ETHICS EDUCATION AND NEUROSCIENCE: A NEUROCOGNITIVE APPROACH TO BUSINESS ETHICS TRAINING

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ABSTRACT

This study incorporates recent advances in neuroscience in the evaluation of instructional methods for business ethics education. By utilizing a neurocognitive model which accounts for the fundamental neural processes which underlie human behavior, this research expands the traditional view of conscious cognitive ethical decision-making to include nonconscious drivers of ethical behavior. Measuring ethical behavior directly rather than the traditional but not perfectly-correlated ethical judgment, a game theory experiment was employed to assess the ethical behavior of college students before and after ethics training. The distinct neural systems of reflexive and active judgment were activated with time constraint and altered instructions in different rounds of the game. Subjects were trained with two types of cases to determine if case method ethics education may positively impact ethical behavior. Results indicated significant worsening of ethical behavior in subjects not trained with case method ethics instruction, while case method instruction improved ethical behavior. Previous college-level ethics education and gender were not found to be significantly correlated with improvement in ethical behavior.

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CHAPTER 1. INTRODUCTION

The need for improvement in business ethics is undeniable, from massive environmental violations and waves of accounting scandals, to child labor abuses and international sweatshops. We are living in an era of unprecedented power of multinational corporations, yet numerous ethics scandals plague global business. As business ethics education may play a key role in developing ethical business leaders, understanding ethical behavior and how to educate for improvement in ethical behavior are important tasks for the field of organizational behavior.

Researching ethical behavior has always been a daunting task, as the field of ethics is by nature multi-disciplinary. However, the rapid increase in new knowledge from the field of neuroscience poses new challenges and new opportunities for ethical behavior research. Neurobehavioral perspectives should be incorporated with existing behavior models for more comprehensive, realistic models. This study seeks to integrate existing ethical decision-making research and recent neuroscience-based behavior findings to achieve a more comprehensive perspective for developing effective business ethics education.

The current revolution in neuroscience is ushering in a new era for the study of behavior. While the social sciences have been compared to a lemon which has been squeezed dry, the neurosciences have been characterized as fruit which has barely begun to be touched (Coutu 2004). The application of neuroscience to

social, organizational, and ethical behavior provides vast, largely unexplored areas of study with enormous potential for new knowledge as new neuroscience technologies advance and proliferate.

This new knowledge from neuroscience has the potential to significantly impact long-held societal views regarding human social and ethical behavior. The developing field of neuroethics is poised to offer an unprecedented 'brain-based philosophy of life' (Gazzaniga, in Hughes 2006). Illuminated by new neuroimaging technologies, fundamental concepts of responsibility and free will may be seen from new perspectives, and these issues may present special challenges in ethics education.

Neurobiological, evolutionary, and neuroanatomical sources of social and ethical behavior are explored in this study. The impact of neuroactive peptides on social behavior is examined, as are evolutionary perspectives on social behavior aspects including fairness, social cooperation, altruism and empathy. Review of recent neuroimaging studies illuminating social behavior and ethical decision-making helps identify the brain areas active in ethical behavior, which may yield insights for business ethics training.

A neurocognitive approach which incorporates both a traditional ethical decision-making perspective and a new neuroscience-based perspective is utilized in this study. Through this neurocognitive approach, this research expands the

traditional view of ethical decision-making as a function of the mind, to include nonconscious drivers of ethical behavior as a function of the brain.

In this study, a game theory experiment, the anonymous dictator game, is employed to assess the ethical behavior of college students before and after ethics training. By altering the instructions and time constraint in two rounds of the dictator game and employing two different types of instructional cases, subjects are encouraged to employ two functionally distinct neural systems, the X-system and C-system described by Lieberman et al. (2002).

The X-system, which involves the lateral temporal cortex, amygdala, and basal ganglia, is associated with nonconscious reflexive pattern matching. The C-system, which involves the anterior cingulate, prefrontal cortex, and hippocampus, is associated with higher order conscious reasoning. Utilizing Reynolds' (2006) neurocognitive model of ethical decision-making, this study compares the impact on ethical behavior of X-system reflexive judgment, which describes nonconscious intuitive aspects, and C-system active judgment, which involves conscious rule-based reasoning.

In this research, students are instructed with ethics cases to determine if ethical behavior may be increased with case method ethics education. Two types of cases are tested: a case with commonplace content more likely to activate reflexive judgment, and a case with novel content more likely to result in active judgment.

This study addresses several limits of the research on ethical decision-making, including the narrow conscious cognitive focus which fails to include the neural basis of behavior. By measuring ethical behavior directly, rather than the traditional yet not-well-correlated measurement of ethical judgment, the study also addresses this second significant limitation of the field. Additionally, the research attempts to surmount ideological and methodological difficulties common in the field, and to comprehensively address this complex multi-disciplinary topic.

The significance of this research not only lies in its contribution to the ethical decision-making field, but also in the insights it offers on the effectiveness of instructional methods for business ethics education. This study generates discussion regarding additional factors which may influence the effectiveness of ethics education, and utilization of a neuroscience-based approach in experiential ethics training. Finally, a holistic multi-disciplinary model of ethical behavior is very briefly discussed as an integrated future approach for incorporating a neurobehavioral perspective into ethical behavior research, linking the views of this study to possible future exploration.

CHAPTER 2. THEORETICAL FOUNDATION

Ethical Decision-Making (EDM)

Moral judgment[1] is a psychological construct that characterizes the process by which people determine that one course of action in a particular situation is morally right and another course of action is wrong. Moral judgment underlies moral behavior, and involves defining what are the moral issues, how conflicts among parties are to be settled, and the rationale for deciding on a course of action. Psychologists have described a developmental progression in how people make moral judgments (Rest et al. 1997).

Moral development, the development of moral judgment, initially defined by Piaget (1932/65) then refined and researched by Kohlberg (1970), does not simply represent increasing knowledge of cultural values which usually leads to ethical relativity, but rather represents transformations that occur in a person's form or structure of thought (Kohlberg 1977). Kohlberg found these developing structures of moral judgment to be universal in a developmental sequence across

[1] The terms 'moral' and 'ethical' are considered synonymous (Reynolds, 2006) and 'judgment' and 'decision-making' are used interchangeably. In the social sciences literature, the term 'moral judgment' is more frequently used, while the same concept is more frequently referred to as 'ethical decision-making' (EDM) in the business ethics literature.

cultures (Kohlberg 1976), in which attainment of an advanced stage is dependent on the attainment of each of the preceding stages (Rest, Turiel and Kohlberg 1969).

Kohlberg asserted that moral development always moves forward, with an individual always beginning at the lower level in the series of stages and moving forward to the next higher level over time (Kohlberg 1969). Kohlberg (1969) also identified that this sequential stage development resulted in individuals who had developed to a higher stage being able to comprehend the thought in a lower stage through which they had already passed. Kohlberg's focus on the actor's internal process has contributed to the assessment of his work as seminal to the study of morality, and its consideration as the major work on moral judgment (Rest et al. 1997).

Kohlberg's Theory of Cognitive Moral Development

Kohlberg's cognitive moral development theory states that moral reasoning develops over time in a series of six stages of cognitive development. The moral stages are grouped in three levels which include the preconventional level, conventional level, and postconventional (autonomous or principled) level. The first level, the preconventional level, contains stages one and two. Stage one consists of punishment-and-obedience orientation, in which physical consequences

determine an action's goodness or badness, and avoidance of punishment and unquestioning deference to power are valued in their own right. Stage two consists of instrumental-relativist orientation, in which the right action is that which instrumentally satisfies one's self-interest.

Stages three and four comprise the conventional level. Stage three consists of interpersonal concordance orientation, in which good behavior is that which pleases others, behavior is frequently judged by intention, and one earns approval by being 'nice'. Stage four consists of the law-and-order orientation, in which right behavior consists of upholding one's duty, respecting authority and fixed rules, and maintaining the given social order for its own sake.

Stages five and six comprise the postconventional, or autonomous or principled level. Stage five consists of the social-contract, legalistic orientation, generally with utilitarian overtones, in which right action is defined in terms of the individual rights and standards agreed upon by society. Stage six consists of the universal-ethical-principle orientation, in which right is defined by the decision of the conscience in accord with self-chosen ethical principles appealing to logical comprehensiveness, universality, and consistency. These are universal principles of justice, of the reciprocity and equality of human rights, and of respect for the dignity of human beings as individual persons (1971).

In the 1960s and 1970s, the 'cognitive revolution' in psychology was gaining momentum, and Kohlberg's stage six concept of principled morality illuminated the social justice struggles of the era (e.g., the civil rights movement, student war protests, the Watergate scandal, the Black power movement, the women's movement) (Rest et al. 1997). Through Kohlberg's model, American society was introduced to the idea of universal ethical principles (principles of justice, human rights) as more developed than law-and-order morality, demonstrating, for example, that Martin Luther King was not just another law-breaker (Rest et al. 1997). Kohlberg's influence directed researchers to study the internal processes of the actor (i.e., what the situation means to the actor) instead of attending only to the external directives of socializers and social pressure (Rest et al. 1997).

Rest's Four Components of Moral Decision-Making

Utilizing a 'neo-Kohlbergian' approach (Rest 1999) based on the postconventional stage of Kohlberg's cognitive moral development theory, Rest (1979, 1986) developed a theory of individual ethical decision-making which was generalized to organizational settings. Rest's framework defines four basic inner processes of moral decision-making: identifying the moral nature of an issue, making a moral judgment, establishing moral intent, and engaging in moral action.

In Rest's four component model, moral sensitivity to an issue is defined as how the situation is interpreted, and how the perceiver role-takes and empathizes with those affected by what the actor does. Moral judgment is defined as determining which alternative line of action is morally justified, and moral motivation (or intent) as the degree to which the actor prioritizes acting morally above other values. Finally, moral action is determined by moral character, which involves self-regulation, ego strength, discipline, and follow through on one's reflected convictions. Moral development is envisioned as involving all four processes, with deficiencies in any of the four processes leading to more failure (Rest 1986, Rest et al. 1997).

Rest's (1979, 1986) four components of moral decision–making recognized that the inner processes of moral development are more complicated than Kohlberg's (1969) six stages. However, both Kohlberg's and Rest's seminal theories of moral development are focused solely on reasoning processes, and do not account for nonconscious drivers of ethical behavior (see section '*Limitation of EDM Field: Lack of Neural Basis of Behavior*'). This research attempts to address this issue through application of a neurocognitive approach, which extends beyond Kohlberg's and Rest's conscious cognitive focus to encompass the neural basis of ethical behavior.

Descriptive Business Ethics

Rest's neo-Kohlbergian framework formed the foundation of the business ethics field. The primary focus of the field of business ethics is descriptive (or empirical) ethics, which involves management and business and attempts to explain and predict individuals' actual behavior (e.g., Donaldson & Dunfee 1994, Trevino and Weaver 1994, Weaver and Trevino 1994), as opposed to normative ethics, which involves moral philosophy and theology and guides individuals as to how they should behave (O'Fallon & Butterfield 2005). Criticisms of normative models of business ethics, which often assume absolute truths about appropriate decision-making, led to the development of descriptive perspectives and models (Loe et al. 2000).

The descriptive ethical decision-making literature, which has largely stemmed from Rest's framework, includes the theoretical models of Jones (1991), Trevino (1986), and Trevino et al. (1998). These ethical decision-making models, along with those of Ferrell and Gresham (1985) and Hunt and Vitell (1986), identify key constructs in understanding the factors that have the greatest effect on an individual's ethical decision-making in organizations (Loe et al. 2000).

Constructs that influence Rest's four-step process have been proposed and tested, including individual factors such as moral intent, personal characteristics, and person-situation interaction (Ferrell and Gresham 1985, Hunt and Vitell 1986,

Trevino 1986), organizational factors such as codes of ethics and ethical climate/culture (Trevino et al. 1998), and moral intensity factors such as magnitude of consequences (Jones 1991) (O'Fallon and Butterfield, 2005).

Individual factors have been recognized as important determinants in the ethical decision-making process. Ferrell and Gresham (1985) suggested that significant others within the organization greatly influence ethical decisions of their coworkers and peers, and established that moral intent of the individual is moderated by significant others, individual moderators, and opportunity (Loe et al 2000). Hunt and Vitell (1986) suggested that individuals' personal characteristics will influence their perceived ethical situations, perceived alternatives and consequences, perceived importance of stakeholders, and deontological norms engaged in the ethical decision-making process. Trevino's (1986) person-situation interactionist model presented a general theoretical model for ethical decision-making in organizations, identifying both individual and situational moderators as affecting the relationship between making a moral judgment and engaging in moral behavior (Loe et al. 2000).

In examining organizational factors, Trevino et al. (1998) studied two constructs developed to represent the ethical context in organizations: ethical climate and ethical culture, which measure different but strongly related dimensions of the ethical context. The authors found that ethical culture was more

strongly associated with unethical conduct in organizations with codes of ethics, while ethical climate was more strongly associated with unethical conduct in organizations without ethics codes (Trevino et al. 1998).

