

Examining Extension: Is Inspiration Motivational in Novel Contexts?

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Declaration of Originality

The works found within this thesis are original and have not been submitted for publication, written by another person, nor submitted for a higher degree to any other university or institution. The empirical research contained within this thesis was approved by the Human Research Ethics Committee at Macquarie University (reference number: HREC 5201600235).

**Jack Klein**

Abstract

Inspiration has long been explored in art and literature, often taking on a supernatural or mythic tone. However, despite its widespread appeal, the processes underlying inspiration have eluded rigorous scientific investigation until recently. One such untested process is the concept of *novel-context extension*, which refers to the motivational effect of inspirational content in an unrelated domain (e.g. after perceiving an artist's incredible work-ethic a student becomes inspired to persevere with school work). The primary aim of this thesis is hence to determine if an inspirational message concerning one domain (academia or creativity) can improve performance in an unrelated domain (physical endurance). In Experiment 1 participants ($N=64$) completed an initial baseline handgrip task and personality questionnaires before writing about a time they felt either (a) inspired in a sporting context (inspiration-related), (b) inspired in an academic context (inspiration-unrelated), or (c) happy in a context unrelated to success or achievement (control). Participants then completed manipulation checks and a second handgrip test. Results indicated that only the inspiration-related condition successfully elicited inspiration, and found no significant differences between the conditions on handgrip performance. Experiment 2 ($N=70$) addressed methodological issues by altering the writing topics for the inspiration-unrelated (a time you felt inspired in a creative context) and control (a time you felt amused) conditions, and revising the handgrip task. Analyses indicated that both inspiration conditions successfully elicited inspiration. Although handgrip performance again did not differ between conditions, participants in the inspiration conditions were significantly less likely to give up at the task. Overall, these findings provide preliminary support for novel-context extension and have implications in a sporting context.

A Literature Review of Inspiration Research

The motivational concept of inspiration has been employed throughout history to explain how humans transition from the banal to the extraordinary (Thrash, Moldovan, Oleynick & Maruskin, 2014). It has been invoked to explain concepts as diverse as political enthusiasm (Poe, 2010), motivation in school students (Olson, 2003) and nurses (Alcoser, 1998), religiously enlightened writing (Grech, 2012), and even the state of heightened imagination between waking and sleeping (van Deurzen-Smith, 2014). However, despite its frequent usage, the processes underlying inspiration remain relatively under-researched. Inspiration has only recently been systematically defined, starting in earnest with Thrash and Elliot's (2003, 2004) *tripartite conceptualisation* and *component process conceptualisation*. Their models of inspiration continue to be developed; for instance, *novel-context extension* represents a particularly interesting, albeit untested, model of inspiration transmission. Research has also differentiated inspiration from related transcendent emotions, such as awe and elevation, and helped establish its relationship with various personality traits.

Nevertheless, there remain considerable gaps and ambiguities in the literature. Firstly, it has proven consistently difficult to determine what constitutes as an inspirational object. For instance, although successful others are commonly considered inspiring, it remains less clear in what context underdogs can be considered inspiring. The self represents another alleged object of inspiration, despite considerable evidence to suggest that so-called *self-inspiration* is conflated with authentic pride. The behavioural effects of inspiration represent a further source of contention in the literature, largely due to a lack of experimental research. The present literature review will examine these concerns by asking three core questions: What is inspiration? What causes inspiration? and How does inspiration affect behaviour?

What is Inspiration?

The earliest conceptualisation of inspiration was entirely in mythical terms; the ancient Greeks described inspiration as the process whereby creativity was literally imbued into a person through fabled beings known as muses (Spentzou & Fowler, 2002). Since then, inspiration has been variously referred to as the process through which a person becomes aware of an idea, a motivational state that encourages creativity, and even “creativity” itself (Thrash et al. 2014). The diverse and inconsistent usage of inspiration has led to serious definitional ambiguities; can inspiration conceivably refer to both “the external stimulus that evokes creativity” and broadly “creativity itself”? This excessively broad usage of inspiration may ironically contribute to its under-appreciation in the psychological literature. For instance, an oft-cited example of inspiration is a study conducted McClelland and Kirshnit (1988) that found a relationship between inspiration and immune function. However, the article referred to its effect as *affiliation-motivation* and only offhandedly mentioned “inspiration” once; it is possible that the authors perceived inspiration as an unscientific term. Definitional vagueness surrounding inspiration has clearly undermined attempts at establishing a unified conceptual framework, and ultimately hindered research.

The Tripartite Conceptualisation

A scientific approach has only recently been taken to investigating inspiration, and this started with the tripartite conceptualisation (Thrash & Elliot, 2003). This theory fundamentally outlines the defining elements of inspiration, thereby distinguishing it from similarly transcendent emotions and experiences. This is accomplished through classifying inspiration by its characteristic states: (a) *evocation* of inspiration via an internal or external object, (b) *transcendence* that reveals new insights and possibilities, and (c) *motivation* to engage in goal-directed behaviour.

Evocation indicates that inspiration is involuntarily caused by a specific object (*a trigger*) and not through willpower, which differentiates it from related constructs like perseverance. Initial research focused on internal triggers, also known as intrapsychic sources, which evoke inspiration when made conscious (e.g. Ribot, 1906; von Hartmann, 1884), such as a creative idea (Thrash, Maruskin, Cassidy, Fryer, & Ryan, 2010). Contrastingly, external triggers are located in an individual's environment and include works of art, successful others, and incredible human achievements (Thrash & Elliot, 2003). An inspiring video documenting Mother Theresa's charity work represents a particularly compelling example of an external trigger. When displayed to a university sample it increased salivary immunoglobulin levels for up to an hour (indicating increased immune function), due to a heightened pro-social motivation (McClelland & Kirshnit, 1988). Similarly, external triggers such as videos of incredible athletic ability (Thrash, Elliot, Maruskin & Cassidy, 2010) and famous speeches (Steele, 1977) have also elicited inspiration in experimental contexts.

