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## If you Think it you can Achieve it: The Relationship Between Goal Specificity and Magical Thinking

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### Abstract

Previous research has found a connection between the type of goals that individuals set and psychopathology, specifically depression (Dickson & Moberly, 2013). Magical thinking is the belief that a person's thoughts are connected to their actions or to future outcomes (Markle, 2010). Magical thinking has been found to be a primary feature in many psychological disorders such as obsessive-compulsive disorder (Shihata et al., 2014). The present study is the first of the literature to examine the relationships between goal setting and magical thinking as well as magical thinking and various psychological disorders such as depression. The current study examined the type of goals that were set by 86 individuals, specific and plausible, and magical thinking beliefs. The current study did not find a significant relationship between the type of goals that individuals set, specific or plausible, and magical thinking beliefs or any psychological disorders. There were significant positive relationships found between familiarity with the law of attraction and belief in the law of attraction with psychological disorders and symptoms. Implications for clinical practice and future directions are discussed.

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## Chapter I: Review of the Literature

“Like attracts like” (Byrne, 2006). A person can have anything in the world that they desire if they just focus their thoughts on what it is that they want. This is what the book *The Secret* by Rhonda Byrne teaches about the law of attraction (Byrne, 2006). A quick search on google or YouTube reveals the pop culture phenomena that the law of attraction has become in the last couple of years. Everyone from social media influencers to Oprah have been discussing the impact that *The Secret's* teachings of the law of attraction have had on their lives (Oprah, 2006). There have been claims of success, weight loss, and love just from using the law of attraction. Byrne states that every religion and spirituality belief in the world has some teaching that is similar to the law of attraction (Byrne, 2006). “Everything is possible for the person who believes, Mark 9:23” (Byrne, 2010 p. 141). “All that we are is a result of what we have thought, Buddha” (Byrne, 2006, p. 73). “Imagination is everything. It is the preview of life’s coming attractions, Albert Einstein” (Byrne, 2006, p. 91).

While the law of attraction has recently received widespread attention and acceptance by the general public, its link to psychological theory is unclear at best. There is currently very little if any research on the law of attraction in psychological science. Rhonda Byrne, the author of *The Secret*, stated that she made up the ideas in her book about the law of attraction by combining ideas from quantum physics, common sense principles, New Age mysticism, and a book from 1910 titled *The Science of Getting Rich* (Radford, 2009). The law of attraction is not grounded in science, but psychological

science can help explain the theory of the law of attraction and why it is so popular by explaining the link between thoughts and behavior (Sternberg, Critchley, Gallagher, & Raman, 2011).

The law of attraction is based on the idea of self-fulfilling prophecies. A self-fulfilling prophecy is a process where a person's false expectations lead to confirmation through the person focusing on the false expectation. Students are often impacted by self-fulfilling prophecies in that they usually perform and achieve at the level that is consistent with their teachers' expectations (Jussim, 2016). Self-fulfilling prophecies and the law of attraction can explain how behavior is influenced by what we believe. Beliefs might act as dispositions to behave or act a certain way. Humans often base their behavior on their beliefs and if their behaviors reinforce or prove their beliefs then they tend to hold stronger to that belief (Sternberg et al., 2011).

### **The Law of Attraction as Magical Thinking**

Magical thinking is a recent phenomenon that has become popular in the last ten years, therefore the research on the topic is still in the beginning stages and is not fully understood. Currently, much of the information on magical thinking is unclear, but the common theme is that magical thinking creates a sense of control where individuals feel that they lack the ability to control the future (Burton & Lent, 2016). Magical thinking is the belief that a person's thoughts, actions, or words will either cause or prevent something from occurring in a way that defies the normal laws of cause and effect (Markle, 2010). Magical thinking defies physical laws or culturally accepted explanations (Passanisi, Craparo, & Pace, 2017). Just because there is a correlation between two experiences that does not mean that there is also causation. You cannot

assume causation from a correlation of two or more experiences (Cohen, 2007). Yet, that is exactly what magical thinking is; assuming causation from a correlation between a person's thoughts and the physical world. *The Secret* teaches that causation can be assumed from a correlation. For example, Rhonda Byrne says that if someone focuses their thoughts on what they are wanting in their life, whether that be a car, to lose weight, or to meet their perfect soulmate, they will achieve it and soon have what they desire. Magical thinking followers often believe that a person's mind or thoughts have the ability to control what happens in the physical world (Hausteiner-Wiehle & Sokollu, 2010). Magical thinking followers believe that if they think about something happening in their life then their thoughts will actually make it happen. For example, if a magical thinking follower wants to pass a class they are taking then all they would have to do is think about passing that class, focus their thoughts on what their life will be like when they find out that they pass the class, and as a result they will actually pass the class.

### **Multiple Perspectives on Magical Thinking**

Many areas of psychology have different definitions or perspectives on magical thinking. A clinical psychology perspective of magical thinking focuses on the features of magical thinking that are found in various psychological disorders (West & Willner, 2011). Specifically, magical thinking is found in psychological disorders as a thought-action fusion and a way to gain a sense of control over a person's thoughts and what happens in their life (Stavrova & Meckel, 2017). This study will focus on a clinical psychology perspective of magical thinking and goal setting, but due to the limited amount of research on magical thinking currently there are other perspectives on what magical thinking is in other areas of psychology.

A developmental psychology perspective of magical thinking focuses on the naivety of children and the fact that children fail to find logical and rational correlations between two different things. Children do not have an accurate representation of what adults call the real world (Himawan, 2014). Magical thinking develops when children are three or four years old, with many children around this age stating that they would like to be a fish or a mermaid when they grow up (Brashier & Multhaup, 2017). Magical thinking beliefs fade as children get older and learn more about natural laws. By age eight the majority of children have learned enough about natural laws that they no longer have as many magical thinking beliefs and the magical thinking beliefs fade as children hit their adolescent years (Brashier & Multhaup, 2017). Adolescents who use magical thinking tend to have maladaptive decision-making styles such as procrastination or buck passing, which is where a person defers decisions to others instead of making the decision themselves (Passanisi et al., 2017).

The social psychology perspective of magical thinking focuses on the thoughts that people have when using magical thinking. Magical thinking from the social psychological perspective views magical thinking as connecting two different experiences in a way that uses irrational principles that cannot be explained by science (Himawan, 2014). Magical thinking includes ideas and beliefs such as the power of positive thinking, spirituality, superstitions, intolerance of uncertainty, and thought action fusion (Shihata et al., 2014).

The social/cognitive psychology perspective of magical thinking focuses on how people interpret, analyze, and recall information about the social world. From this perspective magical thinking is thought of as an error in creating a schema or a mental

representation used to understand the social world. Magical thinking is described as an error in the process of social cognition because magical thinking is believed to be an error in an individual's ability to create a logical association between two or more social phenomena that they perceived (Himawan, 2014).

People make decisions and act on those decisions due to various beliefs or life experiences they personally hold. Magical thinking decisions are decisions that are made not based on any formal logic or reason. The abnormal psychology perspective of magical thinking says that when people use magical thinking they are using a distorted thought where their mind does not find a logical connection between two different things. Magical thinking is due to an imbalance or disorganization in the structures of the brain that cause problems with cognitive functioning according to the abnormal psychology perspective (Himawan, 2014).

