason why this topic has been left out of introductory psychology texts is that it is quite complex. The concept of grandmother cells in and of itself is not difficult, but the idea of neural ensembles is. However, using the Freiwald et al. (2009) study as the basis, this topic can be presented as an evolving scientific controversy that has a rich history and an interesting outcome. It may also help to convey one of the most difficult concepts of all: How the wet matter of the brain converts neural signals into perceptual experiences. (Note: For an excellent summary of the methods and findings of Freiwald et al., 2009, see Jagadeesh, 2009.)

Grandmother cells (and neural ensembles) can be easily integrated into the discussion of perception in that their primary function deals with the organization, identification, and interpretation of faces. Furthermore, after being introduced in the chapter covering perception, this theory can also support discussion of infant-maternal bonds and social referencing in the emotion and development chapters as it provides neural evidence of the ability to identify specific faces, a component important to social referencing behaviors, which may aid in infant-mother pair bonding.

Memory Reconsolidation

Consolidation, the stabilization of memories in the brain, is a process that involves changes to receptor sites, synapse sensitivity, and the proteins contained in the neuron (McGaugh, 2000). This process works to transfer and stabilize short-term memories into long-term storage (Tronson & Taylor, 2007). According to the standard model of consolidation, prior to the transfer of memories into long-term storage, encoding can be easily disrupted. However, once a memory is consolidated in the brain, a process that may vary in duration depending on the complexity of the memory being consolidated (Dudai, 2004), it is stable and highly resistant to disruption or change (Nader & Hardt, 2009).

Memory reconsolidation, as the name implies, is the process of storing a memory after it has been retrieved. According to Nader (2003), "[r]eactivation of a consolidated memory can return it to a labile, sensitive state—in which it can be modified, strengthened, changed or

even erased" (p. 226). In other words, it was previously thought that once a memory was consolidated, it could no longer be altered. However, recent research suggests that once a memory is reactivated, it can potentially be altered and reconsolidated into long-term memory (Dudai, 2012; Nader & Hardt, 2009). A good analogy here is that of a computer text file. Once closed and saved, that file is stored safely on our computer. However, once individuals reopen, i.e., reactivate, that file, it is vulnerable to alterations, which then get stored when they again save and close the file.

A number of studies carried out with rodents in the 1960s and '70s demonstrated how the reactivation of a memory makes it vulnerable to modification (e.g., Misanin, Miller, & Lewis, 1968). Schiller and colleagues (2010) more recently demonstrated this in human participants by classically conditioning a fear response (measured by skin conductance). Here, the conditioned stimulus (CS) was a colored square and the unconditioned stimulus (UCS) used to evoke the fear response was a shock to the wrist. After conditioning, Schiller et al. reactivated the memory by giving one presentation of the CS and then a number of extinction trials. Schiller et al. were attempting to reactivate the memory, destroy the conditioned emotional aspect of it, and reconsolidate that memory. They found that the extinction group showed no spontaneous recovery either one day or one year following reconsolidation. Control groups showed spontaneous recovery on both occasions.

We need to mention here that the work of Loftus and her colleagues (e.g., Loftus, Miller, & Burns, 1978) has shown, in the behavioral domain, that such changes to stored memories are easily made, even when unintentional. This research is fairly well-represented in introductory psychology texts. However, the research on reconsolidation comes from neurobiological fields and therefore focuses on physiological dependent variables and the neural processes and structures involved (e.g., the amygdala). Another subtle but important difference is that reconsolidation research tends to address emotional aspects of memory rather than the episodic details emphasized in the work of Loftus. Therefore, what is important to note about memory reconsolidation is not only that it is a crucial part of memory encoding and storage processes that is being overlooked in curricula, but it is also an adaptive mechanism that has important clinical implications. Schiller et al. (2010) showed that extinction prior to reconsolidation prevents spontaneous recovery of an extinguished fear response. This knowledge, used in a clinical setting, could provide a way to erase, or at least diminish, negative emotional memories, specifically those that trigger posttraumatic stress disorder.

Memory reconsolidation is best suited for the discussion of the encoding processes in the memory chapter. Additionally, the Schiller et al. (2010) findings demonstrating the relationship between reconsolidation and fear depletion make this topic appropriate for treatment chapters. Finally, since reconsolidation studies utilize classical conditioning techniques, it can also be tied to the learning chapter.

Brain Plasticity

Neuronal plasticity includes the ability of the central nervous system to reorganize networks in the brain in response to the environment and recover after injury to the central nervous system (Johnston, 2003; Pascual-Leone et al., 2011). Brain plasticity occurs in two primary ways. *Structural* plasticity takes place during normal brain development when the brain undergoes physical changes in structure as a result of learning, memory, and developmental processes (Johansen-Berg, 2007). *Functional* plasticity shifts functions from one area of the

brain to another following injury (Brain Plasticity, 2009). In contrast to structural plasticity, functional plasticity is an adaptive mechanism acting to maximize remaining functions in the brain and compensate for functions lost to injury (Anderson, Catroppa, Morse, Haritou, & Rosenfeld, 2005). Early knowledge of functional brain plasticity stems from rodent studies in which an area of the brain was lesioned and the surrounding cells began to undergo changes that allowed them to take over lost functions of the damaged area. Similar changes take place in human brains following injury and surgical procedures (Diamond, Krech, & Rosenzweig, 1964), perhaps the most drastic of which is hemispherectomy, a rare treatment for seizures in which an entire hemisphere is removed (Collins & Mullins, 2002; Duchowny, 2004). Studies have found that hemispherectomy is a highly successful procedure (Carreno et al., 2001; Jonas et al., 2004). For example, a recent study (Moosa et al., 2013) assessed the outcomes of 170 hemispherectomy patients, finding that 112 (66%) of the patients no longer experienced seizures and the remaining patients either experienced remission of seizures or showed a reduction in their frequency by over 90%. The success of this invasive procedure is due largely to the brain's plasticity during the "critical period" of childhood. The critical period, a widely discussed concept of developmental psychology, is a period during which neural networks can be reshaped, resulting in structural and functional changes. As individuals age, the reshaping process becomes more difficult. Therefore, hemispherectomy is predominantly reserved for infants and toddlers because pediatric surgical candidates are able to couple the adaptiveness of functional plasticity with the structural plasticity that is most prevalent at this stage of life. Interestingly, memory and personality are shown to undergo normal development in these candidates following the procedure.

The developmental status of functions other than personality is largely dependent on which hemisphere is removed and which remains intact and fully functioning (Vining et al., 1997). Removal of the left hemisphere typically results in minor deficits in language comprehension. Interestingly, patients that underwent a left hemispherectomy had few differences in the grammatical characteristics of their speech compared to typically developing individuals and experienced close to normal grammatical development, making only minor errors (Curtis & Schaeffer, 2005; Kennison, 2014). However, the removal of the right hemisphere resulted in visuospatial deficits and increased difficulty completing complex tasks (Fournier, Calverley, Wagner, Poock, & Crossley, 2008). Some of the most significant differences between the removal of the right hemisphere versus the left can be seen in the patient's ability to identify and make inferences about the emotions that another person is exhibiting. A study comparing two patients that underwent anatomical right and left hemispherectomies found that the removal of the right hemisphere resulted in severe deficits in the identification of negative emotional expressions. In contrast, the removal of the left hemisphere left interpersonal skills intact, with only minor difficulties in identifying negative emotional expressions, specifically anger and disgust (Fournier et al., 2008).

Brain plasticity is addressed in nearly every textbook, but is usually included as a sub-point to other topics. In some texts, it is briefly described in the neurobiological chapter under the discussion of changes in somatosensory inputs (Schacter, Gilger, Wegner, & Nock, 2014) or as an initial introduction to stem cells (Kalat, 2014). Although functional plasticity is best suited for the neurobiological chapter, it and structural plasticity should be discussed in detail to provide a platform for integration of the topic in the learning, language, intelligence, and development chapters, allowing for a well-rounded understanding of how it applies to the entire field of psychology.

Infant Moral Judgement

As previously mentioned, most introductory psychology texts discuss theory of mind (ToM) to some extent. ToM is the ability for one to understand that others have thoughts, feelings, and perceptions that may differ from one's own (Premack & Woodruff, 1978) and is thought to develop at approximately four years of age. Thus, it is typically addressed in developmental chapters. Infants are thought to be unable to engage in ToM processes owing to the cognitive complexity required (Dunn, 1988). For this and other reasons, it has been long assumed that infants are unable to make judgements about the "goodness" or "badness" of the behaviors of others. However, recent research has discredited this assumption, finding that infants may make judgements regarding the behavior of agents, which appear to be moral judgements (Hamlin et al., 2007; Hamlin & Wynn, 2011).

In the prototypical experiment, infants are presented with a scenario that includes both a "helper" and a "hinderer" (characters that aid or prevent a protagonist from completing its goal). In one study (Hamlin, et al., 2007), infants 6 and 10 months of age observed the protagonist—a geometric shape with eyes—trying to reach the top of a hill. One condition showed the "helper" pushing the protagonist up the hill. In another, the "hinderer" pushed the protagonist down the hill it was attempting to climb. Infants were given a choice between the "helper" and "hinderer" leading to 26 of the 28 infants choosing the "helper" more than the "hinderer", suggesting that these infants were basing their preferences on their evaluation of the behavior of the "helper" and "hinderer." Replications and extensions of this study with infants of various ages (Hamlin et al., 2010; Hamlin & Wynn, 2011) have found similar results: Infants preferred the character that acted prosocially compared to the character that acted antisocially. The young age of the infant participants in these studies suggests not only that infants have an ability to make moral judgements, but that perhaps there is an innate capacity to distinguish "good" from "bad" behavior.

Further evidence suggesting moral judgements in infancy can be found in resource distribution research. Geraci and Surian (2011) examined whether infants can evaluate the subtler types of moral dilemmas involved with the inequity of resource distribution. They found that 16-month-old infants demonstrated a preference (measured through manual choice) for characters that distributed resources equally compared to those that distributed resources unequally. This indicates that even in subtle tasks, infants appear to be able to evaluate the fairness of the behavior of others.

The research on infant moral judgement is remarkable in that it identifies skills possessed by infants that have not only been unrealized, but the existence of which is denied by previous theories (e.g., Piagetian). Moreover, theory of mind can be a difficult concept for any layperson to understand, but can be particularly difficult to portray to a class of freshman students. These studies of infant moral judgement allow for a clear, real-world example of both theory of mind and empathy development in infancy.

Aside from Kohlberg's stage theory (Kohlberg & Kramer, 1969), moral judgement and empathy are rarely mentioned in introductory texts, and virtually never with infants. This is surprising,

Owing to the number of fields and topics in psychology with which these concepts could be paired to aide in student's understanding of more complex topics. For example, it could be useful in explaining the importance of mirror neurons in the neurobiological chapter, the implications of social behaviors and the development of social-emotional expressions in both the emotion and social chapters, and the development of theory of mind in the development

chapter. Owing to the diversity of the topics with which infant moral judgement can be associated, and the implications this research has on theory of mind, a fundamental concept of child development, it warrants greater recognition within psychology texts than it is currently receiving.

Textbook Consolidation

Brief versions of introductory texts are a growing trend, with 6 of the 15 top-selling texts in the 2011–2012 academic year being brief versions containing 3–4 fewer chapters than their full-length companion texts (Griggs, 2014). Our review provides five topics that are currently under-represented in introductory textbooks, but the inclusion of new concepts increases the length of the textbook because outdated information is rarely removed. The question is, which old concepts should be removed to make room for new ones, and why? Identifying a list of specific topics to remove from future textbooks is beyond the scope of this paper. However, we can suggest one criterion that should be considered, namely, replicability, one of the defining features of scientific research. An example of a popular concept that has recently been put to the replication test is infant imitation of adult facial expressions, which is frequently introduced in texts through a discussion of Meltzoff and Moore's (1983) research. A recent longitudinal study (Oostenbroek et al., 2016) failed to replicate those findings in infants between 1 and 9 weeks of age, reporting no evidence of the occurrence of these imitative behaviors. We do not mean to say that one failure to replicate should result in removing a concept from a textbook but we do propose that replicability is a necessary criterion for this selection process.

Conclusion

The goal of the presented work was to identify important emerging concepts in the fields of developmental and neurobiological psychology that are largely under-represented in introductory psychology textbooks. This was not intended to be a thorough search of every introductory text available, but a survey of widely used psychology texts that allowed us to gauge if and how these important concepts are taught in introductory psychology.

Psychology as a whole, and the individual areas within it, have continued to increase in both depth and breadth. However, the texts that introduce students to our broad and diverse field have not kept pace with these changes. Within both brief and full-length texts, the popular studies of Pavlov, Piaget, and other psychological pioneers are still given their earned fame and regard, but largely at the neglect of more recent studies that have expanded our knowledge of psychological processes. This is not to say that more recent studies should be included in place of such influential work as classical and operant conditioning, or developmental stage theories, but rather that these earlier works should provide a foundation upon which this new and exciting research has been built and from which it has evolved.

It is also important to remember that the topics addressed in this paper focus only on those concepts we feel are lacking in the neurobiological and developmental areas of psychology and further analysis of the available texts by specialists in the other areas of psychology is required in order to obtain a comprehensive list of topics throughout the field of psychology that are not being shown their due credit. It is not our intention to criticize the available psychology texts, but to inform authors and instructors of new, and in some cases,

forgotten, research that is being overlooked. The field of psychology is growing and the texts need to reflect that growth by including the ongoing, new, and exciting research.