Transcendence is the second state of the tripartite conceptualisation and refers to the emergence of novel insights and ideas, which are unattainable via sheer willpower (Thrash & Elliot, 2003). Experiences of transcendence are caused by the perception of an object that expands a person's understanding of the world, such as Mother Theresa's phenomenal capacity for compassion (McClelland & Kirshnit, 1988), or Michael Jordan's superhuman athletic prowess (Thrash, Elliot, Maruskin, & Cassidy, 2010). In this way, the inspirational object alters a person's understanding of what is possible, provokes awareness of new possibilities, and causes the inspired individual to positively reappraise their own potential.

Motivation is the final state of the tripartite conceptualisation, and refers to energised and directed behaviour towards a particular object, known as a *target* (Thrash & Elliot, 2003). This could refer to a present goal, such as writing a novel, or a desired future self (e.g.,

acquiring a more muscular physique); indeed, self-reported inspiration has been shown to predict goal progress in university students (Milyavskaya, Ianakieva, Foxen-Craft, Colantuoni, & Koestner, 2012). Motivation crucially distinguishes inspiration from related transcendent emotions like awe, which is characterised by feelings of wonder and reverence to a perceptually vast object (Keltner & Haidt, 2003). Awe clearly shares the evocation and transcendent aspects of inspiration; it is triggered when a specific object overwhelms mental structures, which must then be expanded to accommodate new insights into a person's understanding of the world. However, inspiration differs from awe in that an inspired individual is motivated to extend the qualities of an evocative object towards a specific goal. For instance, witnessing the Northern Lights would likely be an awe-inspiring experience and expand one's personal understanding of the natural world, but would not typically be considered motivating. Conversely, a successful other's incredible propensity to achieve could expand an individual's understanding of what is humanly possible, and motivate them to extend the object's hardworking qualities into their own life. Only the latter is an example of inspiration, as distinguished by its motivational state.

Component Process Conceptualisation

Thrash and Elliot (2004) expanded on their conceptualisation of inspiration by characterising it in terms of its two component processes. While the tripartite conceptualisation is focused on describing inspiration through its distinctive states, the component process conceptualisation provides a causal account of how these states interact. The theory condenses inspiration into two distinct components: an inspired *by* component that causes an inspired *to* component (Thrash & Elliot, 2004). In this sense, the tripartite and component process conceptualisations are not competing accounts of inspiration; rather, the former describes its distinctive states, whereas the latter proposes a causal model.

The component processes succinctly explain how inspiration operates: the *by* component refers to the perception and accommodation of an inspirational object (e.g. nature, a successful other), whereas the *to* component refers to an inspired person's subsequent motivation to extend the inspirational object's qualities into actuality. This theory is supported by three studies in which participants wrote about a time they felt inspired (Thrash & Elliot, 2004). Although the inspirational objects described by participants varied greatly (e.g. a successful other, scientific discovery), subsequent coding revealed that the stories contained dominant themes of transcendence and motivation. Participants then completed self-report measures assessing the tripartite conceptualisation states (i.e. evocation, transcendence and motivation), which were analysed using a confirmatory factor analysis. Two distinct factors emerged: decreased responsibility and increased transcendence (inspired *by*), and responsibility and approach motivation (inspired *to*). This indicates that the *by* component is unwillingly evoked and elicits transcendence, whereas the *to* component is perceived as deliberate and motivating. The component processes hence illuminate how inspiration operates as a two-step function.

A great strength of the component process conceptualisation is its ability to present inspiration, paradoxically, as both a passive and active phenomenon. The reduction of responsibility associated with the *by* component depicts inspiration as something that is unwilling and imbued from an external source. Conversely, the increased sense of responsibility associated with the *to* component reflects a volitional aspect, depicting the individual as taking ownership for their inspired behaviours. It is worth noting that the large overlap between the component processes and tripartite states suggests that the component process conceptualisation alone may sufficiently conceptualise inspiration. Nevertheless, both theories propose that inspiration involves an evocative object, a transcendent experience, and motivation to extend the inspirational object's qualities into actuality.

Inspiration and Personality

Although the component process conceptualisation implies that anyone can become inspired *by* and *to*, the extent that this occurs is influenced greatly by personality. This can be measured by trait inspiration, which describes the frequency and intensity an individual is inspired. Thrash and Elliot (2003) developed the Inspiration Scale (IS) to measure trait inspiration, whereby higher scores denote that a person is inspired more frequently and intensely. This scale has allowed researchers to construct a meaningful nomological network between trait inspiration and other important personality traits, thereby establishing what personality types are more easily inspired.

For example, trait inspiration is correlated with the Big Five personality traits of Openness to Experience and Extraversion, but not Neuroticism, Agreeableness and Conscientiousness (Thrash & Elliot, 2003). It is possible that Openness to Experience increases individual susceptibility to inspirational triggers (i.e. the inspired *by* component), while Extraversion may promote motivated behaviour (i.e. the inspired *to* component). Finally, the absence of a correlation between Conscientiousness and trait inspiration supports the assertion that inspiration is unwilled (i.e. not a result of conscious effort). Hence, the relationship between trait inspiration and the Big Five personality traits supports a component process account of inspiration.