Jones (1991) addressed the lack of emphasis on the characteristics of the ethical issue itself. His issue-contingent model defined a set of new variables called moral intensity, derived in part from the normative arguments of moral philosophers who differentiate levels of moral responsibility based on proportionality. Jones' moral intensity components include such characteristics of the moral issue as magnitude of consequences, social consensus, probability of effect, temporal immediacy, proximity and concentration of effect. Jones has argued that if moral intensity is found to be positively linked to moral behavior, it can be concluded that people generally behave better when the moral issue is important than they do when it is unimportant.

The descriptive business ethics field built on Rest's neo-Kohlbergian framework has examined organizational and issue-based constructs, yet has remained narrowly focused on conscious reasoning at the individual level. This focus has resulted in the exclusion of the neural bases of ethical behavior, which this study seeks to incorporate.

Limitation of EDM Field: Lack of Neural Basis of Behavior

The ethical decision-making (EDM) field, and the descriptive business ethics field that stems from it, has notable limitations which this research attempts to address. Perhaps most notably, the EDM literature is limited by the convergence of the field on a narrow conscious cognitive[2] model which fails to comprehensively account for the neural basis of behavior. Failure to include important nonconscious processes, which represent additional neural functions involving different brain regions and systems, is a highly significant limitation of the field. By utilizing a neurocognitive approach which attempts to account for the neural basis of behavior, this research seeks to address this key limitation of the field.

The rationalist approach, asserting that moral judgment is primarily a conscious reasoning process (Kohlberg 1969, Piaget 1932/65, Turiel 1983), led to the dominant cognitive perspective of the EDM field. Considerable criticism surrounded Kohlberg's views, questioning the adequacy of the philosophical and theological assumptions, and limited scope of the methodology and empirical

[2] In the literature, the term 'cognitive' is used to refer to conscious reasoning, as opposed to intuition or other nonconscious processes. Reasoning is defined as occurring more slowly than intuition, requiring some effort while intuition occurs effortlessly, and involving at least some steps that are accessible to consciousness, while intuition occurs automatically such that the outcome but not the process is accessible to consciousness (Haidt 2001). While reasoning and intuition are technically both forms of cognition, the distinction in the literature was intended to capture the contrast made by dozens of philosophers and psychologists between two kinds of cognition (Haidt 2001).

support (Petrinovich et al. 1993). One major criticism was that the presumed developmental stages are derived from a unidimensional perspective based on principles of justice, and the model assumes that moral development proceeds in a series of linearly increasing and invariant steps, with no reversions to more preliminary stages (Petrinovich et al. 1993).

Kohlberg's cognitive approach was most popular in the 1970s although empirical evidence was weak at that time. Even as evidence strengthened, the popularity of Kohlberg's cognitive theory waned as psychologists were concerned not only that the stage concept was flawed, but that the cognitive revolution was 'too cognitive' (Rest et al. 1997).

The entrenched cognitive approach in the existing ethical decision-making research (O'Fallon and Butterfield 2005, Loe et al. 2000) has traditionally failed to include noncognitive attributes such as retrospection, intuition and instinct, and excludes the role of the neural reflexive pattern matching system (Reynolds 2006). However, limited attempts to address the field's notable limitation of a narrow focus on conscious cognition have been made (Haidt 2001, Petrinovich et al. 1993, Werhane 1999, Nisbett and Wilson, 1977, Wilson 1993b).

Haidt (2001) questioned the research on moral judgment which was dominated by rationalist models in which moral judgment was thought to be caused by moral reasoning. Noting that moral reasoning is usually a post hoc construction,

generated after a judgment has been reached, he presented an alternative to rationalist models. In his social intuitionist approach to moral judgment, Haidt presented reasons for considering the hypothesis that moral reasoning does not cause moral judgment.

Haidt's (2001) social intuitionist model is a social model in that it deemphasizes the private reasoning done by individuals and emphasizes instead the importance of social and cultural influences. The model is an intuitionist model in that it states that moral judgment is generally the result of quick, automatic evaluations (intuitions). Haidt has stated that the model is more consistent than rationalist models with recent findings in social, cultural, evolutionary, and biological psychology, as well as in anthropology and primatology.

Also examining noncognitive moral intuition, Petrinovich et al.'s (1993) study investigated the organization of moral intuitions. Probing the underlying dimensions involved in moral intuitions, the authors found the most important dimensions to be speciesism, abhorrent political philosophy (nazism), and inclusive fitness, followed by social contract and number of individuals, with the dimensions of action–inaction, elite, and endangered species having significant but weak influences.

In another attempt to examine noncognitive attributes of ethical decision-making, Werhane (1999) discussed moral imagination, which falls outside the

cognitive approach of the existing ethical decision-making research. Werhane (1999), along with Reynolds (2002), challenged the rationalistic assumptions of ethical decision-making research and suggested that perhaps a sensemaking or social constructionist perspective might better enlighten understanding of this phenomenon (Reynolds 2006).

In Nisbett and Wilson (1977), the authors described noncognitive attributes of ethical decision-making with a situation in which an individual not only automatically recognized that a situation is one of bribery, but also reflexively judged that action as immoral, even though he or she may not have been able to explain why. Wilson (1993b) defended the concept of innate universal moral orientation, which he termed moral 'disposition', and presented numerous studies from the biological and social sciences to illuminate human behavior.

Researchers Haidt (2001), Petrinovich et al. (1993), Werhane (1999), Nisbett and Wilson (1977), and Wilson (1993b) have described phenomena that reflect nonconscious neural aspects of behavior, including intuition, imagination, automatic recognition, and moral disposition. However, these concepts have only very recently begun to be linked to their neural bases in the EDM literature, although the field is increasingly accepting of the role of nonconscious elements such as intuition in ethical behavior. Hauser (2006a) and Reynolds (2006) have begun to introduce neuroscientific bases of ethical behavior in the ethical decision-

making field, and this study seeks to add to this growing direction of incorporating neuroscience-based perspectives into the EDM field.

Limitation of EDM Field: Judgment Measured Rather Than Behavior

The fundamental limitation of failing to incorporate the neurological basis of behavior into models of ethical decision-making is related to the finding that ethical judgments do not correlate perfectly with individual behaviors (Reynolds 2006). Researchers have noted the disparity between the ethical judgments people report they would make and the ethical behavior they actually exhibit (Diamond and Adams 1999).

The field has been confused by repeated findings that individuals often fail to behave ethically although they are able to make ethical judgments (Blasi 1980, Rest 1986). Despite this correlation gap between ethical decision-making (judgment) and ethical behavior, which is infrequently addressed (Sleeper et al. 2006), judgment has traditionally been measured rather than behavior due to relative ease of measurement. By measuring ethical behavior through a game theory experiment, this research attempts to address this limitation of the field.

Limitation of EDM Field: Research Challenges

The substantial limitation of the focus of the EDM field on the measurement of ethical judgment instead of ethical behavior despite the correlation gap has been due in part to potential problems in the operationalization and measurement of ethical behavior (O'Fallon and Butterfield 2005), although laboratory and field experimentation permit study with findings more relevant to ethical practices (Trevino 1992). Through the use of a well-established game theory experiment to measure ethical behavior, this research attempts to address this limitation of research challenges in the EDM field.

Despite increased attention to ethics in organizations, scholars may be reluctant to study value-based issues because of ideological reasons or because methodological problems are considered difficult to surmount, resulting in a relative paucity of theoretical and empirical examinations of ethical decision-making in organizations (Jones 1991).

Limitation of EDM Field: Multi-Disciplinary Area

The study of ethical decision-making is not only fundamentally cross-disciplinary, but multi-disciplinary, which may discourage many scholars. Few scholars possess interest in all the fields necessary for research in ethical decision-

making, including ethics, organizational behavior, psychology and psychology-based disciplines, and decision-making (Jones 1991).

The necessary inclusion of the even more diverse field of neuroscience into this already multi-disciplinary theoretical and empirical pursuit increases the challenge of study in this field. Yet it is only through a more comprehensive perspective of human behavior which includes neural drivers of behavior that new knowledge regarding ethical decision-making can emerge. This research attempts to incorporate the field of neuroscience into the already multi-disciplinary field of ethical decision-making, by employing a neurocognitive model which addresses the neural basis of behavior.

Neuroscience and Behavior

This research seeks to add a neuroscience-based approach to the existing social science view of ethical decision-making. Behavior research in general has begun to shift from traditional social science to neuroscience-based approaches, as new neuroscientific advances have been made through the advancement of neuroimaging technologies.

This new neurobehavioral perspective brings new theories and models of behavior, calling into question and sometimes outdating older, less comprehensive

ones. The study of neuroscience reveals that accepted concepts, and the terms used to express them, should be challenged (Farmer 2006). Neuroscience research is beginning to illuminate numerous aspects of human behavior, and is critical to understanding ethical decision-making.

The Neuroscience Revolution and Neuroimaging Advances

A 'neuroscience revolution' (Coutu 2004) is underway, with research in neuroscience exploding exponentially (Carl 2007). Great strides have recently been made in neuroscience, with the U.S. Congress having christened the 1990s the decade of the brain (Farah and Wolpe 2004). The neuroscience revolution is being driven by advances in neuroimaging technologies, which provide new research avenues to enrich our understanding of behavior.

Neuroimaging advances from computed axial tomography (CAT) scans, to positron emission tomography (PET), single photon emission computed tomography (SPECT), and functional magnetic resonance imaging (fMRI), have enabled pioneering research on cognition and emotion (Farah and Wolpe 2004). In addition, electroencephalography (EEG) and event-related potentials (ERP) have acquired new capabilities that allow better localization of brain activity and analysis of patterns of brain activity (Koles 1988).

Utilizing these tools, neuroscience is now growing beyond the two categories of basic and clinical, into new applications such as the measurement of mental processes with functional neuroimaging (Farah and Wolpe, 2004). Neuroimaging techniques have created new avenues of research which illuminate understanding of human social behavior. Several studies have sought neuroimaging correlates of personality, including extraversion/ introversion, neuroticism, novelty seeking, harm avoidance, and reward dependence (Fischer et al. 1997, Johnson et al. 1999, Sugiura et al. 2000, Youn et al. 2002, Canli et al. 2001, Canli and Amin 2002).

Additionally, neural systems underlying such social behaviors as cooperation in reciprocal exchange and attribution of emotion to self and other have been examined using fMRI (McCabe et al. 2001, Ochsner et al. 2004). The use of fMRI is rapidly increasing in research which seeks to aid our understanding of the neural basis of social behaviors which can influence ethical behavior.

Utilizing new neuroimaging techniques is key to understanding the brain, which is a multi-disciplinary pursuit. Each element of brain-related research represents a different course of study in the academic curriculum: memory relates to the study of history, perception to epistemology, reason to logic and math, creativity to the arts, body to biology, emotions to psychology, beliefs to theology, and behavior to ethics (Carl 2007). Optimal understanding will require cooperation

among many disciplines such as economics, sociology, psychology, evolutionary biology, cellular physiology, and neuroscience (Jones and Goldsmith 2005).

In recent years, new multi-disciplinary fields have evolved in the pursuit of understanding the brain's role in human behavior, from neurophilosophy and neuroeconomics, to neuropolitics, neuropsychology, and neuro-governance (Farmer 2006). Researchers have been urged to 'catch up' to both the neuroscientific revolution itself, and to researchers in political science, economics, philosophy and psychology who have already incorporated neuroscience into their research (Farmer 2006). In embracing neuroscience, researchers have been encouraged to a multi-disciplinary approach, reaching beyond the scope and methods of traditional disciplines (Farmer 2006).

Thus, this research embraces a multi-disciplinary approach for examining ethical behavior and teaching business ethics. Neuroscience has the potential to become a force to unify academic disciplines, acting as a catalyst for re-unification of the fragmented social sciences and social action subjects, including political science, economics, public administration, and business administration (Farmer 2006).

Just as the neuroscience revolution driven by new neuroimaging technologies is impacting numerous academic disciplines, the effect of the neuroscience revolution on society will be far-reaching and have implications for

ethical behavior. Neuroscience discoveries have important implications, far beyond philosophical discussion, for the way society operates (Mobbs 2007). Human social behavior in general, and ethical behavior specifically, are being illuminated by neuroscientific findings, and these new understandings will have considerable societal implications.

The neuroscience revolution is impacting society through the insights derived from the use of new neuroimaging technologies. Cognitive neuroscientist Michael Gazzaniga, who defined neuroscience as focused on understanding the brain mechanisms that underlie behavior, identified the field as one which, although young, could ultimately have as dramatic a societal impact, for example, as DNA testing (Reuters 2007).

Brain abnormalities that could affect ethical decision-making may be revealed through noninvasive brain imaging techniques, such as functional magnetic resonance imaging (fMRI), which allow the viewing of neural regions that monitor behavior and regulate emotions. Already, courts are seeing more cases in which defendants seek to use brain scans as mitigating evidence (Reuters 2007), and jurors have reduced sentences based on brain-imaging results (Carey 2007). Experts have noted that evidence of damage to the brain's ventromedial prefrontal cortex could sway judgments of moral competency in some cases (Carey 2007).

As neuroscientists discover more about how the brain affects behavior, the distinction of responsibility for ethical behavior is less clear, with one long-term implication being a more nuanced view of how responsibility is evaluated (Rakoff, in Reuters 2007). Neuroscience poses challenges in a society which has traditionally taken a rather clear-cut view of responsibility in which people either commit acts intentionally or they do not. New neuroscience-based views of responsibility and free will present opportunities to update the fields of ethical decision-making and ethics education.

