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Sense of Agency and the Exhibition of Prosocial Behaviors

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Sense of Agency and the Exhibition of Prosocial Behaviors

**A senior thesis submitted to
The Department of Psychology
College of Arts & Sciences**

In partial fulfillment of the requirements
for a Bachelor of Arts degree in Psychology

by

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Abstract

The concept of human agency refers to whether or not free will exists. Over the course of history, several philosophers and psychologists have debated this particular topic. As a result, three divergent schools of thought have emerged. One such school posits the doctrine of free will; another articulates the doctrine of determinism. Still another school of thought holds that free will and determinism cannot exist outside of one another. This concept is called compatibilism. Human agency is a necessary contextualization for the scope of the present study. While the debate of human agency has not been fully resolved, this study is concerned with the implications of the belief in agency. Individual belief in free will is referred to as sense of agency. Researchers have indicated that the mere belief in free will or determinism produces cognitive and behavioral effects. A higher belief in free will is correlated with positive cognitive benefits and prosocial behaviors. A diminished sense of agency is correlated with negative cognitive effects and antisocial behaviors. The present study seeks to determine if sense of agency could be primed and subsequently enhanced. If enhanced, the study seeks to determine if a heightened belief in free will leads to an increased exhibition of prosocial behaviors. The present study included the participation of 130 individuals. No significant data was found.

Keywords: free will, determinism, sense of agency, prosocial behaviors

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Sense of Agency and the Exhibition Prosocial Behaviors

Philosophers have often debated the notion of whether or not human beings possess and exercise free will. Free will has been defined as the idea that human beings possess the capability to control the course of their lives through their own thoughts and actions (Feldman, 2017). Alternatively, those on the opposite side of this debate hold the belief that humans are in fact subject to the doctrine of determinism. Determinism is characterized by the idea that “every event or action, including human action is the inevitable result of preceding events and actions and the laws of nature” (Caruso, 2016, p.1). Although this was originally a debate between schools of philosophy in antiquity, over time psychology has become intermittently intertwined with the idea of free will. When examining this question, however, psychologists have typically sought to determine not whether human agency exists, but rather the empirical implications of the belief in free will.

Psychological researchers have shown that the mere belief or disbelief in the subject of free will powerfully influences human behavior and cognition. Contemporary researchers have indicated that a greater belief in determinism has been correlated with undesirable social behavior. For example, researchers have suggested that disbelief in “free will led to an increase in aggression and a reduction in willingness to help” (Baumeister, Masicampo, & DeWall, 2009, p. 267). Such a conclusion stems from the notion that a lack of free will belief ultimately reduces motivation and effort in an individual. Conversely, a higher belief in free will has been shown to produce prosocial behavior in humans. Additionally, a variety of cognitive benefits have also been associated with a higher sense of agency

(Baumeister & Brewer 2012; Clark et al., 2014; Moore, 2016). Such cognitive benefits include higher self-efficacy and attributions of moral responsibility. Evidence from Baumeister & Brewer (2012) indicated that high free will belief is “correlated with finding life as more meaningful, with higher life satisfaction” (p. 8). Ultimately, it appears there is an inherent correlation between sense of agency and humanistic behaviors and cognitions.

Based upon my review of the current research, there is a gap in the literature. The current research suggests that a higher disbelief in sense of agency typically leads to antisocial behaviors. Conversely, researchers have indicated that an increased sense of agency has led to the exhibition of prosocial behaviors. Cognitive benefits have also been linked to this enhanced sense of agency. As a result, because this correlation exists, sense of agency could help engender prosocial behaviors, while at the same time reducing antisocial behaviors. Such a correlation could potentially produce significant impacts for the improvement of society and individual cognitions. Aarts & Van den Bos (2011) posited that evidence of free will belief inherently primes individual sense of agency. However, beyond this experiment, researchers have largely neglected any attempt at enhancing free will belief. While the contemporary psychological research illustrates such an association between human agency and behavior, a gap exists wherein the enhancement of sense of agency, and its resulting correlates, has been under researched. As a result, the corresponding question to the present study is whether sense of agency can be enhanced and, if so, whether it results in increased manifestation of prosocial behaviors.

The hypotheses associated with this study, labeled as H1 and H2, are as follows:

- H1: Individual sense of agency possesses the potential to be primed and subsequently enhanced.
- H2: Enhanced sense of agency will ultimately increase the exhibition of prosocial behaviors, as seen in individuals in the experimental group compared to the control group.

To examine these hypotheses, an experimental study was conducted that contained two experimental conditions and one control condition. All participants completed a pre/post questionnaire measuring their sense of agency. Between these measures, participants read a vignette that was altered in accordance with the group to which they were randomly assigned. After the completion of the post questionnaire, individuals were provided an opportunity to participate in an act of prosocial behavior. Immediately subsequent to the post-questionnaire, through means of deception, this opportunity was introduced through an online invitation to participate in a volunteer opportunity outside the scope of this study. The exhibition of the behavior (i.e., agreeing to participate in the prosocial act) determined the validity of the hypothesis.

Literature Review

Philosophers and psychologists have continually engaged in debate concerning the existence of human agency. Human agency refers to the idea that an individual has the capacity to act independently from external influences and to control their choices based on free will. From this overarching debate, multiple

schools of thought and theorists have emerged. One such school contains doctrines of free will, which presupposes that humans have direct influence over their choices. Within this particular domain, Immanuel Kant and Carl Rogers produced theories in an effort to provide evidence for the existence of human agency. Opposite to this sphere of thought is the school of determinism. Determinism posits that humans are subject to external forces and do not have influence over their choices. Baruch Spinoza and B.F. Skinner espoused doctrines of determinism within their respective fields of practice. Finally, a third school developed that argued that free will and determinism exist simultaneously. This field, known as compatibilism, has experienced recognition due to the influence of existentialists such as Friedrich Nietzsche, Ludwig Binswanger, and Medard Boss.

Theories regarding the existence of human agency are imperative for the contextualization of human *sense* of agency. Doctrines concerning the existence of human agency have influenced and provided a basis for the construction of the concept of individual sense of agency. Sense of agency refers to individual belief in the concept of free will. Contemporary researchers have built upon the original debate and focused on both the cognitive and behavioral effects of belief in free will. Individuals who possess greater levels of sense of agency typically experience positive cognitive effects. In addition, these individuals display a heightened exhibition of prosocial behaviors. Conversely, lower levels of sense of agency are correlated with negative cognitive effects and antisocial behaviors. As a result, priming and enhancing levels of sense of agency possesses the capacity to benefit both the individual and the collective. In the pages that follow, both the doctrines

related to agency and the psychological construct of the sense of agency will be fully explored.

Doctrines of Free Will

Historically, a variety of philosophers have produced theories espousing doctrines of free will. Immanuel Kant systematically constructed an argument advocating human agency (Kant, 1972, 2013). Such advocacy fundamentally relied upon certain ontological and epistemological considerations. When considering the notion of metaphysics, Kant argued for two ontologically distinct categories, the phenomenal and the noumenal (Kant, 2013). The phenomenal world encompasses elements that appear to humans insofar as they are perceivers. Conversely, the noumenal world represents elements as they are in themselves, as they exist independently of how they appear (Yu, 2011). Humans, as a result of the existence of these two categories, naturally exist in a state of duality. Stemming from such metaphysics, Kant substantiated his epistemology through reason and cognitive faculties. As in the case of Kantian metaphysics, a duality is consequently established for the explication of human knowledge. Knowledge, according to Kant, is derived through two divergent manners. Humans possess the ability to attain knowledge through *a posteriori* and *a priori* means. *A posteriori* is empiricist in nature and asserts that knowledge is known dependent upon experience. However, Kant additionally argued from a rationalist perspective that certain knowledge is known *a priori*, independent of individual experience (Hanna, 2016; Kant, 2013).