Considering that inspiration is characterised largely by positivity, it is unsurprising that its nomological network is littered with connections to positive personality traits. For instance, scores on the IS are strongly correlated with self-reported positive affect; a trait associated with feelings of euphoria and awe (Thrash & Elliot, 2003). Longitudinal studies indicate that inspiration precedes increases in positive affect (Thrash, Elliot et al., 2010), suggesting that trait inspiration predicts general well-being. Similarly, time-lagged analyses have shown that increased self-esteem is a consequence of inspiration, which demonstrates

that inspiration can bolster psychological resources (Thrash & Elliot, 2003). This research indicates that inspiration is an overwhelmingly positive experience, and associated with a greater level of mental well-being.

Inspiration Without Positivity

Although it is commonly accepted that inspiration is a transcendent and positive phenomenon (Thrash & Elliot, 2003), there exist a number of accounts that suggest mundane or negative experiences can be considered inspirational. Firstly, van Duerzen-Smith's (2014) existential account of inspiration indicates that it can be derived from competition; specifically, that exposure to unremarkable work "inspires" others to produce better. For example, a person might be "inspired" by a sub-par painting and attempt to create a superior artwork. This invokes social comparison theory, which purports that individual comparisons to less successful persons (i.e. downward comparisons) increase motivation (Festinger, 1954). The classic "Mr. Clean and Mr. Dirty" study demonstrated this phenomenon by exposing job applicants to a person that was either socially desirable, which decreased self-esteem, or undesirable, which increased self-esteem (Morse & Gergen, 1970). However, rather than illuminate an unrecognised internal source of ability, downward comparisons merely highlight inadequacy in others. Downward comparisons hence lack genuine transcendence, wherein one appreciates something superior to the self (Thrash & Elliot, 2003), and cannot be considered inspiration. On the other hand, upward comparisons refer to interactions with objects greater than the self (Festinger, 1954) and can result in genuine inspirational experiences, as evidenced by the prominence of successful others as inspirational objects. The conflation of inspiration with downward comparisons devalues the transcendent power of inspiration, and further confuses conceptualisations.

van Duerzen-Smith (2014) similarly claims that inspiration can arise from confrontation with our finiteness (i.e. increased mortality salience), which compels the

generation of creative works in an effort to establish a legacy that outlasts death. For example, esteemed Australian artist Margaret Olley experienced a surge of productivity prior to her death in 2011, remarking “I’m like an old tree dying and setting forth flowers as fast as I can, while it still can” (Conway, 2011). Interestingly, research has suggested that mortality salience can stifle creativity (Routledge, Arndt, Vess & Sheldon, 2008), although the evidence is mixed (Routledge & Juhl, 2012). In any case, van Duerzen-Smith (2014) appears to conflate inspiration with terror management theory (TMT), which postulates that mortality salience promotes conceptualisations of the self as a part of something more meaningful and eternal than physical existence (Routledge & Arndt, 2009). TMT stipulates that mortality salience causes anxiety and negativity (Lambert, Eadeh, Peak, Scherer, Schott & Slochower, 2014), diverging from common depictions of inspiration as a force of positivity. This suggests that, while likely motivating, mortality salience does not represent a genuine object of inspiration.

Notably, Thrash et al., (2014) contend that negatively valenced experiences can prompt inspiration. For example, they assert that the death of a loved one could lead to reflection, and inspire subsequent emulation of the deceased’s admired qualities. However, this does not suggest that inspiration itself is negatively valenced; while death is generally associated with grief, the inspirational act of reflection itself would likely be an uplifting and positive experience. In contrast, mortality salience is positively correlated with negative affect and self-reported fear (Lambert et al. 2014). It is worth noting that appreciating the permanence of one’s legacy could represent a transcendent, positive and inspirational experience, provided that this epiphany occurs in the absence of the negativity associated with mortality salience. If this is what van Duerzen-Smith (2014) was referring to then it only emphasises the importance of avoiding the vague terminology that unfortunately often characterises inspirational research.

Transmission Model

The transmission model further contributes to the scientific conceptualisation of inspiration through defining inspiration by its function. This model posits that inspiration's role is to motivate the transmission of an object's perceived transcendent qualities into reality (Thrash, Maruskin, et al., 2010). For instance, a person might perceive a successful other as having an incredible work ethic; exposure to this object (i.e. the successful other) causes inspiration, which subsequently motivates attempts to emulate the object's valued properties (i.e. work harder). In this way inspiration operates as a conduit through which the admired traits of an object motivate a person to extend these qualities into a new object. Inspiration has been found to mediate the relationship between the creativity of an idea and the creativity of the final product (Thrash, Maruskin, et al., 2010), providing evidence for this model.

This has important ramifications for the role of inspiration in a creative context. Most notably, it implies that inspiration should be viewed not as the originator of creative ideas, but as their product. Thrash, Maruskin, et al. (2010) asked 165 undergraduate psychology students to submit online questionnaires each Wednesday regarding their experiences of inspiration and creativity across the previous week. A cross-lagged longitudinal analysis revealed that creative ideas preceded inspiration, suggesting that inspiration represents a response to creativity. However, it is possible for creativity to act as a conduit for the transmission of inspiration between people. Recent research by Thrash, Maruskin, Moldovan, Oleynick, and Belzak (2016) found that inspiration has a contagious element, whereby inspiration promotes future creative ideation. A sample of 196 college-aged students each wrote a poem that was then read by 220 students; results indicated that inspiration reported by student poets predicted reader inspiration, and that inspiration contagion was moderated by Openness to Experience. These findings suggest not only that inspiration begets inspiration and can be transmitted through the medium of the written word, but that

individual differences influence the degree to which inspiration is transferred. Future research could examine if inspiration could be similarly transmitted through other mediums, such as a resounding sporting performance inspiring fellow team members.

