



# The freedom to excel: Belief in free will predicts better academic performance



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## ABSTRACT

Increasing evidence supports the importance of beliefs in predicting positive outcomes in life. We examined the performance implications of the belief in free will as an abstract, philosophical belief that views the self as free from internal and external constraints and capable of choosing and directing one's own path. In Study 1 ( $N = 116$ , undergraduates), belief in free will was associated with higher performance on an academic proofreading task. In Study 2 ( $N = 614$ , undergraduates), we examined performance in real academic settings, and the belief in free will measured at the beginning of the semester predicted better course and semester grades at the end of the semester. Importantly, we found support for the distinctive contribution of the belief in free will in comparison to well-established predictors of academic performance — trait self-control and implicit theories. We conclude that individual differences in the endorsement of the belief in free will are a significant and unique predictor of academic achievement.

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## 1. Introduction

The last two decades have witnessed the emergence of research that recognized the importance of beliefs as predictors of academic achievement (Hong, Chiu, Dweck, Lin, & Wan, 1999; Yeager & Dweck, 2012). Beliefs have been identified as essential components of self-concept as they affect sense-making and shape the meaning given to all aspects of life, and therefore play a crucial role in guiding behavior (Dweck, 2008). People differ in their beliefs, and these differences hold the potential for predicting differences in behavior and outcomes (Dweck, 2014). This is especially true for undergraduates attending college because students often face difficult challenges and important choices under intense pressure to perform. Academic performance is dependent on the ability to change, adapt, make difficult decisions, and learn from mistakes, and these are rooted in associated beliefs that change is controlled and choice is free.

A promising direction in social psychology and experimental philosophy explores agency-related philosophical beliefs and focuses on views regarding free will and determinism. People differ in their beliefs regarding the human capacity for choice; some view their behaviors and lives as a consequence of their own agentic free choice, whereas others believe that they are deterministically guided by internal factors

that are beyond their control, such as their upbringing, personality, or genetics, or by external factors such as God, nature, science, or fate (Baumeister, 2008). This abstract philosophical belief in free will encompasses a broad view of the person as an active agent who is capable of choosing one's own path, planning for long-term goals, changing if so desired, and directing one's own actions to achieve desired goals. Previous literature on the relationship between beliefs and performance has mainly focused on implicit theories; specifically, the contrast between two groups of people endorsing opposing implicit theories based on essentialism — entity theorists who consider human attributes as relatively fixed and incremental theorists who view such attributes as malleable (Dweck, 2008, 2014). These two types of people differ in their view of whether change is at all possible, yet this categorization does not address the broader question of how change occurs and the role that the self plays in making a desired change happen, which is conceptualized by the belief regarding free will. The present work aims to extend previous research on the effect of beliefs on academic performance by theorizing and testing the hypothesis that the belief in free will would predict better academic performance.

### 1.1. Belief in free will

The belief in free will is a core belief that views humans as free from both external constraints (e.g., luck, fate, God, the environment, society, other agents) and internal deterministic factors (e.g., urges, needs, genes, personality, affect). The belief in free will is common in most modern societies and religions and is held by a high percentage of people across the world (Sarkissian et al., 2010). Nevertheless, people differ

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in the degree to which they endorse this belief (Carey & Paulhus, 2013; Paulhus & Carey, 2011). The growing prevalence of this belief supports the philosophical idea that the belief in free will serves an important, positive, and functional role for the self in adaptation and survival (Brembs, 2011), the pursuit of what a person wants or needs (Dennett, 2003; Hume, 1748), and the coordination with others in society (Baumeister, 2008; Kant, 1788/1997). The concept of free will has long been theorized as underlying important aspects of human action, such as the attribution of intentionality (Roskies, 2006), the understanding of moral responsibility (Stillman, Baumeister, & Mele, 2011), the acceptance of accountability (Nietzsche, 1886/1966), as well as of perceived ability, self-regulation, and the drive for action (Greve, 2001).

Studies have shown that belief in free will has broad implications for behavior (Brass, Lynn, Demanet, & Rigoni, 2013). The concept of free choice develops very early on in life (Kushnir, 2012; Kushnir, Wellman, & Chernyak, 2009; Nichols, 2004) across cultures (Chernyak, Kushnir, Sullivan, & Wang, 2013), with behavioral implications as early as preschool (Chernyak & Kushnir, 2014). People who believe in free will learn better from their own mistakes and misdeeds (Stillman & Baumeister, 2010), have higher perceived ability and positive attitudes toward decision making (Feldman, Baumeister, & Wong, 2014), enjoy greater self-efficacy and suffer less from helplessness (Baumeister & Brewer, 2012), show more honest behavior (Vohs & Schooler, 2008), demonstrate higher levels of autonomy and report higher willingness to exert effort (Alquist, Ainsworth, & Baumeister, 2013), show stronger motivations for career success and exhibit better job performance (Stillman et al., 2010), and are more future-oriented (Seligman, Railton, Baumeister, & Sripada, 2013). The belief in free will has even been shown to affect the fundamental processes of agentic volition (Rigoni & Brass, 2014), such as increased voluntary motor preparation (Rigoni, Kühn, Sartori, & Brass, 2011), better suppression of automatic pain reactions (Lynn, Van Dessel, & Brass, 2013), and more efficient neural reactions to errors (Rigoni, Pourtois, & Brass, 2014; Rigoni, Wilquin, Brass, & Burle, 2013). These findings support the view that the belief in free will has evolved to facilitate both the individual pursuit of long-term goals and the coexistence with others within cultures (for a review, see Baumeister & Monroe, 2014).