Based upon such metaphysical and epistemological foundations, Kant consequently sought to establish a basis for human freedom. Human free will, as Kant

argued, could not exist in the phenomenal realm. All natural events in this world were subject to deterministic causes. As a result, freedom must necessarily exist as a transcendental idea in the objective noumenal world. According to Kant, contained within this noumenal world is an intuitively accepted “fact of reason” that humans are subject to an axiom of morality (Kant, 1997). Morality, as a concept, inherently presupposes the determination of reason and consequently implicates humans as rational beings. Rational agents, as in the case of humans, are implicitly conscious of the binding laws of morality (Cureton & Johnson, 2016; Kant, 1972). Kant argued that such morality consists in and ultimately depends upon the faculty of reason. Without the assumption of freedom, however, reason is ultimately unable to act. When considering the concept of reason, freedom inherently represents an indispensable practical function. As a result, rational beings possess an unavoidable interest in thinking of themselves as free through reason. The ability to perform judgments and apply reason systematically elevates rational beings outside the realm of determinism (Kant 1972). Analysis of Kant’s argument reveals that the implicit awareness of morality produces implications of rationality, which implies free will. Thus, according to Kant, humans cannot exhibit rational functioning and possess moral capacities without freedom.

Immanuel Kant produced theories that fundamentally represent the philosophical underpinnings of free will. Psychologists, such as Carl Rogers, eventually became intimately involved in this philosophical consideration. This psychological involvement emerged out of the observation that human cognition and perception can influence the philosophical debate. Originally, two branches of

psychology dominated the entire field. These two primary branches, behaviorism and psychoanalysis, were intimately influenced by deterministic perceptions and approaches (Mounier et al., 2015). Both schools explicated the notion that humans were subject to external forces outside of individual control. Eventually, this deterministic dominance sparked the emergence and subsequent movement of a new school of thought, humanistic psychology. In stark contrast to previous schools, humanism emerged to explicate the freedom of humans. Humanists believed that both psychoanalytic and behavioral schools neglected the conscious existence of individuals. Behaviorism was perceived as mechanistic, while psychoanalysis appeared reductionist in nature (Mounier et al., 2015). As a result of these beliefs, humanistic psychologists sought to establish the principle that humans were unique beings who possess awareness. This is manifested in the form of human consciousness (Greening, 2006). Consequently, humanism is characterized by a focus on individual growth and potential. Such a conscious desire for fulfillment and growth functionally illustrates behavioral motivations. These motivations inherently suggest that humans possess personal agency that arises through intentionality and choice. As a result, humans utilize the notion of free will to achieve full potential as rational beings.

Carl Rogers is considered the most influential figure in humanistic psychology. His theory deals primarily with the development of personality in individuals (Rogers, 1959). This development of personality, however, systematically relies on and substantiates the philosophical consideration of free will. Such establishment develops primarily through structural and motivational constructs.

Analysis of Roger's theory reveals that human experiences exist principally in what he calls the phenomenal field (Rogers, 1959). The phenomenal field encompasses all that is experienced by the organism, whether or not consciously perceived. Rogers identified the self as a conscious aspect of the phenomenal field, which comprises all aspects of experiences and being that exist in individual awareness (Pescitelli, 1996). This self-concept is never complete and exists in a constant state of growth. As a result, evaluation of this self-concept develops a consistent underlying motivational construct. Humans, according to Rogers, possess an innate disposition towards an actualizing tendency (Rogers, 1959). The actualizing tendency is characterized by the desire to fulfill one's potential and align with the organismic self. "All living organisms strive to maintain, further, and actualize their experience" (Mueller, 2017a, slide 11). As a result, behavior does not deterministically occur due to the past. Rather, behavior is facilitated by the inclination to embody how one perceives themselves to exist. According to Rogers, such a tendency is naturally directional and is an outward movement towards inherent autonomy, as the awareness of self and the motivation for growth to achieve one's potential ultimately act as a presupposition to free will.

When considering the debate concerning the existence of human agency, free will encompasses a prominent school of thought. Free will is the idea that individuals possess the capacity to control their choices and have direct influence over the environment around. Immanuel Kant and Carl Rogers represent two theorists who posit doctrines of free will in their respective fields. From a philosophical perspective, Kant argued for free will primarily on account of ontological and epistemological

considerations. Due to the human faculty of reason, Kant argues that human agency must necessarily exist. Psychologically, Rogers claimed the existence of free will through the establishment of structural and motivational constructs in human personality. Individual awareness and the actualizing tendency illustrate these assertions by Rogers. Kant and Rogers ultimately represent advocates of human agency albeit from two independent domains of influence.

Doctrines of Determinism

It is evident that multiple theories were developed in an attempt to prove the philosophical assumption of free will. Two theories of free will, articulated by Kant and Rogers, have been explored. Due to the exposition of theories on free will, deterministic considerations arose in an effort to refute the concept of human freedom. Baruch Spinoza fundamentally disagreed with the theoretical assumptions of freedom and consequently posited the existence of determinism. Such propositions emerged and relied upon metaphysical characteristics. For Spinoza, everything in existence possessed the property of being either a substance or a mode (Spinoza, 2009). A substance is characterized as something that exists independently and does not need anything to subsist. Conversely, a mode is a property, which needs a substance to exist (Astore, 2016). Previous theorists articulated the notion that substances were abundant throughout the universe. Spinoza, however, rejected this traditional view and contended that God, also identified as nature, is the only substance (Spinoza, 2009).

The establishment of substance monism represents the fundamental basis of Spinoza's argument for determinism. According to Spinoza, in order for an entity to

be considered free, the being must exist solely by the necessity of its own nature (Spinoza, 2009). In addition, the actions of the entity must be determined by itself alone. Spinoza contended that except in the case of God, no substance could be conceived. God represents the only conception of *causa sui*, something engendered through itself (Spinoza, 2009). As a result of this substance monism, the claim that one infinite substance is the only substance that exists, a certain brand of immanence is inevitably created (Sandum, 2012). God consequently functions as a necessity for the existence of all entities. Due to the fact that everything ultimately stems from God, the current casual order of events represents the only possible order. These metaphysical doctrines thus establish a high degree of causal determination.

Ontologically, humans exist outside of duality and as an intimate extension of God. This extension places humans within the constraints of nature and the governance of the laws of mind and body (Kisner, 2011). These attributes are in effect subject to the previously established causal determination. “Men believe themselves to be free because they are conscious of their own actions and are ignorant of the causes by which they are determined” (Lord, 2010, p. 82). Ultimately, for Spinoza, it is impossible for humans to exhibit free will, and the properties of determinism must remain in full effect (Spinoza, 2009). Accordingly, the sense of free will is an epiphenomenon of consciousness of one’s own acts, but not a reality in itself.

Upon analysis of psychological models consistent with Spinoza’s deterministic philosophical framework, behaviorism appears as a preeminent branch. Fundamentally, behaviorism is a theory that relies on a principle of stimulus and response. All motivations and subsequent behaviors could thus be reduced to simple

associations. Proponents of behaviorism, in its radical form at least, dismiss inward experiential aspects and disregard internal mental states and consciousness (Graham, 2015). Such a sphere focused on observable behaviors that can be strictly perceived as the result of external stimuli. These external stimuli typically manifest themselves through conditioning. Conditioning is the process whereby behaviors become more frequent or predictive in a given environment due to reinforcements. Reinforcements are feedback, whether positive or negative, that function as a stimulus subsequent to a particular response (Staddon & Cerutti, 2003). When considering this basis, humans are consequently assumed to embody a state of passivity. In addition, the being is viewed as a product of *tabula rasa*, or as possessing a clean slate. Free will then, as a concept, possesses the presumption of illusory in nature.

In accordance with the deterministic perceptions of behaviorism, B.F. Skinner produced radical theoretical assumptions. Skinner was intimately concerned with the state of the external world. According to Skinnerian theoretical foundations, the driver of behavior is the environment as a result of conditioning (Skinner, 1971). For this reason, Skinner believed that a *technology of behavior* must necessarily be produced. However, this technology required that the environment, rather than humans be the prime target. Humans, according to Skinner, contained an inherent lack of autonomy. This fictional sense of autonomy merely endured as a reinforcing agent for the survival of aversive control for the human species (Skinner, 1971). Behavior, and motivation as a result, were strictly engendered through the external stimuli of the environment. Skinner argued that most behaviors were emitted through operant conditioning (Skinner, 1971). Operant conditioning is engendered as an

organism produces units of behavior that are sent forth into the environment. Such operants are subsequently followed by consequences induced by the environmental context. These consequences systematically shape succeeding emitted behavior (Staddon & Cerutti, 2003). Responses, which are followed by reinforcements, are more likely to occur in the future. Conversely, those behaviors not reinforced are less likely to transpire. Behavior consequently “increases or decreases as a result of an empirical law of effect” (Mueller, 2017b, slide 3). Humans, according to Skinner, are controlled through the environment, which is always the originating source of behavior (Skinner, 1971). Multiple apparatuses, both social and non-social, exist to exert control over human autonomy. Such assertions support the supposition of deterministic considerations.