A particularly interesting method of transmission is the case of *extension*. This refers to when a person is inspired by the qualities of an object in an external environment, and endeavours to reproduce these qualities in a new object (Thrash et al., 2014). Extension could involve a close reproduction of the inspirational object in its original domain (e.g. a person becoming inspired to sing after seeing a Pavarotti performance), or may occur in more abstract circumstances, wherein the core inspirational qualities of the object are reproduced in a novel context (e.g. a person resolving to work harder at soccer practice after being inspired by Pavarotti's incredible self-discipline). The latter novel-context extension is currently untested, as are the individual difference measures that may moderate the degree to which it occurs. Considering that much of the "motivational speakers" industry is reliant upon novel-context extension (e.g. consider a former sports star hired to present an inspirational speech to an office boardroom), this represents an intriguing concept for researchers to examine.

Inspiration and Related Emotions

The precise nature and makeup of inspiration can be further clarified by exploring how it differs from closely related emotions. Indeed, it is worth asking whether inspiration itself is even an emotion. Although there is no universally acceptable definition, an emotion can be broadly defined as affective episode that has intentionality (i.e. is directed at an object) and induces bodily changes (e.g. arousal; Mulligan & Scherer, 2012). While inspiration largely corresponds with this definition (see Hart, 1998) it differs in that it involves two focal objects: an object associated with being inspired *by* (the trigger), and a separate object associated with being inspired *to* (the target). This indicates that inspiration is more complex

than standard uni-focal emotions, such as joy and anger, and should be described as a separate phenomenon (Thrash et al. 2014).

Although it does not seem useful to classify inspiration as an emotion, the process of inspiration clearly draws upon related emotions. As explained previously, inspiration is differentiated from other transcendent emotions, like awe, through its motivational state (the *to* component of inspiration). However, the *by* component of inspiration closely resembles the evocation of a discrete emotion, and often shares the same triggers as transcendent emotions. For example, elevation is elicited by moral beauty, awe by vastness, and admiration by skill (Keltner & Haidt, 2003); inspiration can also be elicited by each of these objects. There are, however, subtle differences between *by* component of inspiration and related transcendent emotions. Most importantly, inspirational objects uniquely illuminate an individual's potential intrinsic value, such as an undiscovered will to succeed or sense of determination (Thrash et al. 2014). This does not occur with the passive emotions of awe or wonder; only inspiration prompts targeted, productive behaviour. The introspective nature of inspiration hence gives rise to its exclusively motivational state and sets it apart from transcendent emotions.

What Causes Inspiration?

Although the tripartite conceptualisation outlines a basic description of an inspirational object (e.g. it must induce a sense of transcendence), it is difficult to predict exactly what objects will be perceived as inspirational. This deficit at least partly stems from the fact that inspirational experiences cover an extremely wide spectrum; commonly cited inspirational experiences include following a leader, dealing with challenges, and even simply reading a book (Buheji, Saif, & Jahrami, 2014). Indeed, novel-context extension suggests that inspirational objects do not even need to be related to the task at hand. While this suggests that inspiration likely lies in the eye of the beholder (that is, different objects

inspire different people), there do exist large categories of objects that are generally considered inspirational. The most prominent example is the successful other, although the degree to which another can be inspirational is limited by the relative relevance and attainability of the other (Lockwood and Kunda, 1997). Moreover, even if objects are described as inspirational, it is not always clear that these descriptions reflect genuine instances of inspiration; this problem has been most notable in the cases of underdogs and self-inspiration.

Inspiration and Successful Others

Perhaps the most commonly evoked form of inspiration is derived from the perception of a successful other. The archetypal successful other has overcome trials and tribulations before eventually emerging victorious, and represents a source of inspiration for those attempting to emulate this success in their own life. Considering the prevalence of successful others as objects of inspiration, it is unsurprising they have been used to induce inspiration in an experimental context. Steele (1977), for instance, manipulated inspiration by exposing 104 university students to speeches made by prominent successful others such as Winston Churchill. Participants then completed Winter's (1973) Thematic Apperception Test (TAT), which was used to measure a participant's need for power (labelled *n* power). Exposure to the successful others increased *n* power and general activation in participants, suggesting that the speeches induced a highly motivated and emotionally aroused state mirroring inspiration. This indicates that successful others can reliably elicit inspiration.

However, there are a number of methodological limitations associated with Steele's (1977) experiment. Winter's (1973) TAT has been criticised for its low reliability (Kraiger, Hakel, & Cornelius III, 1984) and the vagueness of *n* power; the test only assesses the frequency an individual thinks about power and assumes that this reflects a general "need" for power. Moreover, the validity of TATs generally has been questioned (Alvarado, 1994;

Keiser & Prather, 1990; Lilienfeld, Wood, & Garb, 2000), thereby raising doubts over their propensity to accurately assess motivation or needs. In the absence of a clear, definitive test of motivation or productivity, it cannot be established whether the speeches of successful others actually motivate actions towards increased power, as seemingly implied by the TAT results.