### **Magical Thinking and Psychological Disorders**

Magical thinking is a main feature in some mental illnesses. In the past magical thinking has been linked to psychosis and psychotic disorders such as schizophrenia (Passanisi et al., 2017). Schizophrenia has been considered one of the most serious and mysterious psychological disorders with symptoms such as hallucinations. Hallucinations also appear in other disorders such as OCD, bipolar disorder, and post-traumatic stress disorder (Garcia-Montes et al., 2014). A recent study by Garcia-Montes and colleagues (2014) looked at the relationship between magical thinking beliefs and hallucinations in patients with schizophrenia and patients with OCD. Magical thinking has been related to auditory hallucinations in patients with schizophrenia and OCD through the mechanism of metacognitive beliefs about the responsibility of their own thoughts. One example of

the metacognitive beliefs that patients with schizophrenia or OCD experience is some patients believed that they had to control their thoughts. They believed that if they do not control their thoughts then hallucinations or something else that they considered bad would happen and it would be their fault for not controlling their thoughts (Garcia-Montes et al., 2014). This shows that magical thinking can be conceptualized as a pathological symptom or trait.

More recently studies have found that magical thinking is a primary feature of obsessive-compulsive disorder (OCD; Shihata et al., 2014). Thought action fusion is a component of magical thinking where a person's thoughts are linked to the actions that they take. Most people would agree that having thoughts about murdering someone is bad, but it is not the same as actually committing murder. Someone who struggles with thought action fusion believes that having a thought about murdering someone is the same as actually murdering that person. Difficulties with thought action fusion make it hard to differentiate between thoughts that someone has and actions because to the person struggling with thought action fusion they are equal. A study by Einstein & Menzies (2004) found that many individuals with OCD present with issues related to thought action fusion (Einstein & Menzies, 2004). Individuals diagnosed with OCD attempt to control their thoughts to help prevent certain actions or behaviors from occurring. These attempts and efforts tend to increase in frequency and intensity over time in those with OCD (Eremsoy & Inozu, 2016). Religiosity is another component of magical thinking that is connected to OCD. Individuals with OCD often use compulsions to try to eliminate or avoid uncomfortable feelings due to unwanted thoughts. Studies have found a relationship between the level of religiosity a person holds and their need to control

their unwanted thoughts (Eremsoy & Inozu, 2016). A study by García-Montes and colleagues found that people diagnosed with schizophrenia who experience auditory hallucinations and people diagnosed with OCD report more superstitious beliefs as a result of having a sense of responsibility for controlling their thoughts (García-Montes et al., 2014).

A study by Stavrova & Meckel (2017) found that people also use magical thinking beliefs to explain situations where they lack a sense of control or predictability. When people feel that their world is predictable they are more optimistic and are more likely to believe that negative events are less likely to occur than positive events (Stavrova & Meckel, 2017). Intolerance of uncertainty involves fear of the unknown or the negative view of ambiguous situations and is a main predictor of worry according to a study by Shihata, Egan, and Rees (2014). The law of attraction and magical thinking reduces worry about ambiguous situations and fear of the unknown about the future because it gives people a sense of control of their life and their future (Stavrova & Meckel, 2017).

Currently there is little knowledge about magical thinking and other psychological disorders. There have been studies conducted on magical thinking and generalized anxiety disorder and magical thinking and somatoform disorders. A study by West & Willner (2011) found that magical thinking and overt compulsive behaviors may be features of generalized anxiety disorder as well as obsessive-compulsive disorder. The study found that superstitious beliefs related to worries are found in many individuals with generalized anxiety disorder. Intolerance of uncertainty is a feature that is heightened in individuals with OCD, generalized anxiety disorder, social anxiety

disorder, and panic attacks (Shihata et al., 2014). Individuals with lots of worry might engage in magical thinking as a strategy to deal with outcomes that they fear and to feel like they have control (Shihata et al., 2014). Magical thinking often gives those with generalized anxiety disorder a sense of control with their worry leading them to assume that the worry prevents unknown, bad experiences from happening in the future (Shihata et al., 2014). A study by Hausteiner-Wiehle & Sokollu (2010) found that participants with a somatoform disorder displayed more magical thinking and endorsed more magical thinking items on the Schizotypal Personality Questionnaire than participants that did not have a somatoform disorder. Participants with a somatoform disorder endorsed items about the belief in telepathy and the belief in clairvoyance more frequently than participants not diagnosed with a somatoform disorder.

Magical thinking contributes to psychopathology by helping clients identify the source of their worries or other symptoms such as hallucinations and difficulties with thought action fusion (Einstein & Menzies, 2004). Magical thinking could help a client identify the magical beliefs that a client has in order to determine how those magical beliefs relate to the thoughts and emotions that the client is experiencing (Shihata et al., 2014). Identifying if a client uses magical thinking or has magical thinking beliefs could help the clinician better understand the client and their symptoms and behaviors (Garcia-Montes et al., 2014).

### **Goal Setting & Magical Thinking**

Magical thinking has been robustly linked to various psychopathologies, but it might have positive effects. Magical thinking can create confidence and a sense of control in an uncertain situation (Bever, 2012). Most adults in Western society use

magical thinking in certain circumstances especially when the stakes are high, or they feel that they have little control. In these cases, using magical thinking or focusing one's thoughts on whatever it is that they are wanting or wanting to happen can actually encourage the person to behave in ways that make it more likely that they will achieve whatever it is that they are focusing their thoughts on (Hortop, Wrosch, & Gagné, 2013). Whenever a person spends majority of their time focusing on one thing that they really desire they may start behaving in ways that moves them towards getting what they want because they are focusing all of their thoughts and energy on that one thing (Bever, 2012; Burton & Lent, 2016). There is currently no research on magical thinking and goal setting. Further, the information that is available about each area, especially magical thinking, is often unclear and sometimes contradictory. Hortop et al. (2013) believed that magical thinking in this context could be similar to goal setting interventions, as magical thinking may assist the person in taking steps to achieve the goal (Hortop et al., 2013). Much like magical thinking in psychological disorders helping individuals feel as though they have control over their thoughts or a certain situation in their life goal setting and magical thinking often works the same way. Using magical thinking to set goals creates a sense of control in that it is believed that with magical thinking focusing your thoughts on the specific goal that you want to accomplish will lead to that goal actually being achieved (Hortop et al., 2013).

Goal setting is often used as a treatment intervention for psychological disorders. Clinicians use an individualized client focused collaborative approach when treating psychological disorders (Tabak & Link, 2015). Setting goals as a treatment intervention helps both the client and the clinician decide what direction to go in with therapy and

what treatment would be the most helpful to the client. Setting goals for therapy can also identify the client's values and help the clinician tailor treatment to that specific client (Tabak & Link, 2015).

There are some aspects of goal setting that make a person more likely to achieve the goals that they set. Goals that are set publicly and as verbal statements are more likely to be achieved because these statements that are public, known by others, serve as motivation to achieve the goal because the person will be held accountable by others if the goal is not achieved (Jackson et al., 2016). When people are committed to the goal that they are setting they are more likely to make plans to achieve the goal and are more likely to have intentions about what is to come in the future in relation to the goal they have set. Having positive fantasies about the future and goal achievement but focusing attention on a negative reality leads to less goal commitment (Oettingen, Pak, & Schnetter, 2001). Magical thinking emphasizes focusing attention on positive fantasies about the future and future goal achievement in order to achieve goals.

Goal setting is most effective when the goal is set face-to-face with another person and there are many resources and few constraints on the situation in which the goal is to be achieved (Epton, Currie, & Armitage, 2017). Goals should be clear and specific, attainable, future oriented, positive, and valuable or meaningful to the person setting the goal in order to encourage achievement of the goal (Burton & Lent, 2016).