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References

- Anderson, V., Catroppa, C., Morse, S., Haritou, F., & Rosenfeld, J. (2005). Functional plasticity or vulnerability after early brain injury? *Pediatrics*, 116, 1374–1382. doi:10.1542/peds.2004-1728
- Brain Plasticity. (2009). Brain Repair. In L. R. Puente (Ed.), *Encyclopedia of neuroscience* (pp. 481–481). Cambridge, MA: Academic Press.
- Brown, R. M., & Brown, N. L. (1982). Bias in psychology and introductory psychology textbooks. *Psychological Reports*, 51, 1195–1204. doi: 10.2466/pr0.1982.51.3f.1195
- Carreno, M., Wyllie, E., Bingaman, W., Kotagal, P., Comair, Y., & Ruggieri, P. (2001). Seizure outcome after functional hemispherectomy for malformations of cortical development. *Neurology*, 57, 331–333. doi: 10.1212/WNL.57.2.331
- Christopher, A., & Marek, P. (1999). Introductory psychology textbooks: An objective analysis and update. *Teaching of Psychology*, 26, 182–189. doi:10.1207/S15328023TOP260304
- Collins, J., & Mullins, W. (2002). *Hemispherectomy end seizures in many older children with rare seizure disorder*. Retrieved from <https://web.archive.org/web/20140402063415/http://www.hopkinsmedicine.org/press/2002/December/021210.htm>
- Curtis, S., & Schaeffer, J. (2005). Syntactic development in children with hemispherectomy: The I-, D-, and C-systems. *Brain and Language*, 94, 147–166. doi:10.1016/j.bandl.2004.12.004
- Cush, D., & Buskist, W. (1997). Future of the introductory psychology textbook: A survey of college publishers. *Teaching of Psychology*, 24, 119–122. doi:10.1207/s15328023top2402_7
- Diamond, M. C., Krech, D., & Rosenzweig, M. R. (1964). The effects of an enriched environment on the rat cerebral cortex. *Journal of Comparative Neurology*, 123, 111–119. doi: 10.1002/cne.901230110
- Duchowny, M. (2004). Hemispherectomy for epilepsy – when is one half better than two? *Neurology*, 62, 1664–1665. doi:10.1212/01.WNL.0000128703.88072.E
- Dudai, Y. (2004). The neurobiology of consolidations, or, how stable is the engram? *Annual Review of Psychology*, 55, 51–86. doi:10.1146/annurev.psych.55.090902.142050

- Dudai, Y. (2012). The restless engram: Consolidations never end. *Annual Review of Neuroscience*, 35, 227–247. doi:10.1146/annurev-neuro-062111-150500
- Dunn, J. (1988). *The beginnings of social understanding*. Cambridge, MA: Harvard University Press.
- Fields, R. D. (2009). *The other brain: From dementia to schizophrenia, how new discoveries about the brain are revolutionizing medicine and science*. New York: Simon & Schuster.
- Fournier, N. M., Calverley, K. L., Wagner, J. P., Poock, J. L., & Crossley, M. (2008). Impaired social cognition 30 years after hemispherectomy for intractable epilepsy: The importance of the right hemisphere in complex social functioning. *Epilepsy and Behavior*, 12, 460–471. doi:10.1016/j.yebeh.2007.12.009
- Freiwald, W. A., Tsao, D. Y., & Livingstone, M. S. (2009). A face feature space in the macaque temporal lobe. *Nature Neuroscience*, 12, 1187–1196. doi:10.1038/nn.2363
- Geraci, A., & Surian, L. (2011). The developmental roots of fairness: Infants' reactions to equal and unequal distributions of resources. *Developmental Science*, 14, 1012–1020. doi:10.1111/j.1467-7687.2011.01048.x
- Griggs, R. (2014). Topical coverage in introductory textbooks from the 1980s through the 2000s. *Teaching of Psychology*, 41, 5–10. doi:10.1177/0098628313514171
- Gross, C. G. (2002). Genealogy of the “grandmother cell”. *The Neuroscientist*, 8, 512–518. doi:10.1177/107385802237175
- Gross, C. G., Bender, D. B., & Rocha-Miranda, C. E. (1969). Visual receptive fields of neurons in inferotemporal cortex of the monkey. *Science*, 166, 1303–1306. doi:10.1126/science.166.3910.1303
- Hamlin, J. K., & Wynn, K. (2011). Young infants prefer prosocial to antisocial others. *Cognitive Development*, 26, 30–39. doi:10.1016/j.cogdev.2010.09.001
- Hamlin, J. K., Wynn, K., & Bloom, P. (2010). Three-month-olds show a negativity bias in their social evaluations J. Kiley Hamlin et al. Social evaluation by 3-month-old infants. *Developmental Science*, 13, 923–929. doi:10.1111/j.1467-7687.2010.00951.x
- Hamlin, J. K., Bloom, P., & Wynn, K. (2007). Social evaluation by preverbal infants. *Nature*, 450, 557–559. doi:10.1038/nature06288
- Hubel, D. H., & Wiesel, T. N. (1959). Receptive fields of single neurons in the cat's striate cortex. *Journal of Physiology*, 148, 574–591. doi: 10.1113/jphysiol.1959.sp006308
- Jagadeesh, B. (2009). Recognizing grandmother. *Nature Neuroscience*, 12, 1083–1085. doi:10.1038/nn0909-1083
- Johnston, M. (2003). Brain plasticity in paediatric neurology. *European Journal of Paediatric Neurology*, 7(3), 105–113.
- Johansen-Berg, H. (2007). Structural plasticity: Rewiring the brain. *Current Biology*, 17, R141–R144. doi:10.1016/j.cub.2006.12.022
- Jonas, R., Nguyen, S., Hu, B., Asarnow, F., LoPresti, C., Curtiss, S., . . . Mathern, G. (2004). Cerebral hemispherectomy – hospital course, seizure, developmental, language, and motor outcomes. *Neurology*, 62, 1712–1721. doi:10.1212/01.WNL.0000127109.14569.C3
- Kalat, J. (2014). *Introduction to psychology* (3rd ed.). Pacific Grove, Calif.: Brooks/Cole Pub.
- Kennison, S. M. (2014). *Introduction to language development*. Los Angeles, CA: SAGE Publications.
- Kohlberg, L., & Kramer, R. (1969). Continuities and discontinuities in childhood and adult moral development. *Human Development*, 12, 3–120. doi:10.1159/000270857
- Loftus, E. F., Miller, D. G., & Burns, H. J. (1978). Semantic integration of verbal information into a visual memory. *Journal of Experimental Psychology; Human Learning and Memory*, 4, 19–31. doi: 10.1037/0278-7393.4.1.19
- McGaugh, J. L. (2000). Memory-A century of consolidation. *Science*, 287, 248–251. doi:10.1126/science.287.5451.248
- Meltzoff, A. N., & Moore, M. K. (1983). Newborn Infants Imitate Adult Facial Gestures. *Child Development*, 54(3), 702–709.

- Misanin, J. R., Miller, R. R., & Lewis, D. J. (1968). Retrograde amnesia produced by electroconvulsive shock after reactivation of a consolidated memory trace. *Science*, 160, 554–555. doi: 10.1126/science.160.3827.554
- Moosa, A., Gupta, A., Jehi, L., Marashly, A., Cosmo, G., Lachhwani, D., ... Bingaman, W. (2013). Longitudinal seizure outcome and prognostic predictors after hemispherectomy in 170 children. *Neurology*, 80, 253–260. doi:10.1212/WNL.0b013e31827dead9
- Morawski, J. G. (1992). There is more to our history of giving: The place of introductory textbooks in American psychology. *American Psychologist*, 47, 161–169. doi: 10.1037/0003-066X.47.2.161
- Nader, K. (2003). Memory traces unbound. *Trends in Neurosciences*, 26, 66–72.
- Nader, K., & Hardt, O. (2009). A single standard for memory: The case for reconsolidation. *Nature Reviews Neuroscience*, 10, 224–234. doi:10.1038/nrn2590
- Oostenbroek, J., Suddendorf, T., Nielsen, M., Redshaw, J., Kennedy-Costantini, S., Davis, J., ... Slaughter, V. (2016). Comprehensive longitudinal study challenges the existence of neonatal imitation in humans. *Current Biology*, 26, 1334–1338. doi: 10.1016/j.cub.2016.03.047
- Pascual-Leone, A., Freitas, C., Oberman, L., Horvath, J. C., Halko, M., Eldaief, M., ... Rotenberg, A. (2011). Characterizing brain cortical plasticity and network dynamics across the age-span in health and disease with TMS-EEG and TMS-fMRI. *Brain Topography*, 24, 302–315. doi:10.1007/s10548-011-0196-8
- Pannasch, U., & Rouach, N. (2013). Emerging role for astroglial networks in information processing: from synapse to behavior. *Trends in Neurosciences*, 36, 405–417. doi: 10.1016/j.tins.2013.04.004
- Piaget, J. (1932). *The moral judgement of the child*. London: K. Paul, Trench, Trubner, & Co.
- Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences*, 1, 515–526. doi:10.1017/S0140525X00076512
- Rodriguez, W. A., Phillips, M. Y., Rodriguez, S. B., & Martinez, J. L. (1993). Cocaine administration prior to reactivation facilitates later acquisition of an avoidance response in rats. *Psychopharmacology*, 2–3, 336–370. doi: 10.1007/BF02244934
- Sanders, L. (2009). Single brain cells selectively fire in response to specific thoughts: Thinking about her face activates 'Halle Berry' neuron. *Science News*, 176, 9doi:10.1002/scin.5591761107
- Schacter, D. L., Gilber, D. T., Wegner, D. M., & Nock, M. K. (2014). *Psychology* (3rd ed.). New York, NY: Worth Publishers.
- Schiller, D., Monfils, M.-H., Raio, C. M., Johnson, D. C., LeDoux, J. E., & Phelps, E. A. (2010). Preventing the return of fear in humans using reconsolidation update mechanisms. *Nature*, 463, 49–53. doi: 10.1038/nature08637
- Steuer, F. B., & Hamm, K. W. II (2008). Psychology textbooks: Examining their accuracy. *Teaching of Psychology*, 35, 160–168. doi:10.1080/0098628080218197
- Tronson, N. C., & Taylor, J. R. (2007). Molecular mechanisms of memory reconsolidation. *Nature Reviews Neuroscience*, 8, 262–275. doi:10.1038/nrn2090
- Vining, E. P., Freeman, J. M., Pillas, D. J., Uematsu, S., Carson, B. S., Brandt, J., ... Zuckerberg, A. (1997). Why would you remove half a brain? The outcome of 58 children after hemispherectomy – the Johns Hopkins experience: 1968 to 1996. *Pediatrics*, 1003, 163–171. doi:10.1542/peds.100.2.163
- Volterra, A., & Meldolesi, J. (2005). Astrocytes, from brain glue to communication elements: the revolution continues. *Nature Neuroscience*, 6, 626–640. doi:10.1038/nrn1722
- Weinstein, N. (1973). Beyond the yellow Volkswagen detector and the grandmother cell: A general strategy for the exploration of operations in human pattern recognition. In R. L. Solso (Ed.), *Contemporary Issues in Cognitive Psychology: The Loyola Symposium* (pp. 17–51). Washington, DC: V.H. Winston & Sons.
- Weiten, W., & Wight, R. D. (1992). Portraits of a discipline: An examination of introductory textbooks in America. In A. E. Puente, J. R. Matthews & C. L. Brewer (Eds.), *Teaching psychology in America: A history* (pp. 453–504). Washington, DC: American Psychological Association.

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Teaching Qualitative Inquiry to Ignite the Social Psychological Imagination

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In this article I discuss how incorporating a module of assignments requiring students to conduct qualitative inquiry in an undergraduate social psychology course fosters a greater understanding of diverse theoretical perspectives within social psychology, builds practical research skill competencies, and stimulates the growth of their *Social Psychological Imagination*; a concept I base on Mills's (1959) idea of the "Sociological Imagination" (1959). Through a series of field observations and low-stakes writing assignments (Elbow, 1997) that build toward a final report of findings about social behavior observed in public spaces, students learn how to observe, analyze, and write like a social psychologist. In this module, students are required to observe social behavior in a public place and generate a theory about a social norm that impacts behavior in the place they observed. Actively carrying out qualitative inquiry and writing about it is important for developing core competencies in social psychology. Qualitative inquiry affords the opportunity for students to indulge their Social Psychological Imagination and engage in reflexive, critical, historically informed and person-sensitive practices. Furthermore, the practice of communicating the process of qualitative inquiry develops academic and professional writing tools that are useful to students in multiple domains. By incorporating practice conducting qualitative inquiry into a content-based course like social psychology, students' understanding of course material is enriched as they come to learn how knowledge in the discipline is produced while providing real-life examples of social psychological theories in action.

Keywords: teaching, social psychology, qualitative inquiry, field observation, writing

In this article I describe how a module of qualitative inquiry exercises was incorporated into an undergraduate Social Psychology course in order to foster a greater understanding of social psychological concepts, build practical research skill competencies, and develop students' *Social Psychological Imagination*. My concept of the Social Psychological Imagination builds on Mills's (1959) idea of the "Sociological Imagination," but reorients analytic focus onto the "dynamic interdependence" (Lewin, 1939) of person and society that characterizes social psychological analysis. Through a series of field observations and low-stakes writing assignments (Elbow, 1997) that build toward a final report of findings about social

behavior observed in public spaces, students learn how to observe, analyze, and write like a social psychologist. I created this module of exercises to be used within a Social Psychology course in an urban environment, but the module may be adapted to other content-based courses within psychology or other social science disciplines such as anthropology or sociology, as well as courses taking place in other locales.