A number of other studies have also used successful others to elicit inspiration in participants. Thrash, Elliot et al., (2010) manipulated inspiration using two video clips of esteemed American basketballer Michael Jordan. The videos depicted Jordan outmanoeuvring opponents with extraordinary ability and emphasised his task mastery over the sport of basketball. Participants that watched the videos of Jordan reported increased positive affect, and this effect was mediated by self-reported inspiration. However, a successful other does not necessarily need to possess extreme competence to be perceived as inspiring. As previously mentioned, Mother Theresa is also commonly regarded as an inspirational figure and has been used in an experimental setting (McClelland & Kirshnit, 1988). It is tempting to claim that Michael Jordan and Mother Theresa are irreconcilable as inspirational objects; the former is inspiring in terms of his skill mastery, and the latter because of her purported selflessness and pro-social message. However, both figures test the boundaries of what one might perceive to be physically possible, hence satisfying the transcendent state of the tripartite conceptualisation. According to the transmission model an inspired individual may internalise these qualities and attempt to actualise them in their own life. The concept of novel-context extension purports that both figures could theoretically inspire a single person in the same way; a young student looking for motivation to complete a school assignment may be inspired by Jordan's mastery or Mother Theresa's determination. This suggests that although the admirable qualities of inspirational figures vary greatly, they all redefine human limitations and represent transcendent forces. However, as previously

mentioned, novel-context extension remains untested and represents an intriguing avenue for future research.

It should be noted that not all inspirational figures are equally inspiring. A young basketball player may view Jordan as an inspirational object, and yet be uninterested by Theresa's exploits. In the same way, an aspiring Catholic priest might be inspired by Mother Theresa's Christian devotion and be left utterly uncompelled by Jordan's sporting accomplishments. Similar observations over a series of three studies led Lockwood and Kunda (1997) to suggest that successful others are only inspiring when they are seen as self-relevant and their accomplishments are considered achievable. In their first study, prospective accountants and teachers were exposed to either congruent (i.e. same profession) or incongruent successful others. Lockwood and Kunda (1997) found that they reported enhanced self-evaluations only when exposed to the congruent successful other; that is, prospective teachers were inspired by successful teachers, but not successful accountants (and vice versa). This indicates that successful others must be considered relevant in order to be inspirational.

While relevance determines whether an object can have an effect, the attainability of its successful qualities ultimately dictates whether it will inspire or demoralise. Lockwood and Kunda's (1997) second study exposed 69 students in their first or fourth year of accountancy school to bogus newspaper articles. Participants in the experimental condition read about an outstanding student with a "superb academic record", whose gender matched the participant's in order to maximise relevance. While exposure to the successful other significantly improved self-evaluations in first-year participants (i.e. induced inspiration), it conversely caused fourth-year participants to rate themselves (non-significantly) less positively than control participants. The authors argued that this was due to the attainability of the successful other's achievements; fourth-year students were simply too far into their

degree to attain a similar level of success and hence became demoralised. These results were supported by a follow-up study, which asked 58 participants to complete a questionnaire determining their “Theory of Intelligence (TOI)” (i.e. the belief that intelligence is (a) fixed or (b) malleable). Mirroring study two, participants in the experimental condition read a bogus newspaper article detailing the accomplishments of a successful student in their own discipline. Following exposure, participants with a malleable TOI reported significantly enhanced self-evaluations, while those with a fixed TOI reported significantly diminished self-evaluations. This suggests that only participants with a malleable TOI were able to perceive the intelligence of others as an achievable goal, whereas those with a fixed TOI did not believe their own intelligence could ever be improved and were subsequently demoralised. The inspirational value of an athlete like Michael Jordan may hence represent a double-edged sword; while his immense ability may inspire a young basketballer starting his or her career, it would likely demoralise those that know they will never reach a comparable level of skill.

Inspiration and “Underdogs”

Perhaps the most recognisable iteration of the successful other is that of the “underdog”, defined simply as a group or individual engaged in a task with a low likelihood of success (Vandello, Goldschmeid, & Richards, 2007). The human tendency to “root for the underdog” hence refers to the celebration of the unlikely victories of those who triumph over an overwhelmingly dominant opponent. Indeed, despite a wealth of research indicating that social advantage is attractive (e.g. Langlois, et al., 2000), there exist circumstances in which disadvantage is desirable. Michniewicz & Vandello (2013) found that participants rated unfairly disadvantaged (i.e. disadvantage was beyond their control) job applicants as more physically attractive and desirable than fairly disadvantaged and unfairly advantaged applicants. Moreover, the experience of supporting the underdog mirrors an inspirational

experience; supporters commonly report feeling an “emotional high” and a renewed confidence in their ability to rise to a challenge (McGinnis & Gentry, 2009). Clearly, disadvantage represents an advantage when inspiring others in the case of the underdog.

Nowhere is the phenomenon of the underdog more prevalent than in sport. This trope refers to a sports person or team overcoming incredible odds to lodge an unlikely victory, and can take on a level of significance that exceeds its original sporting context. The role of basketball in the Philippines represents an interesting case study of the importance of inspiring sporting underdogs. Antolihao (2010) argues that the Filipino tendency to “root for the underdog” when watching their national basketball league reflects a larger national battle with poverty; Filipinos are inspired when underdogs win because they are underdogs themselves. The appeal of underdogs is so great that the most popular Filipino basketball player of all time, Robert Jaworski, rose to fame at the old age of 38 years and was never considered a particularly talented athlete. Nevertheless, his toughness and perseverance inspired his fans and teammates; in one game he absconded hospital to play while injured and rallied his team to an improbable victory. In fact, the small stature of the average Filipino, and basketball’s general unsuitability for a tropical climate, suggests that the national obsession with basketball is in itself an embrace of the underdog and a means of expressing defiance (Antolihao, 2010). Underdogs, especially in sports, offer disadvantaged spectators a means to vicariously win through their chosen champion, thereby taking on symbolic importance as objects of inspiration.