While free will exists as a school of thought on one side of the debate, determinism functions as the opposite perspective. Determinism is characterized by the idea that humans are essentially subject to external forces and thus exert little control over the environment. Baruch Spinoza and B.F. Skinner represent two theorists who endorse doctrines of determinism from a philosophical and psychological perspective respectively. Spinoza claimed a lack of human agency through the establishment of substance monism. Substance monism asserts that God is the only conception of *causa sui*, which requires that humans functionally rely upon something external to exist (Spinoza, 2009). This reliance forces human existence to be causally determined. Through the establishment of certain motivational constructs, Skinner argued for deterministic considerations. The environment, which functions as the originating source for behavior, continually

conditions humans through reinforcements (Skinner, 1971). These theorists thus remove free will from human existence. For these reasons, Spinoza and Skinner illustrate proponents of an absence of human agency from two separate spheres of influence.

Doctrines of Compatibilism

While the philosophical debate of human agency has typically articulated two opposing sides, an alternate school exists. This coalition, known as the compatibilists, has elucidated the notion that free will and determinism coexist with one another. Friedrich Nietzsche, preeminently classified as an existentialist, systematically rejected the separate existence of human freedom and determinism. Such rejection of free will arises as a result of an apparent internal contradiction. Free will, according to Nietzsche, relies upon the conception of the agent of *causa sui* (Nietzsche, 1927). The concept of *causa sui* denotes something that is caused or generated within itself. *Causa sui* proposes that human action results from choice, which in effect emerges from the will. Will, however, is paradoxically determined by human nature (Grillaert, 2006). As a result, such a free will argument is inherently circular. In addition, Nietzsche identifies a further internal inconsistency in the form of a false dichotomy. “The belief in free will presupposes that the agent can be isolated from the act” (Grillaert, 2006, p. 44). This dichotomy postulates a dualistic relationship between humans and the world. According to Nietzsche, however, this reduces inherent complexities to isolation and does not reflect the continuous flow of reality. Subsequent to the rejection of free will, Nietzsche undermined the notion of determinism. Determinism seemingly produces its origins in the conception of cause

and effect. Nietzsche argued that such causality is engendered through false comprehensions (Nietzsche, 2007). These false comprehensions occur through the error of confusing the effect for the cause, while commonly rejecting the deep cause. Additionally, humans commit the error of a false causality whereby non-existent inner causalities, such as the human will, are invented. Such inventions arise based on individually observed experiences of the will acting as casual. According to Nietzsche, however, the inner causes merely accompany actions rather than act as a basis for causality (Nietzsche, 2007). As a result, causality is an error of traditional human thought. Mechanical necessity thus is not a fact, but rather an interpretation (Leiter, 2007). For these reasons, the foundational elements that Kant and Spinoza utilized in the debate between free will and determinism are rejected.

An analysis of the entirety of Nietzsche's theory, however, indicates a disposition towards compatibilism. While not wholly deterministic, humans are inevitably subject to deterministic elements. Such elements manifest in the form of psychological characteristics through individual childhood impressions, relationships, and environmental stimuli (Grillaert, 2006). In addition, humans experience physical determinants in the case of subjugation to natural laws and biological underpinnings. For these reasons, evidence suggests that humans innately experience determinism. However, Nietzsche also contended that the mere act of reflecting and reasoning on the notion of free will systematically supposes inherent human freedom (Leiter, 2015). Free will, according to Nietzsche, is evident in individual character. Individual character constitutes a hierarchy of drives. Sovereign individuals, through the command of a strong rather than weak will, can organize these inherent drives

(Nietzsche, 1927). A genuine self thus emerges, which guarantees autonomy. Humans consequently exist within a deterministic environment, but freedom allows for the manifestation of individual consequences of such effects through strength of will. The concepts of determinism and free will exist as two antithetical forces whose inherent significance relies primarily upon their opposition. As such, the two forces must invariably exist as one another, outside a realm of duality. According to Nietzsche, it is evident that these two inclinations function as complementary counterbalances of one another.

Stemming from the philosophical consideration of Nietzsche, multiple theorists have applied existentialism to the field of psychology. Prominent among these theorists, Ludwig Binswanger and Medard Boss employed these deliberations to the development of an existential model of individual personality (Binswanger, 1965; Boss, 1963). When considering the structural constructs of personality, Binswanger and Boss articulated an existential phenomenology of being. Humans do not exist in a state of duality, but rather subsist in unity (Rychlak, 1981). Phenomenally, humans exist as their ideas and concretely illustrate the centrality of existence, the state of being. As a result of this phenomenological assumption, the dichotomy of unconsciousness and consciousness is causally rejected. Emanating from such a phenomenological outlook is the core theoretical construct of these existentialists, the *dasein* (Rychlak, 1981). The *dasein* is characterized by the existence of being within multiple world designs. These multiple world designs encompass human interaction with the *eigenwelt* (oneself), *umwelt* (the environment), *uberwelt* (spirituality), and *mitwelt* (social beings). When considering such existence,

Binswanger and Boss fundamentally disagreed upon the derivative of meaning.

Binswanger argued that existence is endowed with meaning by humans, whereas

Boss contended that existence discloses its meaning (Binswanger, 1965; Boss, 1963).

Human existence within the *dasein* necessarily produces implications for the interplay of determinism and free will. Binswanger and Boss contend that humans are thrown within the *dasein* and thus exist in a state of *thrown-ness* (Binswanger, 1965). Such thrown-ness encompasses the circumstances with which individuals are provided. These circumstances exist primarily as a result of biological and environmental factors. In addition, spatial and temporal antecedents function as imperative influences as well. As a result, thrown-ness represents the existential accordance of determinism. Contained within this incidence of being thrown, humans possess the innate capacity to experience *pitch* (Boss, 1963). Pitch is the primary motivational construct for Binswanger and Boss as they suggested that humans are constantly drawn to possibilities. Fundamentally, pitch allows humans to choose to transcend their inherent circumstances and project opposition to the rigidity of a seemingly inflexible environment. Existentialists articulate that the central theme in existence is to “advance on life actively and assume the responsibility of meeting our possibilities to enrich and extend *Dasein*” (Rychlak, 1981, p. 645). Such a notion of pitch allows for a challenge to thrown-ness consequently engendering the exhibition of individual autonomy. In addition, existential anxiety arises as a result of a basic sense that it is impossible to fulfill every available option in life. The capacity to deliberate upon various choices and thereafter attempt to fulfill all options in life

further points to this notion of human freedom. As a result, existential psychology articulates a necessary interplay between determinism and free will.

From Agency to Sense of Agency

It is evident that philosophers and psychologists have fundamentally disagreed over the existence of human sense of agency. Despite such controversy, the field has transitioned to determine not whether agency exists, but whether the belief in agency engenders effects. Researchers have indicated that the mere belief in the idea of free will produces significant effects in the cognitive realm and subsequent behavior of humans (Baumeister & Brewer, 2012). Higher levels of sense of agency have been correlated with positive cognitive effects and behaviors. Conversely, a diminished sense of agency produces detrimental effects in the realm of cognition and behavior. In an effort to ascertain such effects, psychologists have typically assessed the consequences of sense of human agency through two separate processes, “measurement and experimental manipulation,” (Baumeister & Brewer, 2012). Experimental manipulation involves introducing the concepts of free will or determinism to participants. Thereafter, participants are placed into an experimentally conceived social situation for observation, whereupon measurement of change is needed. When considering measurement processes, psychologists have developed multiple instruments, such as the Free Will and Determinism Plus Scale, for consequential analyses (Paulhus & Carey, 2011). These two categories of assessment exist independently of one another. However, evidence has suggested that the most effective means of determining the effects of sense of agency on human behavior and cognition is by utilizing these two categories in tandem (Paulhus & Carey, 2011).