A study by Cohen, Garcia, Apfel, and Master (2006) found that African American students who wrote down their most important values and why they are important to them as well as their agreement with the statements earned higher grades during that term. This led to a forty percent reduction in the racial achievement gap (Cohen et al., 2006). If the

person setting the goal has a high expectation of success for the goal, then it is more likely that the person will set that goal. People only make moves toward a goal if the desired future of achievement for that goal and the person's present reality can be imagined and obtained at the same time (Oettingen et al., 2001). The way that a person consciously interprets a goal influences their behavior to achieve or not achieve that goal (Baumeister, Masicampo, & Vohs, 2011). A study by Nakama & Oshio found that self-improvement activities and setting and achieving goals were significantly positively related to people who believe in the power of positive thinking (Nakama & Oshio, 2013). Thinking about something happening that is focused on the process of accomplishing a goal, such as thinking about accomplishing a specific goal, encourages plans and reduces anxiety (Oettingen, 2012).

Expectations that a person holds for their future or a goal that they have set can influence the future and outcome of that goal. A study by Oettingen (2012) found that women who had positive expectations for a weight loss goal ended up losing more weight. College students who had positive expectation about finding a job after graduation found more suitable jobs and received more job offers after graduation (Oettingen, 2012). Creating an image in your mind of something that you want to accomplish or imagining yourself in that situation can lead to more success and achievement. The person setting the goal should be committed to the goal and the goal should not be overly complex in order for the goal to be more likely to be achieved (Oettingen et al., 2001). Goals that are set when using magical thinking beliefs are more likely to be complex due to the belief that a person can have anything that they desire if they just focus their thoughts and attention on what they are wanting to achieve. A study

by Baumeister, Masicampo, and Vohs found that students who imagined themselves studying and then taking a test and answering the questions on the test improved their test scores significantly. Students who only imagined themselves getting a good grade on the test did not improve their test scores significantly (Baumeister et al., 2011).

### **Goal Specificity & Magical Thinking**

Magical thinking may help goal setting. One of the key links in this relationship may be goal specificity. Setting specific goals leads to more achievement due to having more clear expectations for what is desired and more clarity on how to take steps to achieve the goal (Burton & Lent, 2016). Goal specificity is used in magical thinking with vision boards. When creating a vision board an individual attaches pictures of the specific goals, objects, or trips they want to accomplish or obtain in the future on a board that they will see every day and will then achieve by taking steps due to seeing the pictures on a daily basis and thinking about what it is that they desire (Burton & Lent, 2016). A study by Dickson & Moberly (2013) examined the types of goals that depressed adults generate. The authors were interested in determining whether depressed adults set more or less specific goals compared to a non-depressed control group. The authors looked at both approach goals, goals with rewarding outcomes, and avoidance goals, goals with undesirable outcomes. The authors also examined reasons that depressed individuals generated for reasons for (pros) or reasons against (cons) goal attainment for both approach and avoidance goals.

Dickson & Moberly (2013) recruited depressed participants from NHS Primary Care Teams and Mental Health Trusts in England and non-depressed participants from NHS Primary Care Teams in the same region. The authors had twenty-one participants in

the depressed group who met DSM-IV criteria for current major depression and who had at least one previous episode of major depression in the last five years and scored in the symptomatic range on the Beck Depression Inventory (BDI-II). The control group contained twenty-four participants who had never met criteria for major depression or any other psychiatric disorder and scored in the asymptomatic range on the BDI-II.

Dickson & Moberly (2013) had participants complete two tasks with two measures each. The first task gave participants prompts that elicited approach (“In the future it will be important for me to...”) and avoidance goals (“In the future it will be important for me to avoid...”). The approach and avoidance conditions were counterbalanced across participants. Participants were given instructions to write down as many specific and discrete goals that they believe with characterize them in the future (next week, next month, next year, in a few years) in ninety seconds and use a separate line for each goal. They were instructed to provide goals that were personally meaningful and plausible.

In the second task in the Dickson & Moberly (2013) study participants were prompted to choose their two most important approach goals and two most important avoidance goals. Prompts were then given to get participants to give reasons for (pro) and reasons against (con) goal achievement for each type of goal. The prompts for the approach goal condition were “reasons why this would be accomplished (pro reasons)” and “reasons why this would not be accomplished (con reasons).” The prompts for the avoidance condition were “reasons why this would be avoided (pro reasons)” and “reasons why this would not be avoided (con reasons).” Participants were given

instructions to write down as many specific and discrete reasons as they could in ninety seconds for each condition (pro and con) using a new line for each reason.

Two judges who were both blind to condition dichotomously coded all goals as approach or avoidance goals and all reasons as pro or con. Goals and reasons were then coded as either general or specific. “A goal was coded as specific if it described an explicit aim or target feature an included at least one of these aspects: time, place, or people. A goal was coded as general if it referred to a global or abstract aspiration rather than a specific target feature or unique experience” (Dickson & Moberly, 2013 p. 3). Dickson & Moberly (2013) found that the depressed group wrote down less specific goals across both goal types and less specific reasons for goal attainment and nonattainment compared to the control group. Goals that are specific are more likely to be achieved compared to goals that are less specific due to the fact that goals that are more specific are easier to create a plan for or have a vision of how to achieve the goal and what that will look like (Burton & Lent, 2016). Goals that are specific also foster more goal commitment and expectations for the goal because the person will have a clear vision of what goal achievement will look like and it will be obvious if they do not achieve the goal (Oettingen et al., 2001).

### **Current Study**

The current study attempts to apply the goal specificity task developed by Dickson & Moberly (2013) to explore the relationship between goal specificity and magical thinking. To accomplish this aim, this study will shorten Dickson & Moberly’s (2013) goal setting intervention by only examining approach goals instead of both approach goals and avoidance goals. This study will also examine short-term goals

(today, this week, this month, this semester) instead of long-term goals (next week, next month, next year, in a few years) to more directly explore the relationship between short-term goal specificity and magical thinking. In addition to goal specific, this study will also measure goal plausibility (i.e., how realistic the goals are) to explore the impact of magical thinking on this important goal setting component.

### **Primary Research Question**

This study attempts to explore whether there be an effect of magical thinking on goal specificity and plausibility. Most proponents of magical thinking suggest that an individual must be as specific as possible with whatever it is that they are wanting, such as with vision boards where an individual includes pictures of specific goals or items that they wish to obtain. This is similar to setting goals that are specific so that the individual can imagine the steps needed to achieve the specific goal. Magical thinking also often involves thinking that lacks realistic thinking or plausibility. When using magical thinking individuals often imagine themselves obtaining or accomplishing large goals due to the belief that they can have whatever they want if they just use magical thinking and focus their thoughts on what it is that they desire (Byrne, 2006). Given that there is currently not any research to support the idea that magical thinking and goal specificity and plausibility are related, this study will approach this relationship in an exploratory manner. This study focuses on goal setting and not the outcome of goals. This is because magical thinking is purported to be related to the type of goals individuals set since research suggests that magical thinking increases the sense of control an individual has in their life and their goals (Burton & Lent, 2016).