Despite the prominence of the “inspirational underdog”, this depiction is occasionally used disingenuously and reflects a larger disagreement between scientific and layperson conceptualisations of inspiration. Admittedly, these conceptualisations typically closely mirror one other. For instance, the frequency and intensity of which a person experiences the *Oxford English Dictionary* definition of inspiration (“A breathing in or infusion of some idea,

purpose, etc. into the mind; the suggestion, awakening, or creation of some feeling or impulse, especially of an exalted kind”; Simpson & Weiner, 1989, p. 1036) correlates strongly with IS scores (the IS relies upon a respondent’s personal definition of inspiration; Thrash & Elliot, 2003). Similarly, qualitative research shows that layperson descriptions of inspiration closely reflect its portrayal in scientific literature; for instance, inspiration is consistently described as being unwilling (Hart, 1998). However, the common appraisal of disabled persons as objects of inspiration represents a notable disagreement between scientific and lay-person conceptualisations of inspiration.

People with disabilities are frequently lauded as objects of inspiration, regardless of whether the person in question is genuinely inspiring. Comedian Stella Young (2014), who suffers from a disease causing brittle bones and stunted growth (*osteogenesis imperfecta*), argues that disabled persons are often described as “brave” or “inspirational” by virtue of their continued existence. Mundane tasks, such as “managing to get up in the morning”, are deemed inspiring when completed by persons with disabilities, defying conceptualisations of inspiration that stress the transcendent qualities of evocative objects. Moreover, it is not clear how “inspiring” disabled people increase motivation or productivity; a person with *cerebral palsy* learning to walk presumably does not inspire able-bodied individuals to improve their own walking style. It is, of course, possible that disabled persons are abstractly inspiring and that their resilience to adversity represents to object of inspiration, compelling others to extend this quality to address their own problems. This theory is implicit in the multitude of “inspirational” messages that litter social media, such as the picture of a person with a disability accompanied by the caption “The only disability in life is a bad attitude” (Young, 2014).

However, it is still unlikely that this represents inspiration. Firstly, anecdotal evidence indicates that “inspiring” interactions with disabled people are often not associated with

genuine feelings of inspiration. Young (2014) recalls that as a child she was presented with a Community Achievement Award despite not having achieved anything; it was awarded purely on the basis of her disability. Her selection as a recipient was likely associated with feelings of condescension or sympathy rather than actual inspiration. Secondly, Young (2014) contends that the underlying message of heralding disabled people as objects of motivation—referred to as *inspiration porn*--is that “however bad my life is, it could be worse”. This reflects a downward social comparison, wherein an individual perceives themselves in a more favourable position than the disabled person and reports an improved self-image (Festinger, 1954). As argued earlier, actual inspiration comes solely from upward social comparisons, where the object is perceived as greater than the self (Festinger, 1954). This suggests that, while underdogs are often inspiring, they need to have achieved something genuinely impressive for inspiration to occur.

Although it is clear that downward comparisons should not be considered inspirational, that does not mean that disabled people cannot be inspiring. Franklin D. Roosevelt, a former US president and polio sufferer, is widely considered one of the 20th century’s most inspirational figures (Pearson & Podair, 2013). However, Roosevelt’s inspirational qualities arose not from his disability, but from his incredible political accomplishments (e.g. leading the United States through the Great Depression and World War Two). It is even possible that Roosevelt’s illness amplified his inspirational qualities, and cemented his position as a resilient underdog. The crucial difference between Roosevelt and inspiration porn is that his achievements were impressive in their own right, thereby inviting upward comparisons and genuine inspiration. Ultimately, Young (2014) and Roosevelt illustrate the importance of invoking inspiration correctly; its misuse patronises and objectifies disadvantaged individuals, while detracting from the accomplishments of countless actual figures of inspiration.

Self-Inspiration

In clear contrast with an inspirational successful other is the dubious construct of self-inspiration, and its close relationship with pride. van Kleef, Oveis, Homan, van Der Löwe and Keltner (2015) claim that the self can operate as an object of inspiration, and is elicited from triggers as diverse as treasured possessions, achievements and past travels. Research indicates that powerful individuals are more likely to obtain inspiration from personal experiences compared to less powerful people, and rate their own stories as more inspirational than stories that others had told them (van Kleef et al., 2015). This is not because powerful people simply have more inspirational experiences; the effect was replicated even when power was experimentally manipulated by asking participants to recall a time that they had power (van Kleef et al., 2015). This indicates that power permits the self to act as a source of inspiration.

Nevertheless, there are serious grounds to doubt the validity of self-inspiration as a discrete domain of inspiration. Firstly, self-inspiration is poorly defined and largely treated as self-evident. For instance, van Kleef et al.'s (2015) article commences with a quote from actor Matthew McConaughey citing "himself in ten years" as his inspiration, seemingly indicating that self-inspiration arises from a desire to become a future role model. However, the article later argues that self-inspiration is embedded in past experiences, such as books read or countries visited. This depiction reflects two separate accounts of self-inspiration that are never reconciled: self-inspiration derived from (a) an imagined future, and (b) past achievements. Moreover, the questionnaire used to measure self-inspiration contained items such as "I get enthusiastic when I talk to people about my life". This further confuses conceptualisations of self-inspiration; is self-inspiration the equivalent of enthusiasm about the self? Finally, self-inspiration is never explicitly defined at any stage throughout the article.

However, the most serious problem with self-inspiration is its blatant conflation with pride. When discussing pride it is important to acknowledge its dual nature: *hubristic pride* stems from a generalised excessively positive appraisal of self-worth, whereas *authentic pride* originates from genuine successes (Tracy and Robins, 2007; Williams & DeSteno, 2009). Participant examples of self-inspiration provided in van Kleef et al.'s (2015) study (e.g. becoming a pilot, graduating high-school) suggest that self-inspiration arises in response to discrete, genuine successes, closely mirroring authentic pride. Authentic pride also, like self-inspiration, motivates the desire for future success (Tracy, Shariff & Cheng, 2010); indeed, intrinsic motivation mediates the link between authentic pride and creative achievement (Damian & Robbins, 2012). Lastly, like self-inspiration, authentic pride is viewed as a positive emotion, and has even been found to improve likeability in social interactions (Williams & DeSteno, 2009). It seems likely that authentic pride and self-inspiration have been heavily conflated, casting doubt on the existence of self-inspiration as a discrete entity.