Neuroethics: Brain-Based Philosophy of Life

The developing field of neuroethics attempts to integrate the neurosciences with our current understanding of ethics, as this research seeks to do through a neurocognitive approach. Neuroethics has been described as an amalgamation of two related, overlapping branches of inquiry: the neuroscience of ethics and the ethics of neuroscience (Tovino 2005/2006, Damasio 2007, Ashcroft 2006, Roskies 2002 and 2006).

The neuroscience of ethics may be described as a scientific approach to understanding ethical behavior, and the term 'neuroethics' is used in this context to refer to the neural bases of ethical thinking and the application of the methods of

the neurosciences to understanding moral and social decision-making (Roskies 2002 and 2006). The ethics of neuroscience is concerned with the ethical principles that should guide brain research, and the effects that advances in neuroscience have on our social, moral, and philosophical views (Tovino 2005/2006).

Neuroethics attempts to produce an integrated approach to disparate problems by connecting ethics, law, public policy, and philosophy to the latest research in basic and clinical neurosciences, and asks the questions: What do the neurosciences have to tell us about our human nature in all its variety? How should we revise our images of humanity in the light of this information? (Ashcroft 2006). The ethical questions we ask and the just guidelines we hope to formulate depend on the boundaries of what constitutes ethical behavior, and the setting of those boundaries may come to be influenced by new knowledge regarding how the brain operates (Damasio 2007).

However, the field of neuroethics appears to present considerable debate. Interestingly, the viewpoint of a key leader in the fields of cognitive neuroscience and neuroethics, Michael Gazzaniga, a member of President Bush's Council on Bioethics (Chorover 2005, Jennings 2005), has been interpreted differently by different authors, indicating the complexity of the issue and suggesting that deeply-held personal feelings about the issue may color analysis.

Hughes (2006) noted that Gazzaniga clearly thinks of the brain (like the genome) as being the key to all human problems, and professes that neuroethics aims at a 'brain-based philosophy of life'. Presenting an alternative viewpoint, Hughes stated that the standing of neuroethics as a discipline remains contentious, as neuroscience cannot tell us about content (meanings and memories), and thus is simply as exciting as the neuroscience of feeling pain or making music.

This debate of the significance of neuroethics is intensified by individual attitudes regarding responsibility and free will, and these issues present a major challenge for the integration of neuroscience in the study of ethical behavior, as well as for ethics education. Although neuroscience may offer insight into factors of behavior beyond free will, even Gazzaniga has been identified as having too much respect for the complexity, contingency, and context-dependency of neuropsychological relations to believe that neuroscience research could or would ever lead to crudely deterministic outcome (Chorover 2005).

Yet it is this fundamental issue of determinism versus free will that presents challenge in both the study of ethical behavior and the teaching of ethics, as this issue can be an emotionally-charged one. Indeed, the concept of neurobiologically-based behavior and moral instincts, shaped by evolution, may be threatening to personal concepts of individual responsibility for some, and may approach sensitive areas of religious tradition for others.

For example, people with tendencies toward self-serving bias may over-attribute their success to free will and personal choice, while underestimating the impact of neurobiological factors in their success. This may be accompanied by judging others' lack of success from the same perspective, that is, overemphasizing free will and underestimating neurobiological factors, which may lead to a skewed perspective. Ethics education which includes neurobiological realities of behavior may help achieve more realistic views of human behavior in defining what it means to treat others fairly and ethically, but may threaten such perspectives. For those who may rely heavily psychologically on self-perceptions deeply influenced by this type of self-serving bias, intense fearful or unpleasant emotions may result.

Thus, the 'brain-based philosophy of life' neuroscience is beginning to reveal requires careful incorporation with existing theories of behavior, and sensitive utilization in educational settings. Ethics education already deals with a sensitive topic with potential for emotional consequence, and the addition of neuroscience-based perspectives in understanding human behavior can intensify this aspect of ethics education. Although neuroscience-based-perspectives of ethical behavior may be illuminating for many and even liberating for some, these special challenges require sensitivity and care for the greatest effectiveness of ethics education.

Neuroscience and Social Behavior: Neurobehavioral Perspectives

Many contemporary neuroscientists assume that the essential ingredients of the human condition, including free will, empathy, and morality, are the calculable consequences of an immense assembly of neurons firing. Intuitively, this view opposes Cartesian dualism (i.e., the brain and mind are separate, but interacting, entities) and assumes that anti-social behavior emanates from a mechanistically determined brain (Mobbs 2007).

The first modern indication that reasoning and regard for others can be compromised by injury to the brain's frontal lobe was provided by the 19th century case of Phineas Gage (Harlow 1848, Mobbs 2007). Gage, a railroad worker, was unfortunately injured when during an explosion an iron bar was thrust through the front of his brain, which resulted in extensive damage to the prefrontal cortex. Despite Gage's miraculous physical and intellectual recovery, conspicuous changes in his personality were reported. In short, the once courteous and diligent man became explicitly anti-social, with his friends reporting that "Gage is no longer Gage" (Mobbs 2007).

While Kohlberg (1970), Piaget (1932/65), and other early experts in moral development espoused mentalism (the perspective of the mind as separate from the brain and the body, centered on the concepts of free will and intentionality), there has more recently been a transition to physicalism, which emphasizes the primacy

of the physical brain (Tancredi 2005). Although physicalism dates back to Aristotle and the principles of natural law, advances in neuroscience have brought it to the level of brain biology (Tovino 2005/6).

Indeed, neuroscience-based evidence of determinants of social behavior is rapidly increasing, and recent research is defining the role of neurochemical, evolutionary, and neuroanatomical factors in aspects of social behavior such as fairness, cooperation, altruism, and empathy. Understanding these social behavior factors which underlie ethical decision-making is essential for understanding ethical behavior and implementing effective ethics education.

Neuroactive Peptides and Social Behavior

The impact of neurochemical factors on behavior supports the inclusion of neural bases of behavior in ethical behavior research. The neuropeptide oxytocin has been linked with social behaviors related to ethical decision-making, including generosity, caring behavior, and trust (Kosfeld et al. 2005, Zak et al. 2005, Zak and Fakhar 2006, Zak et al. 2007). Oxytocin, a hormone released by the brain in response to social stimuli, causes a feeling of attachment to others.

Neuroeconomist Paul Zak has conducted research which has shown that people given oxytocin gave significantly more money to a stranger than

participants who took a placebo (Zak et al. 2007). In the study of 68 male college students distributing money to others they were paired with through a computer, participants given oxytocin gave $4.86, about 80 cents more on average than those given a placebo. These findings linked generosity and caring behavior to oxytocin.

Researching trust in economic exchanges, researchers studied oxytocin release while people played a money-transfer game (Zak et al. 2005). This study found that when participants received a signal of trust, their oxytocin levels rose, and people with higher oxytocin levels were more likely to reciprocate trust. These findings identify oxytocin in the endocrinological basis of trust.

With the social behaviors of generosity, caring behavior and trust underlying ethical behavior, neurobiological research regarding the effect of neuroactive hormones on these social behaviors has illustrated the importance of comprehensive models of ethical decision-making which take into account the neuroscientific basis of behavior. Similarly, neuroanatomical and evolutionary evidence of social behavior aspects which underlie ethical behavior underscores the need for comprehensive neurobehavior models in ethics research, such as the neurocognitive approach used in this study.

Neural Basis of Social Behavior and Ethical Decision-Making

Fairness, social cooperation, altruism and empathy are important aspects of ethical decision-making for which biological, evolutionary and neuroanatomical evidence is increasingly being established. This evidence supports the inclusion of neural bases of behavior in ethical behavior research, through incorporation of models such as the neurocognitive approach used in this study.

Fairness and Cooperation

The evolution and neuroanatomical basis of the human sense of fairness may be illuminated by recent research. For example, van Wolkenten et al.'s (in press) findings suggest that a sense of fairness is deeply ingrained in human evolutionary history rather than it is a cultural response and learned from other humans (Bryner 2007).

Van Wolkenten et al.'s (in press) results regarding a primate sense of fairness have implications for the evolution of fairness in humans. In van Wolkenten's research, capuchin monkeys were trained to play a 'no-fair' game, and became upset upon receiving an unfair cucumber reward when their companions received a more desirable grape. The authors' further experiments ruled out greed or frustration as forces driving the monkeys' reactions. Recognition of unfair situations and inequitable treatment could be critical for maintaining relationships

in cooperative societies such as those of capuchins and humans (Bryner 2007, Van Wolkenten et al. in press).

Similarly, recent research by Hamlin et al. (2007) supports the view that social evaluation is a biological adaptation. In infants who have not yet learned language, early developmental emergence of preference for socially cooperative behavior was seen, with babies as young as 6 months old showing preference for those who cooperate and help others versus those who hinder others. These findings show that infants assess individuals on the basis of their behavior towards others, and this may serve as the foundation for moral thought and action (Hamlin et al. 2007).

Neural responses to inequity and violations of social rules have also been investigated with neuroimaging technologies. Sanfey et al. (2003) measured brain activity as subjects played an ultimatum game in which one player was asked to divide a monetary sum with another player. When the division was deemed inequitable, the second player had brain activity in areas associated with emotion. Berthoz et al. (2002) found similar engagement of the brain's emotion regions when subjects considered violations of social rules, such as a dinner guest rudely spitting out food after tasting it without an apology.

Brain reward regions such as the striatum, ventromedial prefrontal cortex (VMPC), and the amygdala have been found to be responsive to fairness,

cooperative partners and behavior (Tabibnia and Lieberman 2007, Tabibnia et al. 2008, King-Casas et al. 2005, Rilling et al. 2002, Singer et al. 2004a). Lieberman (2007) found that fairness processing is relatively automatic and intuitive, as the ventral striatum, the amygdala, and VMPC have all been associated with automatic and intuitive processes. Along with fairness and cooperation, the social behavior of altruism has been found to have evolutionary and neuroanatomical bases which should be considered in the study of ethical behavior.

Altruism

Altruism describes the tendency of people to act in ways that put the welfare of others ahead of their own. Several evolutionary mechanisms have been proposed to explain altruistic giving, including kin selection, direct and indirect reciprocity, group or multi-level selection, and strong reciprocity (Nowak and Sigmund 2005, Van Veelen 2006, Panchanathan and Boyd 2004, Sober and Wilson 1999, Glazer and Konrad 1996, Ginntis 2000, Bowles and Gintis 2004).

Researchers believe altruism evolved to help either one's genetic heritage or oneself, with altruistic behavior benefiting either kin or those who may reciprocate. An altruistic level of selfless behavior has often been claimed as unique to humans, however in a study of 36 chimpanzees born in the wild, chimpanzees have shown they can help strangers at personal cost without apparent expectation of personal

gain. Similar results with 36 human infants just 18 months old yielded comparable results (Warneken et al. 2007).

Chimpanzee and young infant behavior both show that some level of altruism may be innate and not just a factor of education, which suggests that culture is not the only source of altruism (Warneken et al. 2007). Warneken (2007) notes a biological predisposition to altruistic tendencies that humans and chimpanzees share with a common ancestor, with culture cultivating rather than implanting the roots of altruism in the human psyche.

Further examining the neural basis of altruism, recent fMRI studies illuminate human altruistic behavior. Tankersley et al. (2007) discovered that activation of a particular brain region predicts whether people tend to be selfish or altruistic. Researchers scanned the brains of 45 people while they either played a computer game or watched the computer play the game on its own. In both cases, successful playing of the game earned money for a charity of the study participant's choice. The fMRI scans showed that increased activity in the posterior superior temporal sulcus strongly predicted a person's likelihood for altruistic behavior.

Another neuroimaging study, an fMRI study conducted by Moll et al. (2006), suggested that altruism was not a superior moral faculty that suppresses basic selfish urges, but rather was basic to the brain, hard-wired and pleasurable. Researchers scanned the brains of subjects who were asked to decide whether to

donate money to charity or keep it for themselves. When subjects chose the altruistic option, activity increased in the midbrain, a region associated with pleasures such as food and sex.

Harbaugh et al. (2007) conducted an fMRI experiment examining the brains of female subjects who were asked to donate money. Researchers observed that subjects' brains, the pleasure centers specifically, registered a 'neural reward' whenever the subjects donated to charity, and the pleasure was greater when the giving was voluntary. Consistent with 'pure altruism' (satisfied by increase in the public good no matter the source or intent), it was found that even mandatory, tax-like transfers to a charity elicit neural activity in areas linked to reward processing. Consistent with 'warm glow' (fulfilled by an individual's own voluntary donations), the research found that neural activity further increases when people make transfers voluntarily.

The evolutionary and neuroanatomical bases of social behaviors related to ethical behavior, including fairness, cooperation, and altruism, also extend to empathy, which should also be considered in the study of ethical behavior.

Empathy

The role of empathy in prompting altruistic acts has been proposed by behavioral scientists (Preston and De Waal 2002, Eisenberger 2004, Batson 2002,

Eisenberger and Lieberman 2004, Decety and Jackson 2006, De Vignemont and Singer et al. 2006). Empathy underlies the ability to function effectively within a social context, which is significant for human survival (Singer et al. 2004b). Nonhuman primates have also been shown to exhibit empathy, indicating that human empathy has evolutionary roots (De Waal 2006).

