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ARTICLE

Making sense of agency: Belief in free will as a unique and important construct

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Abstract

Belief in free will is the general belief that human behavior is free from internal and external constraints across situations for both self and others. In the last decade, scholars in social-cognitive psychology and experimental philosophy have made progress in defining free will terms, exploring how laypersons think of free will, discovering related cognitive processes and biases, and examining the behavioral outcomes of believing in free will. The growing interest in this construct raises the need for a discussion of what is new about free will beliefs, and how this construct differs from and relates to other well-known agency constructs in the literature. In this review, we integrate conceptual discussions and empirical findings in the existing literature to highlight the belief in free will as a separate and important construct, different from existing constructs in the literature, and capturing unique aspects of agency. We conclude by calling researchers to recognize these differences and to leverage the potential in the construct of the belief in free will as a predictor of cognition and behavior.

KEYWORDS

belief in free will, beliefs, agency

1 | INTRODUCTION

The question of whether free will exists has fascinated mankind for over two millennia, with heated philosophical debates among the greatest of human minds. To date, the debate is still far from any resolution. However, the last decade has seen the emergence of a research literature based in social-cognitive psychology and experimental philosophy offering a fresh perspective on this ancient question by moving beyond a debate on the existence of free will to the examination of laypersons' understanding of the idea and related beliefs. At the center of inquiry is the lay-belief

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in free will which regards humans as agents that are capable of choosing freely regardless of external (e.g., environment, society, nature, God/s, and other agents) and internal (e.g., uncontrollable urges, needs, genes, and personality) constraints. Research in this domain focuses on why people believe in free will, associated cognitive processes and biases, and the consequences of endorsing such beliefs.

Over the course of the last decade, researchers have made significant progress in defining free will (e.g., Haggard, Mele, O'Connor, & Vohs, 2010), assessing layperson's understanding of the concept of free will (e.g., Monroe & Malle, 2010; Nahmias, Morris, Nadelhoffer, & Turner, 2005), and developing scales to measure beliefs in free will (Carey & Paulhus, 2013; Nadelhoffer, Shepard, Nahmias, Sripada, & Ross, 2014; Rakos, Steyer, Skala, & Slane, 2008), with studies examining the consequences of the belief in free will for neurophysiological mechanisms (Rigoni & Brass, 2014) and a wide array of psychological and behavioral outcomes (Baumeister & Monroe, 2014). Despite the fast-growing body of research, the advances in our understanding of the belief in free will, and the accumulating evidence for its effects on cognition and behavior, some theoretical gaps remain. The belief in free will is still a relatively new construct, often misunderstood or undervalued, and it is therefore imperative to position this construct within the existing literature to clarify how the construct differs from and complements other well-studied constructs in the literature. So far, there have been only sporadic references to the relationship between free will beliefs and other agency constructs, with no systematic theoretical overview or a comparison to conceptually related constructs.

The purpose of this review is to outline the belief in free will as a unique and important construct. We provide a brief introduction of the construct by clarifying what the belief in free will is and what it is not, and then discuss important conceptual differences between the belief in free will and other well-studied constructs (self-efficacy, locus of control, self-esteem, self-control, implicit beliefs, mind-body dualism, autonomy, and intentionality) with references to supporting empirical evidence.

2 | WHAT BELIEF IN FREE WILL IS AND WHAT IT IS NOT

Belief in free will is the core abstract belief that people have the capacity to act freely (Haggard et al., 2010) or put more simply that a person *could have chosen to do otherwise* (Nichols, 2004), both in the perception that alternative options are available for the self to choose from and in the perceived ability for the self to choose among these options freely without constraints (Kane, 2002, 2011)¹. Possible constraints generally fall into two categories: internal and external. In the category of external limitations for freedom are broad influences that include other agents (e.g., family, friends, and colleagues), the environment, society, norms, and much broader factors, such as nature, fate (Au et al., 2011; Chan, Wan, & Sin, 2009), and even God, angels, and demons (Fromm, 1941). These and other external factors are possible barriers to perceived free choice, such that – for example – a person may perceive everything to be causally determined by the laws of nature or predestined by the rule of God or the inevitability of fate, thus leaving humans and the self with no ability to choose. The second category of constraints involves internal factors that are about oneself. These factors include genes, personality, intelligence, urges, needs, desires, physical disabilities, mental disorders, addictions, and other deterministic or uncontrollable factors. For example, people may believe that genes predetermine their actions and future since birth, thus preventing them from changing and limiting their choice to take actions atypical to their genetic predestination. People may also perceive themselves to have less free will if they believe that they are incapable of controlling or overcoming their internal urges, desires, or needs.

Although most cultures operate on the basis of some degree of belief in freedom of choice (Sarkissian et al., 2010), people vary in the extent to which they regard human beings, including themselves, as having free will (Baumeister, 2008a). Differences in the endorsement of the belief in free will are typically assessed using scales emphasizing different aspects of the philosophical definition of free will (e.g., Paulhus & Carey, 2011; Stroessner & Green, 1990; Rakos et al., 2008; Nadelhoffer et al., 2014). Yet with a concept so highly controversial and

abstract as free will scholars have realized the importance in also assessing how laypersons generally think about and refer to free will (Monroe & Malle, 2010; Nichols, 2011). Monroe and Malle (2010) and Stillman, Baumeister, and Mele (2011) both reported choice and unconstrained action as the most important factors in the way people perceive free will, and Feldman, Baumeister, and Wong (2014) demonstrated strong cognitive links between the concepts of choice and free-will. While laypersons' associations between free will and choice may seem straightforward, researchers previously simply assumed that people think of the concept of free will as something metaphysical (Brembs, 2011; Cashmore, 2010; Greene & Cohen, 2004; Montague, 2008). Therefore, in both the academic conceptualization and laypersons' understanding, the concept of free will is not a magical metaphysical notion, but rather a reference to choice, agency, and unconstrained action (Monroe, Dillon, & Malle, 2014; Monroe & Malle, 2014; Nadelhoffer et al., 2014; Nahmias, Shepard, & Reuter, 2014).

3 | THE PURPOSE OF FREE WILL

The prevalent endorsement of the belief in free will raises an important fundamental question – Why would anyone believe in free will? If one believes in free will – then what is free will meant for?

One group of scholars views free will beliefs as a mechanism that allows the self to pursue self-enhancing desired states and goals and seek own wants and needs (Hume, 1748; Edwards, 1754). Put more simply – free will is only worth having if it enables the individual to get what she or he wants (Dennett, 2003).