Through these processes, researchers have established a correlation between human agency and both cognition and behavior (Baumeister & Brewer, 2012).

Higher Sense of Agency

Upon analysis of the consequences associated with human agency, many researchers have noted that human cognition and behavior are significantly affected. A higher sense of agency is characterized by a greater belief in free will. Researchers have indicated that as an individual possesses a higher level of agency, they are more likely to experience positive cognitive effects as well as to exhibit more prosocial behaviors (Baumeister & Brewer, 2012). Within the cognitive realm, a heightened sense of agency has been intimately linked to increased beliefs of self-efficacy. This self-efficacy belief is inherently intertwined with the concept of individual motivation. Bandura (1989), a lead researcher in this domain, has suggested, “self-efficacy beliefs determine ... level of motivation” (p. 1176). Cognitively, individuals with a high sense of agency have also illustrated heightened life satisfaction and meaningfulness. Sense of agency, as researchers have indicated, facilitates attributions of moral responsibility. In addition to these cognitive effects, a heightened sense of agency produces an increased likelihood for the exhibition of prosocial behaviors. Prosocial behaviors are those that are socially desirable and intended for the benefit of others. These behaviors are characterized by empathy and a concern for the well-being and rights of other individuals (Knickerbocker, 2003). Ultimately, it can be seen that a greater belief in free will is correlated with positive cognitive effects (e.g., self-efficacy, meaning in life, and moral attribution) and prosocial behaviors (Baumeister & Brewer, 2012).

Positive cognitive effects. When considering the notion of heightened levels of human agency, evidence suggests that individuals experience positive cognitive effects. One such cognitive benefit is an increased belief in self-efficacy. Albert Bandura (1989), contra Skinner, argued that humans do have agency, and noted that self-efficacy functions as the most central and pervasive mechanism for human agency. Self-efficacy is characterized as a person's belief in his or her capabilities as well as their ability to exercise control over events that affect their lives (Bandura, 1989). An imperative function of thought systematically stems from this concept. This idea of self-efficacy enables individuals to predict their own ability to influence the environment and subsequent events, thus creating the means for exercising control. Belief in individual capabilities influences the type of scenarios that are psychologically constructed and reiterated. Those with high self-efficacy, as attained through heightened sense of personal agency, are more inclined to materialize positive scenarios that function as guides for behavior (Bandura, 2006). This additionally enhances performance within a particular domain. These individuals can also exert influence over their selective processes so as to engender beneficial environments. Conversely, perceptually inefficacious individuals primarily focus on negativity and simulations that can go wrong, which typically undermines performance (Bandura, 1989). This self-efficacy is possible only as individuals believe they are able to operate situationally and within the spectrum of their capabilities.

The concept of self-efficacy, and human agency as a result, is naturally interlaced with individual motivation. Motivation is typically characterized as the

reason for one's direction and inclination to engage in a specific behavior. In addition, the term motivation encompasses the willingness of an individual to perform such a behavior (Lai, 2011). Evidence suggests that self-efficacy modulates levels of motivation. This is reflected in how much effort an individual is willing to exert, as well as how long they will persevere in the face of adversity (Bandura, 1989). The stronger that an individual believes in their ability to influence the future through their capabilities, the more persistent they will be in their endeavors. Such individuals will exert greater effort to master challenges, as well as to accomplish goals. Ordinary social reality is pervaded with impediments, adversities, and failures. People of low self-efficacy are liable to become convinced of the futility of their endeavors and subsequently cease their efforts. Conversely, efficacious individuals perceive such difficulties as surmountable through their capabilities, and functionally remain resilient (Bandura, 2006). In essence, heightened sense of agency fosters self-efficacy through the belief that individual capabilities can influence the future. This self-efficacy produces motivational effects through perseverance and resiliency. Such motivational effects are feasible through the belief that one is free to influence future outcomes.

In addition to increased self-efficacy and motivation, heightened sense of agency is positively correlated with self-perceived meaningfulness of life and life satisfaction (Bergner & Ramon, 2013; Crescioni, Baumeister, Ainsworth, Ent, & Lambert, 2016; Seto, Hicks, Davis, & Smallman, 2015). A deterministic view posits that the outcome of an event is the only outcome that could have materialized. As a result, this phenomenon engenders a reductionist perception of meaning in life, a key

existential theme. Existentially, humans impart meaning on their choices and the subsequent reality of the outcomes (Crescioni et al., 2016). When determinism systematically reduces an individual to the subjugation of external forces, sense of meaning is diminished. Conversely, high free will belief has been shown to increase life meaningfulness and satisfaction. Such indication of meaning is aided through a process known as counterfactual thinking. Counterfactual reflections are “mental representations of alternatives to past occurrences” that presuppose an outcome could have been otherwise (Seto et al., 2015, p. 243). These reflections illustrate causal inferences that create awareness of the sequence of events that led to current circumstances. Counterfactual thinking, and free will belief as a result, emphasize the mutability of individual action. Such reflections serve to accentuate the importance of prior events chosen by the individual and their influence on the events that occurred (Seto et al., 2015). Experiences are perceived as meaningful because they could have occurred differently, resulting in entirely different circumstances, which though hypothetical, enhances the sense of personal agency. Personal action has ultimately dictated the context that one exists within. As a result, free will belief allows one to impart and amplify meaning on the experiences caused by individual action through a seemingly infinite amount of possibilities, both counterfactual and future.

Further evaluation of the positive cognitive effects associated with higher levels of human agency reveals that moral attribution is a closely related concept. Free will functions as a prerequisite for individual responsibility. As Moore (2016) has suggested, “sense of agency plays a key role in guiding attributions of responsibility” (p. 7). In order to hold an individual morally responsible for their

action, they must necessarily possess the capacity to choose different courses of action. Conversely, when genuine choice is deemed impossible, moral responsibility is undermined. The concept of moral attribution consequently produces cognitive and behavioral implications. Individuals are unable to utilize determinism as a viable excuse for immoral behavior (Shariff et al., 2014). In addition, this individual responsibility functions as an adaptive challenge to suppress antisocial behaviors and lapses of self-control. Morality also becomes imperative in the broader context of society. The capacity to hold individuals morally responsible for their actions allows for punishment. Punishment, in this sense, functions as a benefit to societal functioning through establishing cultural principles in the realm of morality and behavior (Clark et al., 2014). Cooperation and ethics, through fear of punitive measures, are also engendered as moral obligations when the notion of free will belief exists. Finally, this concept of morality functions as a means of deterring antisocial behavior and thereby promoting the exhibition of prosocial behaviors. It can be seen that free will implies moral responsibility, which acts as a positive cognitive and behavioral effect.

Prosocial behaviors. A higher sense of agency has been positively correlated to beneficial cognitive effects. Such cognitive effects extend into the physical realm and incite prosocial behaviors. Free will belief enables humans to experience feelings of empathy. “Empathy has been described as an affective vicarious response, isomorphic to the emotion that provoked it” (Lepron, Cuasse, & Farrer, 2014, p. 1). This affective emotion essentially allows an individual to feel as another feels. Empathic responses emerge as individuals judge themselves to be responsible agents

and attribute morality to their actions. Such an emotion produces inherent implications in the regulation of social behaviors. Enhanced empathic response is closely linked and perceived as a trigger for prosocial behavior. This prosocial behavior is observed through human willingness to help, which empathy functions as a primary factor and indicator (DeWall, Baumeister, Gailliot, & Maner, 2008). Helping others is socially desirable and centrally related to the concept of being performed for the benefit of others. Belief in free will is positively associated with helping. As such, individuals with heightened human agency, and empathic concern, are more willing to help across situations and opportunities. It can thus be seen that “belief in free will is a valuable support for prosocial behavior” (Baumeister et al, 2009, p. 267). Ultimately, high sense of agency engenders positive cognitive effects and prosocial behaviors, which is beneficial to society.