Through cases involving reduced capacity for empathy and cases involving individual and corporate greed, Tancredi (2005) identified relationships to brain disorders involving the prefrontal lobes, temporal lobes, and amygdala, and structural and functional abnormalities in the orbitofrontal gyrus, left superior frontal gyrus, posterior cingulate gyrus, and superior temporal sulcus.

Neuroimaging experiments in humans measuring empathic responses have revealed activity in a network of brain regions, including premotor regions, subcortical areas that process emotional stimuli and social information, as well as pain pathways (Zak et al. 2007). Singer et al. (2006) noted that results of studies on empathy suggest that our ability to empathize relies on neuronal systems that underpin our own bodily and emotional states (Preston and De Waal 2002, Gallese et al. 2004, Singer et al. 2004b, Craig 2004).

Gallese et al.'s (2004) work on empathy provided a neurophysiological account of the experiential dimension of action and emotion understanding. This research stated that the fundamental mechanism that allows us a direct experiential

grasp of the mind of others is not conceptual reasoning, but direct simulation of the observed events through the mirror mechanism. Gallese et al.'s (2004) unifying neural hypothesis on how individuals understand the actions and emotions of others claims that the fundamental mechanism at the basis of the experiential understanding of others' actions is the activation of the mirror neuron system, while a similar mechanism, which involves the activation of viscero-motor centers, underlies the experiential understanding of the emotions of others.

Social behaviors of fairness, cooperation, altruism and empathy have been found to have evolutionary and neuroanatomical bases which should be considered in the study of ethical behavior. Indeed, morality itself has been examined with neuroimaging technology, which underscores the neurobiological basis of morality by linking ethical decision-making to neuroanatomy. These findings support a neurocognitive perspective in ethical behavior research, as utilized in this study.

Morality and the Ventromedial Prefrontal Cortex: The Moral Organ

The neural basis of morality, a key component of the neurocognitive approach utilized in this study, is increasingly being examined. Research on the neural basis of morality has been aided by neuroimaging technologies, such as fMRI utilized, for example, in Borg et al.'s (2006) identification of consequences, action, and intention as factors in moral judgments. Several studies have illustrated the role of the brain's neurobiological, emotional, nonconscious processes in moral

decision-making (Anderson et al. 1999, Eslinger et al. 1992, Heerkeren et al. 2003, Luo et al. 2006, Mendez et al. 2005, Raine and Yang 2006).

Recent neuroimaging studies have investigated the neural correlates of morality, linking morality to emotion centers of the brain. Prinz (2006) noted that current evidence favors the conclusion that ordinary moral judgments are emotional in nature, with emotions co-occurring with moral judgments. Prinz stated that it is fairly obvious from experience that when we judge that a moral rule has been violated, we typically have a negative emotional response, and that this piece of introspective psychology has been confirmed again and again in every study of what goes on in the brain during moral judgment (Prinz 2006).

Indeed, Moll et al. (2002a) measured brain activity as subjects evaluated moral sentences and found that when subjects made moral judgments, as opposed to factual judgments, areas of the brain associated with emotional response were active. Greene et al. (2001) examined emotional engagement in moral judgment, finding emotion activation as subjects considered moral dilemmas. Prinz (2006) noted that these findings are not surprising, as the brain scans simply add empirical support to a pretheoretical intuition that emotions arise when we respond to a wide range of morally significant events.

Further investigating neural correlates of morality and emotion, Moll et al. (2002b) noted that humans are endowed with a natural sense of fairness that

permeates social perceptions and interactions, a moral stance so ubiquitous that it may not be noticed as a fundamental component of daily decision-making and in the workings of many legal, political, and social systems.

In Moll et al.'s (2002a) examination of the neural correlates of moral sensitivity, moral emotions were shown to activate the amygdala, thalamus, and upper midbrain. The orbital and medial prefrontal cortex and the superior temporal sulcus were indicated as critical regions for social behavior which play a central role in moral appraisals, and the researchers suggest that the automatic tagging of ordinary social events with moral values may be an important mechanism for implicit social behaviors in humans.

Recent research further underscores the neural basis of morality by linking ethical decision-making to specific neuroanatomy. This research has identified the brain's ventromedial prefrontal cortex (VMPC) as a critical area for moral judgments, with the VMPC a critical neural substrate for the nonconscious intuitive/affective system, but not for the conscious/rational system (Koenigs et al. 2007). The views of evolutionary biologists who have been proposing the existence of a moral organ (Hauser 2006b) have been supported by this recent discovery that injury to this primitive part of the brain, the VMPC, impairs moral judgment.

Using lesion neuroimaging techniques, studies of human patients with focal brain damage in the VMPC were compared to normal controls in moral dilemmas (Ciaramelli et al. 2007). Subjects with VMPC damage were more willing to judge personal moral violations as acceptable behaviors, indicating that the VMPC is necessary to oppose personal moral violations, possibly by mediating anticipatory, self-focused, emotional reactions that may exert strong influence on moral choice and behavior.

Findings regarding the neural basis of morality support a model in which moral judgments result from a combination of nonconscious and conscious mechanisms (Cushman et al. 2006, Greene et al. 2004, Hauser 2006a, Hauser 2006b, Saver and Damasio 1991). The relevance of the brain's VMPC in moral judgment highlights the limitation of the traditional conscious cognitive orientation of the ethical decision-making field. As the VMPC is not a critical neural substrate for the conscious/rational system, the effect of this critical area is not appropriately addressed by the majority of existing ethical decision-making models which consider moral judgment from a limited conscious cognitive perspective.

As recent studies have increased understanding of the neural basis of morality, the role of the brain's neuroanatomical and nonconscious emotional processes in moral decision-making has been illustrated. With the clarity offered by neuroimaging studies, it is increasingly difficult to adhere solely to the traditional

conscious cognitive model of ethical decision-making which fails to incorporate nonconscious neural factors. For these reasons, this research utilizes a more comprehensive, dual process neurocognitive approach which incorporates the neural basis of morality.

Neurocognitive Model of Ethical Decision-Making

Reynolds' (2006) neurocognitive model of ethical decision-making addresses the limitation of the conscious cognitive perspective by accounting for both conscious reasoning and nonconscious intuitive aspects with the two functionally distinct cycles of reflexive pattern matching and higher order conscious reasoning. Based on the X-system and C-system described by Lieberman et al. (2002), Reynolds's model considers both reflexive judgment, which involves matching base patterns known as prototypes, and active judgment, which describes the rule-based analysis of conscious reasoning.

X-system reflexive pattern matching involves the brain's lateral temporal cortex, amygdala, and basal ganglia, while C-system higher order conscious reasoning involves the anterior cingulate, prefrontal cortex, and hippocampus (Lieberman et al. 2002). Reynolds' (2006) neurocognitive model integrates both the reflexive judgment of the neural X-system and the active judgment of the neural

C-system in a comprehensive model of the ethical decision-making process which underlies ethical behavior.

Traditionally, the ethical decision-making field has been narrowly focused on the conscious reasoning of C-system active judgment, which describes the rule-based analysis of conscious cognitive reasoning. The ethical decision-making field has largely overlooked X-system reflexive judgment, which involves base pattern matching.

Reynolds' (2006) neurocognitive model proposes that active judgment will be more positively correlated with ethical behavior than will reflexive judgment, and rests upon the assumption (Kohlberg's 1984) that the moral rules in use during active judgment are superior to the moral rules that serve as foundation of the relevant prototypes of reflexive judgment.

The integrated, comprehensive approach of Reynolds' dual-process model, which incorporates both active and reflexive judgment, more accurately accounts for the nonconscious neural basis of ethical behavior which has been lacking in the field of ethical decision-making. This study utilizes the neurocognitive model in examining the effects of reflexive and active judgment on subjects' ethical behavior. The findings of this neurocognitive-based research seek to illuminate business ethics education methods and instructional materials.

Business Ethics Education

Acknowledging the culpability of business schools in the ethical scandals in the business world in recent years, Mitroff (2004) identifies a narrow, outdated, and repudiated notion of ethics as a key reason business education is partly to blame for the poor ethical climate of business. Indeed, such fundamental issues plague the field of ethics education. Many even question whether business ethics can be effectively taught (Loeb 1991, Marnburg 2003, Pamental 1989, Park 1998, Purcell 1977, Ritter 2006, Weber 1990, Wynd and Mager 1989). The numerous criticisms surrounding the teaching of business ethics relate to the views that ethics involves a high level of abstraction that may prohibit effective learning, and ethics education may have little effect, with students unable to effectively utilize their ethical skills (McDonald and Donleavy 1995).

However, ethics education has been shown to substantially speed the rate of students' moral development (Boyd 1982), help students define and evaluate the importance of social issues (Stead and Miller 1988), stimulate student concern for the obligation of business to act for social good (Angelidis and Ibrahim 2004), and modify students' attitudes and internal principles over time (Sleeper et al. 2006). Additionally, the broad psychological literature suggests that education is one of the most consistent and powerful correlates of moral judgment development (McCabe et al. 1991).

Existing instructional materials for business ethics education are notably limited, and a greater need for explicit guidance in the teaching of ethics has been identified. As business ethics courses are usually taught by functional faculty without training or experience in teaching ethics, the learning materials available, which provide only very superficial coverage of ethical issues and offer little guidance, fail to satisfy the needs of teaching faculty (Baetz and Sharp 2004).

To improve ethics education, Zych (1999) stresses the need for instruction based on realistic business problems in which students deal with ethical dilemmas. One such method, case instruction, has been advocated for teaching business ethics. Cagle and Baucus's 2006 study supports the use of the case study method, finding that it can positively impact students' ethical decision-making, influence students' attitudes, strengthen students' values, and reduce students' cynicism regarding the state of business ethics.

Case instruction may provide a dynamic and powerful method for teaching ethics as part of a business curriculum, fulfilling key criteria for effective ethics education. These criteria include increasing awareness of the complexity of ethical challenges, allowing application of concepts, creating a personal emotional engagement, and creating a setting that encourages students to think critically about ethics (McWilliams and Nahavandi 2006).

This research seeks to provide insight into the effectiveness of instructional methods for business ethics training, specifically case method ethics education. By incorporating a neuroscience-based perspective of social behavior which addresses the limitations of the traditional ethical decision-making field, this study seeks to present a multi-disciplinary view of ethical behavior which more closely approximates the complex realities of human behavior (Figure 1). Findings from this research based on a comprehensive perspective are anticipated to reveal insights useful to implementation of business ethics training in an educational setting.

Figure 1: Multi-Disciplinary Literature Review Summary

Subject	*Author*	*Topic*
Ethical Decision-Making (EDM)	Kohlberg 1969	Cognitive moral development
	Nisbett & Wilson 1977	Automatic recognition
	Rest 1979	Moral sensitivity, judgment, intent, character
	Ferrell & Gresham 1985	Peers, opportunity
	Hunt & Vitell 1986	Personal characteristics
	Trevino 1986; Trevino et al 1998	Person–situation; Organization ethical climate
	Jones 1991	Issue moral intensity
	Petrinovich 1993	Moral intuition
	Wilson 1993b	Innate universal moral disposition
	Werhane 1999	Moral imagination
	Haidt 2001	Social intuition
	Reynolds 2006	Neurocognitive Model of EDM
Neuro-science, Neuro-behavior	Gazzaniga 2000	Neuroethics a brain-based philosophy of life
	Zak et al 2005; Zak et al 2007	Neuropeptides and generosity, caring, trust
	Greene et al2001; Moll etl2002a	MRI: Moral dilemma; judgment & emotion reg
	Berthoz et 2002; Sanfey et 2003	MRI: Rule violation/emotion region; inequity
	Gallese et al2004; Tancredi 2005	Empathy & mirror system; Reduced empathy
	Borg et al 2006; Moll et 2002b	MRI: Moral judgment factors; moral sensitivity
	Moll et al 2006; Harbaugh 2007	MRI: Altruism & pleasure/ reward regions
	Tankersley et al. 2007	MRI: Altruism & post. superior temporal sulcus
	Koenigs et al 2007; Hauser 2006	Brain's VMPC the moral judgment organ
	VanW. in press; Warneken 2007	Fairness, altruism evolutionary
Business Ethics Education (BEE)	Boyd 1982	BEE speeds rate of moral development
	Stead & Miller 1988	BEE defines importance of social issues
	McCabe et al. 1991	Education and moral judgment development
	McDonald & Donleavy 1995	BEE abstract, little effect and utilization
	Sleeper et al. 2006	BEE modifies attitudes, internal principles
	Zych 1999	Need instruction based on realistic problems
	Angelidis & Ibrahim 2004	BEE raises concern for bus. social obligation
	Mitroff 2004	Business education culpable in scandals
	Baetz & Sharp 2004	Instructional materials, faculty lacking
	Cagle & Baucus 2006	Cases impact EDM, attitudes, values, etc.
	McWilliams & Nahavandi 2006	Cases allow application, create engagement

CHAPTER 3. METHOD

Ethical decision-making research may be enhanced with the incorporation of a neuroscience-based perspective which considers the neurobehavioral aspects of ethical behavior. Therefore, a neurocognitive approach (Reynolds 2006) is utilized in this study for the perspective it offers on two neurally-different types of judgment, reflexive and active. With mixed views of the effectiveness of ethics training in general and instructional materials specifically, assessment of the effectiveness of case method ethics education is warranted and is pursued with the research questions of this study.