A second view often referred to as the “action-control perspective” argues that the concept of free will has evolved to allow the self to coexist with others in society as to override inherent immediate biological urges that mainly focus on the self (Kant, 1797/1967) thus allowing for prospection, long-term planning, action control, and coordination with others in society (Baumeister, 2005, 2008a). The belief in free will could have possibly evolved so that people would be able to deal with a world of increasingly complicated choices and complex societal interactions that require coordination and inhibition of self (Baumeister, 2008a; Laurene, Rakos, Tisak, Robichaud, & Horvath, 2011; Rakos et al., 2008).

The close conceptual relationship that free will holds with moral responsibility supports the view that free will is a notion embedded in societal considerations. The concept of free will may be regarded by societies and religions as a solution to the predicament of laypersons that associate determinism with inevitability, reduced accountability, and thus lower action control over socially undesirable behaviors. Based on the idea of free will as a social tool, the belief that a person could make different free choices in a given situation is considered essential to legal, moral, and political judgments (Juth & Lorentzon, 2010; Searle, 2007). More broadly, society often regards it appropriate to adjust legal and moral judgments based on the assessment of whether a wrongdoer acted out of his or her own free will (Greene & Cohen, 2004; Roskies, 2006). In order to legally hold a person accountable and bring a person to trial, it is now commonly expected that it be proven that the person could have done otherwise, meaning that there were no external influences coercing the person to act in this way (e.g., having a gun to the person's head) or that the person did not merely act out of uncontrollable urges (e.g., temporary insanity; Burns & Bechara, 2007). Similarly, a contract between two people is only considered valid if the two sides have entered the contract out of their own free will, meaning that both sides were free from any coercion (Cohen, 1933).

A developmental perspective argues free will to be rooted in the perception people experience in their everyday choices while growing up – even if such a perception is illusory, serving as a self-indicator regarding the ability to execute and increasing one's motivation to enter difficult choice situations (Bandura, 2006; Rakos, 2004; Wegner, 2004). Nichols (2004) showed that children between the ages of three and five typically endorse free will and reject determinism by making the claim that a person in a given scenario could have chosen to act differently, much more so than a physical object could have. Nichols goes on further to argue that the perception of having free will in kids is innate rather than learned – that freedom of an agent is inferred by native evidence to form the belief that humans are

different than objects in their ability to act otherwise. Other studies have extended these findings by demonstrating that not only do kids at the age of five perceive people to have the capacity to choose more freely than objects do but that they also clearly distinguish between free and un-free actions by the same human agent (Chernyak, Kushnir, & Wellman, 2010; Kushnir, Wellman, & Chernyak, 2009).

To summarize, the role of free will in people's beliefs could be the pursuit of own goals and desires or in the evolutionary role of free will as overcoming self to allow people to coexist with others in society. This belief could also be rooted in an innate intuitive perception developed by people while growing up to self-motivate when faced with making choices.

4 | BELIEF IN FREE WILL AS A UNIQUE CONSTRUCT

Belief in free will captures a unique aspect of agency that has not been addressed by other constructs in the literature. Our discussion of the unique attributes of the belief in free will is focused on the following dimensions: (a) construct type – a belief, a trait, or an evaluation, (b) key factor – core underlying factor captured (choice, ability, worth, control, etc.), (c) view of the person – a unified or nuanced view of the self, and (d) view of the environment – a unified or nuanced view of the environment.

Below we review the construct of belief in free will on each of those dimensions. We address several well-known constructs previously conceptualized to capture agency and discuss how they are different from and are related to the belief in free will. Specifically, we address trait self-efficacy, trait locus of control, trait self-esteem, trait self-control, implicit beliefs, mind-body dualism belief, autonomy, and intentionality. We chose these constructs as they are some of the most widely used constructs in the literature in the theoretical discussion of agency and are common predictors of behaviors and outcomes (e.g., grouped together as the 'core self-evaluations' meta-construct; Judge, Erez, Bono, & Thoresen, 2002; Judge, Locke, & Durham, 1997; Judge & Bono, 2001), often raised as related conceptualizations of agency in the discussion of the construct of the belief in free will (see various chapters in Baer, Kaufman, & Baumeister, 2008).

4.1 | Dimensions

4.1.1 | Construct type

The belief in free will is a generalized lay-belief regarding the capacity for human choice – “Do I (and others) have a choice, and if so, can I (and others) freely choose to do otherwise?”. As a belief, it captures a mental representation by a believer of the link between an object, in this case humans, and an attribute, in this case “free will”, or the capacity for choice. Beliefs are generally considered stable, durable, and lasting (Wyer & Goldberg, 1970), although the literature suggests several mechanisms by which this belief can be temporarily activated or affected (Vohs & Schooler, 2008).

Beliefs differ from evaluations. Evaluations are interpretations and/or attributions of events and behaviors aimed to explain processes and facilitate an understanding of the world (Heider, 1958). Beliefs are broader and more stable than evaluations, perceptions, attitudes, or inferences (Wyer & Albarracín, 2005). For example, in reference to free will, the belief in free will would be “I have free will” whereas an evaluation would be “this outcome happened because I have free will” (free will attributions; Feldman, Wong, & Baumeister, 2016c) or “I am experiencing/exercising free will right now” (e.g., sense of agency or the illusion of will; Wegner, 2003, 2004; Haggard, Clark, & Kalogeras, 2002). Beliefs are considered the fundamental building blocks of behavior (Ajzen & Fishbein, 1975) affecting attitudes, intentions, and behavior depending on factors such as belief strength, centrality of the belief to the self, retrievability of the belief in a context, and relevance of the belief to the target or situation.

Beliefs also differ from traits. Traits are commonly defined as habitual characteristics, the relatively stable patterns of behavior, thoughts, and emotions (McCrae & Costa, 2003; Parks-Leduc, Feldman, & Bardi, 2015). Traits are solely focused on a single individual rated by an assessment of a self. In the constructs reviewed below, these are assessments of perceived ability (self-efficacy), perceived controllability (self-control), or perceived worth (self-esteem). Beliefs such as the belief in free will, implicit theories, or mind-body dualism, are more generalized abstract beliefs about life, across domains, and in reference to human beings in general, both self and others.

4.1.2 | Key factor

The belief in free will is different from other constructs in that it conceptualizes agency as being about the capacity for choice (Davidov & Eisikovits, 2015; Monroe et al., 2014). Laypersons' exhibit a strong cognitive link between free will and choice and believers in free will exhibit higher motivation in engaging in choice, lower difficulty in making choices, and higher satisfaction with choices they made (Feldman et al., 2014). Other constructs focus on other agentic factors, such as the capacity for successful execution (self-efficacy), capacity for change (implicit beliefs), capacity for internal control (self-control), internal-external attributions (locus of control), worth (self-esteem), and independence (autonomy).