Lower Sense of Agency

When considering the consequences of the sense of human agency, researchers have also observed that a lower sense of agency produces variant effects. A lower sense of agency is characterized by a decreased belief in free will, or a more deterministic worldview. As a result, researchers have indicated that as an individual possesses a lower level of agency, they are more likely to experience detrimental cognitive effects as well as the exhibition of antisocial behaviors (Baumeister & Brewer, 2012). Within the cognitive realm, a diminished sense of agency is correlated with increased negative affective processes. Individuals are likely to experience amotivation and an increased reliance upon instinct. Instinct, in this sense, refers to a set of behaviors, which are unlearned and result from an environmental stimulus.

Prosocial behaviors require the expenditure of personal resources such as time and energy. For this reason, individuals tend to default to innate responses of self-interest (DeWall et al., 2008). Amotivation additionally facilitates feelings of indifference and overall passivity throughout the lifespan. Such cognitive effects inhibit the individual and engender the exhibition of antisocial behaviors. Antisocial behaviors are those that are outside the realm of social acceptance and morality. Typically, these antisocial behaviors are identified by harmful and negative intentionality (Baskin-Sommers, 2011). Individuals become more likely to act through naturally selfish impulses and to display increased aggressive tendencies. In addition, those who possess a deterministic worldview display a reduction in willingness to help others. Essentially, a lower sense of agency is correlated with negative cognitive effects and antisocial behaviors (Baumeister & Brewer, 2012).

Negative cognitive effects. As an individual holds a lower sense of human agency, they experience an increase in negative affective processes. Affective processes include all feelings and responses related to behavior, knowledge, and beliefs (Merritt, 2011). These emotional reactions possess the capacity to alter the nature and course of individual cognition. For example, individuals constrained in these negative affectivities experience heightened levels of stress and depression. In addition, these individuals typically experience high levels of anxiety arousal (Bandura, 1989). Such affectivities arise as a result of decreased belief in self-efficacy as people doubt their capabilities to handle particular situations. Inefficacious thoughts produce apprehensive cognitions, which promote feelings of stress as individuals focus on deficiencies. Depression materializes when inefficacy produces

negative evaluations of one's self-worth. This diminished self-worth aids in ruminative thoughts that constrain adaptive abilities. Finally, anxiety is engendered as individuals experience aversive cognitions coupled with an inability to alter perceived efficacy of thought control (Bandura, 1989). These negative affectivities also possess the capacity to affect biological systems, thereby producing adverse physiological effects, such as immunodeficiency (Bandura, 1989). Fundamentally, evidence suggests that inefficacious thoughts inhibit and impair level of functioning, both cognitively and behaviorally. Perceived inefficacy emerges as a result of diminished levels of personal agency.

Antisocial behaviors. In addition to these cognitive detriments, lower levels of sense of human agency produce effects on individual behavior. Humans, as philosophers and psychologists have suggested, have internal motivational conflicts. This motivational dissension involves natural inclinations towards selfish impulses and conflicting socially imposed prosocial motivations. Based upon evolutionary principles, researchers have indicated that humans are innately predisposed towards exhibiting selfish tendencies (Baumeister et al., 2009; DeWall et al., 2008; Harms, Liket, Protzko, & Schölmerich, (2017). From an evolutionary standpoint, organisms exhibit selfish tendencies for survival. It appears to be an automatic impulse for humans to act without concern for others. As a result, “ a significant amount of self-control and mental energy is required to override this default” (Baumeister et al., 2009, p. 261). Such an idea is intimately connected to the concept of amotivation brought about by low levels of human agency. Disbelief in free will possesses the capacity to serve as a subtle clue that exerting volition and self-control is futile. This

perceived futility inhibits individual willingness to exert energy on self-regulation. Without the capacity for self-regulation, individuals would enact all impulses, for which many appear to be antisocial in nature (Baumeister & Monroe, 2014). Self-regulation thus is imperative for constraining automatic antisocial tendencies (DeWall et al., 2008). Additionally, this reduction in volition willingness facilitates feelings of indifference and passivity, which promotes impulsivity. For this reason, it can be seen that “a belief in free will ... is crucial for motivating people to control their automatic impulses in favor of more prosocial forms of behavior” (Baumeister et al., 2009, p. 261).

Reduction in willingness to exert volition and self-regulation, brought about through decreased sense of human agency, produces implicit implications for behavior. Essentially, it possesses the capacity to allow socially undesirable and antisocial behaviors. Aggression functions as a natural impulse present in human beings. Typically, such aggressive impulses are consciously blocked by strong inner restraints. However, as self-regulation decreases, failure of these inner restraints increases (DeWall et al., 2007). This internal failure occurs regardless of the root cause of the anger. Disbelief in free will is thus correlated to an increase in manifested aggression. Stemming from these aggressive impulses, evidence suggests that individuals are more likely to perform acts of violence. Aggressive tendencies tangibly evince themselves at a higher rate than if constraints were available. A lowered inclination to exert volition and effort thus facilitates physical action on aggressive impulses (DeWall et al., 2007). In addition to this aggressiveness, humans also display selfish and passive actions. Individuals are less willing to help across an

assortment of situations and opportunities. This comes as a result of responding automatically to internal, negative impulses as opposed to exerting self-control. Human helpfulness intimately requires exertion of the self (Baumeister et al., 2009). Passivity towards others is consequently engendered through this lack of volition. Such passivity correlates to a reduction in willingness to assist others. Ultimately, “disbelief in free will led to an increase in aggression and a reduction in willingness to help” (Baumeister, et al., 2009, p. 267). As a result, it can be seen that diminished levels of human agency engender negative cognitive effects as well antisocial behaviors.

Argument for this Study

An analysis of the research associated with human agency illustrates a gap in our knowledge about the importance of individual sense of agency. As an individual experiences heightened levels of belief in free will, they are more likely to experience beneficial cognitive effects. In addition, these cognitive effects are accompanied by an increase in the exhibition of prosocial behaviors. Conversely, as an individual possesses diminished levels of free will belief, they typically experience detrimental cognitive effects. Antisocial behaviors materialize from a low sense of human agency. Such an association inherently engenders implications for both the individual and society as a whole. Individuals could potentially experience the benefits of positive cognitive effects, while society would observe an increase in socially desirable and empathic behaviors. This would simultaneously occur with a decrease in detrimental cognitions and antisocial behaviors. Despite this correlation, however, researchers have not yet attempted to experimentally prime and enhance free will

belief in humans. For this reason, in this study I sought to determine if human sense of agency could be primed and subsequently enhanced, resulting in increased expressions of prosocial behaviors.

The hypotheses associated with this study, labeled as H1 and H2, were as follows:

- H1: Individual sense of agency possesses the potential to be primed and subsequently enhanced.
- H2: Enhanced sense of agency will ultimately induce an increase in the exhibition of prosocial behaviors, as seen in individuals in an experimental group as compared to the control group.

Method

Participant Characteristics

Potential participant population. Participants were primarily individuals of traditional undergraduate student age (18-23 years) at Concordia University – Portland. Contingent upon instructor permission to conduct the study, participants included those enrolled in introductory and upper division psychology courses. As a result, all years of study were eligible. This was done in an attempt to avoid a demographic representation bias from any specific area of study. Such a population was chosen in an effort to represent the general body of Concordia University in as accurate a way as possible. This sample was primarily drawn as a result of a convenience sampling strategy.

Demographics. Participants were 130 undergraduate students at Concordia University- Portland. The age range of students was 17 – 52 with the majority of participants (approximately 82.4%) falling within traditional undergraduate age.

Females comprised 70.2% of participants with males composing the other 20.8%. The majority of participants (55.7%; n=73) identified as Caucasian. A total of 3.1% were African American, 17.6% were Asian/ Pacific Islander, 11.5% were Latino/a, and 11.5% identified as other. When considering faith tradition, participants primarily identified as Christian (39.7%), Catholic (13.0%), Non-denominational Christian (10.7%) and Unaffiliated (10.7%). Multiple other faith traditions, from participants within the study, were claimed as well. The majority of participants were currently pursuing degrees in Business Administration (9.2%), Nursing (31.3%), and Psychology (23.7%). Students from various other majors were also present in the study. Finally, the study obtained data from 41.2% freshman, 27.5% sophomores, 16.8% juniors, 13% seniors, and 0.8% fifth year seniors.