Research Methodology

This study investigates the effectiveness of case method ethics instruction as determined by increased ethical behavior. Two types of cases which may differentially activate active judgment are evaluated. Data is analyzed using McNemar test of significance of changes, Pearson chi-square analysis, and logistic regression analysis.

Research Questions

The research questions of this study comprise the following twelve hypotheses.

There are four hypotheses for analysis by McNemar test of significance of changes:

H1: There will be a change in ethical behavior from round 1 to round 2 for the reflexive judgment, no case training group (R-R).

H1a: There will be a change in ethical behavior from round 1 to round 2 for the active judgment, no case training group (R-A).

H1b: There will be a change in ethical behavior from round 1 to round 2 for the group trained with case method ethics education utilizing a case involving a commonplace situation (R-CC-A).

H1c: There will be a change in ethical behavior from round 1 to round 2 for the group trained with case method ethics education utilizing a case involving a novel situation (R-NC-A).

There are four hypotheses to be tested by Pearson's chi-square analysis:

H2: The group a subject is in will change the probability of changing ethical behavior in some way.

H2a: Active judgment without case training will improve ethical behavior compared to control group R-R.

H2b: Case method ethics education utilizing a case involving a commonplace situation will improve ethical behavior compared to control group R-R.

H2c: Case method ethics education utilizing a case involving a novel situation will improve ethical behavior compared to control group R-R.

Additionally, there are four parallel hypotheses for regression analysis which hold the variables of previous college-level ethics education and gender constant:

H3: The group a subject is in, previous college-level ethics education, and gender will change the probability of changing ethical behavior in some way.

H3a: Active judgment without case training will improve ethical behavior compared to control group R-R, holding constant previous college-level ethics education and gender.

H3b: Case method ethics education utilizing a case involving a commonplace situation will improve ethical behavior compared to control group R-R, holding constant previous college-level ethics education and gender.

H3c: Case method ethics education utilizing a case involving a novel situation will improve ethical behavior compared to control group R-R, holding constant previous college-level ethics education and gender.

Research Design: Dictator Game Experiment

The research design of this study is centered on economic game theory, which provides a well-established theoretical foundation and experimental tool in the study of human behavior (Arifovic and Ledyard 2004, Bednar and Page 2007, Camerer 2003, Dana et al. 2006, D'Arms and Batterman 1998, Dekel and Scotchmer 1999, Fox and Weber 2002, Henrich et al. 2005, Mailath 1998, Osborne and Rubinstein 1998, Sanchez et al. 2005, Sell 1997).

A decision task from experimental economics, the well-known distribution game called the Dictator Game (DG), will be employed as a measure of ethical

behavior. The dictator game is described as 'a workhorse within experimental economics, frequently used to test theory' (List 2007). Like the trust game, and its predecessor the investment game, the dictator game is a frequently-used experimental game and is well referenced in the literature (Branas-Garza 2007, Branas-Garza et al. 2007, Broberg et al. 2007, Dufwenberg and Muren 2006, Hong and Bohnet 2007, Stahl and Haruvy 2006).

The anonymous dictator game is a useful tool for examining ethical behavior as it gives a person complete control over distribution of wealth with complete anonymity (Hoffman et al. 1996, in Cherry et al. 2002). The dictator game is referenced in the literature for its use in ethics research, as Takezawa et al. (2006) employed the dictator game in their study of the role of moral reasoning in group discussions of moral issues.

The dictator game has been used extensively in reference to aspects of ethical behavior. Zak et al. (2007) employed the dictator game in their investigation of the role of empathy in producing generosity and altruism, and several studies utilizing the dictator game have examined fairness and other-regarding behavior (Bohnet and Frey 1999, Bolton et al. 1998, Burnham 2003, Cappelen et al. 2007, Charness 2000, Cherry et al. 2002, Dana et al. 2007, Diekmann 2004, Fetchenhauer and Huang 2004, Frey and Bohnet 1997, Gowdy et al. 2003, Haselhuhn and

Mellers 2005, Hoffman et al. 1996, Song et al. 2004, van Dijk and Vermunt 2000, Whitt and Wilson 2007).

The dictator game is the preferred tool for this study as it is not reciprocity-based. While Reynolds (2006) has suggested the trust game for studying ethical behavior, use of the dictator game rather than the reciprocal trust game reduces the possibility that subjects will make or alter their decisions based on expected reciprocity. In Chaudhuri and Gangadharan's (2007) experiment in which subjects participated in both the trust game and the dictator game, the authors found that transfers in the trust game were higher and were motivated by expected reciprocation. Unlike the trust game, which involves willingness to trust, attitudes toward risk (or 'sensation-seeking'), and betrayal aversion (Bohnet and Zeckhauser 2004), the dictator game is not reciprocity-based.

In the reciprocal trust, investment, and ultimatum games, recipients make decisions, whereas in the dictator game, the subject's choice solely determines an unknown recipient's payoff with the recipient making no decision (Bohnet and Zeckhauser 2004). Therefore, recipients may be representational in the dictator game, as they are in this study. Participants are instructed to assume their distributions will be received by individuals not in the room, which strengthens the anonymity of the game.

Anonymity, Language and Stakes in the Dictator Game Experiment

In the anonymous dictator game, subjects are instructed to distribute money between themselves and an anonymous recipient (Appendix B: Dictator Game Instructions). Subjects are instructed that their identities will not be revealed to the recipients. Subjects' anonymity is ensured in this experiment using double blind procedure, as increases in privacy are reported to reduce conformity (Allen 1965). Subjects are ensured that their identities are unknown to the researcher, and are not connected in any way with their decisions. Subjects are identified only by numbers, randomly-chosen as envelope packets are distributed throughout the room.

With careful wording, ethical language was masked in administration of the dictator game to reduce potential impact on ethical behavior. Avoiding moral language which cues ethical prototypes (Butterfield et. al. 2000) reduces the likelihood that subjects may apply prototypes they are 'supposed' to apply (Reynolds 2006), which is especially important in the initial round of naturally-occurring reflexive pattern matching. Thus in giving oral consent to participate, subjects were invited to participate in an economic distribution game as part of a research study for the purpose of comparing instructional methods, and in which they may be asked to read a case.

Camerer and Hogarth's (1999) review of the literature on the effect of stakes in a broad range of economic game experiments, as reported by Carpenter et

al. (2005), found that stakes tend to have little effect on average behavior. However, games with larger (or non-zero) stakes tended to generate data with less variance, thus the context in which stakes are most likely to be important is when moving from zero stakes to positive stakes, and the effect is to shift behavior in the direction of standard theory.

In reviewing the literature regarding the effect of stakes on behavior in the dictator game, Carpenter et al. (2005) reported that Sefton (1992) found that the average allocation to the second-mover dropped by approximately half when going from no stakes to US$5 stakes, and Forsythe et al. (1994) found no significant stakes effect when increasing stakes from US$5 to US$10. They also reported that List and Cherry (in press 2006) examined the effect of substantial stakes on dictator behavior and found no significant effect.

Carpenter et al. (2005) conducted the first randomized experiment that substantially raised the stakes in the dictator game, which found that stakes do not appear to have a significant effect on behavior in the game, as stakes have no effect on allocations. Their experiments indicated that raising the stakes from US$10 to US$100 had no statistically significant effect on behavior in the game.

Stakes are US$6 in this experiment, as research indicates that larger stakes result in no significant effects (Carpenter et al. 2005). The amount of US$6 was chosen to facilitate distribution in dollars without coin change.

Data Collection

Data was collected from 229 undergraduate students participating in the dictator game experiment[3]. Each student distributed US$6 in each of two rounds of distribution. The student subjects were divided into four groups, with all four groups starting with round one of the dictator game, performed under time constraint in order to engage reflexive judgment.

Group 1 (R-R) acted as the control and received no case method education. During the second round of the dictator game, group 1 again distributed under time constraint, again engaging reflexive judgment. As group 1engaged reflexive judgment in both rounds of the game, this group is represented as 'R-R'.

Group 2 (R-A) also did not receive case method education, but did not distribute under time constraint in the second round. Group 2 was instructed to take time to consider the distribution decision in the second round in order to engage active judgment. As group 2 engaged reflexive judgment in the first round and active judgment in the second round, this group is represented as 'R-A'.

After round one, Group 3 (R-CC-A) received education consisting of a commonplace case (Appendix C), and in the second round was permitted to take

[3] The experiment was reviewed by the Committee on Human Studies of the University of Hawaii, and determined to be exempt from the Department of Health and Human Services (DHHS) regulations, 45 CFR Part 46, with authority for this exemption section 46.101 (b)(2). (Appendix A: Certificate of Exemption)

time to consider the distribution decision to engage active judgment. As group 3 engaged reflexive judgment in the first round, then analyzed a commonplace case, and finally engaged active judgment in the second round, this group is represented as 'R-CC-A'.

Group 4 received education consisting of a novel case (Appendix D), and was instructed to take time for consideration to engage active judgment in round 2. As group 4 engaged reflexive judgment in the first round, then analyzed a novel case, and finally engaged active judgment in the second round, this group is represented as 'R-NC-A' (Figure 2).

Figure 2: Dictator Game Experiment Summary

	Round 1	*Education*	*Round 2*
Group 1: R-R	Reflexive o_1	-none-	Reflexive o_1
Group 2: R-A	Reflexive o_1	-none-	Active o_2
Group 3: R-CC-A	Reflexive o_1	Commonplace case x_1	Active o_2
Group 4: R-NC-A	Reflexive o_1	Novel case x_2	Active o_2

In this experiment, ethical behavior was quantified as distribution to the unknown recipient of half or more of the US$6 assigned for distribution in each round. Therefore, ethical behavior was determined in accordance with the parameters outlined in Figure 3. The quantification of ethical behavior as distribution to the unknown recipient of US$3 or more in each round is based on

principles underlying ethics including fairness[4], other-regarding behavior, and altruism. Subjects improved in ethical behavior if in round 2 they distributed to the recipient any amount higher than the amount distributed in round 1 (increased toward, to, or above an equal distribution, including distribution of the maximum of $6 in round 1 and $6 in round 2).

Figure 3: Ethical Behavior Parameters in Dictator Game Experiment

- Subject behaved ethically if subject distributed to recipient ≥ $3 (an equal or greater than equal distribution)
- Subject did not behave ethically if subject distributed to recipient < $3 (a less than equal distribution)
- Subject improved in ethical behavior if in round 2 distributed to recipient any amount higher than amount distributed in round 1 (increased toward, to, or above an equal distribution)

Data Analysis Methods

Data will be analyzed using McNemar tests for significance of changes, Pearson chi-square tests, and logistic regression analysis. The independent variables of Judgment Type, Commonplace Case, and Novel Case will be regressed

[4] Fairness in economic-exchange tasks is typically defined as the equitable distribution of an initial stake of money (Tabibnia & Lieberman 2007), and fairness in dictator games specifically has been defined as an equal division. Students who had never before participated in a dictator game experiment were asked in a questionnaire what they considered to be a fair choice in a dictator game, and an equal split was the modal response (Eichenberger, R. & Oberholzer-Gee, F. 1998).

against the dependent variable of Improved Ethical Behavior, holding the variables of Previous Ethics Education and Gender constant (Figure 4).

Figure 4: Regression Analysis Summary

Improved Ethical Behavior = $\beta_0 + \beta_1$ JT + β_2CC + β_3NC + β_4PEE + β_5G + ε,

Improved Ethical Behavior (IEB) = Round 2 $ amount > Round 1 $ amount (0 = No IEB, 1 = IEB),

JT = Judgment Type (0 = Reflexive Judgment, 1 = Active Judgment),

CC = Commonplace Case (0 = Not Commonplace Case, 1 = Commonplace Case),

NC = Novel Case (0 = Not Novel Case, 1 = Novel Case),

PCLEE = Previous College-Level Ethics Education (0 = No Previous College-Level Ethics Education, 1 = Previous College-Level Ethics Education),

G = Gender (0 = Male, 1 = Female), and

ε = error term.

The coefficient associated with the independent variable of Judgment Type (JT) is expected to be positive, based on hypothesis 3a. The coefficients associated with the independent variables of Commonplace Case (CC) and Novel Case (NC) are expected to be positive, based on hypotheses 3b and 3c.

CHAPTER 4. RESULTS

McNemar Tests for Significance of Changes

The McNemar test assesses the significance of the difference between two dependent samples when the variable of interest is a dichotomy, and is used primarily in before-after studies to test for an experimental effect (Garson 2008). Utilizing the dichotomous data of subjects' ethical behavior categorization, Ethical Behavior (EB) and No Ethical Behavior (No EB) subjects are analyzed in this study using McNemar tests. Changes in subjects' ethical behavior are examined, with the number of people who changed from ethical behavior in round one to no ethical behavior in round two compared to the number of people who changed in the opposite direction.