Choice is important, as it is a fundamental factor in the understanding of the human psyche and is considered by thinkers to be a defining feature of human existence (Heidegger, 1954/1968; Sartre, 1943/1956) and sense of freedom (Kant, 1797/1967). Modern capitalist societies generally view choice as positive and desirable and the absence of choice problematic and negative (Deci & Ryan, 1985; Schwartz, 2004). Using an evolutionary perspective, the perceived capacity for choice, the ability to perceive and evaluate alternatives, weight costs and benefits, and then make and implement a decision, are all of crucial importance for survival (Brembs, 2011), successful long term goal pursuit (Seligman, Railton, Baumeister, & Sripada, 2013), behavioral adaptation (Vohs & Baumeister, 2013), and coexistence and coordination with others (Baumeister, 2008b).

4.1.3 | Conceptualization of the person and the environment

The belief in free will differs from other constructs in regards to the conceptualization of the person and the environment. Belief in free will is focused on agentic choice and therefore makes the distinction between agentic behaviors and non-agentic behaviors for the person and a distinction between constraining versus non-constraining external factors in the environment. As mentioned above, traits are mostly centered on the individual, with no consideration of the external environment surrounding the individual. Locus of control, for example, views the individual as a unified self and all external factors as one external environment, so attributions are made either to a person or to the environment. In these trait constructs, genes, personality, as well as a person's uncontrollable urges and needs are all evaluated as being part of the self and are factors that may possibly drive more positive self-evaluations (e.g., "I have strong gut instincts"; "I have genes that allow me to do this task successfully") but are all perceived as non-agentic self and as possible constraints to free will in self (e.g., "I cannot control my gut instincts"; "I cannot choose what I am good at"). Looking at external factors, the autonomy construct makes a reference to an external environment, but only in reference to other agents. Similarly, mind-body dualism and implicit theories are beliefs that are centered on persons and therefore only consider possible change or perceptions of mind-body dualism in others.

This distinction regarding agency in the self and of constraints in the environment is of crucial theoretical importance. Recent reviews of the attribution literature in psychology have highlighted general concerns with attribution theory as focusing on the distinction between attributions to the self versus attributions to the environment rather than the distinction between agentic self versus non-agentic self (Malle, 2011a, 2011b). Researchers have called for the field to return to the roots of Fritz Heider's (1944) original conceptualization of human behavior based on the recent understanding of laypersons' philosophy of action as differentiating between agentic versus non-agentic action (Malle, 2011a, 2011b). The latter differentiation makes a clear distinction between two types of actions that emanate from the self – actions that are free, intentional, and deliberate and actions that are not. The recent criticism of the

current attribution theory is in the grouping of these two forms of action in the self as one whereas much of the psychology literature now assumes the distinction between these two forms of thinking (Kahneman, 2011). The study of folk psychology supports the understanding that laypersons evaluate their own actions and the actions of others in a similar way (Malle & Knobe, 1997a, 1997b). This new direction relates to the differences between belief in free will and the other constructs as competing conceptualizations regarding the cognitive origins of action. The construct of the belief in free will directly addresses many of the concerns raised regarding the current conceptualizations of agency.

4.2 | Comparison to other constructs

4.2.1 | Overview

The belief in free will captures a unique aspect of agency, and several articles have specifically contrasted the belief in free will against other agency constructs and compared their predictive power for outcomes. Initial conceptual discussion and empirical evidence was provided by the studies validating the free will beliefs scales (Nadelhoffer et al., 2014; Paulhus & Carey, 2011; Rakos et al., 2008). Feldman, Farh, and Wong (2016b) showed that free will beliefs predicted outcomes above and beyond trait self-control, trait locus of control, job self-efficacy, trait self-esteem, and implicit theories, over time and across cultures. Feldman (2014) reported a confirmatory factor analysis showing that a model with the belief in free will as a separate construct from these other constructs had better fit than a model with the constructs combined. Stillman et al. (2010) demonstrated that the belief in free will predicted job performance above and beyond locus of control, intelligence, the big five personality traits, protestant work ethic, and life satisfaction. Feldman, Chandrashekar, and Wong (2016a) reported that the belief in free will predicted academic achievements above and beyond implicit beliefs and trait self-control. In Crescioni, Baumeister, Ainsworth, Ent, and Lambert (2016), belief in free will predicted positive outcomes above and beyond implicit theories and internal control.

We now proceed to review how the belief in free will differs from and is related to each of the constructs in greater detail. Table 1 provides a summary of the conceptual differences between belief in free will and the trait constructs, and Table 2 provides a summary of the conceptual differences between belief in free will and the lay-beliefs and evaluations constructs.

4.2.2 | Trait self-efficacy

Self-efficacy is "a judgment of one's ability to organize and execute given types of performances" (Bandura, 1994), and as a core self-evaluation it is referred to as "one's estimate of one's fundamental ability to cope, perform, and be successful" (Judge et al., 1997). Self-efficacy differs from belief in free will in that it reflects a self-evaluation of abilities, such as "Do I possess the means to execute this successfully?" or "Can I achieve this?". Sappington (1990) gives an example of differences between self-efficacy and the belief in free by pointing out that one can perceive the self as incapable and still believe that self is free to choose whether to undertake the action or not.

TABLE 1 Summary table of the differences between belief in free will and traits

	Free will beliefs	Trait locus of control	Trait self-efficacy	Trait self-esteem	Trait self-control
Type	Belief	Trait	Trait	Trait	Trait
Key factor	Choice	Internal versus external attributions	Internal ability	Internal worth	Internal controllability
View of the person	Agentic vs. non-agentic self	One self	Capable versus incapable self	Valued versus unvalued self	Controlled versus uncontrolled self
View of the environment	Constraining vs. allowing factors	One external environment	(not considered)	(not considered)	(not considered)

TABLE 2 Summary table of the differences between belief in free will, lay-beliefs, and evaluations

	Free will beliefs	Implicit theories	Mind-body dualism	Intentionality	Autonomy
Type	Belief	Belief	Belief	Evaluation	Evaluation
Key factor	Choice	Capacity for change	Controllability	Intentions	Independence from other agents
View of the person	Agentic vs. non-agentic self	Changing vs. fixed self	Mind vs. or with body	Intended vs. unintended actions of the self	One self
View of the environment	Constraining vs. allowing environment	Changing vs. fixed others	Mind vs. or with body in others	Intended versus unintended actions of others	All other agents

Although the two constructs are different, there are some conceptual links. For example, Rigoni, Kühn, Sartori, and Brass (2011) suggested that free will beliefs affect intentional effort through perceived control and self-efficacy. Crescioni et al. (2016) reported a moderate positive relationship between beliefs in free will and self-efficacy ($r = 0.35$).