Conflation of inspiration and other transcendent emotions, such as elevation, admiration and awe, have previously been addressed by emphasising the internal nature of inspiration (Thrash et al., 2014). For instance, while both inspiration and elevation can be elicited by instances of moral beauty, only inspiration leads directly to introspection and emulation (Thrash et al., 2014). However, considering that the eliciting objects in both authentic pride and self-inspiration are aspects of the self (e.g. past achievements), the internal focus of inspiration no longer serves as a point of differentiation. It seems likely that authentic pride and self-inspiration actually represent the same construct, and perhaps a separate domain of inspiration. Nevertheless, it is unknown whether self-inspiration mirrors inspiration derived from external sources (e.g. role models, natural scenery) and possesses an equivalent emotional composition in terms of intensity, frequency or subjective experience.

Future research is needed to elucidate the nature of self-inspiration, and determine if it represents a genuine domain of inspiration.

How Does Inspiration Affect Behaviour?

The tripartite and component process conceptualisations (Thrash & Elliot, 2003, 2004) both emphasise motivation as the defining aspect of inspiration; unlike awe or elevation, inspiration occurs only when the intrinsic qualities of an object are perceived and motivate behaviour in an inspired individual. A notable example is the finding that the frequency inventors experience inspiration is a significant predictor of the number of US patents held (Thrash & Elliot, 2003), suggesting that the ability to become inspired often increases productivity and subsequent success. The intensity of inspirational experiences, however, was not correlated with an inventor's patent number, indicating that quantity may outweigh quality when considering inspiration's effect on productivity.

The effect of inspiration on productivity has also been examined in an experimental setting. Thrash and Maruskin et al. (2010) asked students to develop an original hypothesis for a psychology paper, and to self-report their present level of inspiration. Current inspiration positively predicted the creativity of a participant's writing at the between-person level, and peaks in inspiration positively predicted writing creativity within persons. Similarly, when participants were asked to write fiction their self-reported level of inspiration predicted productivity (i.e. inspired participants wrote more words) and writing efficiency (i.e. inspired participants retained a larger portion of words; Thrash and Maruskin et al., 2010). This indicates that creative inspiration motivates individuals to not only write more, but also to stay focused on a specific topic and express ideas while they are still concrete. These results suggest that inspiration is related to productivity and competency, at least in a creative context.

However, there are a number of limitations regarding the present research. Firstly, Thrash and Maruskin et al. (2010) did not experimentally manipulate inspiration. Considering that inspiration is notoriously difficult to elicit (see Thrash, Moldovan et al., 2014) a quasi-experimental approach is reasonable, but ultimately prevents a causal conclusion regarding the relationship between inspiration and productivity. In contrast, Gonzalez, Metzler, and Newton's (2011) experimental design found that exposing males to an inspirational video increased self-reported motivation; however, this study lacked an objective measure of increased output (e.g. word-count) which makes it difficult to ascertain ecological validity. Moreover, it seems likely that inspiration would be related to a greater number of motivational outcomes than simply productivity. Inspiration could potentially motivate higher levels of pain tolerance, physical endurance, or other tasks that are mentally or physical fatiguing. Indeed, qualitative research suggests that inspiration can improve motivation and even task performance (Figgins, Smith, Sellars, Greenlees, & Knight, 2016). Investigations of a range of motivational outcomes will continue to shed light on the effect of inspiration on behaviour.

Notably, the propensity for role models (particularly elite sports stars) to inspire others represents a rare area of considerable research. For instance, a study commissioned by VicHealth, an Australian governmental foundation aimed at promoting health in the state of Victoria, found limited evidence that role models increase sporting participation (Payne, Reynolds, Brown, & Fleming, 2003). Despite the existence of 13 elite athlete mentor programs in Victoria, the review found that only two had ever conducted an extensive internal review. A follow-up assessment of the "Active Girls Breakfast" program (which provides teenage girls the opportunity to interact with female athletes) found that a majority of participants reported their intention to participate more in sport and remain physically active. Notably, this study relied on self-report information and did not report if participant

physical activity actually increased. In contrast, a longitudinal study of a program in which elite sports stars mentored indigenous residents at a Juvenile Justice Centre determined that long-term interaction with the role models dramatically increased sport participation, team work, and overall self-esteem in the juveniles. This suggests that athletes have the capacity to inspire others to participate in sport, at least as long as their interaction is face-to-face.

The inspirational effect athletes have in the absence of direct contact is less clear. Grand sporting events, such as the Olympics, are commonly said to inspire amateur athletes and encourage grass-roots sporting participation. Indeed, the president of London's bid for the 2012 Olympic Games said that "London's vision is to reach people all over the world to connect them with the inspirational power of the Games so that they are inspired to choose sport" (Lee, 2006, p. 181-182), despite a 2009 review finding no evidence that prior Olympics have influenced sporting or healthy living behaviours (Weed, Coren, & Fiore, 2009). A recent review by Veal, Toohey, & Frawley's (2012) on the sporting legacy of the 2000 Sydney Olympic Games found mixed evidence for the existence of an effect. They reported that National Physical Activity Survey results suggested the Olympics did not significantly affect sporting participation rates, and only 4% of respondents had changed their sporting participation in response to the Olympics. Contrastingly, the review noted that data from the Australian Bureau of Statistics revealed an increase in participation of Olympic sports by children aged 5-14, lending some credence to the idea that the Olympics might inspire young people to participate in sport. This finding is partially undercut by the development of sporting facilities that accompany the Olympics; participation may have been increased due to an increase in sporting infrastructure, not inspiration. It is hence difficult to definitively argue that Olympic-induced inspiration caused increases in sporting participation among Australian youth.