In the R-R group (Table 1), 24 subjects did not show ethical behavior (No EB) in either round one or round two. Ethical behavior (EB) was shown in both rounds by 19 subjects. Seventeen subjects changed their ethical behavior category from round one to round two, with most (15 subjects) showing ethical behavior in round one but not showing ethical behavior in round two. Only two subjects did not show ethical behavior in round one but showed ethical behavior in round two.

Subjects in the R-R group were not equally likely to change in both directions, as shown with a significant p-value of .00235. Rather, subjects were

more likely to change from ethical behavior in the first round to no ethical behavior in the second round. Therefore, hypothesis 1, which states that there will be a change in ethical behavior from round 1 to round 2 for the R-R group, is supported, as subjects in the R-R group showed a decline in ethical behavior.

Table 1: Group R-R

	Round 2	
	No EB	EB
Round 1		
No EB	24	2
EB	15	19

In the R-A group (Table 2), 41 subjects did not change ethical behavior categories from round one to round two, with 28 subjects not showing ethical behavior in either round, and 13 subjects showing ethical behavior in both rounds. Sixteen subjects changed their ethical behavior category from round one to round two, with all 16 showing ethical behavior in round one but no ethical behavior in round two. Zero subjects changed from no ethical behavior in round one to ethical behavior in round two.

Subjects in the R-A group were not equally likely to change in both directions, as shown with a significant p-value of .000031. Rather, subjects were more likely to change from ethical behavior in the first round to no ethical behavior in the second round, as in the R-R group, but even more so. Therefore, hypothesis

1a, which states that there will be a change in ethical behavior from round 1 to round 2 for the R-A group, is supported, as subjects in the R-A group showed a decline in ethical behavior. While active judgment did result in significant change in ethical behavior as anticipated, the direction of change was opposite of the expected result, with subjects in the R-A group showing a significant worsening of ethical behavior.

Table 2: Group R-A

		Round 2	
		No EB	EB
Round 1	No EB	28	0
	EB	16	13

In the R-CC-A group (Table 3), 43 subjects did not change ethical behavior categories, with 19 subjects not showing ethical behavior in either round one or round two, and ethical behavior shown in both rounds by 24 subjects. Seven subjects showed ethical behavior in round one but did not show ethical behavior in round two, and six subjects did not show ethical behavior in round one but showed ethical behavior in round two. The non-significant p-value of 1 leads to acceptance of the null hypothesis that subjects in the R-CC-A group are equally likely to change in either direction.

Therefore, hypothesis 1b, which states that there will be a change in ethical behavior from round 1 to round 2 for the R-CC-A group, is not supported. However, while the R-CC-A group exhibited no significant change in ethical behavior, the active judgment group not trained with case method (R-A) exhibited significant worsening of ethical behavior. So although hypothesis 1b is rejected, those trained with case method with a commonplace case (R-CC-A) showed reduced negative change in ethical behavior compared to the active judgment group without case training (R-A).

Table 3: Group R-CC-A

		Round 2	
		No EB	EB
Round 1			
No EB		19	6
EB		7	24

In the R-NC-A group (Table 4), 37 subjects did not change ethical behavior categories, with 17 subjects not showing ethical behavior in either round one or round two, and 20 subjects showing ethical behavior both rounds. Thirteen subjects showed ethical behavior in round one but did not show ethical behavior in round two, and six subjects did not show ethical behavior in round one but showed ethical behavior in round two. The non-significant p-value of .167068 leads to acceptance

of the null hypothesis that subjects in the R-NC-A group are equally likely to change in either direction.

Therefore, hypothesis 1c, which states that there will be a change in ethical behavior from round 1 to round 2 for the R-NC-A group, is not supported. However, while the R-NC-A group exhibited no significant change in ethical behavior, the active judgment group not trained with case method (R-A) exhibited significant worsening of ethical behavior. So although hypothesis 1c is rejected, those trained with case method with a novel case (R-NC-A) showed reduced negative change in ethical behavior compared to the active judgment group without case training (R-A).

Table 4: Group R-NC-A

		Round 2	
		No EB	EB
Round 1			
No EB		17	6
EB		13	20

McNemar's test for the significance of changes indicates that the distributions of change and no change in ethical behavior from round one to round two are independent of groups R-CC-A and R-NC-A, as these groups exhibited no significant change in ethical behavior. The distributions of change and no change in ethical behavior from round one to round two are not found to be independent of

groups R-R and R-A, as these groups exhibited significant worsening of ethical behavior. Subjects in the two groups not trained with case method (R-R and R-A) were more likely to change from ethical behavior in the first round to no ethical behavior in the second round, with the effect being greater in the R-A group.

While the groups trained with case method (R-CC-A and R-NC-A) exhibited no significant change in ethical behavior, groups not trained with case method (R-R and R-A) exhibited significant decline in ethical behavior. Thus the case-educated groups showed reduced worsening of ethical behavior than those not trained with case method.

Pearson Chi-Square Tests

To examine the relationship between pairs of categorical variables, crosstabulations were performed for relationships between improved ethical behavior and variables. Two sets of crosstabulations were performed, the first with all subjects, and the second with a subset of the subjects who changed the amount they distributed to the recipient from round 1 to round 2.

The group a subject is in was shown to change the probability of changing ethical behavior in some way, in both the all subjects test ($p = .003$) and the subset test ($p = .000$) (Tables 5 and 6). Therefore, hypothesis 2 is supported.

Active judgment without case training was not shown to improve ethical behavior compared to reflexive judgment in the control group R-R, in either the all subjects test ($p = .439$) or the subset test ($p = .490$) (Tables 5 and 6). Therefore, hypothesis 2a is not supported.

However, case method ethics education utilizing a case involving a commonplace situation was shown to improve ethical behavior compared to control group R-R, in both the all subjects test ($p = .037$) and the subset test ($p = .004$) (Tables 5 and 6). Therefore, hypothesis 2b is supported.

Similarly, case method ethics education utilizing a case involving a novel situation was shown to improve ethical behavior compared to control group R-R, in both the all subjects test ($p = .012$) and the subset test ($p = .007$) (Tables 5 and 6). Therefore, hypothesis 2c is supported. In addition, when groups R-CC-A and R-NC-A were each compared to the R-A group, commonplace and novel cases were shown to even more significantly improve ethical behavior ($p = .007$ and $p = .002$ respectively in the all subjects test, and $p = .001$ and $p = .002$ in the subset test).

Table 5: Improved Ethical Behavior, All Subjects

	Improved Ethical Behavior	
n = 229	*No*	*Yes*
Group		
R-R (n=60)	93.3%	6.7%
R-A (n=57)	96.5%	3.5%
R-CC-A (n=56)	80.4%	19.6%
R-NC-A (n=56)	76.8%	23.2%
Judgment Type		
Active no case (n=57)	96.5%	3.5%
Reflexive no case (n=60)	93.3%	6.7%
Commonplace Case Training		
Commonplace case (n=56)	80.4%	19.6%
Reflexive no case (n=60)	93.3%	6.7%
Novel Case Training		
Novel Case (n=56)	76.8%	23.2%
Reflexive no case (n=60)	93.3%	6.7%

	Chi-Square	*P-Value*
Group	13.925	.003
Judgment Type	.599	.439
Commonplace Case Training	4.332	.037
Novel Case Training	6.341	.012

Table 6: Improved Ethical Behavior, Subjects who changed amount distributed to recipient from round 1 to round 2

	Improved Ethical Behavior	
n = 113	*No*	*Yes*
Group		
R-R (n=32)	87.5%	12.5%
R-A (n=28)	92.9%	7.1%
R-CC-A (n=23)	52.2%	47.8%
R-NC-A (n=30)	56.7%	43.3%
Judgment Type		
Active no case (n=28)	92.9%	7.1%
Reflexive no case (n=32)	87.5%	12.5%
Commonplace Case Training		
Commonplace case (n=23)	52.2%	47.8%
Reflexive no case (n=32)	87.5%	12.5%
Novel Case Training		
Novel Case (n=30)	56.7%	43.3%
Reflexive no case (n=32)	87.5%	12.5%

	Chi-Square	*P-Value*
Group	18.320	.000
Judgment Type	.476	.490
Commonplace Case Training	8.419	.004
Novel Case Training	8.466	.007

Logistic Regression Analyses

In the first of two regression models, the independent variables of Judgment Type, Commonplace Case, and Novel Case were regressed against the dependent variable of Improved Ethical Behavior for all subjects, and Previous Ethics Education and Gender were included as control variables.

The regression model containing all subjects was found to be significant, with a p-value of .009 (Table 7), therefore hypothesis 3 is supported. The Nagelkerke R Square for the model containing all subjects is .120, reflecting the significance of other factors which likely contribute to individual ethical behavior, such as personal psychological factors and value orientations.

Table 7: Logistic Regression Analysis: Improved Ethical Behavior, All Subjects, Overall Test of the Model

Chi-Square	df	Sig.	Nagelkerke R Square
15.385	5	.009	.120

Both control variables, previous college-level ethics education and gender, were not significant. The coefficient associated with the control variable of Previous College-Level Ethics Education (PCLEE) was positive at .317, but not significant at a level of significance of .05 ($p = .502$), indicating no correlation between previous ethics education and improved ethical behavior (Table 8). The

coefficient associated with the control variable of Gender (G) was .063 and not significant at a level of significance of .05 (p = .878), indicating no correlation between gender and improved ethical behavior.

The Judgment Type (JT) variable describes reflexive or active judgment without case training[5]. Although expected to be positive based on hypothesis 3a, the coefficient associated with the independent variable of Judgment Type was -.683 and not significant at a level of significance of .05 (p = .442) (Table 8). These results indicate that active judgment did not improve ethical behavior compared to reflexive judgment of the control group, thus hypothesis 3a is not supported.

As expected based on hypotheses 3b and 3c, the coefficients associated with the independent variables of Commonplace Case (CC) and Novel Case (NC) were positive, at 1.228 and 1.411 respectively (Table 8). The independent variable of Commonplace Case was significant at a level of significance of .05 (p = .047), and the independent variable of Novel Case was significant at a level of significance of .05 (p = .020). These results indicate that case method education which utilized cases with both commonplace and novel situations improved ethical behavior compared to the control group, thus hypotheses 3b and 3c are supported.

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[5] To further examine the significance of active judgment, the Judgment Type variable can be redefined, with reflexive judgment = 0 and all active judgment (including case groups) = 1. While the values for previous college-level ethics education, gender and judgment type do not change, the values of the independent variables of commonplace case and novel case do change (p = .017 and .008 respectively), remaining significant.

Table 8: Logistic Regression Analysis: Improved Ethical Behavior, All Subjects, Variables in the Equation

n = 229	B	S.E.	Wald	df	Sig.	Exp(B)
Judgment (JT)	-.683	.887	.592	1	.442	.505
Comnplc Case (CC)	1.228	.619	3.938	1	.047	3.416
Novel Case (NC)	1.411	.609	5.371	1	.020	4.100
P CL Ethics Ed (PCLEE)	.317	.472	.450	1	.502	1.373
Gender (G)	.063	.412	.024	1	.878	1.065
Constant	-2.729	.570	22.941	1	.000	.065

The second of two regression models is a subset model of only subjects who changed the amount they distributed to the recipient from round 1 to round 2. The same independent variables of Judgment Type, Commonplace Case, and Novel Case were again regressed against the dependent variable of Improved Ethical Behavior, and Previous Ethics Education and Gender were again included as control variables.

The subset regression model was found to be significant at a level of significance of .05 (p = .002) (Table 9), which was more significant than the model containing all subjects, also supporting hypothesis 3. The Nagelkerke R Square for the subset regression model was .231, greater than the model containing all subjects.

Table 9: Logistic Regression Analysis: Improved Ethical Behavior, Subjects who changed amount distributed to recipient from Round 1 to Round 2, Overall Test of the Model

Chi-Square	Df	Sig.	Nagelkerke R Square
19.495	5	.002	.231

Results in the subset model were similar to the initial regression model containing all subjects. Previous College-Level Ethics Education was again positive but not significant at a level of significance of .05, and at p = .945 even less significant than in the model examining all subjects, and Gender was again not significant (Table 10). Active judgment again did not improve ethical behavior compared to reflexive judgment of the control group, thus hypothesis 3a again is not supported.

The coefficients associated with Commonplace Case (CC) and Novel Case (NC) were again positive, at 1.858 and 1.689 respectively, and both even more significant than in the first model (p = .006 and .009 respectively). These results were not surprising, indicating that within the subset of subjects who changed the amount they distributed, case method education which utilized cases with both commonplace and novel situations improved ethical behavior compared to the control group, again supporting hypotheses 3b and 3c.

Table 10: Logistic Regression Analysis: Improved Ethical Behavior, Subjects who changed amount distributed to recipient from Round 1 to Round 2, Variables in the Equation

n = 113	B	S.E.	Wald	df	Sig.	Exp(B)
Judgment (JT)	-.599	.911	.433	1	.511	.549
Comnplc Case (CC)	1.858	.680	7.474	1	.006	6.413
Novel Case (NC)	1.689	.651	6.732	1	.009	5.415
P CL Ethics Ed (PCLEE)	.037	.539	.005	1	.945	1.038
Gender (G)	-.156	.474	.108	1	.743	.856
Constant	-1.886	.603	9.779	1	.002	.152

Summary of Findings

Previous ethics education and gender were not shown to change the probability of improving ethical behavior. Results indicated significant worsening of ethical behavior in groups not trained with case method ethics education. Parallel hypotheses 2b/3b and 2c/3c, which hypothesize that case training with commonplace and novel cases will improve ethical behavior compared to the control group (R-R), were supported. Therefore, case method education, with both commonplace and novel cases, appears to be effective in improving ethical behavior by reducing the decline in ethical behavior seen with active judgment without case training.