In the qualitative field observation module, students are required to observe social behavior in a public place of their choosing and generate a theory about a social norm that impacts behavior in the place they observed. In conversation with other students and the course readings, students learn diverse theoretical perspectives within social psychology that can make sense of the same observed phenomena in different ways. By incorporating qualitative inquiry as an experiential module into a content-based course like Social Psychology, students' understanding of course material is enriched as they come to

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learn through first-hand experience how knowledge in the discipline is produced as well as providing real-life examples of social psychological theories in action. The substantive content of the course is enlivened by engaging students in practicing qualitative inquiry analyzing the contours of their own social environment. These assignments also require students to exercise their Social Psychological Imagination, changing their perspective on often taken for granted social behavior to involve critical reflection into how both the person and the environment may be impacting that experience.

Context

While qualitative inquiry has played an important role in the field of psychology since its inception (Gergen, Josselson, & Freeman, 2015), practicing and teaching these approaches continues to be a "contested" (Gibson & Sullivan, 2012, p. 2) area in relation to the dominance of quantitative methods. Eisenhart and Jurow (2011) describe the difficulty of designing curricular goals for teaching qualitative inquiry across social scientific disciplines, pointing out that "qualitative research communities . . . do not agree on research priorities. . . do not face the same research problems or questions about their work . . ." and "do not share one approach" (p. 669). In addition, they note that very few practitioners of qualitative research have written about teaching, and even fewer have written in detail about curriculum design or pedagogical decisions. Within psychology, even fewer examples of qualitative research pedagogy exist. Furthermore, much of the pedagogical literature focuses on stand-alone qualitative research courses, graduate level courses, and apprenticeship style advising. Unfortunately, many psychology departments do not have dedicated qualitative methods courses (this is particularly true for undergraduate programs) and may not even cover qualitative methods within other courses. This article builds on and adds to existing pedagogical literature on teaching qualitative inquiry in psychology, providing an example of how a module focused on qualitative inquiry can be incorporated in an undergraduate content-based course like Social Psychology in order to introduce students to qualitative inquiry and enliven course content.

Even in the absence of a robust literature on the teaching of qualitative inquiry, the growing body of literature already exhibits some consistent insights, including a "consensus . . ." that ". . . experiential pedagogies" (Strayhorn, 2009, p. 701) are the most effective way to teach qualitative methods. This module of exercises builds on these insights from the literature on qualitative research pedagogy. The idea to have my students actively engage in a small research project was driven by findings on the importance of experiential activities in teaching qualitative methods in psychology (Fontes & Piercy, 2000), and the benefits of "learning by doing" (Preissle & deMarrais, 2011, p. 31) in teaching qualitative inquiry in other social science disciplines. Based on reviews and surveys of syllabi and publications covering qualitative research pedagogy, Eisenhart and Jurow (2011) argue that the student research project is a "signature pedagogy" of qualitative research courses" (p. 701). The process of actually engaging in qualitative research is found to develop practical skills, root abstract concepts in real settings, improve confidence in carrying out a project, and enhance enjoyment of learning.

In addition, Preissle and deMarrais (2011) argue that responsiveness, or the interaction between the researcher and that being researched, is a core aspect of all forms of qualitative inquiry that must be taught in qualitative pedagogy. Some methods of generating qualitative data, such as clinical interviews, engender much more "responsiveness" (Preissle & deMarrais, 2011, p. 33) than field observations. However, the field observation module encourages students to attend to their affective and cognitive responses to the social spaces they observe in order to practice accessing their responses and using it as an analytic tool. Students were encouraged to reflect on their subjectivities, which Eisenhart and Jurow describe as "part and parcel of doing qualitative research" (Eisenhart and Jurow, 2011, p. 709). As I discuss in more depth later, assignment prompts and class discussions guide students toward examining how their social identities intersect with the qualities of the space they observe and how that may impact what they observe and how they interpret it.

Furthermore, the module attempts to avoid teaching qualitative inquiry as a "linear recipe-like process" (Preissle & Roulston, 2009), a problem found in many attempts to teach meth-

odological approaches. I use class discussions to troubleshoot problems or sticking points throughout the process, as well as to explore the many different analytic approaches that could be used to make sense of the data students have gathered. In doing so, I hope to build on the knowledge of different qualitative approaches described in our text, and foster the "pluralist orientation" (Gergen et al., 2015) that is one of the hallmarks of the qualitative movement within psychology.

In their introduction to a recent special issue of *Qualitative Inquiry* focused on teaching qualitative research, Hsiung (2016) describes how teaching qualitative research is a necessarily context specific practice, and how educators, especially those in the global or disciplinary "periphery must make their teaching materials locally meaningful" (Hsiung, 2016, p. 60). In addition, the critically important nature of social context is the key insight that social psychology brings to the analysis of psychological phenomena. I created this series of assignments to fit as a module within the particular context of a semester-long Social Psychology course in an undergraduate psychology department at a 4-year college in New York City. In doing so, I strove to create exercises that would be locally meaningful to the particular context in which I was teaching. In the sections that follow, I describe in more depth how the particularity of this context shaped the exercise, and how it can be adapted to other contexts.

Departmental and Institutional Context

The Social Psychology course was an upper-division elective within the department's Social/Developmental concentration, so most students were junior or senior psychology majors. Prerequisites for the course are introduction to psychology, Statistics, and Experimental Psychology. The department did not have a dedicated qualitative methods course. However, all students enrolled in Social Psychology will have already taken Statistics and Experimental Psychology courses that introduced them to quantitative methods. Some will have encountered qualitative inquiry in other psychology courses, such as Developmental Psychology, Clinical Psychology, the Psychology of Women, or Human Sexuality, depending on the professor who taught it. They may also have

encountered qualitative inquiry in courses they have taken in other social scientific disciplines such as Sociology, Anthropology, Women's and Gender Studies, or Education Studies. Most students, however, come into the course thinking of quantitative surveys and experiments as the main methods of producing knowledge in contemporary psychology. Through my choice of assignments, textbook, and examples of contemporary and historical research on social psychological phenomena, I aim to broaden their view of the methods used in social psychology.

The university is located in New York City. Most students live within the five boroughs that comprise the city and all students spend time there as a result of attending classes each week at the campus in Manhattan. When creating the assignments, I was inspired by some of Stanley Milgram's (1992) later work on the social environment of cities, undertaken after he completed his well-known obedience experiments and then moved to New York City to join the Psychology faculty at the City University of New York Graduate Center.

To emphasize to students the centrality of qualitative inquiry to psychological research, I explicitly situate the field observation exercise in relation to Milgram, a figure whom most are familiar with from their introductory psychology course, and about whom they have learned more during early weeks of this course. Most students readily recall his famous studies of obedience, so I introduce them to his later studies of social behavior in cities that he undertook when he moved to the City University of New York. We read excerpts from *The Individual in a Social World* (Milgram, 1992) that touch on the discussion of social norms on subways, how the social environment of New York City differs from that of Boston or Paris, and other topics that are usually perceived as immediately relatable by students who live in the city but have not been considered as norms that govern their and others' behavior every day.

While this may seem like a unique context, and that the assignment is particularly suited to analyzing the urban environment, this is not necessarily true. I also gained inspiration for the assignment from exercises used in other social science courses in which students are asked to analyze public locations such as laundromats, auctions, bingo halls, and sports leagues (Keen, 1996) in more suburban locales, and also an

assignment in which students investigated the social meanings of farm buildings (Snyder, 1995). Most universities themselves, regardless of location, will likely also provide ample places to conduct this sort of study, such as libraries, cafeterias, lecture halls, and social areas. Those who want to adapt these assignments to other locations may wish to find examples of other extant research that has examined the kinds of places their students live in. Providing examples of research conducted in relevant locations can establish the presence of an existing foundation of knowledge and ignite the creation of research questions and jumping off points for new avenues of investigation.

Context Within Course

Within the course itself, the knowledge required to carry out the assignments was scaffolded by using a social psychology textbook (Stainton Rogers, 2011) that incorporates discussions of ontology and epistemology in the first two chapters, and dedicates an entire chapter to qualitative methods. By the midpoint of the semester, students have a working understanding of many qualitative methods, and have seen examples of qualitative inquiry woven throughout the content-based chapters on various areas of social psychology. They are then ready to begin carrying out their own observational study in the qualitative research module.

Textbook choice. In choosing the textbook I used for the course, I evaluated many options and chose Wendy Stainton Rogers's *Social Psychology* (2011) because of its coverage of both mainstream and critical perspectives in social psychology, as well as its introduction of both qualitative and quantitative research methods early on in the text. All of the mainstream social psychology texts I reviewed did not cover qualitative approaches, or covered them too thinly to be useful for my course without significant outside reading and supplementation. I aimed to find a text that would provide students with a foundation in traditional topics and approaches in social psychology, yet not introduce qualitative methods or critical perspectives as a footnote or afterthought. In recent years, a handful of textbooks have been published that are explicitly aimed at teaching critical social psychology, a growing field that includes critical perspectives on social psychology rooted in

feminist psychology, liberation psychology, action research, discursive psychology, and other critical perspectives. The critical social psychology textbooks I evaluated generally provided excellent coverage of qualitative methods and critical perspectives, but were oriented toward students who had already taken an introductory course on social psychology and thus did not cover traditional core topics that the department and I believed were crucial knowledge that should be transmitted in the introductory course. I also considered Jane Callaghan and Lisa Lazard's textbook *Social Psychology* (2011) because it too incorporates traditional and critical perspectives throughout the text. It could also be a successful choice for teaching a course on social psychology that includes a qualitative research module if the section covering methods was assigned nearer to the beginning of the course, as it is located in the penultimate chapter.

Instructors interested in teaching an experiential qualitative research module in a content based course such as social psychology should review current textbook options when designing their course, as qualitative methods and other critical perspectives are incorporated into more textbooks over time. They should also consider using a traditional textbook and assigning supplemental materials, or assigning textbook chapters out of sequential order if it will scaffold skills related to research methods, ethics, and analysis that are useful in carrying out the qualitative module. I found Stainton Rogers's (2011) textbook to be the best choice for my class, as it integrates traditional and critical perspectives on the field, introduces qualitative and quantitative methods in depth early on in the text, and is written in an engaging and charismatic manner that appealed to my students.

Data collection and analysis. In the textbook and in class, we cover multiple sources of data used in qualitative research: ethnography, participant observation, field research, interviews, focus groups, case studies, archives/media, and action research. We also cover multiple modes of analysis: thematic analysis, grounded theory, discourse analysis, phenomenological analysis, and narrative analysis. In regard to the assignments that comprise the qualitative research module, we discuss in greater depth how students will conduct a short-term type of field research. I situate their field research in relation to the ways an ethnographer

would engage in observations that, in a larger study, might be accompanied with interviews, participation, and analysis of media relating to the phenomena of interest. Due to ethical and temporal constraints, students do not undertake interviews or engage in active participation in the social settings they analyze for their projects. However, we explore some of these other modes of inquiry with in-class activities in which students use narrative analysis to trace the development of an activist identity based on interview samples I provide, and use discourse analysis to examine representations of gender in advertising drawn from contemporary media. For the observational assignment module, we focus on practices of generating field notes that describe events and impressions that are not reducible to numbers. As described in more depth later in this paper, we address the difficulty in attempting to describe without interpreting, which reinforces the difference between data collection and data analysis as well as points out their interdependence.

Research ethics and project design. Furthermore, when we cover quantitative and qualitative methods in their respective textbook chapters we also detail contemporary and historical ideals of research ethics. Before beginning the observational assignment, students should have a firm grounding of how ideas of informed consent, anonymity, and harms versus benefits are built into the earliest stages of developing a research project. Students should have a working knowledge of core ethical principles in psychological research and understand why the assignment asks them to only participate in observation of public spaces and not engage in deception, intervene in the dynamics observed, or record personally identifiable information before they begin the module. While it may seem that covering methods and ethics in addition to core conceptual topics might push the introduction of a research assignment to the last few weeks of a semester-long course, it is crucial that students begin working on the assignments as early as possible in order to give them time to revise, discuss their work in class, and complete the separate stages without being faced with a final assignment integrating all of their skills and knowledge relevant to the course in final weeks. This can be accomplished by covering methods and ethics earliest, and then using the assignments to provide examples of

topic areas (e.g., identity, attitudes, cognition, communication, groups, prejudice) as the course continues. I use Milgram's obedience experiments as an example of questions regarding research ethics and a bridge into his work on the social climates of cities.

Learning Goals

I designed the observational assignment module with four desired objectives in mind: (a) Experience conducting field research, (b) Engaging actively in the course, (c) Theoretical diversity, and (d) Igniting the "Social Psychological Imagination."

1. Experience Conducting Field Research

Learning the skills necessary to successfully carry out a program of qualitative research depends upon experience actually conducting qualitative inquiry (Mason, 2002), so it is useful to engage students in actual research as soon as possible. This is challenging when trying to incorporate experience conducting qualitative inquiry as a module in a content-based course, especially given severe time constraints during the length of a single semester. To prepare students to enter the field during the midpoint of the semester, their learning must be scaffolded earlier on with coverage of research ethics, a variety of orientations toward research methods, as well as the content of the course.

Nonparticipant observation allows students to begin engaging in research quickly by minimizing issues of gaining access, informed consent, and locating research subjects. This series of assignments introduces students to a number of skills that are important to many different kinds of qualitative inquiry, such as note-taking, the difference between description and interpretation, reflexivity, and the challenge of writing up research findings.