4.2.3 | Trait locus of control

Locus of control is a construct that aims to capture the extent to which people tend to attribute outcomes to internal versus external causes (Rotter, 1966). Those with an internal locus of control tend to perceive the self as the cause of an outcome while those with an external locus of control attribute the cause of events to external determinants.

The belief in free will and locus of control are different constructs (Paulhus & Carey, 2011; Rakos et al., 2008; Stillman et al., 2010; Stroessner & Green, 1990; Waldman, Viney, Bell, Bennett, & Hess, 1983). Locus of control focuses on the distinction between internal and external attributions, regardless of agency. Furthermore, locus of control is an evaluation of the connection between actions taken by the self and outcomes observed, whereas the belief in free will is mainly focused on the origins of action and perceived choice of enacting, regardless of whether these actions led to a desired result or had an impact.

Empirically, the reported correlations between the two constructs in the literature range from very weak (Rakos et al., 2008 high-school student sample: no effect; Stroessner & Green, 1990: $r = 0.03$) to moderate (Crescioni et al., 2016: $r = 0.28$; Rakos et al., 2008 college sample: $r = 0.22$ to 0.33 ; Stillman et al., 2010: $r = 0.23$; Waldman et al., 1983: $r = 0.17$).

4.2.4 | Trait self-esteem

Self-esteem is a construct that aims to capture the overall value that one places on oneself as a person, reflecting the self-worth evaluative component of self-concept capturing how people feel about themselves (Leary & Baumeister, 2000). Several definitions of self-esteem make references to evaluations of the self as compared to perceptions others' worth (Baumeister & Boden, 1998). The differences between self-esteem and belief in free will are most apparent when examining items used in common self-esteem measures (Rosenberg, 1965), such as "I am able to do things as well as most other people" or "I feel that I'm a person of worth, at least on an equal plane with others" which include aspects of both (a) how well one does, and (b) a comparison to how well most other people do or have done in the past. Belief in free will has no evaluations or judgments of worth about agents or actions, it merely refers to the capacity for choice and not for quality of execution. It makes no comparison between self and

others or to the normative ability to execute, as the belief applies to both self and others and is considered a generalized stable rule.

Linking between the two constructs, belief in free will has been found to hold a weak to moderate positive relationship with self-esteem (Alquist, Ainsworth, Baumeister, Daly, & Stillman, 2015: $r = 0.17$; Rakos et al., 2008: $r = 0.26$ to 0.29) and has been shown to predict outcomes above and beyond self-esteem (Alquist et al., 2015).

4.2.5 | Trait self-control

Self-control generally refers to the capacity to regulate behavior, thoughts, and emotions by sustaining, altering, amplifying or overriding natural impulses, urges, and desires (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012), associated with a conscious exertion of effort needed to resist, manipulate or overcome oneself (Vohs & Baumeister, 2004). Trait self-control is typically measured using items about the capacity for self-discipline, concentration, effective pursuit of long-term goals, and fighting off temptations (Tangney, Baumeister, & Boone, 2004).

There are conceptual links between belief in free will and self-control. Self-control allows the person to overcome some internal constraints that limit free will, such as urges, needs, temptations, and desires, and therefore some argue that self-control, together with the capacity for rational choice, are two adaptive forms of expressing free will (Baumeister, 2008a; Baumeister & Monroe, 2014). This seems to correspond to laypersons' notions of free will perceiving actions to be most free when they involve resistance to pressure, deliberate conscious thought, and rational choice (Baumeister, Sparks, Stillman, & Vohs, 2008). Therefore, a person with a higher capacity for self-control may perceive oneself as being less constrained and therefore as having more free will. The relationship may be bidirectional, in that those who believe in free will would exhibit higher capacity for self-control or the motivation to exert it to maximize their potential for freedom of action. Studies have indeed shown that belief in free will is associated with better self-control (Clarkson et al., 2015; Rigoni, Kühn, Gaudino, Sartori, & Brass, 2012).

However, self-control and belief in free will are not one. Self-control focuses on a specific set of internal constraints (temptations, desires, urges, needs, etc.), whereas belief in free will includes freedom from all constraints (genes, personality, disorders, etc.). Moreover, the belief in free will refers to the inherent capacity for choice of overriding possible constraints, while self-control is typically about the exertion of effort to override constraints. In that sense, the belief in free will can be conceptualized as the perceived capacity of whether or not to exert self-control and the way to do so (Feldman, Chandrashekar, & Wong, 2016a; Rigoni et al., 2012). Metaphorically, belief in free will can be viewed as enabling the self to choose a desired direction and to change directions when necessary, whereas self-control facilitates the long-term pursuit of a chosen direction, and the combination of the two may lead to optimal goal pursuit.

Belief in free will and self-control do not always align and it is possible for a person to have high belief in free will and exhibit low self-control. For example – there are situations in which agents deliberately choose to “let go” and give in to temptations in order to fulfill some goal (Kivetz & Simonson, 2002), like when feeling distressed and wanting to indulge the self in order to feel better (Tice, Bratslavsky, & Baumeister, 2001). It is also possible for a person to have high trait self-control but show relatively low endorsement of the belief in free will (e.g., Asian samples in Feldman, Chandrashekar, & Wong, 2016a). For example, some religious believers display high levels of self-control but view the future as pre determined by God and their choices constrained, and many scientists demonstrate high levels of self-control but tend to view all actions as predetermined by scientific rules of nature.

4.2.6 | Implicit beliefs

Implicit theories reflect the belief in fixed versus malleable human attributes (Dweck, 1996; Dweck, Chiu, & Hong, 1995) addressing the agentic capacity for change. People generally fall into two main groups endorsing different implicit theories – the entity theorists who believe that human attributes are fixed, and incremental theorists who see human attributes as malleable. Measures of implicit lay-theories typically ask participants to indicate their

agreement to statements like “everyone is a certain kind of person, and there is not much that can be done to really change that” endorsed by entity theorists as opposed to “anyone can change even their most basic qualities” endorsed by incrementalists (Levy, Stroessner, & Dweck, 1998). Implicit theories have been shown to affect attitudes, perceptions, and behaviors (Dweck, 1999; Levy, Plaks, Hong, Chiu, & Dweck, 2001), so that – for example – entitists may use categories of race to explain someone’s behavior and expect behavior to be predictable and stable while incrementalists would expect behavior to vary between situations (Chiu, Hong, & Dweck, 1997b).