Relationship/role with the participants. The researcher is a student at Concordia University – Portland. With the permission of various introductory and upper division psychology instructors, I obtained access to my intended participant population at Concordia University – Portland. Beyond the context of this study, I have had no contact with the participants concerning the nature of my experiment. Following the conclusion of this study, the majority of participants were debriefed of all deceptive practices involved via written communication. Through Qualtrics, participants were provided with a written debrief sheet that possessed downloadable capabilities. The debrief sheet outlined the entirety of the study and articulated the true nature of the research. At instructor request, the researcher verbally debriefed one class. Beyond such debriefing, I neither foresaw, nor anticipated any future contact following the conclusion of the study.

Recruited population included/excluded. In an attempt to avoid bias in the study, I sought to recruit a sample that was demographically representative of the Concordia – Portland student body. This assisted in reducing threat to external validity and generalizability. As a result, there was no exclusion criterion, as no groups were deliberately left out of the study.

Sampling procedures

Sampling method. This study utilized convenience sampling. Participants were those who participated on a voluntary basis and were provided the option to withdraw at any point in time. Each person who consented (see Appendix A) was randomly assigned to one of two experimental conditions or one control condition. Permission was sought, and consequently obtained, from professors of general education courses.

Sample size, power, and precision. To estimate required sample size a power analysis for a one-way ANOVA with three groups was conducted to arrive at a desired sample size of 160 participants (assumptions in the power analysis were as follows: $\alpha = .05$; power = 0.80; medium effect size ($f=0.25$)).

Data Collection Procedures

Setting for data collection. This study was conducted in the classroom environment of Concordia University – Portland, contingent upon instructor permission. The experiment was conducted in introductory and upper division psychology courses at the beginning of scheduled class time. All participants completed a measure of sense of agency at the same time. Data collection was multi-

site and the experiment was conducted in as many classrooms as necessary to attain the desired demographic representation.

Study procedures

Research design. Participants were provided with a constructed verbal summary of the study. Deception was used throughout this study. To avoid response bias, the terms “free will” and “determinism” were not utilized. If the participants had known the true nature of the study, social desirability could have arisen and prevented participants from behaving in an honest manner. Minor deception was thus inherently necessary during the completion of the initial sense of agency questionnaire. Such minor deception was associated with minimal risk for participants. Participants were informed of the true nature of the study at the conclusion of the study during debriefing.

All participants were asked to utilize a device with online capabilities and were provided, by the researcher, with the link to a website. This link directed participants to a data collection website named Qualtrics. Each participant was provided with an online informed consent form (see Appendix A). The informed consent form provided participants with the option to participate or not participate in the study. Students who did not wish to participate were redirected to a separate page thanking them for their time and consideration. This page also asked students to remain online so as not to distract others, which aided in participant anonymity. In addition, students were provided the option to withdraw at any point during the study if they did not wish to continue. Information that did not impact the required deceptiveness was included as well.

For students who chose to participate, Qualtrics redirected participants to a pre-questionnaire designed to measure an individual's sense of agency (described in the *Measures and Covariates* section below). Questionnaire items were utilized in an effort to obtain information on how each participant viewed free will and determinism. This acted as a measure of one's sense of agency. Once the participants completed all constructs, participants were randomly assigned into one of two experimental conditions or one controlled condition, using the block randomization feature available in Qualtrics. Once randomly assigned, each participant was provided with a vignette describing a study of human agency. This vignette was based on the 1964 free will study performed by Benjamin Libet (2011). The base vignette, along with those containing alternate endings, are available in Appendix C.

The vignette was from the same "author and study," but the results were altered based upon the experimental condition one was randomly assigned. As a result, in its three forms, this vignette acted as a compilation of measurement and experimental manipulation as introduced by previous studies (Paulhus & Carey 2011; Vohs and Schooler 2008). The conditions are labeled as C1 – C3 below.

C1: (Control Condition) Participants read a vignette that simultaneously proves and disproves free will.

C2: Participants read a vignette that proves free will as a product of human agency.

C3: Participants read a vignette that indicates a disproof of free will and thus indicates a worldview of determinism as a product of human agency.

Once all vignettes were read, the post sense of agency questionnaire was administered and completed. The total scores measured any changes in previous

beliefs on human agency, which indicated individual sense of agency. The pre/post difference score was the first of two dependent variables in the study. This is associated with hypothesis H1.

This aspect of the study utilized deception. At the conclusion of the questionnaire, participants were redirected to a page thanking them for their participation and informing them of the conclusion of the study. However, on the page, an additional note provided information concerning an opportunity for the exhibition of some form of prosocial behavior. This behavior was measured through some form of volunteer work performed with an inconvenience. This was conceptualized as an “opportunity that Concordia University desires to provide to all students who participated in research activities.” See Appendix B (IRB CU-07d document) for complete text for this portion of the experiment. Participants received a brief description of the opportunity, thus allowing them to review the potential task. Each participant was then provided with the opportunity to check whether or not they would like to volunteer. This measured prosocial intent as well as exhibition of the behavior on the part of the participants. As such, this constituted the second of the two dependent variables; this is associated with hypothesis H2. Students did not disclose their actual name; instead they disclosed their G number. This helped to maintain anonymity and reduced the potential for social desirability.

Participants were finally debriefed on the true nature of the study. The researcher explained the research and revealed the hypotheses involved. There were no anticipated adverse reactions to this study, and thus further services are likely not

required. Finally, participants were provided with an opportunity to pose questions to the researcher concerning the study and any further concerns.

Measures and covariates. When considering measures of sense of agency, two categories exist. They are implicit and explicit measures utilized to determine free will belief. Implicit measures use perceptual differences between self and externally generated stimuli as measures of sense of agency. Conversely, explicit measures include scales and questionnaires (Dewey & Knoblich, 2014). This study utilized explicit measures. The explicit measure utilized was the Free Will and Determinism Plus Scale, developed by Paulhus and Carey, which contained 28 questions divided into four subscales. Such subscales included Free Will, Scientific Determinism, Fatalistic Determinism, and Unpredictability. Analysis of the subscale revealed that the “alpha reliability of the Unpredictable scale is .72 ... Free Will alpha = .70, Scientific Determinism alpha = .69, and Fatalistic Determinism alpha = .82” (Paulhus & Carey, 2011, p. 101). Paulhus and Carey (2011) subsequently conducted further testing on the construct ultimately producing evidence and support for its validity.

While the Free Will subscale of the FAD Plus was used to assess individual sense of agency, behavioral intent was measured through single item, yes or no response to an upcoming “volunteer opportunity.” This volunteer opportunity, with perceived inconvenience, was provided at the conclusion of the study. The volunteer opportunity was offered under deceptive practices in order to conceal the true nature of the study and prevent participant desirability biases. That is, after what they perceived to be the conclusion of the study, participants were able to indicate, through

their single item response, whether or not they desired to engage in the volunteer opportunity. Volunteering is socially perceived as a desirable behavior. As a result, this desire to participate indicated behavioral intent and the exhibition of a prosocial behavior. The intent and prosocial behavior is associated with the second hypothesis of the study.

Plan to deal with withdraw, “loss-to-follow-up,” or some reason to stop study. In the event a participant chose to withdraw, the corresponding questionnaire and consent form was discarded by Qualtrics.

Declaration on Conflicts of Interest or lack thereof. I did not anticipate and there did not appear to be any conflicts of interest in this study.

Data Analysis Procedures

Data Management Procedures. As all participants responded to instrumentation via an online surveying platform (Qualtrics), data entry was not required. Instead, data as entered was exported from the platform directly to a format readable by Statistical Package for the Social Sciences (SPSS). Questionnaire results were analyzed through SPSS in an effort to filter for usable data. Frequencies and descriptive statistics were executed to check for errors and missing data in categorical and continuous variables. No missing data were obtained.