### **Depression Hypothesis and Research Question**

This study also plans to extend the findings of Dickson & Moberly's (2013) study looking at goal specificity and depression symptoms. Dickson & Moberly (2013) found that individuals experiencing symptoms of depression generated less specific goals, and we expect to find similar findings in the current sample. That is, participants who report more symptoms of depression determined by higher scores on the Depression, Anxiety, Stress Scale (DASS-21) (Lovibond & Lovibond, 1995) depression scale will generate less specific goals. In contrast to depression and goal specificity where this is a clear established relationship, there is not a comparable literature base that examines the relationship between depression and goal plausibility. This study attempts will explore whether there is an effect of depression symptoms on the plausibility of goals generated by participants.

### **OCD Hypothesis**

Research has shown that magical thinking beliefs, specifically thought action fusion, is a feature in obsessive compulsive disorder (OCD; Einstein & Menzies, 2004; Kingdon, Egan, & Rees, 2012). It is expected that the higher an individual's score is on the Illusory Beliefs Inventory (IBI), specifically the thought action fusion subscale, the higher their scores will be on the Yale-Brown Obsessive-Compulsive Scale (YBOCS).

### **Goal Specificity and Plausibility Research Question**

In order to achieve a goal, the goal should be specific and clear as well as plausible for the individual setting the goal (Burton & Lent, 2016). There is currently not any research that examines how goal specificity and goal plausibility are related. This study will also explore whether the proportion of specific goals and plausible goals generated by participants are related.

## Chapter II: Methodology

### Measures and Materials

**Goal Setting Intervention.** The goal task was adapted from the Dickson & Moberly (2013) study. The task involved participants writing down as many short-term goals that they could think of in 90 seconds. The instructions that participants were given was “Write down as many specific and discrete goals as you can in 90 seconds to the prompt. These should be goals that will typically characterize you in the future and be goals that you could accomplish today, this week, this month, or this semester. Use a separate line for each goal.” A prompt was then given to generate approach goals (“In the future it will be important for me to...”) and then participants had 90 seconds to write down as many specific and discrete goals that they think will characterize them in the near future (today, this week, this month, this semester). Participants were instructed to use a new line for each goal. The goals were then be dichotomously coded by two judges as either general or specific. “A goal was coded as general if it referred to a global or abstract aspiration. A goal was coded as specific if it described an explicit aim or target feature and included either time, place, or people” (Dickson & Moberly, 2013, “Specificity coding of goals and explanations,” para. 2). Each goal was also coded by two judges as plausible or not plausible. A goal was coded as plausible if a typical college student could obtain the resources needed and put in the time required to accomplish the goal by the end of the academic semester. The goal setting intervention was completed online to help the participant focus on goals that are meaningful and valuable to them

without concern about the presence of the researcher in the same room. Creating a vision board as a type of goal setting is an activity done alone to visualize the goals that one hopes to achieve (Burton & Lent, 2016). Completing the goal setting intervention online allowed the participant to visualize the goals that they would like to achieve without the distraction of other participants or the researcher.

The author was the primary coder who trained the other coder, another graduate student in the program, using examples not from the dataset. The coders coded each of the participants goals independently. Per the guidelines in McHugh (2012), Cohen's Kappa was used to calculate interrater reliability for the coding of each participant's goals. Interrater reliability was found to be .86 for goal specificity and .87 for goal plausibility across the 593 goals that were rated. These values exceed the reliability coefficients found in previous research (Dickson & Moberly, 2013) found a Cohen's Kappa of .82 and indicate substantial agreement. For participants the following scores were obtained from the goal setting task, the total number of goals generated, the proportion of goals that were specific, the proportion of goals that were plausible, the proportion of goals that were general, and the proportion of goals that were not plausible. Some of the examples of specific goals that were used for training purposes were "I want to get a 4.0 GPA," "I want to lose 10 pounds," and "I want to cook three times a week." Some of the examples of general goals that were used for training purposes were "I want to graduate," "I want to travel," and "I want to lose weight." Some of the examples of plausible goals that were used to training purposes were "I want to make an A in my psychology class," "I want to make new friends," and "I want to go to the gym twice a

week.” Some examples of goals that were considered not plausible were “I want to win the lottery,” “I want to travel to Europe,” and “I want to always be happy.”

**Depression Anxiety Stress Scale-21 (DASS-21).** The short form of Depression Anxiety Stress Scale (DASS) was used to assess participants’ symptoms of depression, anxiety, and stress. Each of the scales contains seven items. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, and anhedonia (Lovibond & Lovibond, 1995). The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/ over-reactive, and impatient. The DASS is a measure comprised of twenty-one self-report items. Participants responded on a four-point rating scale from 0 (*Did Not Apply to me at All*) to 3 (*Applied to me Very Much or Most of the Time*). Each scale is scored by summing the response values for each item on each scale. Higher scores indicate that the participant is experiencing more distress with symptoms of depression, anxiety, and stress the mean score that has to be obtained on the DASS-21 depression subscale to meet criteria for a current episode of major depressive disorder is 26 (Beaufort, De Weert-Van Oene, Buwalda, de Leeuw, & Goudriaan, 2017). Previous research found that the internal consistency of the DASS-21 to be  $a = .94$  for the depression subscale,  $a = .87$  for the anxiety subscale, and  $a = .91$  for the stress subscale (Antony, Bieling, Cox, Enns, & Swinson, 1998). The alphas found for the current study were  $a = .91$  for the depression subscale,  $a = .88$  for the anxiety subscale, and  $a = .88$  for the stress subscale, which are good to excellent. These numbers indicate that the DASS-21

has good internal consistency. The alpha for the total DASS-21 for the current study was  $a = .95$ , which is excellent.

**Magical Thinking.** The *Illusory Beliefs Inventory* (IBI) was used to assess the participant's beliefs in magical thinking. The IBI is comprised of three areas, thought action fusion and internal state, spirituality, and magical beliefs (Shihata et al., 2014). It is a 24 item self-report questionnaire. Participants responded on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale is scored by adding together the response values for each item and area. Some items are reverse scored (i.e., items 3, 8, 11, 13, 14, 19, and 23). Examples of items on the IBI are, "If I think too much about something bad, it will happen," "I avoid unlucky numbers," and "I do not believe in a spiritual presence(R)." The authors found that test-retest reliability for the IBI is  $r = .94$ , the internal consistency was found to be  $a = .92$  (Shihata et al., 2014). These numbers indicate that the IBI has good test-retest reliability and good internal consistency. The alphas for the current study were found to be  $a = .82$  for the spirituality subscale,  $a = .68$  for the internal state- thought action fusion subscale,  $a = .69$  for the magical thinking subscale, and  $a = .72$  for the IBI total, which are questionable to good. Bivariate correlations were conducted between the IBI, *Penn State Worry Questionnaire* (PSWQ) and *Brief Fear of Negative Evaluation Scale, Straightforward Items* (BFNE-S) to examine the construct validity of the IBI. The authors found that the three areas of the IBI (magical beliefs, spirituality, and internal state - thought action fusion) were small to moderately correlated with the PSWQ. The authors found that the IBI total and the three areas of the IBI were small but significantly correlated with the BFNE-S. The authors found that there was not a significant correlation between spirituality and the BFNE-S.

These findings support the validity of the IBI by showing that the IBI measures the similar constructs as other measures.