There are several important differences between implicit theories and belief in free will, and those have been discussed across several studies examining the links between the two (Crescioni et al., 2016; Dweck & Molden, 2008; Feldman, Chandrashekar, & Wong, 2016a; Nadelhoffer & Matveeva, 2009). First, implicit theories focus on malleability and capacity for change, the degree to which a person perceives a specific domain atypical or that a change in human behavior is at all possible (Hong, Chiu, Dweck, Lin, & Wan, 1999). Whereas belief in free will focuses on the capacity for free choice, and in relation to change – whether a person perceives that self can choose whether to change or not. Therefore, one can perceive that change is possible (incrementalists) but perceive that change is not under one’s own control (low belief in free will).

Second, implicit theories are typically viewed as domain specific, focusing on a single category of constraints to free will (e.g., intelligence and personality; Blackwell, Trzesniewski, & Dweck, 2007; Chiu, Dweck, Tong, & Fu, 1997). Belief in free will addresses all causal determinants combined. Studies on racial lay-theories, for example, argued that people’s views of race as malleable or not are crucial to interpretations made of others’ behaviors in reference to their racial category. Belief in free will considers race, or any other essentialized category as just one of the many possible constraints on one’s behavior. The belief that people do not have to follow the stereotypical behavior of their category or that the category is malleable does not imply that they perceive agents to be free of other constraints. Therefore, incrementalists can hold low beliefs in free will because of external constraints not captured by implicit theories.

Empirical evidence suggests no relationship to a weak relationship between free will beliefs and implicit theories, and free will beliefs predicted outcomes above and beyond implicit theories (Crescioni et al., 2016: $r = -0.03$; Feldman et al., 2016: $r = 0.03$ to -0.25).

4.2.7 | Mind-body dualism beliefs

Mind-body dualism is the belief that the mind and the body are not one, in that beyond the body exists some non-physical entity (spirit, soul, etc.) which is somehow related to the body. Dualism beliefs are widespread, especially in religious thought, and in relation to ideas such as the afterlife (the existence of the mind after the body ceases to exist). Dualism has long been debated by philosophers, at times with references to the debate on free will, yet the two debates regarding the existence of free will and of dualism are not the same. Our discussion above of what the belief in free will is and what it is not concluded that the lay-belief in free will is not grounded in metaphysical notions, but on the concept of choice, and the empirical evidence is in support of weak to no correlations between the two (Forstmann, Burgmer, & Mussweiler, 2012: $r = 0.01$ to -0.17). For example, Nadelhoffer et al. (2014) provided a discussion of the differences and an in-depth empirical demonstration using factor analysis and concluded dualism (or, non-reductionism) as a separate factor than free will beliefs. Nahmias et al. (2014) further showed that laypersons do not understand free will as dualism, and therefore neuroscience evidence connecting between the mind and the body (Preston, Ritter, & Hepler, 2013) does not seem to affect beliefs in free will.

4.2.8 | Autonomy

Like free will, the concept of autonomy has also been a focus of heated philosophical debate and at the center of controversy for long. Scholars have defined the concept of autonomy in different ways, yet most converge on seeing autonomy as regulation of the self by the self, congruent behavior that could be endorsed and fully identified as enacted by the self and not by others (Ryan & Deci, 2006). Perceptions of autonomy are based on high-order reflections that enable a person to maintain a separate identity and meaning from other agents (Deci & Ryan, 1987).

Autonomy is commonly measured as social connectedness or attachment with factors relating to self-awareness, sensitivity to others, and self-efficacy (Bekker & van Assen, 2006; Deci & Ryan, 1985). Measures of autonomy in a context such as job autonomy include items referring to independence and freedom from rules or agents in making contextual decisions (e.g., Barrick & Mount, 1993; Oldham & Hackman, 1981; Spector & Fox, 2003). Hence, autonomy reflects an overall perception in regards to the capacity or the ability to act without constraints from others in a social environment.

Though free will beliefs are conceptually related to perceived autonomy, there are several distinctions. Autonomy mainly refers to the self as maintaining a separate and independent self from other agents, without addressing the many other types of constraints to free will, either external or internal. In that sense, autonomy is mainly about the person's behavior in social environments and the interplay between the self and others, between a need for relatedness to others and the need for maintaining autonomy, often involving the exercise of self-regulation (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Autonomy is also person and context specific and less of a general belief about humans overall. Therefore, feelings of autonomy can change by simply changing the context in which the individual operates, and perceptions of autonomy in one context are not necessarily indicative of perceptions of autonomy in another.

To give an example of the differences – even with strict instructions on working with minimal discretion indicative of low granted autonomy, individuals with a strong belief in free will can still perceive their own ability to choose whether to adhere, to choose how to adhere, or to choose to move to an environment that will grant more autonomy. Also, employees might be granted high degrees of autonomy from their superior, yet they might feel that they are not completely in control of their own actions, driven by deterministic internal factors or that their lives are driven by external influences such as God or fate, preventing them from capitalizing on their granted autonomy.

4.2.9 | Intent/Intentionality

Intentionality (or intent) in the context of behavior and cognition refers to the mental representation of purposeful action, meaning an action is perceived as deliberately taken to lead to a certain outcome. Because both intent and free will are considered important factors in attributions of blame, the two are sometimes used interchangeably, but attributions of intent and free will are conceptually and empirically different (Feldman, Wong, & Baumeister, 2016c). Intent is perceived as a purely internal process regarding whether an agent intended for a certain outcome to happen or not, while free will is about the capacity to choose otherwise free from internal and external constraints. Intent is focused on outcomes, whether an agent knew and understood the connection between the action and the outcome and was deliberately affecting that outcome, while free will is focused on the capacity to act in the situation, focusing on the circumstances of the decision or behavior and not its consequence. People generally tend to have a clear judgment of whether they intended for something to happen, while the question of free will is less certain as it is tied to a more generalized belief about life factors that are less understood or controlled. There is growing empirical work that attempts to examine how free will beliefs are related to readiness potential, motor preparation, or intentional binding, aiming to further clarify the experiences of free will and of action-outcome connections (Aarts & van den Bos, 2011; Kühn & Brass, 2009; Rigoni et al., 2011; Rigoni, Wilquin, Brass, & Burle, 2013; Soon, He, Bode, & Haynes, 2013), yet there needs to be a clearer differentiation between the concept of free will (or free choice, or voluntary action) and intentionality (or intent) in the literature, recognizing the important conceptual nuances.