2. Active Engagement in the Course

This exercise gives students experience actually conducting research, which imparts an understanding of the research process that is not attainable through reading about research or discussing it in class. As Fontes and Piercy (2000) discuss in regard to a series of different experiential class activities for engaging students in qualitative re-

search in psychology courses, research has shown these experiential activities to be particularly successful because "techniques that actively involve students facilitate learning" (p. 175). Engaging students in field research cannot only impart a greater knowledge of the research process and the skills it requires, but will also likely improve student engagement with the course and deepen their potential to learn.

3. Exploring Theoretical Diversity

During the class discussions in which students describe their field observations and initial interpretations of those phenomena, I encourage students to draw on the many different theoretical perspectives we have engaged in the class as a way of making sense of their data. Students often foreground different ways of interpreting the same data by recalling the different theories we have encountered in the content of the course. Thus, a student noticing a pattern of differences in the ways people perceived to be men and women behaved in a particular setting might interpret this as support for the idea that those people learned their behavior as described by Social Learning Theory (Bandura, 1977) or through the active organization of knowledge about gender differences in cognitive schemas as explained by Gender Schema Theory (Bern, 1981) or that those differences reflect Gender Stereotypes (Brannon, 1996) or the enactment of patriarchal cultural biases and power dynamics (Weisstein, 1993). As we discuss students' observations and interpretations, I try to make room for as many perspectives as possible in the discussion. I try to hold space for both analytic and methodological differences, working toward the "pluralist orientation" (Gergen et al., 2015) that is one of the hallmarks of the qualitative movement within psychology. These assignments, and particularly their discussion during class time, can contribute to exploring theoretical diversity within the field of psychology.

4. Igniting the Social Psychological Imagination

Perhaps most importantly for a course on social psychology, the assignment asks students to think like a social psychologist, exploring the interplay between the person and society that defines the social psychological perspective on social reality. I periodically remind students of

Kurt Lewin's classic "formula" for social behavior, $b = f(PE)$ (Deutsch, 1968), which represents the idea that any particular behavior is the function of the person in their environment. What I aim to have students develop in the assignment and the course is a Social Psychological Imagination, which I define as a way of thinking that uses an interactive view of the person and the social environment when analyzing social behavior. I am drawing on C. Wright Mills's idea of the Sociological Imagination, which he described as "the vivid awareness of the relationship between personal experience and the wider society" (Mills, 1959, p. 3). While Mills's concept of the Sociological Imagination is about telescoping out of personal experience to imagine how social forces impact the individual, my conception of the Social Psychological Imagination is about keeping the personal and the social in constant relation and investigating their "dynamic interdependence" (Lewin, 1939). While the Sociological Imagination imagines how an individual experience is related to a social force, the Social Psychological Imagination imagines how the individual psychology of a person engages dynamically with those social forces.

Thus, in our assignments and discussions we might cover how thinking about where a person seats themselves on a subway car does not only relate to their own personal propensity to sit in a particular place, but also relates to the social norms governing where one sits, and the messages conveyed by body language or other means while one is in the car that demonstrate the acceptability of sitting in one place or another. The Social Psychological Imagination depends not just on telescoping out to view the self in a wider picture, but to also zoom back in; using a "critical bifocality" (Weis & Fine, 2012) to move between positionalities and levels of analysis. Mills urges us to know the meaning of the individual within their sociological and historical time period, but as social psychologists I believe it imperative that we also take into consideration the psychological dynamics and individual histories of persons whom we relate to these larger historical flows. Mills's exhortation that we develop lenses for viewing our individual struggles as connected to broad changes in sociological dynamics is assisted in the Social Psychological Imagination by the individual

differences that shape how we respond differently to those larger forces.

Assignments

To scaffold the production of a qualitative research report I divided the process into four assignments: Descriptive Field Notes, Critical Reflection, Theory of a Social Norm; and the final Integrative Research Report. This final research report integrates all of the previous assignments and draws on students' experience writing an experimental research report in the prerequisite experimental psychology course. I created these assignments also thinking of our university's commitment to integrating writing across the curriculum, an initiative recognizing the importance of writing in all disciplines and aiming to integrate assignments focused on developing writing skills across all departments (Aries, 2010). In particular, I utilized the concept of "low-stakes writing" (Elbow, 1997) to build student competencies and confidence as they progressed through the series of assignments that required them to write in initially free-formed ways that were not graded harshly for style or structure. Low-stakes writing assignments aim to help students be more comfortable sharing their thinking through writing. By not assigning a lot of weight to the grade from the assignment, and putting value on student thought and expression over structure or grammar, students are encouraged to exercise putting their thoughts into words.

The order of the four assignments is structured to encourage greater refinement of writing with each assignment. In the first, almost any way of describing the place a student is observing is satisfactory. They are invited to let their thoughts and associations flow while describing the scene they are observing. In the second assignment, those observations are given more structure as the student reflects on their notes and experience in the space, utilizing some guiding prompts to encourage engagement with particular concepts in the course. In the third, their thoughts should be expressed in a more organized form, as they propose a way of organizing patterns in their observations into a possible social norm. Finally, they utilize the structure of a research report to organize their thinking around the space they observed into a

formal genre of writing with specific disciplinary conventions and norms of its own.

Assignment 1: Descriptive Field Notes

In this initial assignment, students submit a proposal for a public place in which they will conduct nonparticipant observation, and then carry out that observation. It involves two stages in order to create a mechanism by which the instructor can evaluate if the proposed site is ethically appropriate. Examples of places that students in my course have successfully observed include subway platforms, public parks, a museum lobby, a section of stands at a sports game, a hallway in a shopping mall, the elevator bank of a public building, the area surrounding a trash receptacle on a busy street-corner, and the steps outside the New York Public Library. Once approved, students record their observations in descriptive field notes. They are reminded not to record using means other than their written/drawn/typed notes, and to attempt to resist interpretation.

A robust discussion of the difference between description and interpretation is useful before the assignment is carried out. As Fontes and Piercy (2000) describe in their article regarding experiential class activities that engage students in qualitative research, it can at first be difficult to pause the cognitive process of transforming what we see into what it might mean in order to record the descriptive characteristics of a situation or person that cause us to infer social meaning. Thus, they give the example of two contrasting reports of the same observation, one of which focuses on interpretation and the other on description: "1. A rich man got onto the elevator. He looked like he was rushing to a job interview. 2. The first person to step into the elevator was a bearded brown-haired man who wore a dark blue suit, white shirt, and shiny shoes . . . he examined his reflection on the metal elevator wall and . . . shifted from foot to foot . . ." (Fontes & Piercy, 2000, p. 175). Discussing examples such as this are not only useful to encourage students to focus on description in their field notes, but they also reinforce the distinction between data collection and data analysis, and the socially constructed and variably interpretable nature of social categories. Qualitative inquiry employs many methods of data collection, each of which can be

analyzed with an even wider number of analytic paradigms. Attempting to disentangle description and interpretation in observation highlights the many ways qualitative data can be analyzed, holding open the possibility for analyzing the same data from different viewpoints. Furthermore, it drives home a core concept in social psychology, that the social categories and meanings we often take for granted are historically situated, context dependent, and socially constructed (Gergen, 1985). The reasons why someone might be interpreted as rich, or to be a man, or to be in a rush, is rich material from which to discuss social psychological concepts like the performance of social roles (Goffman, 1959), stereotypes (Fiske, 2000), and the power that significations of race, gender and class continue to hold in contemporary society.

For the text of the assignment that I provided to my students, please see Appendix A.

Assignment 2: Critical Reflection

In this assignment, students reflect on their field notes from the first assignment and write a critical reflection on their observations. They are encouraged to think about reflexivity, particularly engaging with the ways in which their social identities may have impacted how they experienced the site they studied. I also encourage them to reflect on how they affectively responded to the space, whereas the previous assignment focused more on spatial and visual components. They give slightly more structure to thinking about their observation of the space by reflecting on their field notes and writing the reflection as a series of impressions that are grouped into themes or topics. While the field notes can be appropriately written as stream of consciousness outpourings and unframed sparks, the critical reflection asks students to write in paragraph form a more organized set of thoughts about their initial observations.

In particular, students are encouraged to apply ideas from the course relating to groups and social identity (Tajfel, 2010), attributions (Kelley, 1967), and attitudes (Eagly & Chaiken, 1993). As discussed in the previous section, the meanings we apply to social phenomena that we perceive are highly dependent on our own past experiences, personal identities, and ways of seeing the world. In this assignment, I invite

students to think about how their own interpretation of social meaning is impacted by the specific constellation of social and historical attributes they hold within themselves. Students have explored topics including how their gender may have impacted what kinds of behaviors they noticed within groups of people shopping, how social meanings about race might influence their perceptions of passengers on public transportation, and how their sexual orientation inflected a social situation with feelings of desire, fear, and pride. Students have also drawn on their experiences inhabiting different neighborhoods and spaces throughout the city and world to think about how they differentially perceived the specific characteristics of the place they observed for the assignment.

For the text of the assignment I provided my students, see Appendix B.

Assignment 3: Theory of a Social Norm

In the third assignment, students are asked to create a theory of a social norm that existed in the space they studied. I refer them to one of the core concepts of the course, the idea of socially shared norms, defined as "the shared standards of conduct expected of group members" (Stanton Rogers, 2011, p. 412), and ask them to imagine what might be a norm governing behavior in the place they observed. In doing so, they are looking for patterns in the unstructured data they collected, using a qualitative form of pattern analysis to inductively create a theory that could be further examined by a wide variety of methods. In this assignment, they are asked to write in an essay format that outlines a thesis statement that defines the norm they propose and provide several examples of empirical evidence that supports this conclusion. In doing so, they engage in a more formal way of writing about their thoughts that corresponds to the results section of a social psychological research report and utilizes scholarly conventions of evidence and defending a theoretical claim.

For example, one student argued that subway riders in New York sit as far as possible from each other when they enter a subway car, maximizing personal space and distributing themselves widely across whatever space is available. To support this argument, she relied both on her field notes that had recorded people turning away from strangers and walking the

length of a car to sit at the opposite end, as well as her personal reflections in Assignment 2 that described growing up in a country where not introducing yourself and sitting near a fellow passenger would be seen as rude. In her assignment articulating her proposed social norm of New York subway spacing, she marshaled observational evidence from her field notes as well as knowledge of comparative social norms to support her argument. In the resulting class discussion, a native New Yorker exclaimed that what she proposed was not a social norm, but rather “just common sense!” which provided ample fodder for discussing the embeddedness of social norms and the ways in which they comprise the “routine grounds of everyday activity . . . which are neither made explicit nor codified” (Milgram, 1992, p. 34).

See Appendix C for the text of the assignment I provided my students.

Assignment 4: Integrative Research Report

In this final assignment, students compile parts of each of the previous assignments into a format they recognize from their prerequisite experimental psychology course, a research report. This report represents the completion of both the course as well as the overarching qualitative research module. Students draw on concepts relevant to their particular observation from our textbook to create a brief literature review, then describe the observational method, their empirical findings, their interpretation and analysis of that data into a proposed theory of a norm, and lastly a discussion of possible implications of their analysis for understanding social behavior. They follow the disciplinary convention of a four-part report that includes an introduction/literature review, methods section, findings section, and discussion. We discuss how the report differs in regard to the quantitative research report they have previously written by not having a hypothesis and requiring more writing about their interpretation and process of analysis of the raw observational data.

While other disciplines, such as sociology (e.g., Becker, 2008; Stoddart, 1991) have more established conventions for reporting qualitative research, psychology has offered relatively less guidance regarding the reporting of qualitative research findings. This can present challenges when instructors aim to develop the

skills of students in this area. Recent publications such as Levitt, Motulsky, Wertz, Morrow, and Ponterotto (2017) provide useful recommendations such as “fidelity to the subject matter . . .” and “utility in achieving research goals” (Levitt et al., 2017, p.2) in assessing the integrity of qualitative inquiry in psychology, and it is useful to discuss these concepts in relation to the observational report. Students should thus be encouraged to hew as closely as possible to the descriptive findings of their observations, and to link their analyses to the conceptual questions about public social behaviors they are investigating. Forthcoming developments in creating guidelines for reporting qualitative inquiry in psychology will be useful to complement existing conventions for writing up qualitative inquiry. It is also useful to provide students with successful examples of other qualitative research reports, which can be found in previous student examples (with appropriate permissions) from an instructor’s (or department colleague’s) course history as well as published exemplary reports in journals such as *Qualitative Psychology*, *Qualitative Research in Psychology*, or others from the subdiscipline related to the particular course.

For the text of the assignment I provided to my students, see Appendix D.

Results and Outcomes

Although I did not collect data specifically about the qualitative module in the semesters I taught it, some references to the exercises did show up in comments included in overall course evaluations, and my observations of classroom behavior and performance on assignments provide additional evidence of student learning. The students who mentioned the exercises in their overall course evaluations wrote that engaging in the module “made elusive and complicated ideas more tangible,” “helped me to understand the whole concept of social psychology in a way [other courses] did not,” “made complicated material extremely accessible,” and added to their enjoyment of the class.

In general, more students participated in class discussion on days that we workshoped the field notes, critical reflection, and theory of social norms assignments than during other class sessions. In these discussions, students seemed more engaged than usual. They contributed dif-

ferent interpretations of observational data, offered suggestions for making sense of contradictory or conflicted evidence, and shared concerns or difficult questions they encountered while completing the exercises. They raised questions, often grounded in their recent experience in the field, that became jumping off points for class discussions that touched on core debates in both the field of social psychology and the practice of qualitative inquiry. Several discussions covered questions of how social identity could be known or interpreted by an observer, and the implications for the nature of social categories as well as different methodological approaches that researchers could use to make sense of social groups and individual identity. Another discussion dug deep into ethical questions about expectations of privacy, the nature of public space, and the social norms that govern interactions in the city. Principles such as "informed consent" and "causing no harm" were made more real to students as we discussed the nature of our research design, and potential future studies that could follow-up on their interests.