**Yale-Brown Obsessive-Compulsive Scale (Y-BOCS).** The Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) was used to assess participants' obsessive thoughts and compulsive behaviors (Goodman et al., 1989). The Y-BOCS is a measure comprised of ten self-report items. Participants responded on a five-point rating scale from 0 (*no symptoms*) to 4 (*extreme symptom frequency*). Participants will read a definition of obsessions and a definition of compulsions before answering questions about each. The scale is scored by summing the response values for each item on the scale. Higher scores indicate that the participant is spending more time engaging in obsessive thoughts or compulsive behaviors. To meet criteria for obsessive-compulsive disorder an individual has to score above a 16 on the YBOCS (Volpato, Cordioli et al., 2003). The authors found the interrater reliability to be  $r = .98$ . The internal consistency was  $a = .89$  (Goodman et al., 1989). These numbers indicate that the IBI has good interrater reliability and good internal consistency. The alpha for the current study were found to be  $a = .82$ , which is good.

**Demographics.** Participants answered questions about their age, sex, ethnicity/race, and year in school. This information was provided in order to provide a demographic description of the sample as well as to assess the relationship between demographic information and magical thinking beliefs. Participants also answered questions about their familiarity with the law of attraction and the book "The Secret." Participants responded on a 5-point Likert scale ranging from 1 (*Never heard of it*) to 5 (*Extremely familiar*). In addition, participants answered questions about their beliefs in

the law of attraction and “The Secret.” Participants responded on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Very Much*).

### **Participants**

Participants were 86 Murray State University undergraduate students ( $N = 86$ , 8 males, 75 females) with ages ranging from 18 to 28 ( $M = 19.19$ ,  $SD = 1.52$ ) who were recruited through SONA, an online participant management system. Participants were compensated by receiving class credit. The majority of the sample self-reported their race/ethnicity as Caucasian (94.2%), followed by Black (4.7%), Asian (3.5%), and American Indian (1.2%) participants could self-report more than one race/ethnicity as to indicate being biracial. 62.8% of the sample reported being freshmen, 19.8% sophomores, 14% juniors, and 3.5% seniors in college.

Magical thinking beliefs are common in children but tend to diminish as the person grows older (Brashier & Multhaup, 2017). Since *The Secret* was published in 2006 magical thinking beliefs have become more common in adults, and the level of magical thinking beliefs in adults varies depending on the person’s personal thoughts on *The Secret* (Byrne, 2006). Therefore, college students are an ideal population to examine the level of magical thinking beliefs that they have and how that is related to goal specificity.

### **Procedure**

Approval from the IRB was obtained prior to analysis. Participants were recruited to participate in the online survey through the SONA participant management system. Once on the page to complete the survey participants first read information outlining the purpose, possible risks, and benefits of the study. Participants then gave informed consent

to complete the survey. They then completed study measures in this order: The Goal Setting Task, the *Illusory Beliefs Inventory*, the *Depression, Anxiety, Stress Scale*, the *Yale-Brown Obsessive-Compulsive Scale*, and demographics. The survey took about 30 minutes to complete. Participants were taken to a page to be debriefed after completing the survey. Participants received 15 SONA credits for participating in the survey.

### **Analytic Strategy**

Due to missing values in study measures a total of 11 participants were removed from the study before analysis. Two participants were removed before analysis due to missing two out of three attention checks. Five participants were removed before analysis due to completing less than half of the survey. Four participants were removed before analysis due to missing values in study measures. Prior to analyses we screened for univariate and multivariate outliers, screened for normality, and assured that all values are in range. Two univariate outliers on proportion of plausible goals were identified for participants who set zero plausible goals, a score greater than 3.43 standard deviations below the mean. These participants were retained because conceptually it made sense to keep these participants in the study for analysis as we were interested in the full range of goal plausibility. Further, a non-parametric correlation coefficient (Spearman's Rho) was selected for these analyses, which is less sensitive to extreme outliers. Multivariate outliers were screened for using a Mahalanobis critical value of 22.46. There were no multivariate outliers identified as no participants had a value greater than 22.46. The data was also screened for normality. The results showed that the proportion of specific goals was non-normal, the proportion of plausible goals was non-normal, and the DASS-21 scores were non-normal. Spearman's Rho was used for all correlations involving these

variables to mitigate the violation of the normality assumption. Frequency statistics were calculated for demographic variables (age, sex, level in school, ethnicity, familiarity with the Law of Attraction, familiarity with “The Secret,” and belief in the Law of Attraction and “The Secret”). Means and standard deviations were calculated for the IBI and subscales, the DASS-21, and the YBOCS. Correlations between demographics and key study variables were explored. To explore the primary research question a correlational analysis was conducted between the dependent variable, proportion of specific goals, and the independent variable, magical thinking beliefs (i.e., participants score on the IBI). To explore the depression hypothesis and research question a correlation was conducted between the proportion of goals that are specific and participant’s score on the DASS-21 Depression subscale. To explore the OCD hypothesis a correlation was conducted between participants score on the IBI subscales and their score on the YBOCS. To explore the goal specificity and plausibility research question a correlation was conducted between the proportion of specific goals that participants set and the proportion of plausible goals that participants set. SPSS version 25 was used to conduct all study analyses.

With regard to effect size no previous research has been conducted on goal specificity and magical thinking beliefs, but the derived goal task in Dickson and Moberly (2013) had a medium effect size, therefore we would expect a medium effect size. G Power 3.1.9.2 was used to determine the number of participants needed. A one tailed test was assumed, and a bivariate correlation model was run,  $\alpha = 0.5$  and statistical power of 0.8. The results showed that a minimum of 67 participants are needed. The goal was to collect data from 100 participants; however, data from only 86 participants were

available for analysis. Thus, the following statistical analyses may be slightly underpowered.

### Chapter III: Results

Frequency statistics showed that when asked to rate familiarity on a 1 to 5 Likert scale from 1 (*Never heard of it*) to 5 (*Extremely familiar*) on average participants were not familiar with the law of attraction ( $M = 1.83, SD = .86$ ) and also not familiar with “The Secret” ( $M = 1.08, SD = .32$ ). After reading a definition of the law of attraction results showed that when asked to rate how much they believed in the law of attraction and “The Secret” on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Very Much*) on average participants moderately believed in the law of attraction ( $M = 3.38, SD = 1.09$ ), but believed less in “The Secret” ( $M = 2.65, SD = .76$ ). On average participants set about seven goals ( $M = 6.90, SD = 3.19$ ) during the 90 second goal setting task and the proportion of goals that participants set that were specific was 29.8% ( $M = 29.8\%, SD = 29\%$ ), and the proportion of goals that participants set that were plausible was 79% ( $M = 79\%, SD = 23\%$ ). In the current study, two-tailed Pearson’s correlations were conducted on measures for which there the normality assumption was met and two-tailed Spearman Rho non-parametric correlations were conducted on measures where the normality assumption was not met. See Table 1 for all correlation analyses conducted as well as the means and standard deviations for all measures included in the study. A study by Beaufort, De Weert-Van Oene, Buwalda, de Leeuw, and Goudriaan (2017) found that the mean score on the DASS-21 depression subscale for participants with a current episode of major depressive disorder to be 26. The mean score on the DASS-21 depression subscale for our sample was 11.34 indicating that our sample was on average not

clinically depressed. The mean score on the YBOCS for this sample was 10.13. A clinical level of a score on the YBOCS is any score greater than 16 (Volpato, Cordioli et al., 2003), indicating that the majority of study participants fell below the clinical cut-off for OCD.

**Primary Research Question.** A Spearman Rho correlation was conducted to explore the primary research question of the relationship between the dependent variable, proportion of specific goals, and the independent variable, magical thinking beliefs (i.e., participant's score on the IBI). The correlation showed that there was not a significant relationship between the proportion of specific goals and magical thinking beliefs ( $r = .119, p = .28$ ). A Spearman Rho correlation was also conducted to explore the primary research question of the relationship between the dependent variable, proportion of plausible goals, and the independent variable, magical thinking beliefs (i.e., participants score on the IBI). The correlation showed that there was not a significant relationship between the proportion of plausible goals and magical thinking beliefs ( $r = -.034, p = .76$ ).