Statistical Analyses

After assessment of compliance with associated statistical assumptions, analyses of group differences were conducted for each hypothesis. For hypothesis one, obtained data was analyzed utilizing a parametric test. A parametric test was used because the variable being measured was at the interval level. As a result, a one-

way ANOVA was conducted to explore the impact of various vignettes on individual sense of agency. ANOVA was utilized due to the presence of three groups within the independent variable.

For the second hypothesis of this study, a non-parametric test was performed. A non-parametric test was required due to the fact that the level of the data was not at least interval. Rather, the data was at the ordinal level of measurement. For this reason, a Kruskal-Wallis test was conducted to analyze differences in behavioral intent among the three separate groups.

Data Protection and Security Plan

Due to the fact that names were not utilized in the course of this study, participant confidentiality was ensured. Student demographic information was recorded in an effort to reduce a demographic representation bias. However, such demographic information was coded so as to be unable to connect such information with individual participants. The codes were utilized to connect each students pre and post responses to one another. G numbers, during the volunteer opportunity, were utilized to connect the exhibition of prosocial intent to the randomized group. However, once all data had been entered, G numbers were removed from the dataset in an effort to effectively de-identify the data in digital storage. Completed questionnaires were accessible to the researcher, and thesis advisor when necessary. ANOVA results were stored on the computer of the researcher and protected under username and password.

Risks and Discomforts

Even with the use of deception throughout this study, I did not anticipate any risks or discomforts for the participants. There did not appear to be any sensitive information contained within this study. The researcher attempted to mitigate any potential distress for participants experienced throughout the study.

Benefits

This study was beneficial because if the hypothesis is correct, then society will experience an increase in prosocial behavior by individuals. Belief in free will, as demonstrated above, is intimately linked to a reduction in antisocial behaviors. Priming or enhancing this sense of agency would seemingly enhance the exhibition of desired societal behavior. In addition, this study could be beneficial to participants. Current research has indicated that a higher sense of agency is correlated with cognitive benefits such as increased perceived meaning in life. If the experiment does prime sense of agency, then there is increased potential to experience more desirable cognitive processes.

Costs and Compensations

To ensure that participation is completely voluntary, participants were not compensated. Excluding compensation from this study aided in the avoidance of participant coercion. As a result, this study necessarily remained completely voluntary without compensation for individuals.

Results

Descriptive Statistics

For all 130 participants who consented to the study, the survey was performed to completion. As a result, no missing data were present. Participants were randomly assigned to three conditions. Randomized groups were those who received the free will vignette in Experimental Condition 1 ($N = 41$), those who received the determinism vignette in Experimental Condition 2 ($N = 45$), and those who received the base vignette in the Control Condition ($N = 44$). After utilizing ANOVA, no significant differences were obtained between groups with regard to age, sex, education, academic year, and marital status. As a result, confounding variables can be eliminated.

For each participant, pre-to-post change scores on the Free Will subscale of the FAD Plus scale were calculated using SPSS. Students in Experimental Condition 1 reported no changes in free will belief ($M = .000$, $SD = 1.97$), while participants in Experimental Condition 2 ($M = .067$, $SD = 2.85$) indicated minimal positive changes in free will belief and participants in the Control Condition ($M = -.091$, $SD = 2.34$) exhibited negative changes in free will belief.

Behavioral intent was measured using a single item response concerning a volunteer opportunity. Of the 130 participants within the study, approximately 14.6% ($N=19$) indicated a desire to engage in the prosocial behavior. Within these 19 participants, 7.7% were in Experimental Condition 1 ($N=10$), 3.8% were in Experimental Condition 2 ($N=5$), and 3.1% were in the Control Condition ($N=4$). The

majority of participants (85.4%, N=111) did not express an increased exhibition of prosocial intent through the volunteer opportunity.

Hypothesis 1: Priming Sense of Agency

The first question associated with this study was to test whether individual sense of agency could be enhanced with priming. Hypothesis one postulated that individual sense of agency possesses the potential to be primed and subsequently enhanced. To test H1, a one way between subjects ANOVA was conducted using group assignment as the independent variable and total change scores on the Free Will subscale of the FAD Plus as the dependent variable.

The one-way ANOVA is a parametric test utilized for comparing multiple groups or conditions. However, the use of a one-way ANOVA requires that a set of assumptions be satisfied. Assumption one necessitates that the dependent variable must be measured at the interval or ratio level. Such variables must necessarily be continuous. When considering the independent variable, it should consist of two or more categorical, independent groups. Typically, a one-way ANOVA is utilized with three or more categorical groups; otherwise an independent samples t-test could be used. A third assumption is that an independence of observations is obtained. Participants cannot be in more than one group and different participants must be in each group. An approximate normal distribution of the dependent variable for each category of the independent variables should also be obtained. Finally, in order to run a one-way ANOVA, homogeneity of variances needs to be present in the data.

The data associated with the first hypothesis of this study meets the criteria necessary for the use of an ANOVA. Upon analysis, the overall the mean FAD Plus

scores for the pre-questionnaire ($M = 17.41, SD = 3.54$) were lower than the overall mean FAD Plus scores of the post questionnaire ($M = 17.42, SD = 3.42$). Despite this increase in scores, a one-way ANOVA revealed that the change was not statistically significant, $F_{(2, 127)} = 0.954, p > .05$.

Hypothesis 2: Prosocial Behaviors

The second hypothesis associated with this study was to determine if heightened sense of agency would induce an increased exhibition of prosocial behaviors. A volunteer opportunity was deceptively presented at the conclusion of the post-questionnaire, with a single-item response option as indicated in the method section; this operationalized prosocial behavioral intent. Answers were entered by participants and subsequently coded within SPSS. Participants were separated into three groups based upon their randomly assigned condition and vignette.

In the event there is a lack of normality, as indicated by failure with regard to statistical assumptions, separate analyses must be conducted. ANOVA is a parametric test utilized for three or more groups. A Kruskal-Wallis H (KWH) test represents a non-parametric measure for the same design. Hypothesis two of this study does not meet the necessary criteria to be considered to possess normality. With regard to behavioral intent, the study utilized an ordinal level of measurement. As a result, it is more appropriate to run a Kruskal-Wallis H test for this hypothesis as opposed to an ANOVA.

A Kruskal-Wallis H test was conducted to determine if intent to volunteer was different among the various groups. A Kruskal-Wallis H test revealed that no statistically significant difference was present, $X^2_{(2)} = 4.62, p > .05$. Because no

overall effect was observed, the necessity of subsequent pairwise comparison was negated.

Discussion

The present research was conducted to assess whether it was possible to prime individual sense of agency to enhance it and to determine if such enhancement would induce an increase in the exhibition of prosocial behaviors. Researchers in this domain have indicated that an increased belief in free will is associated with positive cognitive effects and an increased exhibition of prosocial behaviors. Conversely, a diminished belief in free will is correlated with negative cognitive effects and an increase in the exhibition of antisocial behaviors. The data reported on within this study reveal that the presentation of a vignette was not effective in altering individual sense of agency at a level that was statistically significant, at least as could be detected by the FAD Plus scale or could be consciously perceived. Rather, though in the predicted direction for each group, the mean of the overall scores varied only slightly after the presentation of various conditions. In addition, no significant difference was observed when considering the relation of various conditions to one other. Such a finding appears counter to prior research, as previous studies produced significant results in affecting sense of agency through the use of vignettes.

A second hypothesis was also assessed in this study. Through H2, I proposed that a heightened sense of agency would induce an increase in the exhibition of prosocial behaviors. The data did not support this. This hypothesis represented a gap in the prior research for this psychological area. Prior studies have attempted to determine whether a lowered sense of agency would lead to an increase in antisocial

behaviors. However, a gap existed wherein studies had not been conducted to determine if heightened free will belief would increase prosocial behaviors. The hypotheses of previous studies and the current study seemingly appear to be inverted of one another. Intuitively, as free will increases deterministic perceptions should decrease. In addition, as prosocial behaviors increase antisocial behaviors should diminish. Fundamentally, the inverse should remain true of both. Despite the presence of this relationship, the data of the current study are not congruent with the findings of previous studies.