CHAPTER 5. DISCUSSION

The results of this research have numerous implications for business ethics training. Seeking to help improve students' ethical behavior through business ethics education may require assisting neural development to support change in ethical behavior, thus substantial challenges may arise.

Active Rationalization

The proposition of Reynolds' (2006) neurocognitive model that active judgment will be more positively correlated with ethical behavior than will reflexive judgment rests upon the assumption (Kohlberg 1984) that the moral rules in use during active judgment are superior to the moral rules that serve as foundation of the relevant prototypes of reflexive judgment. It may be that this assumption is flawed, (perhaps not surprisingly given the traditional over-focus on conscious cognition and lack of inclusion of neural bases of behavior), which may help explain why active judgment was shown in this study not to correlate positively with ethical behavior.

The highly individualistic, achievement-oriented, power-and-control-centered cultural climate of current American society, amplified in the competitive business environment, may influence the rules in use during active judgment. Dominance-based 'win at all costs' and 'looking out for number one' attitudes,

rather than cooperative harmony-based attitudes, have been common in American society and business especially. These attitudes may be leading to behavioral rules accessed during active judgment which result in less ethical behavior than inherent cooperative social behaviors and prototypes of reflexive judgment.

It is quite possible that the subjects employed active judgment to rationalize unethical behavior choices, aligning them with the cultural values and attitudes common in American social and business culture. Case method education which influences or 'directs' active judgment seems to curb this potential rationalization effect, resulting in less decline in ethical behavior.

Cases may prompt traditional moral rules learned from spiritual or religious training, and encourage them to challenge or override culture-driven dominance-based rules. Alternatively, innate neurally-driven fairness, cooperation, empathy and altruism may come into play, triggered by the cases and resulting in reversion to more ethical prototypes. Or in a combination of both possibilities, it could be that cases prompt increased awareness of these innate neurally-driven social behaviors, which then engages a different set of rules, traditional moral rules, during active judgment.

This would be consistent with the view of Reynolds' (2006) neurocognitive model that to be effective, ethics education should focus on both moral rules and mental structures of prototypes, supporting the inclusion of a neuroscience-based

perspective in ethical behavior research. Through case method instruction, repeated 'direction' of active judgment to consideration of a broader perspective than one's self-interest may be achieved, resulting in reduced rationalization of unethical behavior. Students may be trained to use active judgment to balance their interests with the interests and needs of others in a wider context.

Directing active judgment toward broader ethical consideration rather than self-interest allows alteration to nonconscious prototypes, and opportunity for reinforcement of the brain's natural propensity to reward altruistic behavior. Repeated exposures to activation of neural reward and pleasure centers through altruistic behaviors may strengthen students' desire to choose such behaviors in future contexts.

Experiential Education for Neural Reward

While case method education may open the door to a broader perspective than self-interest and illuminate potential ethical behavior options, experiential education will likely better activate neural reward systems due to the direct experience involved. Activation of neural reward and pleasure centers through experience of altruistic behavior during experiential education exercises such as

role play may increase students' desire to pursue ethical options in the future for activation of this reward circuitry.

Repeatedly experiencing the neural reward and pleasure of altruistic behavior may intensify the desire to choose neurally-rewarding behavior, even when it requires forfeiting benefits which could be gained by purely self-interested behavior. Direct experience of neural reward activated by altruism may offset some of the costs of choosing behavior against overt self-interest. Having repeatedly experienced the pleasure of neural reward, the value of neurally-rewarding behavior may increase relative to the value of whatever may be gained by unethical behavior.

In short, in may be possible to train students through experiential ethics education such as role play, to enjoy and pursue by their own choice the natural neurally-generated reward of altruistic ethical behavior. Through the activation of the visceromotor cortex's 'mirroring' mechanism which allows experiential understanding of the emotions of others (Gallese et al. 2004), students may be allowed a direct experiential understanding, beyond that possible through conceptual reasoning, through direct neurophysiological stimulation of observed events. Such experiential training may have a greater impact on ethical behavior, and/or provide longer lasting improvement in ethical behavior than traditional methods.

No True Altruism?

Philosophically, the understanding of neural reward system activation in altruistic behavior calls into question the existing concept of altruism. Generally defined as selfless or unselfish concern for others, our traditional view of altruism does not take into account the self-rewarding neural pleasure inherent in altruistic acts. In short, it would appear that there is no 'true' altruism – altruistic behavior is inherently rewarding due to its activation of neural pleasure centers, and thus not selfless or unselfish. Rather, altruism seems to be a 'win-win' behavior, in which the actor and the recipient of the behavior both benefit.

Thus, ethical behavior may be viewed as being self-rewarding. Unethical behaviors may lead to outcomes perceived to be of greater value to oneself than neural reward, but as in the example of a person with alcoholism perceiving alcohol to be of greater value than living without alcohol, the perception is likely flawed due to neuropsychological (and potentially neurobiological) factors.

Neuropsychological Factors and Ethical Behavior

It is likely that the impact of individual neuropsychological factors on behavior is a substantial factor which makes changing ethical behavior through education a daunting and difficult task with reportedly mixed results. Indeed, only a

small portion of ethical behavior was explained by the factors considered in the models of this study.

It may be that psychological needs, especially unhealthy ones that often are out of awareness and thus operate relatively unchecked, override any neural reward which may be gained from ethical behaviors. For example, unhealthy psychological needs for power, control, or security may result in unethical greedy, controlling, or hoarding behaviors which attempt to compensate for these psychological needs.

In such cases, desire to assuage one's fear of lack of power, control, or security may result in unethical behavior of apparent self-interest, at the expense of ethical, potentially neurally-rewarding behavior. As unhealthy psychological needs operate largely outside rational conscious thought, and can be extremely deeply-held and intensely emotional, it may be difficult if not impossible to encourage those with unhealthy psychological needs toward healthy ethical behavior in an educational setting.

However, as brain and body innately seek homeostasis, including neuropsychologically, individuals will generally move toward healthy balance (such as the 'win-win' effect of altruistic behavior which activates neural reward) when given support and encouragement to do. Progress may be slow, difficult or impossible in the classroom for those with substantially unhealthy psychological needs blocking their ability to achieve ethical behavior, but it is likely that many, if

not most, students will have the capability to make progress in pursuit of neuropsychologically-healthy ethical behavior.

Walking the Talk

A psychologically-healthy, inclusion-based classroom environment which respects neurodiversity, empowers students and avoids authoritarianism and excessive control, and minimizes emotions of fear, shame, guilt and intimidation will generally provide the greatest likelihood that unhealthy psychological needs will be triggered, preventing movement toward ethical behavior. Demonstrating and supporting fair, respectful, ethical behavior in all aspects of the training environment serves to teach and reinforce ethical behavior, as well as provide a safe, positive environment for students to explore their own ethicality. To maximize the likelihood of successful ethics education, professors must 'walk the talk' and demonstrate the ethical lessons of controlling self-interest and respecting others with their own actions.

Students may already be receiving mixed messages about the importance of business ethics from their work environments, less ethically-aware professors, or other sources. Business ethics training by definition seeks to stand against commonly-held 'win-at-all-costs', 'looking out for number one', and 'nice-guys-

finish-last' attitudes, in favor of a cooperative, fair, 'win-win' ethical perspective. Perpetuating attitudes that work against ethical behavior undermines ethics education and diminishes the likelihood of improving students' ethical behavior.

An interesting area of future study may be the assessment of effectiveness of ethics faculty in improving students' ethical behavior, as related to their own ethicality as perceived by students. It may be hypothesized that professors 'walking the talk' in students' eyes might have greater influence in developing students' ethical behavior. It is likely that crucial contributors to teaching ethical behavior are modeling it, demonstrating it, and providing a psychologically-safe and healthy environment to support students' development of their own ethical behavior.

Paradox of Effective Cases and Ineffective Previous Education

As previous ethics education was not found to be associated with improved ethical behavior in this study, this may be a result of existing ethics education being approached nearly exclusively from the traditional conscious cognitive ethical decision-making perspective. A more comprehensive perspective which integrates the neural and intuitive bases of ethical behavior was likely not incorporated into the previous ethics education, as such perspectives are relatively

rare. Common training methods including lectures may not be the most effective for lasting ethical behavior change.

However, while this study did not show previous ethics education to be associated with improved ethical behavior, it did show case method instruction to be associated with improved ethical behavior due to its apparent effect of reducing decline in ethical behavior. These findings are somewhat paradoxical, as the previous ethics education to which most of the business school student subjects were exposed (a one credit hour business ethics course) usually involves case method instruction. One explanation for this paradox is that case education, when used for business ethics training, may have a short-term effect.

Business ethics education may need to be more frequent, and/or over a longer period of time to creating lasting improvement in ethical behavior. Frequent business ethics training conducted over a longer time period may provide more opportunity for depth and a broader range of experiences that could improve ethical behavior for the long term.

Limitations and Future Research Directions

One limitation of this research is the student sample, which may limit findings to the college setting and restrict generalization to workplace ethics training for managers. Another limitation is the dependence on time constraint in the dictator game, rather than confirmation by neuroimaging, for activation of reflexive or active judgment.

Additionally, while the dictator game has been employed in the study of aspects of ethical behavior, it is an experimental measure and ethical behavior observed outside an experimental setting may differ (although observation has notable limitations as well). A testing effect may also be present with ethics cases impacting behavior. Finally, only a small portion of ethical behavior was explained by the factors considered in this study, and many additional factors likely impact ethical behavior.

Future research may address some of these limitations, for example controlling for age (as maturity beyond traditional college age may provide better use of active judgment and/or a less self-centered perspective), culture, values, socioeconomic/income level, locus of control, and personality attributes. Controlling for such factors may also provide some insight into what portion of ethical behavior can be ascribed to individual neuropsychological factors.

An interesting study to examine the difference between ethical judgment and actual ethical behavior may entail comparing subjects making 'paper' distributions in the dictator game without real money, to subjects making distributions with actual money. Such a study may reveal more ethical intentions shown when distributing fake money than ethical behavior shown when actual money is involved.

Comparative studies which examine business majors compared to other majors may prove to be illuminating. Also, studies performed at the beginning and end of a business ethics course, and at the beginning and end of education in a college of business may also provide interesting findings.

Future studies may include investigations into the effectiveness of experiential business ethics training, including role play and Socratic dialogue, based on neurally-inclusive theory. Also, fMRI studies comparing ethical behavior after the experience of fear and intimidation, and ethical behavior after the experience of psychologically-healthy positive motivation may yield interesting results.

Studies of the correlation between professor ethicality as perceived by students (professors 'walking the talk') and effectiveness in improving students' ethical behavior, may also yield interesting findings. Research into the most

effective frequency and length of business ethics education may help create lasting improvement in ethical behavior.

Incorporating neuroscience advances into all areas of organizational behavior research is a sizable area future research may address. Models and language of the social sciences will need to incorporate the neural bases of behavior to be most accurate and comprehensive. A holistic multi-disciplinary model of ethical behavior is one such possibility for future research.

Holistic Multi-Disciplinary Model of Ethical Behavior

Ethical behavior involves numerous factors, including neurobehavioral psychological, and situational factors. Neurobehavioral factors include neurobiological, evolutionary, and neuroanatomical aspects, psychological factors include cultural, conscious, and intuitive aspects, and situational factors include societal, organizational, and interpersonal aspects. A holistic, multi-disciplinary model of ethical behavior which accounts for these many factors and offers a more comprehensive, more realistic view of ethical behavior may aid understanding of ethical behavior and contribute to development of effective education for improving ethical behavior.

CHAPTER 6. CONCLUSION

Business has had a long history of ethical violations and the current era is no exception. Clear need for improved ethics in business is present, and it is the task of the fields of organizational behavior, ethical decision-making, and business ethics education to work toward improvement in business ethics.

The study of ethical behavior requires a multi-disciplinary approach, and the application of neuroscience-based perspectives which illuminate the brain's nonconscious impact on ethical decision-making has created new opportunities to improve the effectiveness of business ethics education. This research contributes to the goal of improved business ethics education by utilizing a neurocognitive approach to examine the effect of different neural processes on ethical behavior, and assessing the effectiveness of instructional methods for business ethics education.

As society moves toward a new economy based on innovation and human creativity, human-centered issues and viewpoints may become increasingly significant, and lessons of sustainability may encourage a harmony-based rather than dominance-based outlook. For these reasons, business ethics and social responsibility may become increasingly relevant, and business should continue its efforts to prepare future business leaders for their roles through effective ethics education.