As students worked through the series of assignments that comprise the module, the clarity of their writing, the complexity of their engagement with course concepts, and their familiarity with qualitative inquiry generally improved. While performance on each assignment varied throughout the class, taking a chronological view to an individual's growth over the assignments generally showed a gradual increase in grasp of course concepts and ability to communicate their ideas. Even in students who entered the course exhibiting fewer skills in written communication, an increasing progression could be seen across the assignments. In addition, speaking with students during the process and facilitating class discussions gave evidence that the module made students more comfortable with the idea of using qualitative inquiry in the future, and increased their familiarity and understanding of a qualitative approach. Some students who were interested in attending graduate school mentioned they were now interested in joining a program that encouraged the use of qualitative inquiry. Many expressed surprise that qualitative inquiry was not taught more widely, and that it was not present in other coursework. Now, however, they were familiar with the core concepts and ideas, and would be aware if future courses only focused

on quantitative ways of knowing. In addition, many described seeing the city anew after engaging in the exercises, having developed a Social Psychological Imagination which unsettled the assumptions embedded in how they viewed everyday life.

Discussion

I have argued that actively carrying out qualitative inquiry and writing about the research process is important for developing core competencies in social psychology. Qualitative inquiry affords the opportunity for students to indulge their Social Psychological Imagination and engage in reflexive, critical, historically informed and person-sensitive practices. Furthermore, the practice of communicating the process of qualitative inquiry develops academic and professional writing tools that are useful to students in multiple domains. Through this series of assignments, students develop practical research skills, and learn how to observe, analyze, and write like a social psychologist. While these assignments focus on undertaking and reporting on qualitative inquiry, many of the skills developed, such as the Social Psychological Imagination, are crucial to a wide range of methodological approaches within and beyond social psychology.

The act of utilizing one's Social Psychological Imagination is exercised throughout the process of observing social behavior, analyzing it, and reporting results in these assignments. When students indulge their Social Psychological Imagination they engage in a process of critically examining the historical, social, and psychological determinants of a social phenomenon. The kind of reflexive, critical, historically informed and person-sensitive thinking practiced in this imaginative process is crucial to successful analysis in many disciplines, but is particularly important to qualitative inquiry in social psychology. The Social Psychological Imagination is necessary for doing work that dives deeply into the social, personal, and historical context of the multitudes of numbers, data points, and digital traces that accumulate around human lives in our historical moment.

Teaching qualitative inquiry in social psychology can cultivate a Social Psychological Imagination which provides *deep* insights to *big* data, and explicates the contexts surrounding

the masses of text and numbers accumulating in databases that record human activity today. As social scientific research, as well as other practices in government and business, come to rely more on large masses of quantitative and qualitative data, analytic perspectives that attend to the dynamic interplay of the personal and the social will become more crucial to providing deep understanding.

While the challenges such as time and coverage constraints within a semester, adaptation to different contexts, and the lack of established disciplinary guidelines for reporting qualitative inquiry may create hurdles for the successful incorporation of a module of assignments such as these into a content based course like social psychology, the potential successful outcomes show why instructors should consider undertaking the challenge. Several of my students have remarked that this series of assignments was the most enjoyable part of the course. The autonomy to choose a location of personal interest and analyze it from the student's own perspective has also seemed to reinvigorate engagement by students whose participation may have otherwise waned as the semester progressed. Furthermore, students often find that thinking about the places they inhabit in this manner provides them with a fresh perspective that sparks new insights into the nature of their social world and their relationship to it. The skills developed when exercising a Social Psychological Imagination and then writing about the research process in a formal research report are useful to students across disciplines. These exercises help prepare students to critically analyze a variety of data and communicate about their ideas in qualitative social psychology as well as other contexts.

References

- Aries, N. (2010). *Writing across the curriculum at CUNY: A ten-year review*. New York, NY: Office of Undergraduate Education, CUNY.
- Bandura, A. (1977). *Social learning theory* (Vol. viii). Oxford, England: Prentice Hall.
- Becker, H. S. (2008). *Writing for Social Scientists: How to Start and Finish Your Thesis, Book, or Article: 2nd ed.* Chicago, IL: University of Chicago Press.
- Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review*, 88, 354–364. <http://dx.doi.org/10.1037/0033-295X.88.4.354>
- Brannon, L. (1996). *Gender: Psychological Perspectives*. Boston, MA: Allyn & Bacon.
- Callaghan, J., & Lazard, L. (2011). *Social Psychology*. Thousand Oaks, CO: Sage.
- Deutsch, M. (1968). Field theory in social psychology. In *The Handbook of Social Psychology* (pp. 412–487). Reading, MA: Addison Wesley Pub. Co.
- Eagly, A. H., & Chaiken, S. (1993). *The Psychology of Attitudes*. New York, NY: Harcourt Brace Jovanovich College Publishers.
- Eisenhart, M., & Jurow, A. (2011). Teaching Qualitative Research. In N. K. Denzin & Y. Lincoln (Eds.), *The SAGE Handbook of Qualitative Research* (4th ed., pp. 699–714). Thousand Oaks: SAGE Publications.
- Elbow, P. (1997). High Stakes and Low Stakes in Assigning and Responding to Writing. *New Directions for Teaching and Learning*, 1997(69), 5–13. <http://dx.doi.org/10.1002/tl.6901>
- Fiske, S. T. (2000). Stereotyping, prejudice, and discrimination at the seam between the centuries: Evolution, culture, mind, and brain. *European Journal of Social Psychology*, 30, 299–322. [http://dx.doi.org/10.1002/\(SICI\)1099-0992\(200005/06\)30:3<299::AID-EJSP2>3.0.CO;2-F](http://dx.doi.org/10.1002/(SICI)1099-0992(200005/06)30:3<299::AID-EJSP2>3.0.CO;2-F)
- Fontes, L. A., & Piercy, F. P. (2000). Engaging students in qualitative research through experiential class activities. *Teaching of Psychology*, 27, 174–179. http://dx.doi.org/10.1207/S15328023TOP2703_03
- Gergen, K. J. (1985). The social constructionist movement in modern psychology. *American Psychologist*, 40, 266–275. <http://dx.doi.org/10.1037/0003-066X.40.3.266>
- Gergen, K. J., Josselson, R., & Freeman, M. (2015). The promises of qualitative inquiry. *American Psychologist*, 70, 1–9. <http://dx.doi.org/10.1037/a0038597>
- Gibson, S., & Sullivan, C. (2012). Teaching qualitative research methods in psychology. *Psychology Learning & Teaching*, 11, 1–5. <http://dx.doi.org/10.2304/plat.2012.11.1.1>
- Goffman, E. (1959). *The Presentation of Self in Everyday Life*. New York, NY: Doubleday.
- Hsiung, P.-C. (2016). Teaching qualitative research as transgressive practices. *Qualitative Inquiry*, 22, 59–71. <http://dx.doi.org/10.1177/1077800415617204>
- Keen, M. F. (1996). Teaching qualitative methods: A face-to-face encounter. *Teaching Sociology*, 24, 166–176. <http://dx.doi.org/10.2307/1318807>
- Kelley, H. H. (1967). Attribution theory in social psychology. *Nebraska Symposium on Motivation*, 15, 192–238.

- Levitt, H. M., Motulsky, S. L., Wertz, F. J., Morrow, S. L., & Ponterotto, J. G. (2017). Recommendations for designing and reviewing qualitative research in psychology: Promoting methodological integrity. *Qualitative Psychology*, 4, 2–22. <http://dx.doi.org/10.1037/qup0000082>
- Lewin, K. (1939). Field theory and experiment in social psychology: Concepts and methods. *American Journal of Sociology*, 44, 868–896. <http://dx.doi.org/10.1086/218177>
- Mason, O. J. (2002). Teaching Qualitative Research Methods: Some Innovations and Reflections on Practice. *Psychology Teaching Review*, 10, 68–75.
- Milgram, S. (1992). *The Individual in a Social World: Essays and Experiments*. New York, NY: McGraw-Hill.
- Mills, C. W. (1959). *The Sociological Imagination*. Oxford, England: New York: Oxford University Press.
- Preissle, J., & deMarrais, K. (2011). Teaching Qualitative Research Responsively. In N. K. Denzin & M. Giardina (Eds.), *Qualitative Inquiry and Global Crises* (pp. 31–39). Walnut Creek, CA: Left Coast Press.
- Preissle, J., & Roulston, K. (2009). Trends in Teaching Qualitative Research: A 30-year Perspective. In M. Garner, C. Wagner, & B. Kawulich (Eds.), *Teaching Research Methods in the Social Sciences* (pp. 13–22). Farmham, England: Ashgate Publishing, Ltd.
- Snyder, E. E. (1995). Teaching Qualitative Research: The Meanings Associated with Farm Buildings. *Teaching Sociology*, 23, 39–43. <http://dx.doi.org/10.2307/1319372>
- Stainton Rogers, W. (2011). *Social Psychology*. London, England: McGraw-Hill Education (UK).
- Stoddart, K. (1991). Writing Sociologically: A Note on Teaching the Construction of a Qualitative Report. *Teaching Sociology*, 19, 243–248. <http://dx.doi.org/10.2307/1317857>
- Strayhorn, J. (2009). The (in-)effectiveness of various approaches to teaching research methods. In M. Garner, C. Wagner, & B. Kawulich (Eds.), *Teaching Research Methods in the Social Sciences* (pp. 119–130). Farmham, England: Ashgate Publishing, Ltd.
- Tajfel, H. (2010). *Social Identity and Intergroup Relations*. Cambridge, England: Cambridge University Press.
- Weis, L., & Fine, M. (2012). Critical Bifocality and Circuits of Privilege: Expanding Critical Ethnographic Theory and Design. *Harvard Educational Review*, 82, 173–201. <http://dx.doi.org/10.17763/haer.82.2.v1jx34n441532242>
- Weisstein, N. (1993). Psychology Constructs the Female; or the Fantasy Life of the Male Psychologist (with Some Attention to the Fantasies of his Friends, the Male Biologist and the Male Anthropologist). *Feminism & Psychology*, 3, 194–210. <http://dx.doi.org/10.1177/0959353593032005>

Appendix A

Assignment 1: Descriptive Field Notes

Part 1: The location of your proposed site for field observations.

- You must submit your proposed location and have it approved by me before you undertake any observations.
- For this assignment, you will go to any public place where you can unobtrusively observe the behavior of others. You will be engaging in (non) participant observation. You must spend two hours, at separate times, observing what occurs and recording your observations.
- Remember the ethical considerations we discussed—what spaces will allow you to observe the social environment without violating the privacy of others?
- Possible locations that students have utilized in the past include museum lobbies, subway platforms, university cafeterias, parks, public squares, and plazas.

Part 2: Your field notes, and a one-page summary of your notes.

- You can either hand write or type your field notes. If you handwrite them (which may be useful, so you can easily draw

diagrams or sketch out people's movements) make a photocopy to turn in so you can keep your originals.

- This assignment asks you to record observations through writing and sketching—you should not video, audiotape, or otherwise record what you are observing.
- It will be useful in completing this assignment to read the textbook section on about induction and descriptive research, as well as the sections on data collection, ethnography, and descriptive research.
- The following questions may help in guiding your observations:
 - What does the space look like?
 - What kinds of people are here?
 - What are they doing?
- After spending your hours observing behavior in the field, look at your notes and reflect on what you saw. Are there patterns in how people behaved? Can you make any generalizations about how people usually behaved in that space? Based on your observations, create a 1-page summary of your notes.

Appendix B

Assignment 2: Critical Reflection

For this assignment, you will complete a 2-page critical reflection on your field notes, and your interpretations of them. You do not have to answer all of the guiding questions below, but they may be useful in developing a rich reflection on how you experienced the social environment and then began to interpret your observations. On the day we submit our assignments, we will share some of our reflections with the class and discuss.

- In discussing methodological issues present in analyzing the "atmosphere" of cities,

Milgram points out that "the popular myths and expectations each visitor brings to the city will also affect the way in which he perceives it" (p. 22). How might your expectations about the space you observed affected the way you perceived it?

- How might your social position have impacted how you experienced the space you observed and the behaviors that occurred there? Were you familiar with the place?

(Appendices continue)

- Was it one that people who seem like you frequented? How were you similar or different to the people present there? What was the class composition of the space? What about race, gender, sexual orientation, religion, ability, or citizenship status? Were different kinds of people engaged in different kinds of activities there?
- Recalling our discussion of the difference between description and interpretation, how did you "know" the class status, gender, etc. of people you observed?
- What social cues denoted these different experiences?
- How did the space make you feel? Were you uncomfortable or anxious? Did it seem welcoming and friendly? Why might you have had the emotional reaction you did? What did you bring to the setting? How might that have influenced your interpretation of what was going on?
- What makes this place particular? In which ways might your observations not generalize to other places?

Appendix C

Assignment 3: Theory of Social Norms

Social norms are "the shared standards of conduct expected of group members" (Stainton Rogers, p. 412). They are usually not noticed until they are broken, and seem "common sense" because they are so ingrained into our lives. Recall Milgram's discussion of the social norms that govern behavior in cities—the "routine grounds of everyday activity . . . which are neither made explicit nor codified" (p. 34). In opposition to the explicit rules which govern the act of a crossing a street, Milgram describes the actual social norms particular to New York, "in which pedestrians stand at busy intersections, impatiently awaiting a change in traffic light,

making tentative excursions into the intersection, and frequently surging into the street even before the green light appears" (p. 24).