Limitations

Throughout the course of this study, multiple limitations inevitably manifested. One such limitation deals primarily with the presentation of the vignettes. The vignettes, due to the complicated nature of the subject of the study, were dense readings. Such density could have caused some participants to skim the readings rather than analyzing the vignettes carefully. Sparse reading of the vignettes would diminish the effectiveness of the conclusions and effectively reduce the potential for priming sense of agency in the participant. While this represents a potential limitation in this study, this did not appear to be the case in previous experiments. Previous experiments utilized a different delivery system. Physical materials were administered rather than provided online. Other studies could have also potentially negated this effect through requiring that participants construct an abstract of the text that was provided. This would likely create the perception, for the participant, that the vignette needed to be analyzed carefully.

A power analysis also produced the need for 160 participants. This is a relatively small sample size that may need to be expanded in future replications. Additionally, while the researcher and professors indicated that there was no compensation for participation, and conversely no risk for non-participation, the presence of a professor and the classroom environment could have increased participant coercion. Ultimately, the use of convenience sampling could produce an effect on the generalizability of the study.

When considering the second hypothesis associated with this study, a limitation emerged. The volunteer opportunity only provided for one available time and did not specify when the opportunity was occurring. As a result, multiple participants may have had prior commitments and were consequently forced to choose not to engage in the prosocial behavior. Such a limitation potentially reduced the number of participants who desired to engage in the volunteer opportunity and exhibit prosocial intent. Multiple other provided options may reduce such a conflict of interests.

Future Directions

Within this particular domain, there exists the potential for future directions of study. One such direction, which would be valuable, would be to expand the intensity of the opportunity for prosocial behavior in order to determine the extent of prosocial intent. Another future direction with this particular research deals primarily with the time frame of the second hypothesis of this study. The prosocial intent and behavior was measured immediately after the proposed priming. As of now, it is unknown if the supposed priming would manifest itself for a brief or extended period of time. A

longitudinal study, though difficult due to the necessity of intense deceptive practices to reduce social desirability, would be beneficial in this regard. This particular issue of timing produces immense implications for the potential benefit of society.

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Appendix A

CONSENT FORM

Research Study Title: Sense of Agency and Enhancement of Prosocial Behaviors

Principal Investigator: Tyler Charlton

Research Institution: Concordia University

Faculty Advisor: Reed Mueller

Purpose and what you will be doing:

The purpose of this survey is to observe the psychological effects of individual sense of agency. We expect approximately 160 volunteers. No one will be paid to be in the study. We will begin enrollment on January 10, 2018 and end enrollment on February 10, 2018. To be in the study, you will begin by providing answers to a questionnaire administered by the researcher. You will then read a short passage before the administration of a post questionnaire. Doing these things should take less than thirty minutes of your time.

Risks:

There are no risks to participating in this study other than providing your information. However, we will protect your information. Any personal information you provide will be coded so it cannot be linked to you. Any name or identifying information you give will be kept securely via electronic encryption or locked inside the file cabinet of the researcher. When we or any of our investigators look at the data, none of the data will have your name or identifying information. We will only use a secret code to analyze the data. We will not identify you in any publication or report. Your information will be kept private at all times and then all study documents will be destroyed 3 years after we conclude this study. Some details of the project may not be made to me until my session is completed. I realize at the completion of my session that I have the option of withholding the responses I have provided from subsequent analysis.

Benefits:

Information you provide will help advance knowledge of human cognition and behavior. In addition, this will aid in the benefit of deepening the knowledge of human agency. You could benefit this by assisting in the study to illustrate a relationship between sense of agency and cognitive effects.

Confidentiality:

This information will not be distributed to any other agency and will be kept private and confidential. The only exception to this is if you tell us abuse or neglect that makes us seriously concerned for your immediate health and safety.

Right to Withdraw:

Your participation is greatly appreciated, but we acknowledge that the questions we are asking are personal in nature. You are free at any point to choose not to engage with or stop the study. You may skip any questions you do not wish to answer. This study is not required and there is no penalty for not participating. If at any time you experience a negative emotion from answering the questions, we will stop asking you questions.

Contact Information:

You will receive a copy of this consent form. If you have questions you can talk to or write the principal investigator, Tyler Charlton at tycharlton9@me.com If you want to talk with a participant advocate other than the investigator, you can write or call the director of our institutional review board, Dr. OraLee Branch (email obranch@cu-portland.edu or call 503-493-6390).

Concordia Student Counseling:

In the event that this study makes you experience feelings of discomfort or irritation, Concordia has on campus counseling services. The counseling center is located on the lower level of Centennial hall in offices 8, 9, 10, and 11. An appointment can also be made with the counseling staff by phone at 503-493-6499 ext. 1.

Your Statement of Consent:

I have read the above information. I asked questions if I had them, and my questions were answered. I volunteer my consent for this study.

_____	_____	Date
Participant Name		
_____	_____	Date
Participant Signature		
_____	_____	Date
Investigator Name		
_____	_____	Date
Investigator Signature		



Investigator: Tyler Charlton; email: tycharlton9@me.com
 c/o: Professor Reed Mueller;
 Concordia University – Portland
 2811 NE Holman Street
 Portland, Oregon 97221

Appendix B

Volunteer Opportunity

Concordia University wishes to provide a volunteer opportunity to all students who participate in research activities. Concordia has instituted a program for the assistance of the homeless community. Volunteers will assemble packages of food as a part of this service. The service will occur at 7:00 a.m. in the Cafeteria on a Saturday morning. We will be in contact confirming all those who have expressed a desire to volunteer.

_____ Yes, I wish to volunteer

_____ No, I do not wish to volunteer

Appendix C

Experimental Vignettes

Experimental Condition 1 (Free Will)

In the year 1964, Benjamin Libet performed a series of experiments in the field of neuropsychology. These experiments were groundbreaking, particularly in the field of human consciousness. Participants to one of his classic experiments had electrodes from an electroencephalogram (EEG) taped to various places of their scalp. The EEG measures neural activity in the cortex, which is associated with higher cognitive processes. In addition, an oscilloscope timer was placed in front of the volunteers. Libet would then instruct participants to perform a simple motor action, such a flexing the wrist or pressing a button. Participants were asked to note the position of the timer when he/she was first aware of the wish or urge to act. Pressing the button also recorded the position of the timer. Following the collection of this data, Libet compared the timing of brain activity with the timing of the participant's conscious decision to perform the simple motor activity. Results indicated that conscious action preceded neural activity by approximately 200 milliseconds. These results imply that humans possess free will and can exert control over their lives.

Experimental Condition 2 (Determinism)

In the year 1964, Benjamin Libet performed a series of experiments in the field of neuropsychology. These experiments were groundbreaking particularly in the field of human consciousness. Participants to one of his classic experiments had electrodes from an electroencephalogram (EEG) taped to various places of their scalp. The EEG measures neural activity in the cortex, which is associated with higher

cognitive processes. In addition, an oscilloscope timer was placed in front of the volunteers. Libet would then instruct participants to perform a simple motor action, such as flexing the wrist or pressing a button. Participants were asked to note the position of the timer when he/she was first aware of the wish or urge to act. Pressing the button also recorded the position of the timer. Following the collection of this data, Libet compared the timing of brain activity with the timing of the participant's conscious decision to perform the simple motor activity. Results indicated that neural activity preceded conscious action by approximately 200 milliseconds. These results imply that humans are subject to deterministic forces and are unable to exert control over their lives.

Control Condition (Simultaneously Prove Existence of Both)

In the year 1964, Benjamin Libet performed a series of experiments in the field of neuropsychology. These experiments were groundbreaking particularly in the field of human consciousness. Participants to one of his classic experiments had electrodes from an electroencephalogram (EEG) taped to various places of their scalp. The EEG measures neural activity in the cortex, which is associated with higher cognitive processes. In addition, an oscilloscope timer was placed in front of the volunteers. Libet would then instruct participants to perform a simple motor action, such as flexing the wrist or pressing a button. Participants were asked to note the position of the timer when he/she was first aware of the wish or urge to act. Pressing the button also recorded the position of the timer. Following the collection of this data, Libet compared the timing of brain activity with the timing of the participant's conscious decision to perform the simple motor activity. Results indicated that neural

activity and conscious action occurred simultaneously. These results imply that humans possess free will and are subject to deterministic forces at the same time.