5 | CONCLUSION

The last decade has seen the rise of research on folk philosophy and lay-beliefs, identifying the belief in free will as an important predictor of outcomes, yet some confusion remains regarding the construct and its positioning within the existing literature. In this review, we argued that the belief in free will captures unique aspects of agency that go beyond and complement other well-known agency-related constructs in the literature – self-efficacy, locus of control, self-esteem, self-control, implicit theories, mind-body dualism, autonomy, and intentionality. We provided an

overview of the conceptual differences and the empirical evidence highlighting this belief as a distinct and important construct. We call on future research to pay close attention to these differences and to leverage the potential in the emerging construct of the belief in free will.

NOTE

¹ Philosophers have long debated whether free will and determinism are compatible or not, and there is still a heated debate about whether laypersons generally consider free will as compatible with determinism or not (Feltz & Cova, 2014), yet that debate often unnecessarily complicates references to laybeliefs about free will as the joint definition seems relevant regardless of the views on compatibilism. This review deliberately refrains from references to this debate or to determinism beliefs, which are deserving of a separate theoretical review and discussion.

REFERENCES

- Aarts, H., & van den Bos, K. (2011). On the foundations of beliefs in free will intentional binding and unconscious priming in self-agency. *Psychological Science, 22*(4), 532–537.
- Ajzen, I., & Fishbein, M. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*.
- Alquist, J. L., Ainsworth, S. E., Baumeister, R. F., Daly, M., & Stillman, T. F. (2015). The making of might-have-beens effects of free will belief on counterfactual thinking. *Personality and Social Psychology Bulletin, 41*(2), 268–283.
- Au, E. W., Chiu, C. Y., Chaturvedi, A., Mallorie, L., Viswanathan, M., Zhang, Z. X., & Savani, K. (2011). Maintaining faith in agency under immutable constraints: Cognitive consequences of believing in negotiable fate. *International Journal of Psychology, 46*(6), 463–474.
- Baer, J., Kaufman, J. C., & Baumeister, R. F. (Eds.) (2008). *Are we free?* Psychology and free will: Oxford University Press.
- Bandura, A. (1994). *Self-efficacy*. John Wiley & Sons, Inc.
- Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*(2), 164–180.
- Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the Big Five personality dimensions and job performance. *Journal of Applied Psychology, 78*(1), 111.
- Baumeister, R. F. (2005). *The cultural animal: Human nature, meaning, and social life*. Oxford University Press.
- Baumeister, R. F. (2008a). Free will in scientific psychology. *Perspectives on Psychological Science, 3*(1), 14–19.
- Baumeister, R. F. (2008b). Free will, consciousness, and cultural animals. In *Are we free* (pp. 65–85).
- Baumeister, R. F., & Boden, J. M. (1998). *Aggression and the self: High self-esteem, low self-control, and ego threat*.
- Baumeister, R. F., & Monroe, A. E. (2014). Chapter one—recent research on free will: Conceptualizations, beliefs, and processes. *Advances in Experimental Social Psychology, 50*, 1–52.
- Baumeister, R. F., Sparks, E. A., Stillman, T. F., & Vohs, K. D. (2008). Free will in consumer behavior: Self-control, ego depletion, and choice. *Journal of Consumer Psychology, 18*(1), 4–13.
- Bekker, M. H., & van Assen, M. A. (2006). A short form of the autonomy scale: Properties of the Autonomy–Connectedness Scale (ACS–30). *Journal of Personality Assessment, 86*(1), 51–60.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development, 78*(1), 246–263.
- Brembs, B. (2011). Towards a scientific concept of free will as a biological trait: Spontaneous actions and decision-making in invertebrates. *Proceedings of the Royal Society of London B: Biological Sciences, 278*(1707), 930–939.
- Burns, K., & Bechara, A. (2007). Decision making and free will: A neuroscience perspective. *Behavioral Sciences & the Law, 25*(2), 263–280.
- Carey, J. M., & Paulhus, D. L. (2013). Worldview implications of believing in free will and/or determinism: Politics, morality, and punitiveness. *Journal of Personality, 81*(2), 130–141.
- Cashmore, A. R. (2010). Reply to Anckarsäter: A belief in free will is based on faith. *Proceedings of the National Academy of Sciences, 107*(28), E115–E115.
- Chan, H., Wan, L. C., & Sin, L. Y. (2009). The contrasting effects of culture on consumer tolerance: Interpersonal face and impersonal fate. *Journal of Consumer Research, 36*(2), 292–304.
- Chernyak, N., Kushnir, T., & Wellman, H. M. (2010). Developing notions of free will: Preschoolers' understanding of how intangible constraints bind their freedom of choice. In *Proceedings of the Thirty-Second Annual Meeting of the Cognitive Science Society* (Vol. 26022606).