**Depression Hypothesis and Research Question.** A Spearman Rho correlation was conducted to explore the depression hypothesis between the proportion of goals that are specific and participant's score on the DASS-21 depression subscale. The correlation showed that there was not a significant relationship between the proportion of specific goals and how depressed participants report being or their score on the DASS-21 depression subscale ( $r = .044, p = .69$ ). A Spearman Rho correlation was also conducted to explore the depression hypothesis between the proportion of goals that are plausible and participant's score on the DASS-21 depression subscale. The correlation showed that

there was not a significant relationship between the proportion of plausible goals and how depressed participants report being or their score on the DASS-21 depression subscale ( $r = .115, p = .29$ ).

**OCD Hypothesis.** A Pearson's correlation was conducted to explore the OCD hypothesis between participants score on the IBI and their score on the YBOCS. The correlation showed that there was not a significant correlation between participants score total on the IBI and their score on the YBOCS ( $r = .117, p = .29$ ). A Pearson's correlation was conducted to explore the relationship between participants score on the YBOCS and their score on the three IBI subscales. there was not a significant correlation between participants score on the IBI spirituality subscale and their score on the YBOCS ( $r = -.100, p = .36$ ). There was also not a significant correlation between participants score on the IBI magical thinking subscale and their score on the YBOCS ( $r = .104, p = .34$ ). However, there was a significant correlation between participants score on the IBI internal state/thought action fusion subscale and their score on the YBOCS ( $r = .27, p = .01$ ).

**Goal Specificity and Plausibility Research Question.** A Spearman Rho correlation was conducted to explore the relationship between the proportion of specific goals that participants set and the proportion of plausible goals that participants set. The correlation showed that there was not a significant correlation between the proportion of specific goals that participants set and the proportion of plausible goals that participants set ( $r = -.096, p = .38$ ).

**Exploratory Analysis.** Correlations between demographics and key study variables were also explored. There was a significant positive correlation between

participants' belief in the law of attraction and their score on the magical thinking IBI subscale ( $r = .24, p = .03$ ). There was a significant positive correlation between participants familiarity with the law of attraction and their score on the YBOCS ( $r = .26, p = .02$ ). There was also a significant positive correlation between participants score on the DASS-21 and their familiarity with the law of attraction ( $r = .34, p = .002$ ).

Table 1. Means, standard deviations, and correlations between study variables

	<i>M(SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Specific Goals	29.8(.29)	-													
2. Plausible Goals	78.1(.23)	-.096	-												
3. Number of Goals	6.9(3.19)	.112	-.053	-											
4. DASS-21 Total	18.39(13.7)	.044	.118	.139	-										
5. DASS-21 Depression	11.34(5.07)	.026	.115	.133	.886**	-									
6. IBI Total	61.85(9.05)	.119	-.034	.040	-.004	-.062	-								
7. IBI Spirituality	29.46(6.53)	.138	.007	.163	-.160	-0.16	.558**	-							
8. IBI Magical Thinking's	11.79(3.86)	-.002	-.134	.044	-.015	-0.06	.712**	.006	-						
9. IBI TAF & Internal State	20.59(4.9)	.037	.051	-.177	.273*	0.18	.542**	-.307**	.520**	-					
10. YBOCS	10.13(6.03)	.006	.041	.013	.449**	.391**	.117	-.100	.104	.267*	-				
11. Familiarity Law of Attract	1.83(.86)	-.054	.131	.008	.335*	.283**	-.027	-.107	-.058	.137	.255*	-			
12. Familiarity of Secret	1.08(.32)	.032	.010	-.168	-.099	-.150	.042	-.081	.053	.144	.118	.053	-		
13. Belief Law of Attraction	3.38(1.09)	.081	.023	-.087	.044	.012	.056	-.184	.238*	.160	.009	-.003	-.024	-	
14. Belief in Secret	2.65(.76)	.128	.040	-.206	-.022	-.043	.050	-.100	.079	-.100	.074	.032	.119	.319**	-

Note: Spearman's Rho was used for any correlations involving the following variables- DASS-21 (Depression, Anxiety, Stress Scale), proportion of specific goals, and proportion of plausible goals otherwise Pearson's R was used. DASS-21 (Depression, Anxiety, Stress Scale), IBI (Illusory Beliefs Inventory); IBI TAF & Internal State (Illusory Beliefs Inventory- thought action fusion), YBOCS (Yale-Brown Obsessive-Compulsive Scale).

## Chapter IV: Discussion

**Primary Research Question.** The primary research question sought to explore the relationship between goal specificity, goal plausibility, and magical thinking beliefs. The results from this study did not show that there is a relationship between the type of goals that an individual sets, specifically whether the goals are specific and plausible, and their degree of magical thinking beliefs. This lack of a relationship could be due to many factors, including the type of goals that participants set and the proportion of specific and plausible goals that participants set. The proportion of specific goals that participants set was much smaller compared to the proportion of plausible goals that participants set. The proportion of specific goals was 29.8% and the proportion of plausible goals was 78.1%. This difference could have had an impact on the findings that included the type of goals that were set as well as the relationship between specific and plausible goals. None of the relationships between the type of goals that were set, and another variable were significant. The goal setting task was adapted from a study by Dickson & Moberly (2013.) The goal setting task in this study asked participants to set short term goals that could be accomplished today, this week, this month, or this semester whereas the Dickson & Moberly (2013) study asked participants to set long term goals that could be accomplished next week, next month, next year, in a few years. Limiting the type of goals that participants were to set to short term goals could have influenced the way that participants thought while completing the goal setting task in a way that

made participants think of more plausible goals since the goals would need to be able to be accomplished in the near future.

A clinical implication of magical thinking with goal setting is that magical thinking beliefs could explain the thinking style of clients who present with a concern that clinicians cannot fix, such clients who want to get motivation from their clinician. Thoughts like these would impact the type of goals that clients would set. These goals would likely be less specific and less plausible. The client could possibly not see the connection between their own thoughts and behavior that is necessary to complete tasks (Nakama & Oshio, 2013). The difference in the proportion of specific and proportion of plausible goals in this study could have impacted the lack of significant relationships found. Future studies should not limit the goals that participants should set to short term goals as there may be greater variability in plausibility and specific when long-term goals are considered. Clinical implications of proportions of the type of goals set could be that clinicians should consider how the type of goals that are set could impact motivation for treatment. For example, goals that are specific and plausible, meaning that there are clear steps to achieve the goal and it is obvious that the client could achieve the goal, would likely increase motivation for treatment because the client could see what their life would look like throughout the treatment process and would be able to see progress being made.

The sample was also moderately religious indicated by the mean score on the spirituality subscale of the IBI. This raised the mean score on the total IBI scores. Future studies could calculate participants IBI score without the spirituality subscale to better explore the role of magical thinking and thought action fusion, though it is important to note that there was not a relationship between the other IBI subscales and goal

proportions in this study. The implications of the findings that there was not a relationship between the proportion of specific goals, the proportion of plausible goals, and magical thinking beliefs for clinical practice are that clinicians should consider the type of goals that they and their clients set and focus on during treatment. Clients may be more likely to set plausible goals that can actually be accomplished if the focus is put on the short term and goals that can be accomplished in the near future based on the results of this study.