For this assignment, you will complete a three-page text proposing your theory of the social norms in the space you observed. You should write in an essay format that outlines a thesis statement that defines the norm you propose, and provide several examples of empirical evidence that supports this conclusion. Make sure to provide empirical evidence for your claims—describe how what you observed helped you build your theory and what specific observations support your conclusions.

(Appendices continues)

Appendix D

Assignment 4: Integrative Research Report

In the final assignment, you will compile pieces from the three previous assignments into relevant sections to construct a research report that relays the story of how you conducted your inquiry and the results you came to. In doing so, you should refer to the quantitative research report you prepared in your Experimental Psychology course. The main sections will remain the same, as the disciplinary conventions regarding reporting qualitative and quantitative research both require a literature review, description of methods, analysis of findings, and a concluding discussion. There are, of course, some differences between the two forms: you do not have a hypothesis to prove or disprove, and more attention will be paid to how you interpreted the meaning of your data by drawing on social psychological concepts instead of interpreting quantitative outcomes.

You should construct the report using official APA style guidelines, with four main sections:

An Introduction that specifies the story you are going to tell and the relevant back-

ground information drawn from our course readings;

A Method section that describes the observational process and your experience taking field notes;

A Results section that describes how you transformed your raw observational data into social psychologically meaningful phenomena and articulates your definition of the shared social norm present in the space;

And lastly a Discussion section that concludes the report by recounting a retrospective summary of what you have told the reader, and discusses possible future directions for research in this area, limitations of your study, and implications of your findings for the social psychological understanding of social behavior.

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Does Functionalism Offer an Adequate Account of Cognitive Psychology?

Stedman, James M; Spalding, Thomas L; Gagné, Christina L.

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Abstract

The majority of cognitive psychologists, when pressed, would hold for scientific realism as their philosophy of science and ontological position. However, it is functionalism which undergirds the ontology of scientific realism. Moreover, functionalists claim that cognitive psychology, including sensation, perception, memory, and the higher cognitive functions, can be fully accounted for by functionalism. The question is then: Is functionalism up to the task? Recently, Spalding and Gagné (2013) made the case that concept formation, a key element in all aspects of higher order cognition, can be better accounted for by an Aristotelian-Thomistic (A-T) meta-theory, and Stedman (2013) pointed out parallels between Aristotle's model and current cognitive psychology. This essay argues that the A-T viewpoint is a better model for all elements of cognitive psychology.

Full Text

Headnote

The majority of cognitive psychologists, when pressed, would hold for scientific realism as their philosophy of science and ontological position. However, it is functionalism which undergirds the ontology of scientific realism. Moreover, functionalists claim that cognitive psychology, including sensation, perception, memory, and the higher cognitive functions, can be fully accounted for by functionalism. The question is then: Is functionalism up to the task? Recently, Spalding and Gagné (2013) made the case that concept formation, a key element in all aspects of higher order cognition, can be better accounted for by an Aristotelian-Thomistic (A-T) meta-theory, and Stedman (2013) pointed out parallels between Aristotle's model and current cognitive psychology. This essay argues that the A-T viewpoint is a better model for all elements of cognitive psychology.

Keywords: Aristotle, Aquinas, cognitive psychology, functionalism, dualism

Confidence in logical positivism and operationism waned in both philosophy and psychology during the 1960s. At about the same time, psychology experienced the cognitive revolution, which reinstated mental states and processes as central to theory building and explanation. As Levin (2013) points out in her review, cognitive psychologists turned to the functionalist theory of mind (Putnam, 1975) as a philosophical underpinning for all aspects of cognition. This interchange produced psycho-functionalism, as described by Levin:

A second strain of functionalism, psycho-functionalism, derives primarily from reflection upon the goals and methodology of "cognitive" psychological theories. In contrast to the behaviorists' insistence that the laws of psychology appeal only to behavioral dispositions, cognitive psychologists argue that the best empirical theories of behavior take it [behavior] to be the result of a complex of mental states and processes, introduced and individuated in terms of the roles they play in producing the behavior to be explained.... All versions of

functionalism, however, can be regarded as characterizing mental states in terms of their roles in some psychological theory or other, (p.7)

Hence, as Levin sees it, functionalism in all its aspects is intertwined with cognitive psychology at both the philosophical and psychological levels.

The purpose of this essay is as follows: (a) to describe the philosophical roots of functionalism; (b) to present an overview of functionalism as it currently operates in cognitive psychology; (c) to review objections to functionalism; and (d) to examine an alternative account, the Aristotelian-Thomistic (A-T) model, recently proposed in cognitive psychology itself (Spalding and Gagné, 2013; Spalding, Stedman, Hancock, and Gagné, 2014) and within the philosophy of mind (Feser, 2006, 2014; Madden, 2013).

Analytic Philosophy and Functionalism

Analytic philosophy, spawned in Britain as a reaction to idealism, dominates English-speaking philosophy to the present time. As Preston (2007) demonstrates in his review of the history of analytic philosophy, the movement was initiated by Russell and Moore, refined as logical atomism by Russell and Wittgenstein (see Wittgenstein, 1922), elaborated by the Vienna Circle as logical positivism (Ayers, 1952), seriously questioned by Quine (1951), and later reinvented by Wittgenstein (1953). Preston characterizes contemporary analytic philosophy, the home of the philosophy of mind, as eclectic and interested in limited metaphysical problems, as still grounded in language analysis and semantics, and as interested in the kinds of thought experiments often used by philosophers of mind. Although current philosophers of mind are split along property dualism (Chalmers, 1996, 2010; Nagel, 1974) and materialist lines (Churchland, 1986; Lewis, 1966), all agree that cognitive processes, from sensation and memory through all of the higher order phenomena of thinking, reasoning, categorization, planning, etc., can be explained by the doctrine of functionalism. In fact, Chalmers (1996), though a property dualist, asserted this about functionalist cognitive models:

Cognitive models are well suited to explaining psychological aspects of consciousness. There is no vast metaphysical problem in the idea that a physical system should be able to introspect its internal states, or that it should be able to deal rationally with information from its environment, or that it should be able to focus its attention first in one place and then in the next. It is clear enough that an appropriate functional account should be able to explain these abilities, even if discovering the correct account takes decades or centuries, (p. 31)

In her review, Levin (2013) points out that functionalism has antecedents (Ryle, 1949; Turing, 1950; Wittgenstein, 1953) but emerged as a definitive philosophical position in the last 35 years of the twentieth century. Feser (2006, ch. 3) provides a brief and readable explanation of how functionalism developed in response to problems with other strictly materialist philosophies, such as philosophical behaviorism and identity theory. Several major strains of functionalism developed: machine functionalism, psycho-functionalism, and analytic functionalism. So, far from being monolithic, functionalism itself is divided, with arguments in favor of and attacking the various strains.

Machine functionalism (Putnam, 1975) was the first of the three developed and appeared to answer a number of problems with behaviorism, for example, critiques pointing out that behaviorists seemed to undervalue internal mental states, such as beliefs and desires, when those constructs contributed implicitly to their theories. Machine functionalism postulated that any "mind" can be regarded as a finite digital computer, one that receives inputs (1), while in a certain state (SI), goes into other states (Sx), and produces output (0). The person with a mind is viewed as a probabilistic automaton, so for each state and sets of inputs, the machine (mind) will enter a subsequent state and produce output according to certain probabilities. These internal mental states were called representations, and the nature of these representations was and is disputed. Over time, early machine functionalism's ties to a "machine table" or program came to be seen as inadequate. However, the basic idea involving inputs, lawful interactions of internal states, and final outputs has been retained in later functionalist approaches.

Psycho-functionalism is closely tied to the emergence of cognitive psychology in the late 1960s and maintains that mental states and processes are entities (constructs) that are defined by the role they play in cognitive psychological theories. They may be tied to brain structures and processes but this is not a requirement. However, there does seem to be a trend toward attempting to ground these constructs in neuroscience (see Stedman,

Hancock and Sweetman, 2009). These constructs can include mental states and processes easily identified with common sense (folk psychology) or can go beyond common sense to incorporate more refined constructs identified by laboratory findings, thus replacing folk psychology constructs.

Analytic functionalism, developed by Lewis (1966) and Armstrong (1968), asserts that all mental states, such as pain, hunger, belief, desire, consciousness and so on, are constituted by their functional role, that is, to quote Chalmers (1996): "On this view, a mental state is defined wholly by its causal role: that is in terms of the stimulation that tends to produce it, the kind of behavior it tends to produce, and the way it interacts with other mental states" (p. 14).

Advocates of functionalism hold for the following: (a) functionalism offers a comprehensive ontological account either of all mental states or at least the psychological portion of mental states but not the phenomenal (Chalmers, 1996, 2010); (b) some mental states, according to Chalmers and others, are primarily psychological and are fully accounted for by functionalist ontology, including learning, memory, categorization, perception, and higher-order cognitive processes; (c) some mental states, such as belief, desire, and hope, are referred to as intentional mental states in that they refer to something about the world. Many functionalists regard these states as primarily psychological and, hence, fully accounted for by functionalism. Chalmers (1996) views mental states as mixed. However, whatever in these states is psychological, he asserts can be accounted for by a functionalist ontology.

As mentioned above, the models of cognitive psychology rest on functionalism as a philosophical foundation. Psycho-functionalism may carry a slightly different connotation, but it is really a variety of analytic functionalism. Hence, psychofunctionalism is subject to all the ontological strengths and weaknesses of analytic functionalism.

Functionalism in Current Cognitive Psychology

Contemporary cognitive psychology theories are grounded in psychofunctionalism, expressed as models and/or mechanisms: for example, perceptual binding (John, 2002), working memory (Baddeley and Hitch, 1974), category formation (Smith, Patalano, and Jonides, 1998), and so forth. Some theories incorporate brain structures and processes and others do not. All postulate multiple, interacting mental states and processes that play definite roles in the theory. All are grounded in stimuli at the beginning and behavioral outcome at the end. Various psychofunctional cognitive theories compete, and their truth claims are established by empirical observations.

For example, consider the exemplar model of concept formation. The exemplar model claims that category (concept) formation occurs when people compare new information to exemplars stored in memory. This version of concept formation states that exemplars are learned through repeated presentations and naming of category members and the repeated naming allows the pairing of a common name with a set of exemplars, which in turn allows generalization over those exemplars when the name (or other similar cue) is presented. The exemplar model requires a number of psychological constructs: sensation, perception, learning (of exemplars), many constructs in the area of memory and recall, some mechanism accounting for comparing new stimuli to exemplars, an account of language to perform the response. Because cognitive psychology is increasingly linked to neuroscience, interactions with brain structures must also be factored in. Similar examples could be offered for all content areas of current cognitive psychology, and psycho-functionalism is expected to serve as the ontological and epistemological underpinning for all of cognitive psychology.

Problems with Psycho-Functionalism and Functionalism in General

As mentioned earlier, both property dualist and materialist philosophers of mind agree that functionalism is sufficient to account for all the "psychological" components of cognitive psychology. However, functionalism, as a philosophical position, has been challenged by philosophers of mind almost from its inception. Two of these objections will be presented in some depth.

A general objection to functionalism, well known in the philosophy of mind, is the "damn/darn problem," brought forth by Block and Fodor (1972). Their objection lies within the broader theory of mental holism, which claims that the meaning of a belief (or a sentence expressing that belief) is determined by its place in a network of beliefs (or sentences) making up a whole theory or even a group of theories. Block and Fodor point out that a functional

account of mental states must take into consideration any difference in stimuli or responses. Joe smashes his finger in the door and says, "Darn"; Clyde smashes his finger in the door and says, "Damn." We have two equivalent stimuli but different responses. However, functionalists claim that outputs are related to all or many of the agent's internal mental states, so two people who have pain but produce different outputs must share little, if any, common mental states. But this conclusion appears absurd. Hence, Block and Fodor believe that functionalism leads to an extreme and undefendable version of mental holism.

This critique is also important in that one of the presumed advantages of functionalism was that it would allow one to avoid the type/token problems that arose in identity theories. In particular, a problem with identity theories is that, if the mind/thought is taken to be identical to the brain/brain state, then there must be lawful relations between given brain states and thoughts, but there seem clearly to be logical relations among thoughts, but only physically (efficiently) causal relations among brain states. This difference calls into question rather strongly the whole notion of identity between brain states and types of thought. Functionalism works around this problem by defining states with respect to their functional (including logical) relations to other states. However, if, as Block and Fodor (1972) claim, differences in response (including between individual tokens of a particular type of thought) dictate large differences in mental states, the mental holism implied by this removes this purported advantage of functionalism. In short, functionalism does not avoid a similar kind of problem as that identified in identity theories.