- Chiu, C. Y., Dweck, C. S., Tong, J. Y. Y., & Fu, J. H. Y. (1997a). Implicit theories and conceptions of morality. *Journal of Personality and Social Psychology*, 73(5), 923.
- Chiu, C. Y., Hong, Y. Y., & Dweck, C. S. (1997b). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology*, 73(1), 19.
- Clarkson, J. J., Chambers, J. R., Hirt, E. R., Otto, A. S., Kardes, F. R., & Leone, C. (2015). The self-control consequences of political ideology. *Proceedings of the National Academy of Sciences*, 112(27), 8250–8253.
- Cohen, M. R. (1933). The basis of contract. *Harvard Law Review*, 46(4), 553–592.
- Crescioni, A. W., Baumeister, R. F., Ainsworth, S. E., Ent, M., & Lambert, N. M. (2016). Subjective correlates and consequences of belief in free will. *Philosophical Psychology*, 29(1), 41–63.
- Davidov, J., & Eisikovits, Z. (2015). Free will in total institutions: The case of choice inside Nazi death camps. *Consciousness and Cognition*, 34, 87–97.
- de Ridder, D. T., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M., & Baumeister, R. F. (2012). Taking stock of self-control a meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review*, 16(1), 76–99.
- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, 19(2), 109–134.
- Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, 53(6), 1024.
- Dennett, D. C. (2003). The self as a responding—and responsible—artifact. *Annals of the New York Academy of Sciences*, 1001(1), 39–50.
- Dweck, C. S. (1996). *Implicit theories as organizers of goals and behavior*.
- Dweck, C. S. (1999). Caution—praise can be dangerous. *American Educator*, 23(1), 4–9.
- Dweck, C. S., & Molden, D. C. (2008). Self-Theories: The construction of free will. *Are We Free? Psychology and Free Will*, 44.
- Dweck, C. S., Chiu, C. Y., & Hong, Y. Y. (1995). Implicit theories and their role in judgments and reactions: A word from two perspectives. *Psychological Inquiry*, 6(4), 267–285.
- Edwards, J. (1754/1957). *Freedom of the will*.
- Feldman, G. (2014). *Cognition and consequences of the belief in free will*. Hong Kong University of Science and Technology: Doctoral dissertation.
- Feldman, G., Baumeister, R. F., & Wong, K. F. E. (2014). Free will is about choosing: The link between choice and the belief in free will. *Journal of Experimental Social Psychology*, 55, 239–245.
- Feldman, G., Chandrashekar, S. P., & Wong, K. F. E. (2016a). The freedom to excel: Belief in free will predicts better academic performance. *Personality and Individual Differences*, 90, 377–383.
- Feldman, G., Farh, J., & Wong, K. F. (2016b). *Agency beliefs across time and culture: Free will beliefs predict higher work satisfaction*. Manuscript submitted for review.
- Feldman, G., Wong, K. F. E., & Baumeister, R. F. (2016c). Bad is freer than good: Positive–negative asymmetry in attributions of free will. *Consciousness and Cognition*, 42, 26–40.
- Forstmann, M., Burgmer, P., & Mussweiler, T. (2012). “The Mind Is Willing, but the Flesh Is Weak” The Effects of Mind-Body Dualism on Health Behavior. *Psychological Science*, 23(10), 1239–1245.
- Fromm, E. (1941). *Escape from Freedom*. New York, NY: Holt, Rinehart & Winston.
- Greene, J., & Cohen, J. (2004). *For the Law, Neuroscience Changes Nothing and Everything* (pp. 1775–1785). Biological Sciences: *Philosophical Transactions*.
- Haggard, P., Clark, S., & Kalogeras, J. (2002). Voluntary action and conscious awareness. *Nature Neuroscience*, 5(4), 382–385.
- Haggard, P., Mele, A., O'Connor, T., & Vohs, K. D. (2010). “Lexicon of key terms.” big questions in free will project. Retrieved from <http://www.freewillandscience.com>
- Heidegger, M. (1954/1968). *What is called thinking?* New York: Harper & Row.
- Heider, F. (1944). Social perception and phenomenal causality. *Psychological Review*, 51(6), 358.
- Heider, F. (1958). *The Psychology of Interpersonal Relations*. Psychology Press.
- Hong, Y. Y., Chiu, C. Y., Dweck, C. S., Lin, D. M. S., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology*, 77(3), 588.
- Hume, D. (1748). *An enquiry concerning human understanding*.

- Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86*(1), 80.
- Judge, T. A., Locke, E. A., & Durham, C. C. (1997). The dispositional causes of job satisfaction: A core evaluations approach. *Research in Organizational Behavior, 19*, 151.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2002). Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology, 83*(3), 693.
- Juth, N., & Lorentzon, F. (2010). The concept of free will and forensic psychiatry. *International Journal of Law and Psychiatry, 33*(1), 1–6.
- Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.
- Kane, R. (2002). *Free will: New directions for an ancient problem*. Blackwell Publishers Malden.
- Kane, R. (2011). *The oxford handbook of free will*. Oxford University Press.
- Kant, I. (1797/1967). *Critique of practical reason*.
- Kivetz, R., & Simonson, I. (2002). Self-control for the righteous: Toward a theory of precommitment to indulgence. *Journal of Consumer Research, 29*(2), 199–217.
- Kühn, S., & Brass, M. (2009). Retrospective construction of the judgement of free choice. *Consciousness and Cognition, 18*(1), 12–21.
- Kushnir, T., Wellman, H. M., & Chernyak, N. (2009). Preschoolers' understanding of freedom of choice. In *Proceedings of the Thirty-First Annual Meeting of the Cognitive Science Society* (pp. 87–92).
- Laurene, K. R., Rakos, R. F., Tisak, M. S., Robichaud, A. L., & Horvath, M. (2011). Perception of free will: the perspective of incarcerated adolescent and adult offenders. *Review of Philosophy and Psychology, 2*(4), 723–740.
- Leary, M., & Baumeister, R. (2000). The nature and function of self-esteem: Sociometer theory. *Advances in Experimental Social Psychology, 32*, 1–62.
- Levy, S. R., Stroessner, S. J., & Dweck, C. S. (1998). Stereotype formation and endorsement: The role of implicit theories. *Journal of Personality and Social Psychology, 74*(6), 1421.
- Levy, S. R., Plaks, J. E., Hong, Y. Y., Chiu, C. Y., & Dweck, C. S. (2001). Static versus dynamic theories and the perception of groups: Different routes to different destinations. *Personality and Social Psychology Review, 5*(2), 156–168.
- Malle, B. F. (2011a). Attribution theories: How people make sense of behavior. In *Theories in social psychology* (pp. 72–95).
- Malle, B. F. (2011b). Time to give up the dogmas of attribution: An alternative theory of behavior explanation. *Advances in Experimental Social Psychology, 44*, 297.
- Malle, B. F., & Knobe, J. (1997a). The folk concept of intentionality. *Journal of Experimental Social Psychology, 33*(2), 101–121.
- Malle, B. F., & Knobe, J. (1997b). Which behaviors do people explain? A basic actor–observer asymmetry. *Journal of Personality and Social Psychology, 72*(2), 288.
- McCrae, R. R., & Costa, P. T. (2003). *Personality in adulthood: A five-factor theory perspective*. Guilford Press.
- Monroe, A. E., & Malle, B. F. (2010). From uncaused will to conscious choice: The need to study, not speculate about people's folk concept of free will. *Review of Philosophy and Psychology, 1*(2), 211–224.
- Monroe, A. E., & Malle, B. F. (2014). Free will without metaphysics. In *Surrounding free will* (pp. 25–48).
- Monroe, A. E., Dillon, K. D., & Malle, B. F. (2014). Bringing free will down to earth: People's psychological concept of free will and its role in moral judgment. *Consciousness and Cognition, 27*, 100–108.
- Montague, P. R. (2008). Free will. *Current Biology, 18*(14), R584–R585.
- Nadelhoffer, T., & Matveeva, T. (2009). Positive illusions, perceived control and the free will debate. *Mind & Language, 24*(5), 495–522.
- Nadelhoffer, T., Shepard, J., Nahmias, E., Sripada, C., & Ross, L. T. (2014). The free will inventory: Measuring beliefs about agency and responsibility. *Consciousness and Cognition, 25*, 27–41.
- Nahmias, E., Morris, S., Nadelhoffer, T., & Turner, J. (2005). Surveying freedom: Folk intuitions about free will and moral responsibility. *Philosophical Psychology, 18*(5), 561–584.
- Nahmias, E., Shepard, J., & Reuter, S. (2014). It's OK if 'my brain made me do it': People's intuitions about free will and neuroscientific prediction. *Cognition, 133*(2), 502–516.
- Nichols, S. (2004). The folk psychology of free will: Fits and starts. *Mind & Language, 19*(5), 473–502.
- Nichols, S. (2011). Experimental philosophy and the problem of free will. *Science, 331*(6023), 1401–1403.