### 1.2. Belief in free will and academic performance

The belief in free will is highly relevant to academic achievements because universities present students with numerous challenges and decisions, as well as ongoing feedback about their performance. In college environment, students typically enjoy a high level of discretion in setting their personal goals and arranging their daily activities. Students frequently face day-to-day motivational conflicts contrasting choices between short-term temptations and long-term goals (e.g., choosing between academic tasks and leisure activities; Fries, Dietz, & Schmid, 2008; Grund, Brassler, & Fries, 2014). Moreover, college life is not only about academic learning, but it is also a stage in life that symbolizes independence. During this period, many students experience their first separation from their parents, search for their unique voice, and develop their own individual identities (Stephens, Townsend, Markus, & Phillips, 2012).

The belief in free will encompasses the perceptions of human volitional capabilities and serves as an evolved mechanism for directing independent action in a complex social environment (Alquist et al., 2013; Baumeister & Monroe, 2014) such as that of college. Those who believe in free will are motivated to pursue long-term functional goals (Seligman et al., 2013; Stillman et al., 2011) and show more consideration for the consequences of their actions. The belief in free will encourages goal monitoring and facilitates enhanced learning from one's mistakes to improve future performance (Alquist, Ainsworth, Baumeister, Daly, & Stillman, 2015), all crucial aspects of academic achievement.

The belief in free will also aids in dealing with the burden of choice and coping with decision situations. To be able to make choices

effectively, it is essential that one perceives that choices are available and that the self is capable of making a choice (Baumeister, Sparks, Stillman, & Vohs, 2008; Monroe & Malle, 2010). Those who believe in free will consider their own actions as more driven by their own volitional choice, are more motivated to choose, and report higher enjoyment of having choice and of the outcomes of their choices (Feldman et al., 2014). Thus, once faced with a certain outcome, those who believe in free will are likely to assume more responsibility, learn better from their mistakes, and work harder toward changing negative outcomes. The perception of choice, positive attitudes toward choice, and the ability to make choices that are affected by the belief in free will are all essential components for success in academic tasks and in college life (Patall, Cooper, & Robinson, 2008; Patall, Cooper, & Wynn, 2010).

Our central premise is that the belief in free will would be related to positive academic outcomes. Thus far, much of the literature exploring the relationship between beliefs and academic achievement has focused on implicit theories, mostly overlooking agentic beliefs. Conceptual and empirical differences between the belief in free will and implicit theories have previously been noted (Crescioni, Baumeister, Ainsworth, Ent, & Lambert, 2015; Dweck & Molden, 2008) — implicit theories focus on whether a change in human behavior is possible and whether human attributes are fixed (race, intelligence, etc.; Dweck, 2006, 2008), whereas the belief in free will captures the agentic aspects of the capacity for the self to freely choose and direct behavior and change (see Study 2 for more details and an empirical demonstration). In the present investigation, we also sought to establish the unique contribution of the belief in free will above and beyond implicit theories.

### 1.3. The present investigation

In two studies, we examined the relationship between the belief in free will and academic performance with the expectation that individual differences in the endorsement of the philosophical notion of free will would predict better academic performance. We first tested the hypothesis by exploring the belief in free will as a predictor of performance on a short proofreading task (Study 1). In a subsequent study (Study 2), we tested the relationship between the belief in free will and undergraduates' academic performance in a real-life university context.

## 2. Study 1: academic task performance

Study 1 was constructed to provide a first test of the hypothesis that the belief in free will would predict better academic performance by assessing its association with a simple spell-checking task typical in an academic context.

### 2.1. Method

#### 2.1.1. Procedure and participants

A total of 116 undergraduate students from a university in Hong Kong participated in return for course credit ( $M_{\text{age}} = 19.18$ ,  $SD_{\text{age}} = .65$ ; 52.6% females; 84 Hong Kong locals, 16 mainland Chinese, 16 international students). The participants reported their belief in free will and then proceeded to a spell-checking task (adapted from Lee, Gino, & Staats, 2014) that included 16 science essay sentences with varying numbers of spelling mistakes. The participants were instructed to find and report as many errors as possible. Spelling performance tasks are often utilized as a measure of basic academic skills, and are included in various achievement tests used in educational settings. For example, spelling performance is included in the Wide Range Achievement Test (WRAT; 2001), which is often adopted as a proxy for academic achievement in the literature (e.g., Mayes, Calhoun, Bixler, & Zimmerman, 2009; Rohde & Thompson, 2007). The spelling performance task was particularly relevant to the students in this sample because English is a second language for most Hong Kong undergraduate students, with Cantonese Chinese as the native language for Hong Kong locals and Mandarin

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