A second, and perhaps more damaging, critique asserts that functionalism, as an ontological claim, is trivial, that is, that functionalism's internal structures (constructs), anchored by stimulus inputs and behavioral outputs, are not unique but can be present in many complex and less complex systems. This criticism was stated earlier by Putnam (1988), Searle (1990) and others and has been reworked recently by Godfrey-Smith (2008). These arguments all point out that the functionalist realization of a complex mental system is present when the set of mental states maps or corresponds to physical states of the system. These systems are known as combinational state automata (CSA) and can occur in a large number of formats, including a properly manipulated bucket of water! Godfrey-Smith (2008) asserts the following:

If a normal human's functional organization over some interval is represented by a CSA, then our designer could build a transducer device that perturbs the bucket of water in specific ways in response to every possible sequence of inputs that a human might receive, and another transducer device that maps the water's responses to appropriate behaviors. So a bucket of sea water could act as control system for a humanoid robot, provided that our designer was extraordinarily knowledgeable about the object's contingency tree and skilled in the building of input and (especially) output transducer devices, (p. 23)

The triviality argument, as mentioned, is very complex and only this brief sketch will be presented here. It is important to recognize, however, that the import of the critique goes beyond the fact that it seems to lead to strange outcomes in which a bucket of water might have a mind. In particular, the issue is that if these kinds of arguments go through, then there is no guarantee, in functionalist terms, that any mental or intentional state actually bears the meanings that we ordinarily assign to them (see, e.g., Madden, 2013, ch. 5). In sum, there is a real possibility that a consistently functionalist account of thought collapses upon close inspection (see also Feser, 2006). For example, functionalist treatments of intentionality tend to lead to a denial of, or eliminative reduction of, intentionality. But the functionalist treatment itself is presented and argued for in intentional terms. Similar problems arise in functionalist treatments of logical reason and other topics.

Other general objections to functionalism include how to characterize the inputs and outputs of a functional system (Block, 1990), problems in accounting for what appear to be the causal effects of our mental states (Kim, 1989), and introspective belief (Armstrong, 1968). All of these objections and more have been put forward, many from functionalism's early days. In summary, functionalism as a philosophical ontology has met with serious objections. It should be noted that these objections apply to all functionalist positions, including psychofunctionalism and analytic functionalism.

Within psychology, functionalism has failed in the task of theory building and theory discrimination. A recent example of this failure was presented by Spalding and Gagné (2013). They pointed out that none of the three predominant models of concept formation (exemplar, prototype, and theory-theory) has emerged as superior, and

all have approximately the same amount of empirical support (this problem occurs in many areas of psychology). In fact, they note that recent studies of psychological essentialism, generics, K-properties, and perceptual symbol systems/embodied concepts challenge the validity of all three probabilistic models mentioned above.

It should be noted that all three theories of concept formation meet the criteria demanded by functionalism. All commence with stimulus conditions, postulate interacting internal cognitive constructs, and produce behavioral outcomes. However, years of research have not led any of the three theories to dominance. In fact, Spalding and Gagné (2013) made this comment about the current state of affairs:

Given the diversity of representations and processing systems suggested by recent research results, it is unclear whether there can be a theory of concepts at all (e.g., Machery, 2009). How can concepts be both essentialist and yet not involve necessary and sufficient features?... How can they be both sensory-based and abstract/ universal? (p. 71)

Hence, we see that this level of theory building and theory discrimination has failed. Of course, it is possible that there will be a new, functionalist-based, theory that will account for human concepts, though Machery (2009) makes a strong case that this is unlikely. However, this conspicuous failure can also be taken to suggest that a more fundamental re-thinking of concepts is in order, and, since failure of theory discrimination is common in most areas of cognitive psychology, perhaps functionalism is simply not up to the task of theory building.

The A-T Alternative

As mentioned in our statement of purpose, both philosophers of mind and psychologists have recently proposed Aristotelian-Thomistic alternatives to functionalism. We will consider philosophers of mind first. Madden (2013) has written a thorough review of the major approaches to the philosophy of mind, including functionalism. In fact, he is rather enthusiastic about functionalism, as noted in the following quote:

Functionalism is a powerful theory. It seems to provide an account of psychological states without even a hint of anything left to be explained by supposed nonphysical states, while at the same time allowing for mental causation without raising problems of mind-body interaction. ... It is, whatever its vices, a very good idea. (p. 131)

Although Madden concedes that functionalism has many merits, he argues that its shortcomings outweigh its merits as a philosophy of mind. His arguments against functionalism are those covered in the previous section, plus issues regarding intentionality, beliefs, and thoughts in general.

As an alternative, Madden proposes Aristotelian-Thomistic hylomorphic theory as applied to human (and animal) sensory and cognitive processes, as the best solution to the observed phenomena of mind. His argument for this position is indeed complex and is marshaled against materialist positions, property dualism, and substance dualism; all fail as explanatory systems for mind. For the purposes of this essay, we will not present any further detail regarding these purely philosophical arguments raging among the philosophers of mind but will leave it to the reader to investigate the arguments in the works cited below.¹

Returning to our primary question regarding functionalism's adequacy as an account of cognitive psychology, we have seen that functionalism has deficits as an ontological system. These deficits also apply to functionalism as an underpinning for cognitive psychology. Recognizing problems with functionalism and particularly incoherence in cognitive psychology's account of concept formation led Spalding and Gagné (2013) to propose an Aristotelian-Thomistic alternative model to account for concept formation. At about the same time, Stedman (2013) published a paper demonstrating parallels between modern cognitive psychology and neuroscience and Aristotle's hylomorphic theory. He showed that these parallels exist at all areas of interest to cognitive psychology and neuroscience, including sensation, perception, memory, and higher-order cognitive functions, such as concept formation, theory of mind, reasoning, and so forth.

The details of the A-T model have been elaborated in three recent publications (Spalding and Gagné, 2013; Spalding, Stedman, Hancock, and Gagné, 2014; Stedman, 2013) and so will be outlined here only briefly. The A-T framework commences with sensory information regarding objects in the environment. This information is

organized by the "internal senses," including the common sense (*sensus communis*), which receives and arranges all sense data, the phantasm, which retains the sense data, the imagination, which combines and reassembles images from the phantasm, and the memory, which retains sensory level images for later use. The intellect, by the process of abstraction, then acquires the universal form of the object. The A-T model calls for a second movement. For a concept to be finalized, the universal, held in mind, must be predicated. In this process, there is movement from the universal back down the internal senses, the phantasm in particular. This act, known as the existential judgment, affirms the existence of the particular, as in "This man (universal) is Joe (particular man)."

To date, the most detailed presentation of the A-T model as an alternative to functionalism is that of Spalding and Gagné (2013) with regard to concept formation. Spalding and Gagné are careful to distinguish between the A-T and the classical cognitive psychology understanding of concepts at each step in their presentation of the A-T model. They do so in order to demonstrate that rejection of the classical cognitive psychology understanding of the concept has no implications for the A-T model. They summarize three crucial differences:

1. In the A-T model, concepts are "essences shared by all members of the category" and involve external and internal sense involvement of particulars at the outset and at the return to particulars, whereas as cognitive psychology's classical view considers the concept to be only a definition, composed of a bundle of properties.
2. In cognitive psychology's classical view, concepts are definitions of necessary and sufficient features and this view cannot deal effectively with exceptions, whereas the A-T model does not view concepts as constituted by necessary and sufficient bundles of features but by the abstracted essence, and the A-T model manages exceptions by the theory of privation or lack of actuation of essential characteristics in a particular individual.
3. In cognitive psychology's classical view, what "nests" in the concept are bundles of necessary and sufficient features; whereas in the A-T model what nests are capacities of the essence. In fact, the A-T model of concepts reflects the full A-T metaphysics: act and potency, substance and accidents, four-cause understanding, and the faculty psychology of Aristotle and Aquinas, a much more elaborate ontology than a bundle of features gathered by sense observation.

Having differentiated the A-T view from classical cognitive psychology, Spalding and Gagné next consider the current probabilistic models of concept formation. They mention three: (a) exemplars, (b) prototypes, and (c) theorytheories. The exemplar model states that concepts consist of the representations of the individual members of the categories covered by the concepts. The prototype model claims that concepts consist of single summary representations that, in one way or another, are summaries of the whole set of members of the categories covered by the concept. The theory-theories model asserts that concepts consist of explanatory "theories" that use existing background knowledge to identify and explain the categories covered by the concept. Although there is overlap among these models, all have somewhat different views regarding the nature of these probabilistic representations; and all three models have strong support from empirical research. Hence, no particular model has been able to establish itself as the superior.

Spalding and Gagné analyzed problems with each model. Regarding the prototype model, they point out that the model's primary advantage relative to the classical view is that it includes features beyond the necessary and sufficient, and furthermore, that those features that are more frequent tend to be more important to the concept. They then note that the A-T view makes distinctions between features that are always true versus those that are there on a less frequent basis (basically the distinction between substance and accidents) and, furthermore, that the frequency effects identified in the prototype model result from the A-T view's use of sensory-based representations (i.e., phantasms) that contribute to the concept. Spalding and Gagné claim that this flexibility solves the problem of prototype match. However, the prototype model has great difficulty explaining the effects of particular individual category members, as the concept is only the prototype.

The strength of the exemplar model, compared to the prototype model, is that it provides a natural way of understanding how individual instances of a category can come to exert particular influence in the use of a concept. Spalding and Gagné believe that the A-T view also solves this issue through the phantasm model of the internal senses. In the A-T view, a particular exemplar or combinations of exemplars from memory (i.e., phantasms) must

always be recruited when processing a particular category member. Hence exemplarspecific effects are expected in the A-T view. However, the exemplar model has serious difficulties in explaining how one can reason about a concept as a whole. For example, if one learns that whales are mammals, how does one incorporate this into the concept of mammals? Must one retrieve each stored exemplar of whale and attach the property? If there is some one representation where one can attach the new property, then how is that representation related to the supposedly diffuse representation of the concept via the exemplars? The A-T view solves this difficulty by predicating the property to the whole category via the intellectual concept.

The A-T view solves the concern about background knowledge as that affects concept formation. In particular, concepts seem to be much more than simply a statistical accumulation of features. We have many ideas about why certain features might co-occur, for example. In the A-T view, causal analysis of concepts by means of efficient, formal, material, and final causes (the hylomorphic theory) is parallel to modern theory-theories formulations of concepts and generalizations from those concepts. A weakness of the theory-theory, though, is that there is no obvious explanation for how the theory-theory, as a representation of the concept, also accounts for the statistical effects that gave rise to the probabilistic understanding of concepts in the first place. In the A-T view, on the other hand, the relation of the reasoning about causes to the understanding of the concept (and the category members captured in the phantasms) is spelled out. Spalding and Gagné (2013, p. 82) summarize their discussion of the three main theories of concepts in the following way, "The A-T view combines elements of each of the three main views that have developed within the probabilistic consensus on concepts. Thus, from the A-T view, it is not surprising that there should be empirical evidence in favor of each of these perspectives."

Finally, Spalding and Gagné note that more recent research on psychological essentialism, K-properties, and perceptual symbol systems/embodyed concepts challenge the notion that concepts are simply structures consisting of statistically aggregated features defining the concept. Recent work on each of these topics points to something more than frequentist (i.e., statistical) explanations of conceptual structure, and each has strong links back to the A-T claims about concepts.

Psychological essentialism (e.g., Gelman 2003, 2004) refers to the fact that people bring to bear beliefs about the cause and essential nature of the category covered by the concept, and that features playing a role in that belief are more important to the concept than they should be, based on statistical considerations. Research on K-Properties (e.g., Prasada and Dillingham, 2006, 2009) is closely related to psychological essentialism (and very closely related to the notion of essential vs. accidental properties in the A-T view). Again, K-Properties, those that are directly related to the "kind of thing" the concept covers, are more important than other, statistically equivalent properties. Finally, most concepts research has assumed, as a kind of default, that concepts are amodal. That is, both in terms of the conceptual representations themselves and in the representations of their features, concepts are not specifically linked to or grounded in sensory information. Yet, recent research (e.g., Barsalou, 1999) has shown important effects suggesting modality-specific information playing an important role. Again, this recent work harks back to the close linkage of the concept to sensory information, and the phantasms, in particular.

In sum, Spalding and Gagné (2013) surveyed several varieties of concepts research and showed that the results, though seemingly completely incompatible from the viewpoint of modern concept theories, all appear to be at least compatible with, and in most cases directly expected by, the A-T view of concepts. On the basis of this strong correspondence between the A-T view and the empirical results, Spalding and Gagne suggest a serious investigation into the A-T view as a possible high-level framework within which the scientific investigation of the psychology of concepts can proceed. Most importantly for the present purposes, Spalding and Gagné's presentation of the A-T view should be taken as a kind of existence proof that an A-T approach is compatible with modern scientific psychological research (see also Gagné, Spalding, and Kosteletzky, in press, and Spalding and Gagné, 2015, for examples applying an A-T approach to a specific experimental research program within the field of concepts research).

Even more recently, Spalding, Stedman, Hancock, and Gagné (2014) examined the problem of intentionality in concept formation. They pointed out that cognitive psychology currently counts on functionalism, specifically psycho-functionalism, to explain the process of concept formation, including intentionality (what the concept is about). They note that the psycho-functionalist model acknowledges the stimulus as a starting point; however, the primary

explanatory focus of the functionalist paradigm is on the interactions of internal cognitive mechanisms and the behavioral outcomes:

However, psycho-functionalism's focus of explanation is on the mechanisms mentioned above and their interaction. The response element is more important than the stimulus because it is the empirical demonstration that the model has predicted correctly. Hence, with regard to intentionality, the "what the concept is about," the psycho-functionalist epistemological/ontological account has little to say. (p. 251)

Spalding et al. (2014) then turn to the A-T model and demonstrate that intentionality is totally achieved via the existential judgment cited above. Recall that in the existential judgment, there is a movement from the universal, back down through the internal senses, to affirm the existence of a particular, a "what the concept is about." For example, "The man (universal) is my friend, Joe (the existent person)." Again, the A-T model offers a better explanation than the functionalist model because of a definitive connection to the stimulus.

In sum, we have reviewed the philosophical origins of psycho-functionalism, discussed psycho-functionalism as the current philosophical underpinning of cognitive psychology, and pointed out its shortcomings at both the philosophical level and at the level of psychological theory building. We have proposed the A-T model as a positive alternative. In the next section, we will consider some objections to the A-T model.