APPENDIX A: CERTIFICATE OF EXEMPTION

OMB No. [illegible]

Protection of Human Subjects
Assurance Identification/IRB Certification/Declaration of Exemption
(Common Rule)

Policy: Research activities involving human subjects may not be conducted or supported by the Departments and Agencies adopting the Common Rule (56FR28003, June 18, 1991) unless the activities are exempt from or approved in accordance with the Common Rule. See section 101(b) of the Common Rule for exemptions. Institutions submitting applications or proposals for support must submit certification of appropriate Institutional Review Board (IRB) review and approval to the Department or Agency in accordance with the Common Rule. Institutions must have an assurance of compliance that applies to the research to be conducted and should submit certification of IRB review and approval with each application or proposal unless otherwise advised by the Department or Agency.

1. Request Type	2. Type of Mechanism	3. Name of Federal Department or Agency and, if known, Application or Proposal Identification No.
[ ] ORIGINAL [ ] CONTINUATION [X] EXEMPTION	[ ] GRANT [ ] CONTRACT [ ] FELLOWSHIP [ ] COOPERATIVE AGREEMENT [ ] OTHER:_____	
4. Title of Application or Activity "Neuroscience and Ethics Education: A Neurocognitive Approach to Case Method Training for the Teaching of Business Ethics"		5. Name of Principal Investigator, Program Director, Fellow, or Other Cristina Suarez

6. Assurance Status of this Project *(Respond to one of the following)*

[X] This Assurance, on file with Department of Health and Human Services, covers this activity:
Assurance Identification No. F-3526, the expiration date September 23, 2008 IRB Registration No. IORG0000169

[ ] This Assurance, on file with *(agency/dept)*_____, covers this activity.
Assurance No._____, the expiration date_____ IRB Registration Identification No._____ *(if applicable)*

[ ] No assurance has been filed for this institution. This institution declares that it will provide an Assurance and Certification of IRB review and approval upon request.

[X] Exemption Status: Human subjects are involved, but this activity qualifies for exemption under Section 101(b), paragraph 2

7. Certification of IRB Review (Respond to one of the following IF you have an Assurance on file)

[ ] This activity has been reviewed and approved by the IRB in accordance with the Common Rule and any other governing regulations.
by: [ ] Full IRB Review on (date of IRB meeting) _____ or [ ] Expedited Review on (date)
[ ] If less than one year approval, provide expiration date _____

[ ] This activity contains multiple projects, some of which have not been reviewed. The IRB has granted approval on condition that all projects covered by the Common Rule will be reviewed and approved before they are initiated and that appropriate further certification will be submitted.

8. Comments

CHS #15669

9. The official signing below certifies that the information provided above is correct and that, as required, future reviews will be performed until study closure and certification will be provided.	10. Name and Address of Institution
11. Phone No. *(with area code)* (808) 956-5007 12. Fax No. *(with area code)* (808) 956-8683 13. Email: dendle@hawaii.edu	University of Hawaii at Manoa 2444 Dole Street, Bachman Hall Honolulu, HI 96822
14. Name of Official William H. Dendle	15. Title Compliance Officer
16. Signature	17. Date November 14, 2007

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APPENDIX B: DICTATOR GAME INSTRUCTIONS

INSTRUCTIONS

Please do not speak or communicate in any other way with anyone else during this session. (You may ask questions of the monitor.) After the session ends today, please do not discuss today's activities with anyone inside or outside this class as it could adversely affect the outcome of the game. Please maintain complete confidentiality and discuss nothing at all about today's activity.

Please take out a non-erasable pen. Please do not yet open the packet being handed out. Please look at the top sheet, marked 'Consent to Participate'. This consent half-sheet is yours to keep, please remove it from the packet and put it away with your things now.
** [Read consent sheet aloud, ask if any questions or any opt out.]

ALL GROUPS: FIRST ROUND INSTRUCTIONS

1. From your packet, remove the top envelope (marked 'R1' for group R-R, or 'R' for other three groups).
** [Confirm all have 'R1' envelope – leave the other envelope closed, with packet]

2. Do not remove anything from the envelope. Open your envelope flap and find the blank to fill in marked 'Amount for recipient'.
** [Confirm all see the 'amount for recipient' blank]

3. Distribute the six dollars in your envelope between yourself and an anonymous recipient. Assume delivery of your envelope to an anonymous recipient not in this class. You may choose to distribute the six dollars between yourself and the recipient in any way you choose. At the end of today's session, you may take the dollars you choose to distribute to yourself with you when you leave. Your distribution choice is completely anonymous.

4. Right now, write on the inside envelope blank the number of dollars you will distribute to the recipient. Shield your writing to keep the information you write private. Write only your **FIRST** answer. Do not change your answer or cross out. Do not seal the envelope. Pens down.
** [Confirm all have written amount on flap and not sealed envelope or removed any bills.]

5. One at a time, each person will go behind the partition and distribute the six dollars as written on the blank while completely hidden from view.

6. Behind the partition, place the amount you chose to distribute to the recipient – the same amount you wrote on the blank -- into the envelope and seal it. Make **NO** changes to the amount – distribute the dollars exactly as you originally wrote inside the envelope. Seal the envelope and place the envelope into the container provided.

7. Quietly put the dollars distributed to yourself in an out-of-view location (such as a wallet, purse, pocket, etc.) so that no dollars will be visible when you come out from behind the partition. You may take any dollars you distributed to yourself home with you.

<<< Deposit Envelopes >>>

GROUP R-R: ROUND 2 INSTRUCTIONS

1. Open your remaining 'R2' envelope flap -- again, do not remove any bills from the envelope. Find the blank to fill in marked 'Amount for recipient', and again, distribute the six dollars in this envelope between yourself and an anonymous recipient. Your distribution does not have to be the same as or different from round 1 – it can be any amount you choose as this is an entirely separate round of the game. Once you write your answer, do not change your answer or cross out. Do not seal the envelope. Pens down.
** [Confirm all have written amount on flap and not sealed envelope or removed any bills.]

2. One at a time, proceed behind the partitions and distribute the six dollars and seal and deposit your envelope just as you did in round 1. Make sure no dollars are visible when you come out from behind the partition, and again, you may take any dollars you distributed to yourself home with you.

<<< Deposit Envelopes >>>

GROUP R-A: ROUND 2 INSTRUCTIONS

1. From your packet, take out the remaining envelope, marked 'A'. Do not remove anything from the envelope. There is no blank to fill in this time, there is nothing you need to write.
** [Confirm all have envelope 'A'.]

2. You will again be distributing the six dollars in your envelope between yourself and an anonymous recipient. ***But unlike the first round, in this round please take your time to think about and consider the distribution options and the distribution choice you will make. Do not rush to judgment, but rather take your time before coming to a decision. You may change your mind anytime until you drop your envelope in the box.*** Your distribution does not have to be the same as or different from round 1 – it can be any amount you choose as this is an entirely separate round of the game.

3. One at a time, proceed behind the partitions and distribute the six dollars and seal and deposit your envelope just as you did in round 1. Make sure no dollars are visible when you come out from behind the partition, and again, you may take any dollars you distributed to yourself home with you.

<<< Deposit Envelopes >>>

GROUPS R-CC-A AND R-NC-A: READ CASE

Take the case from your packet (leave the rest unopened) and please read the case and consider the questions and approaches at the end. You may, but do not have to, make any notes on the case sheet.
** [Confirm all done reading, and considering.]

GROUPS R-CC-A AND R-NC-A: ROUND 2 INSTRUCTIONS

1. From your packet, take out the remaining envelope (marked 'CC-A' or 'NC-A'). Do not remove anything from the envelope. There is no blank to fill in this time, there is nothing you need to write.
** [Confirm all have envelope.]

2. You will again be distributing the six dollars in your envelope between yourself and an anonymous recipient. ***But unlike the first round, in this round please take your time to think about and consider the distribution options and the distribution choice you will make. Do not rush to judgment, but rather take your time before coming to a decision. You may change your mind anytime until you drop your envelope in the box.*** Your distribution does not have to be the same as or different from round 1 – it can be any amount you choose as this is an entirely separate round of the game.

3. One at a time, proceed behind the partitions and distribute the six dollars and seal and deposit your envelope just as you did in round 1. Make sure no dollars are

visible when you come out from behind the partition, and again, you may take any dollars you distributed to yourself home with you.

<<< Deposit Envelopes >>>

ALL GROUPS: FINAL INSTRUCTIONS

1. Please open the final sheet in your packet. Do **NOT** put your name anywhere on the sheet. Please fill out the questionnaire.
** [Confirm all have one, allow time to complete, and collect.]

2. Thank you VERY MUCH for your time and participation. Please remember not to discuss anything at all about today's project with anyone, inside or outside of this class. Again, thank you very much!

APPENDIX C: COMMONPLACE CASE

Bud West, a twenty-two year old college student, had just finished a long and exhausting day of midterm exams. His entire week prior had been a blur of late night cramming sessions and stress-filled test days, and he still had one more midterm the following day. Since he had nothing left to eat at his apartment, Bud decided to pick up a few things at the convenience store in a nearby shopping center before heading home.

Bud quickly grabbed his food items, his mind already going over what he needed to study for tomorrow's exam. He was growing more and more tired and couldn't wait to get home so he could rest just a bit before staying up late again to study for his next exam. After waiting in line to check out, he bought his items, stuffed his change into his coat pocket, and hurried out to the parking lot.

As he was starting his car, Bud pulled his change from his coat pocket to drop the coins into the car's cup-holder he used to hold change. It was then that Bud noticed an extra five dollar bill in the wad of change he had stuffed in his pocket. He realized the store clerk had given him back too much change from his purchase.

Should Bud keep the $5 bill and continue on his way home, or turn off his car and walk back into the store to return the excess change he received? Does Bud have a responsibility to correct the clerk's error and return the extra change? How much effort should a person make to rectify someone else's error? Would it be unethical for Bud not to return the money, or an act of generosity for him to return it?

- Consider a virtue approach, which holds that individuals should act based on moral virtues.
- Consider a deontological approach, which holds that individuals should act to uphold duties and obligations.
- Consider an ethical egoism approach, which holds that individuals should do what is in their self-interest.
- Consider an altruism approach, which holds that individuals should help or benefit others, if necessary at the sacrifice of self-interest.

APPENDIX D: NOVEL CASE

After graduating from business school, Dawn North accepted a management position with a U.S.-based multinational chemical manufacturing firm that produces plastics, acrylics, polymers and solvents. Eager for her first international assignment, she accepted the job of assistant manager at the company's production facility in an economically-developing country in Asia.

Dawn enjoyed learning the culture of the developing nation, although she was distressed at the poverty all around her. The local people were very willing to work to build their nation, and were enthusiastic when multinational companies came to their country bringing jobs. Jobs at the production plant were in high demand by the local citizens, especially those who had worked at a local textile factory that closed earlier that year. She was pleased to be a part of an organization that was bringing much-needed jobs to eager workers in the developing nation.

Dawn settled into her new position, developing her knowledge of the production process and costs, and getting to know the production plant staff. She knew the company had located the plant in Asia to reduce production costs in order to better compete with rival chemical firms, and the plant had indeed been doing well in that regard. She also made it a point to spend time speaking directly with line operators to ensure she had a good understanding of production issues. However it was during these discussions that Dawn first came to suspect a problem at the facility.

In her interactions with line workers at the plant, Dawn had noticed many of them had unusual-looking sores on their skin. At first she expected this was due to the lack of nutrition and harsh living conditions in this area, until she noticed that locals she encountered around town who did not work at the plant did not seem to suffer from the same skin ailments. One day as employees were filling out paperwork for new ID cards, she also noticed that many of the line workers were having trouble writing on the narrow lines of the form, as their hands were shaking to quite a noticeable degree.

Dawn did not know quite what to make of her observations, although she had an uneasy feeling about them. She knew employees were assigned protective clothing to wear when exposed to chemicals in the plant, and she had heard no health complaints from employees, but she still wondered if the skin sores and hand tremors were related to the employees' work in the manufacturing facility. She

decided that since protective gear was provided and there were no complaints, there was no problem, but then quickly questioned her decision when she felt a pang of fear for her own health since she too had been spending time in the production facility.

Over the following weeks, Dawn spent many sleepless nights trying to decide on a course of action. She knew the company was complying with all local laws and regulations, however she also knew those standards were not as high as those in the United States and many other western nations. She knew cost reduction was extremely important for the company's long-term survival, but she also felt obliged to initiate investigation into the impact of the production process on employee health and the adequacy of protective gear and safety measures.

She knew that changes to the production process and increased health and safety costs could lessen the cost reduction benefit of having the plant located in the country, which might cause the plant to be closed. She worried for the workers whose health may be threatened, and worried about those same workers if the plant were to close and leave them without work opportunities, forcing them into crushing poverty. And she worried about the future of her own career as well.

What course of action should Dawn take? Is the company behaving unethically by locating production in a country where laws and regulations are less stringent than the home country? Does the company have responsibility to investigate or act in the absence of employee complaints? By choosing to work at the production plant, are employees willingly accepting the risks of working around chemicals? Who should decide what working conditions are acceptable: the workers, the company, the local government, or the government of the company's home country?

- Consider a utilitarian approach, which holds that the ethical action produces the greatest balance of benefits over harms.
- Consider a rights approach, which holds that people have rights defined by society which are to be protected.
- Consider a justice (fairness/equity) approach, which holds that all people should be treated equally.
- Consider a common good approach, which holds that what is ethical is what advances the common good.

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