**Depression Hypothesis and Research Question.** My hypothesis for the depression question was that there would be a relationship between participants' scores on the DASS-21 depression subscale and the proportion of specific goals that participants set. My hypothesis was not supported by the results of this study. Previous research by Dickson & Moberly (2013) found that participants who were more depressed set fewer specific goals and the results of this study did not replicate these findings.

This could be a result of the sample used in this study compared to the sample used by Dickson & Moberly (2013). This study used a sample of college undergraduate students whereas the Dickson & Moberly (2013) study had a sample where the mean age was 37 years old. The Dickson & Moberly (2013) study also used participants who were clinically depressed and who had a history of at least one previous episode of major depressive disorder in the last five years. This study did not screen participants for current or a history of clinical depression. A study by Beaufort, De Weert-Van Oene, Buwalda, de Leeuw, and Goudriaan (2017) found that the mean score on the DASS-21 depression subscale for participants with a current episode of major depressive disorder to be 26. The mean score on the DASS-21 depression subscale for our sample was 11.34

indicating that our sample was on average not clinically depressed. The location where the goal setting task took place also could have impacted the results. The Dickson & Moberly (2013) study took place in person and participants completed the goal setting task in front of a researcher. This study was completed online and could have influenced the type of goals that participants set. When completing the goal setting task in person participants may have felt more pressure to set more goals by setting goals for the entire duration of the task. Results showed that participants set a smaller proportion of specific goals compared to plausible goals. Participants also may have paid more attention to the instructions stating to set specific goals when there was a researcher present. Future studies should consider screening participants for clinical depression and having participants complete the goal setting task in person with a researcher instead of online.

Another research question asked about the relationship between depressive symptoms and the plausibility of goals generated by participants. There was not a significant relationship between depression symptoms and the plausibility of goals generated by participants. This could be a result of the large mean proportion of plausible goals, 78.1%, that participants set and the lower mean score on the DASS-21 depression subscale. Future studies should consider screening participants for a current episode of clinical depression. In the future researchers should consider having participants set short term goals to limit the variability in plausibility of goals and they should consider including a more psychometrically sound measure of depression such as the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996).

**OCD Hypothesis.** The next hypothesis was that the higher an individual's score is on the Illusory Beliefs Inventory (IBI), specifically the thought action fusion subscale,

the higher their scores will be on the Yale-Brown Obsessive-Compulsive Scale (YBOCS). This hypothesis was partially supported by the results of this study. There was not an overall relationship between the total IBI score and participants scores on the YBOCS. However, participants' score on the IBI thought action fusion subscale was related to their score on YBOCS. This makes sense when thinking about the criteria for obsessive compulsive disorder being a person's thoughts or obsessions being connected to their actions or compulsions. Often individuals with obsessive compulsive disorder will engage in compulsions to relieve themselves of their uncomfortable thoughts of obsessions (American Psychiatric Association, 2013). The IBI thought action fusion subscale contains items about how connected an individual believes that their thoughts are to their actions. Some clinical implications of this finding are that magical thinking could help clients identify the source of their worries or problematic symptoms such as obsessions or compulsions and clinicians could then target those symptoms or difficulties with thought action fusion (Einstein & Menzies, 2004). Magical thinking could also differentiate what symptoms are the most distressing or impairing by identifying the magical thinking beliefs that a client holds and then determining how those beliefs relate to the client's thoughts and behavior (Shihata et al., 2014). Determining the level of magical thinking that a client holds could help clinicians make sense of or better understand clients who make unclear or irrational connections between two events. The implications of this for clinical practice are that clinicians should consider the connection between a client's thoughts and their actions when treating OCD and how that is related to the client's obsessions and compulsions. Clinicians should also examine a client's

level of thought action fusion with various topics or thoughts when considering the criteria of OCD and the thoughts and behavior of a client.

There was no relationship between participants scores on the YBOCS and the proportion of specific or the proportion of plausible goals that participants set. This is possibly due to sample used in this study. The sample consisted of undergraduate college students who set a small proportion of specific goals and who reported a small mean number of obsessive and compulsive symptoms and overall score on the YBOCS. The mean score on the YBOCS for this sample was 10.13. A clinical level of a score on the YBOCS is any score greater than 16 (Volpato, Cordioli et al., 2003). Future studies should consider screening for obsessive compulsive disorder to examine the relationship between individuals with OCD and the type of goals that they set.

**Goal Specificity and Plausibility Research Question.** The next research question attempted to explore the relationship between the proportion of specific goals that participants set and the proportion of plausible goals that participants set. The results of this research question were that there was not a relationship between the proportion of specific goals that participants set and the proportion of plausible goals that participants set. This was likely a result of the large difference in the mean proportion of specific goals that participants set compared to the mean proportion of plausible goals that participants set. It is also possible that goal specificity and goal plausibility are not related. Participants set a larger proportion of plausible goals than proportion of specific goals. Future studies should consider changing the type of goals that participants set such as long-term goals instead of short-term goals. Short-term goals may lead individuals to consider goals that are more plausible and more immediate in that they can be completed

in the near future therefore they would need to be plausible. This may influence the way that individuals think about the goals that they will set because they are thinking about the short term and therefore the goals would likely not be big goals that are less plausible. The clinical implications of these results are that clinicians should consider the goals that they set for their clients. If specific and plausible goals are important for treatment, then clinicians should consider what it might mean that our results did not show a relationship between specific and plausible goals with undergraduate college students. Clinicians would need to target both goal specificity and goal plausibility with clients since they are unrelated and just working on making goals more specific will likely not lead to more plausible goals.

**Exploratory Analyses.** Why not directly hypothesized, several additional correlations between study variables are worth discussing. Exploratory analyses showed that there was a significant positive relationship between participants' score on the DASS-21 (psychological distress) and their familiarity with the law of attraction. This could be because individuals who are distressed seek out the law of attraction to deal with their distress and symptoms of depression, anxiety, and stress and as a way to cope. It could also be because individuals who are familiar with the law of attraction and know that it states that you can achieve anything that you want if you just believe in it and focus your thoughts on what you want and as a result are more likely to experience distressing symptoms when their life does not go as they planned. This also could be due to an individual's tendency to ruminate when distressed when their life is not going as planned and their familiarity with the law of attraction could increase rumination and distress (Hong, 2007). Individuals experiencing distress may also be more prone to

seeking out non-scientifically supported ways of dealing with their distress. The clinical implications of this are that clinicians should consider clients' familiarity with the law of attraction and how that might relate to their symptoms and possibly cause the symptoms and distress.

There was also a significant positive relationship between participants familiarity with the law of attraction and their score on the YBOCS. This could be a result of obsessions and the connection between obsessions and an individual's familiarity with the law of attraction due to the importance of thoughts and focus on thoughts with the law of attraction (Shihata et al., 2014; Einstein & Menzies, 2004). The clinical implications of this are that clinicians should consider clients' familiarity with the law of attraction and how that might relate to their obsessions and possibly cause the symptoms and distress related to OCD. Due to the believed connection between thoughts and behaviors or outcomes with the law of attraction clinicians should consider how symptoms of OCD may be exacerbated by familiarity with the law of attraction.