Objections to the A-T Model

We are asserting that the A-T approach deserves a serious look by cognitive psychology, and we have argued that functionalism, the current meta-theory underpinning cognitive psychology, cannot withstand serious scrutiny. Thus, it is important to at least consider some of the potential objections to the A-T view.

One potential objection to the A-T view has been addressed by Spalding and Gagné (2013), namely, that the A-T view was ruled out by work on the so-called classical view of concepts in the 1970s and 1980s. It is worth noting that several recent presentations of A-T ideas have done something similar with respect to A-T philosophy more generally (see particularly Feser, 2008, 2009; Oderberg, 2007). This is quite important, as there is a fairly common, though unjustified, belief (a) that A-T philosophy has been shown to be wrong in some deep sense, and (b) that A-T philosophy is somehow inconsistent with modern science. But these claims are mostly the result of a kind of pious myth of progress and scientific revolution that disproved a bad philosophy and replaced it with a much better philosophy (see, e.g., Brown, 2006; Burt, 1925). Indeed, Feser (2014) explicitly argues that the A-T approach provides a superior philosophical underpinning for science in general (see, particularly, pp. 9-25). In addition, Spalding and Gagné have argued that the A-T philosophical approach can serve as a meta-theory for concept formation, and, by extension, other areas of interest in cognitive psychology, including sensation, perception, memory, and the higher-order cognitive processes (see also, Stedman, 2013). Thus, there is no apparent fundamental incompatibility with the science of psychology.

A major concern some may have is that the A-T model reintroduces the Cartesian mind-body interaction problem full bore. This issue of substance dualism was covered in a previous essay (Spalding, Stedman, Hancock, and Gagné, 2014) but is so important it is worth very briefly restating: the mind-body distinction of Descartes and the A-T form-matter distinction are entirely different kinds of distinctions. There are (at least) two critical differences between this Cartesian understanding and the A-T view. First, the A-T view is very clear that mind and body are not two separate substances. Instead, the person is one substance made up of form (soul) and matter. The A-T view is clear that "primary substances" are ordinary individual things, all of which are made of form and matter, so this is not something unique about humans. Second, the Cartesian interaction problem arises due not just to Descartes' view of the soul but also to his mechanistic view of matter, such that only efficient causes are to be admitted. Thus, the soul must have some way of acting as the efficient cause of bodily actions and effects. Indeed, it is the adoption of Descartes' view of matter that necessitates a separate "thinking substance" and hence creates the problem of how that immaterial substance can affect the material "extended substance." However, if, with the A-T view, one understands the soul as a formal rather than efficient cause, the soul-body composite becomes a unity. Instead of the human person consisting of two distinct entities, whose interaction becomes a puzzle, the person is a unified entity, consisting of soul and body. The soul (the form of the body) actualizes the body to be species-specifically

human. In light of this formal causality, the soul and body become two aspects of a single, unitary human being. Thus, the problem of interaction is avoided. There is one entity actuated by its form (soul or life principle), instead of two altogether different substances trying to interact. Rather than a substance dualism, the hylomorphic A-T approach is a kind of "uniformism" due to this distinct causal and metaphysical analysis.

One final point that might be made against adopting the A-T view is the following. Many psychologists will go about their work with little thought to its ontological underpinnings, and while we have shown that the A-T view would serve as a more satisfying underpinning, we suspect most psychologists will not regard ontological underpinnings as important. Our answer to this is twofold. First, a better philosophical underpinning for psychology is simply a better philosophical underpinning and should be preferred for that reason! But, second, most philosophical approaches since Descartes have tended to collapse into either a strictly materialist approach or into a purely idealist approach, both of which have severe problems dealing with much of psychology. We would suggest that a similar collapse will occur over time (indeed, to a large extent has already occurred) within the discipline of psychology. Some areas move toward a pure, mechanistic materialism (e.g., many neuroscientists, medically oriented clinicians, and even cognitive psychologists), while others move toward a more phenomenal approach (e.g., many people interested in personality, some clinicians, and others who reject purely mechanist materialism). Of course, if one is a true believer in either of these approaches, then one sees the other side as simply wrong-headed and perhaps does not regret this break. This requires, in some sense, the psychologist to dismiss not only the specific work done in the other tradition, but even to reject the interests in those areas entirely. An historic example of this is behaviorism's rejection of all mental phenomena. But many psychologists would likely wish for an ontology that breaks down this bifurcation, even as many psychologists rejected the behaviorist's rejection of the mental while still believing that the study of behavior and learning (for example) was a valid and important area for research. Indeed, one of the prime promises of functionalism (albeit a promise that we have argued is not actually fulfilled) is precisely to find a way to account for "mind things" without eliminating them. The A-T approach does not collapse into either materialist or idealist approaches, and potentially provides a philosophical underpinning to psychology that would allow psychology to remain an integrated discipline.

The A-T approach, by its adherence to a moderate realism and to hylomorphism, avoids both the pure materialist and pure idealist positions. It is particularly worth noting that the A-T approach has these advantages, not by inventing clever new ideas about the mind, but by consistently applying its own metaphysical concepts. For example, Madden (2013) contends:

As we turn to the implications of hylomorphism for the philosophy of mind, remember that the Aristotelian does not arrive at this view as an ad hoc attempt to gerrymander an account of nature around our commitments in the philosophy of mind. Rather, the Aristotelian takes this view in order to solve broader philosophical problems. (p. 251)

Conclusions

The major outlines of A-T and functionalism as ontological and epistemological systems have been presented here and in the recent publications mentioned above. We have also considered some of the philosophical strengths and weaknesses of both functionalism and the A-T model. While much thought has been devoted to philosophical critiques of both systems, we have not attempted to summarize that material in a few lines. We simply assert that, in a head to head comparison, the A-T hylomorphic model is better than functionalism as a scientific realist account of human cognition. Arguments for this assertion are found throughout this essay, in the three recent publications cited (Spalding and Gagne, 2013; Spalding, Stedman, Hancock, and Gagne, 2014; Stedman, 2013). Functionalism claims to be an adequate ontology to explain all cognitive events from sensation to all higher-order cognition. However, as pointed out above, functionalism has been seriously challenged as an adequate general ontological theory. Spalding and Gagné (2013) and Stedman (2013) both make a reasonable case for A-T ontology as a meta-theory that provides at least as good a philosophical underpinning for cognitive psychology as functionalism does, in that (a) the A-T approach is compatible with the existing cognitive psychology research results, and (b) the A-T approach is capable of accounting for many aspects of the concepts literature that are deeply surprising if one takes a functionalist approach. Finally, we have shown that there are also philosophical reasons to prefer the A-T

approach, and have shown that some of the common objections to such an approach are misguided, and often based on a misunderstanding of the approach.

Footnote

1As mentioned in our statement of purpose, both philosophers of mind and psychologists have proposed an Aristotelian-Thomistic (A-T) account as an alternative to functionalism. Readable recent descriptions of A-T approaches to metaphysics (Feser, 2014), philosophy of mind (Feser, 2006; Madden, 2013), and other specific relevant topics, such as induction (Groarke, 2009) or essences (Oderberg, 2007), as well as overall systematic descriptions of Thomistic philosophy (e.g., Feser, 2009; Stump, 2003), and older descriptions specifically relating to the application of A-T ideas to philosophical and experimental psychology (e.g., Brennan, 1941; Maher, 1909), are available. Feser (2014) is particularly interesting in the current context as he takes a compare/ contrast approach with many recent developments in analytic philosophy.

References

References

Armstrong, D. (1968). *A materialistic theory of the mind*. London: Routledge.

Ayers, A. J. (1952). *Language, truth and logic*. New York: Dover.

Baddeley, A. D., and Hitch, A. D. (1974). Working memory. In G. Bower (Ed), *The psychology of learning and motivation*, Volume 8 (pp. 47-89). New York: Academic Press.

Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, 22, 577-660.

Block, N. (1990). Can the mind change the world? In G. Boolos (Ed.), *Meaning and method: Essays in honor of Hilary Putnam* (pp. 137-170). Cambridge: Cambridge University Press.

Block, N., and Fodor, J. A. (1972). What psychological states are not. *Philosophical Review*, 81,159-181.

Brennan, R. E. (1941). *Thomistic psychology: A philosophic analysis of the nature of man*. New York: Macmillan.

Brown, M. (2006). *Restoration of reason: The eclipse and recovery of truth, goodness, and beauty*. Grand Rapids, Michigan: Baker Academic.

Burt, E. A. (1925). *The metaphysical foundations of modern physical science: A historical and critical essay*. London: Kegan Paul, Trench, Trubner, and Co.

Chalmers, D. (1996). *The conscious mind in search of a fundamental theory*. New York: Oxford University Press.

Chalmers, D. (2010). *The character of consciousness*. Oxford: Oxford University Press.

Churchland, P. (1986). *Neurophilosophy*. Cambridge, Massachusetts: MIT Press.

Feser, E. (2006). *Philosophy of mind: A beginner's guide*. Oxford: Oneworld.

Feser, E. (2008). *Last superstition*. South Bend, Indiana : St. Augustine's Press.

Feser, E. (2009). *Aquinas: A beginner's guide*. Oxford: Oneworld.

Feser, E. (2014). *Scholastic metaphysics: A contemporary introduction (Editiones Scholasticae: Volume 39)*. Heusenstamm, Germany: Editiones Scholasticae.

Gagné, C. L., Spalding, T. L., and Kostecky, M. (in press). Conceptual combination, property inclusion, and the Aristotelian-Thomistic view of concepts. In J. Hampton and Y. Winter (Eds.), *Compositionality and concepts in*

linguistics and psychology. Language, cognition, and mind. New York: Springer.

Gelman, S. A. (2003). The essential child: Origins of essentialism in everyday thought. New York: Oxford University Press.

Gelman, S. A. (2004). Psychological essentialism in children. *Trends in Cognitive Science*, 8, 404-409.

Godfrey-Smith, P. (2008). Triviality arguments against functionalism. *Philosophical Studies*, 145, 1-34.

Groarke, L. (2009). An Aristotelian account of induction. Creating something from nothing. Montreal and Kingston: McGill-Queen's University Press.

John, E. R. (2002). The neurophysics of consciousness. *Brain Research Reviews*, 39, 1-28.

Kim, J. (1989). Mechanism, purpose, and explanatory exclusion. *Philosophical Perspectives*, 3, 77-108.

Levin, J. (2013). Functionalism. The Stanford encyclopedia of philosophy (pp. 1-41). <http://plato.stanford.edu/entries/functionalism>

Lewis, D. (1966). An argument for identity theory. *Journal of Philosophy*, 63, 17-25.

Machery, E. (2009). *Doing without concepts*. Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780195306880.001.0001

Madden, J.D. (2013). *Mind, matter and nature: A Thomistic proposal for the philosophy of mind*. Washington, D.C.: Catholic University of America Press.

Maher, M. (1909). *Psychology: Empirical and rational* (sixth edition). London: Longmans, Green, and Co.

Nagel, T. (1974). What is it like to be a bat? *Philosophical Review*, 83, 435-450.

Oderberg, D. S. (2007). *Real essentialism*. New York: Routledge.

Prasada, S., and Dillingham, E. M. (2006). Principled and statistical connections in common sense conception. *Cognition*, 99, 73-112.

Prasada, S., and Dillingham, E. M. (2009). Representation of principled connections: A window onto the formal aspect of common sense conception. *Cognitive Science*, 33, 401-448.

Preston, A. (2007). *Analytic philosophy: The history of an illusion*. London: Continuum International Publishing Group.

Putnam, H. (1975). The nature of mental states. In H. Putnam, *Mind, language, and reality* (pp. 429-440). Cambridge: Cambridge University Press.

Putnam, H. (1988). *Representation and reality*. Cambridge, Massachusetts: MIT Press.

Quine, W. V. (1951). Two dogmas of empiricism. *Philosophical Review*, 60, 20-43.

Ryle, G. (1949). *The concept of mind*. London: Hutchinson.

Searle, J. (1990). Is the brain a digital computer? *Proceedings and addresses of the American Philosophical Association* (Vol. 64, pp. 21-37). Newark, Delaware: American Philosophical Association.

Smith, E. E., Patalano, A., and Jonides, J. (1998). Alternative strategies of categorization. *Cognition*, 65, 167-196.

Spalding, T, and Gagné, C. (2013). Concepts in Aristotle and Aquinas: Implications for current theoretical approaches. *Journal of Theoretical and Philosophical Psychology*, 3, 71-89.

Spalding, T. L., and Gagné, C. L. (2015). Property attribution in combined concepts. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 41, 693-707.

Spalding, T. L., Stedman, J. M., Hancock, G, and Gagné, C. L. (2014). Intentionality and the Aristotelian-Thomistic view of concepts. *Journal of Mind and Behavior*, 35, 245-262.

Stedman, J. (2013). Aristotle and modern cognitive psychology and neuroscience: An analysis of similarities and deferences. *Journal of Mind and Behavior*, 34, 121-132.

Stedman, J., Hancock, C., and Sweetman, B. (2009). Cognitive psychology, neuroscience, and the problem of abstraction. *Contemporary Philosophy*, 29, 28-36.

Stump, E. (2003). *Aquinas*. London: Routledge.

Turing, A.M. (1950). Computing machinery and intelligence. *Mind*, 59, 433-460.

Wittgenstein, L. (1922). *Tractatus logico-philosophicus* [G K. Ogden, Trans.] London: Routledge and Kegan Paul.

Wittgenstein, L. (1953). *Philosophical investigations* [G. E. M Anscombe, Trans.] Oxford: Blackwell.

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