- Oldham, G. R., & Hackman, J. R. (1981). Relationships between organizational structure and employee reactions: Comparing alternative frameworks. *Administrative Science Quarterly*, 66–83.
- Parks-Leduc, L., Feldman, G., & Bardi, A. (2015). Personality traits and personal values: A meta-analysis. *Personality and Social Psychology Review*, 19(1), 3–29.
- Paulhus, D. L., & Carey, J. M. (2011). The FAD-Plus: Measuring lay beliefs regarding free will and related constructs. *Journal of Personality Assessment*, 93(1), 96–104.
- Preston, J. L., Ritter, R. S., & Hepler, J. (2013). Neuroscience and the soul: Competing explanations for the human experience. *Cognition*, 127(1), 31–37.
- Rakos, R. F. (2004). The belief in free will as a biological adaptation: Thinking inside and outside the behavior analytic box. *European Journal of Behavior Analysis*, 5(2), 95–103.
- Rakos, R. F., Steyer, K. R., Skala, S., & Slane, S. (2008). Belief in free will: Measurement and conceptualization innovations. *Behavior and Social Issues*, 17(1), 20–39.
- Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin*, 26(4), 419–435.
- Rigoni, D., & Brass, M. (2014). From intentions to neurons: Social and neural consequences of disbelieving in free will. *Topoi*, 33(1), 5–12.
- Rigoni, D., Kühn, S., Sartori, G., & Brass, M. (2011). Inducing disbelief in free will alters brain correlates of preconscious motor preparation the brain minds whether we believe in free will or not. *Psychological Science*, 22(5), 613–618.
- Rigoni, D., Kühn, S., Gaudino, G., Sartori, G., & Brass, M. (2012). Reducing self-control by weakening belief in free will. *Consciousness and Cognition*, 21(3), 1482–1490.
- Rigoni, D., Wilquin, H., Brass, M., & Burle, B. (2013). When errors do not matter: Weakening belief in intentional control impairs cognitive reaction to errors. *Cognition*, 127(2), 264–269.
- Rosenberg, M. (1965). *Society and the adolescent self-image*.
- Roskies, A. (2006). Neuroscientific challenges to free will and responsibility. *Trends in Cognitive Sciences*, 10(9), 419–423.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied*, 80(1), 1.
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, 74(6), 1557–1586.
- Sappington, A. A. (1990). Recent psychological approaches to the free will versus determinism issue. *Psychological Bulletin*, 108(1), 19.
- Sarkissian, H., Chatterjee, A., De Brigard, F., Knobe, J., Nichols, S., & Sirker, S. (2010). Is belief in free will a cultural universal? *Mind & Language*, 25(3), 346–358.
- Sartre, J. P. (1943/1956). *Being and nothingness*. Secaucus, NJ: Citadel Press.
- Schwartz, B. (2004). *The paradox of choice*. New York: Ecco.
- Searle, J. (2007). Freedom and neurobiology. In *Reflections on Free Will, Language and Political Power*. Nueva York: Columbia University Press.
- Seligman, M. E., Railton, P., Baumeister, R. F., & Sripada, C. (2013). Navigating into the future or driven by the past. *Perspectives on Psychological Science*, 8(2), 119–141.
- Soon, C. S., He, A. H., Bode, S., & Haynes, J. D. (2013). Predicting free choices for abstract intentions. *Proceedings of the National Academy of Sciences*, 110(15), 6217–6222.
- Spector, P. E., & Fox, S. (2003). Reducing subjectivity in the assessment of the job environment: Development of the Factual Autonomy Scale (FAS). *Journal of Organizational Behavior*, 24(4), 417–432.
- Stillman, T. F., Baumeister, R. F., Vohs, K. D., Lambert, N. M., Fincham, F. D., & Brewer, L. E. (2010). Personal philosophy and personnel achievement: Belief in free will predicts better job performance. *Social Psychological and Personality Science*, 1(1), 43–50.
- Stillman, T. F., Baumeister, R. F., & Mele, A. R. (2011). Free will in everyday life: Autobiographical accounts of free and unfree actions. *Philosophical Psychology*, 24(3), 381–394.
- Stroessner, S. J., & Green, C. W. (1990). Effects of belief in free will or determinism on attitudes toward punishment and locus of control. *The Journal of Social Psychology*, 130(6), 789–799.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72(2), 271–324.

- Tice, D. M., Bratslavsky, E., & Baumeister, R. F. (2001). Emotional distress regulation takes precedence over impulse control: If you feel bad, do it! *Journal of Personality and Social Psychology*, 80(1), 53.
- Vohs, K. D., & Baumeister, R. F. (2004). Understanding self-regulation: An introduction. In *Handbook of self-regulation: Research, theory, and applications* (pp. 1–9).
- Vohs, K. D., & Baumeister, R. F. (2013). Existential psychology has long remarked on the central importance of choice and. In *Handbook of experimental existential psychology* (pp. 398).
- Vohs, K. D., & Schooler, J. W. (2008). The value of believing in free will encouraging a belief in determinism increases cheating. *Psychological Science*, 19(1), 49–54.
- Waldman, D. A., Viney, W., Bell, P. A., Bennett, J. B., & Hess, S. (1983). Internal and external locus of control in relation to beliefs in free will and determinism. *Psychological Reports*, 53(2), 631–634. <http://dx.doi.org/10.2466/pr0.1983.53.2.631>.
- Wegner, D. M. (2003). The mind's best trick: how we experience conscious will. *Trends in Cognitive Sciences*, 7(2), 65–69.
- Wegner, D. M. (2004). Précis of the illusion of conscious will. *Behavioral and Brain Sciences*, 27(05), 649–659.
- Wyer, R. S., & Albarracín, D. (2005). Belief formation, organization, and change: Cognitive and motivational influences. In *The handbook of attitudes* (Vol. 273). (pp. 322).
- Wyer, R. S., & Goldberg, L. (1970). A probabilistic analysis of the relationships among belief and attitudes. *Psychological Review*, 77(2), 100.

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