There was also a relationship between participants' belief in the law of attraction and participants score on the IBI. This makes sense when thinking about what the law of attraction is and what magical thinking is and that the IBI measures participants' magical thinking beliefs. Magical thinking often gives clients a sense of control. By controlling their thoughts and thinking of something happening that they want to happen or not thinking of something that they don't want to happen they believe that they can make those things happen or not happen. Clients who engage in magical thinking often believe that their thoughts have some influence over what happens in their life whether that be symptoms such as hallucinations or a life event (Garcia-Montes, 2014 and Einstein &

Menzies, 2004). The literature is unclear and mixed on whether magical thinking beliefs are helpful or harmful. This study helps us get a little bit closer to an answer by examining how magical thinking beliefs are related to symptoms of depression and symptoms of OCD. The results showed that familiarity with the law of attraction, which is a philosophy of magical thinking beliefs, is related to greater symptoms of distress OCD, suggesting that there may be risks associated with magical thinking. However, it is important to note that these findings are correlational, and that future research is needed to further explore the possible risks of magical thinking.

### **Limitations and Future Direction**

In addition to the limitations listed above, there are several other ways that future research into this area could be improved. One limitation was the demographics of the sample. The sample consisted of predominantly female, white, and young undergraduate college students. This could have influenced our results and make the results of this study not generalizable to the broader population. Diversity is important in a study examining relationships between symptoms of mental disorders and other variables. For example, a study by Friedman et al. (2003) found that African American participants who met diagnostic criteria for OCD were more likely to present and report symptoms of agoraphobia and panic attacks despite have similar YBOCS scores. It is important to include a diverse sample due to the difference between cultures in presentations of symptoms and disorders as well as the discrepancy in reporting symptoms that are experienced. Another possible limitation of this study is the small sample size. This study included 86 participants, which while appropriately powered to detect a medium effect was, was not appropriately powered to detect small effect sizes. Future studies should

consider collecting more participants to possibly be able to detect smaller relationships that were unable to be detected in this study. Another limitation of this study was that participants were not very familiar with the law of attraction (i.e. the mean familiarity with the law of attraction was  $M = 1.83$  out of 5). Future studies should consider seeking out a sample that is more familiar with the law of attraction such as individuals who have read “The Secret” or who are part of Oprah’s book club that read and discussed “The Secret.” This would be helpful to examine the relationship between individuals who are more familiar with the law of attraction and “The Secret” and measures of symptoms of psychological functioning than those in our sample. The reliability of the Illusory Beliefs Inventory (IBI) was another limitation in this study. It is possible that the alphas for the IBI were not as expected based on previous research due to the sample of this study being more religious and the mean of the spirituality subscale of the IBI being higher than the other two subscales. Future research should consider using or creating a more reliable measure of magical thinking beliefs as there is currently not another measure of magical thinking beliefs. Another limitation of this study is the timing of the semester in which data was collected. Data was collected at the beginning and middle of the semester which could have impacted students’ stress or how depressed they are, and this could have impacted their scores on the DASS-21. Students may be less stressed at the beginning of a semester compared to the end, future studies should consider collecting data at a different point in the semester to examine whether stress levels are different at different points in the semester and how the level of stress may impact other aspects of thinking such as magical thinking beliefs. Future studies should also consider adapting the depression scale used to tailor specifically to cognitive content, such as the Cognitive

Distortion Scales (Briere, 2000) to examine how cognitive symptoms of depression are related to magical thinking beliefs. Future studies should also consider coding more qualitative data in several dimensions such as what themes were the goals that were set and what were the types of specific goals. Future studies should also consider including examples of specific goals along with the goal setting task so that participants can see what a good goal that follows the instructions would look like for the task. Future studies should also consider having a researcher do an actual intervention with the goal setting task where they check participants' goals to see if they are specific enough.

**Conclusions.** The major findings of this study were that there was not a significant relationship between the type of goals that participants set, specific or plausible, and depressive symptoms, obsessive-compulsive symptoms, or magical thinking beliefs. There was a significant positive relationship between participants' scores on the YBOCS and their scores on the thought-action fusion subscale on the IBI. The results showed that there was also a significant positive relationship between participants' scores on the DASS-21 and their familiarity. There was also a significant positive relationship between participants' score on the YBOCS and their familiarity with the law of attraction. This study showed that there does not seem to be a relationship between the type of goals that individuals set and their level of magical thinking beliefs.

### **Appendix I: Goal Setting Intervention**

Write down as many specific and discrete goals as you can in 90 seconds to the prompt.

These should be goals that will typically characterize you in the future and be goals that you could accomplish today, this week, this month, or this semester. Use a separate line for each goal.

In the future, it will be important for me to...

## Appendix II: Demographics Questionnaire

Please answer the following questions:

1. What is your age \_?
  
2. How do you describe yourself?
  - a. Male
  - b. Female
  - c. Non-binary/third-gender
  - d. Prefer to self-describe
  - e. Prefer not to answer
  
3. Are you of Hispanic, Latino, or Spanish origin?
  - a. Yes
  - b. No
  - c. I prefer not to answer
  
4. Which categories describe you? Select all that apply
  - a. American Indian or Alaska Native
  - b. Asian
  - c. Black or African American
  - d. Native Hawaiian/Other Pacific Islander

- e. White
  - f. Other
4. Which class/level most closely describes you?
- a. Freshman
  - b. Sophomore
  - c. Junior
  - d. Senior
  - e. Graduate
5. How familiar are you with the Law of Attraction?
- 1. Never heard of it
  - 2. Slightly familiar
  - 3. Moderately familiar
  - 4. Very familiar
  - 5. Extremely familiar
6. How familiar are you with the book “The Secret”?
- 1. Never heard of it
  - 2. Slightly familiar
  - 3. Moderately familiar
  - 4. Very familiar
  - 5. Extremely familiar

Please read this definition of the Law of Attraction before answering question 7: “Simply put, the Law of Attraction is the ability to attract into our lives whatever we are focusing on. It is the Law of Attraction which uses the power of the mind to translate whatever is in our thoughts and materializes them into reality. In basic terms, all thoughts turn into things eventually. If you focus on negative doom and gloom you will remain under that cloud. If you focus on positive thoughts and have goals that you aim to achieve you will find a way to achieve them with massive action (The Law of Attraction, 2018).”

7. How much do you believe in the Law of Attraction?

1. Not at all
2. Not really
3. Undecided
4. Somewhat
5. Very much

8. How much do you believe in “The Secret”?

1. Not at all
2. Not really
3. Undecided
4. Somewhat
5. Very much

## Appendix III: IRB Approval Letter



### Institutional Review Board

328 Wells Hall  
Murray, KY 42071-3318  
270-809-2916 • msu.ibr@murraystate.edu

**TO:** Michael Bordieri, Psychology

**FROM:** Jonathan Baskin, IRB Coordinator *JB*

**DATE:** 11/26/2018

**RE:** Human Subjects Protocol I.D. – IRB # 19-075

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The IRB has completed its review of your student's Level 1 protocol entitled *Understanding Goal Setting*. After review and consideration, the IRB has determined that the research, as described in the protocol form, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

**The forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.**

**Your stated data collection period is from 11/26/2018 to 11/25/2019.**

If data collection extends beyond this period, please submit an Amendment to an Approved Protocol form detailing the new data collection period and the reason for the change.

**This Level 1 approval is valid until 11/25/2019.**

If data collection and analysis extends beyond this date, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 11/25/2019. You must reapply for IRB approval by submitting a Project Update and Closure form (available at [murraystate.edu/ibr](http://murraystate.edu/ibr)). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

The protocol is approved. You may begin data collection now.

Opportunity  
afforded

[murraystate.edu](http://murraystate.edu)

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