Further research by Ramchandani, Kokolakis and Coleman (2014) has helped clarify when sporting events are deemed inspiring, and identified a number of moderating variables. A survey was completed by 7,458 live spectators of various sporting events, such as hockey, rugby and rowing, and questioned the extent that respondents had been inspired to participate in sport more frequently as a result of their experience. Results indicated that 57.3% of spectators reported feeling “inspired” or “strongly inspired” to participate in sport, although this occurred less frequently in response to “niche” sports such as figure skating and BMX events. Further, the degree to which spectators were inspired was negatively correlated with age (respondents in the 16-24 age group were the most likely to report inspiration) and positively correlated with general sporting interest. These findings mirror previous research, which suggests that age and sporting predisposition influences the effect of inspirational sporting events (Ramchandani & Coleman, 2012). Although this research suggests that sporting events cause individuals to feel inspired, whether these inspirational urges are acted upon remains a point of contention.

Conclusion

Despite immense progress in recent history, inspiration research is clearly marred by definitional ambiguities and gaps in the literature. Modern theoretical models have revolutionised the way we consider inspiration, particularly Thrash and Elliot’s (2003, 2004) tripartite and component process conceptualisations, and helped to clarify its relationship with transcendent emotions and personality traits. However, there still exist a number of unanswered questions, especially with regards to underdogs, self-inspiration, and downward comparisons. In particular, the concept of novel-context extension (i.e. the motivational effect of inspiration in an unrelated domain) remains untested and represents an area ripe for additional study. The present thesis will therefore focus on examining novel-context extension in detail, and experimentally test its efficacy in a sporting context. This research

will hence address one of the innumerable gaps in the inspiration literature, and further elucidate its role in human existence.

The Validity of Extension: Does Context Determine Inspiration?

Esteemed Hollywood actor Matthew McConaughey began his speech to the Texas Longhorns football team by stating that “I find that when I’ve done my best work as an actor, it was only when I pushed myself to be better than I ever thought I could be” (Dodds, 2014). McConaughey had been invited by The University of Texas Coach Charlie Strong to inspire his players in the lead-up to an important game; the actor responded with a commanding speech that outlined the importance of hard work and dedication, primarily drawing upon his experiences as an actor. Strong’s assumption was that successful individuals are inspiring regardless of their domain, and that footballers would extend McConaughey’s message on the importance of hard-work as an actor to a football context. This process of perceiving and reproducing an object’s inspiring qualities is known as *extension* (Thrash et al. 2014); however, it is not known whether inspirational qualities can be extended into an entirely novel context. *Novel-context extension* hence represents an intriguing and untested concept, and the focus of the present study.

Inspiration has long been used to explain how people shift from the mundane to the incredible, and occurs when a transcendent object (e.g. a successful athlete) is perceived and motivates the subsequent actualisation of its internal qualities (e.g. strong work ethic) into reality (e.g. the inspired person is motivated to train harder; Thrash & Elliot, 2003). Although inspiration is often used to explain what motivates athletes to achieve their best (Arthur, Hardy, & Woodman, 2012), few studies have actually examined inspiration in sport. A rare exception is a qualitative study which found that athlete experiences of inspiration typically come from three dominant sources: personal performance, achievements, and thoughts; examples of leadership; and role models (Figgins et al., 2016). Although role models, like Matthew McConaughey, can come from a variety of domains, athletes almost exclusively reported inspiration from others that had achieved success in sport (e.g. a former sporting

professional), thereby possibly undermining the importance of novel-context extension. Similarly, while motivational speeches were cited as example of inspiring leadership, these were again predominately delivered by a team's coach or manager. Participant inspiration accounts also described a range of affective and behavioural effects, including an increased propensity to train, heightened motivation during sports matches, and even improved athletic performances. However, this research was purely interview-based, and did not examine whether these behavioural effects actually occurred.

Two other studies have shed light on the propensity for inspiration to increase task performance in a sporting context. Gonzalez et al. (2011) found that a video clip of actor Al Pacino delivering an inspirational sports-related speech (from the film *Any Given Sunday*) increased self-report levels of inspiration (including being “inspired to compete, play, and perform”) and dominance, and decreased amotivation (the absence of motivation) in male college athletes. A strength of this study is that its control condition (i.e. Al Pacino giving non-inspirational sporting instructions) closely mirrored the experimental condition; participants exposed to the control video reported decreased inspiration and increased amotivation. This suggests that inspirational speeches can inspire athletes in a sporting context, although again the study did not test whether this actually translates into an increased athletic performance. Furthermore, a correlational study assessing 347 adolescent tennis players found that inspiration frequency was significantly positively correlated with mental toughness (Gucciardi, Jackson, Hanton, & Reid, 2015). Both studies suggest that inspiration can be advantageous in sports, but do not indicate whether inspiration can come from an object not grounded in a sporting context (i.e. novel-context extension).

The concept of extension is rooted in the transmission model (Thrash, Maruskin et al., 2010). This model conceptualises inspiration as the process by which the qualities of the evocative object (e.g. McConaughy's work ethic) are perceived by an individual and

extended into their own life (Thrash et al., 2014). Extension could involve a close replication of the evocative stimulus (e.g. an actor finding inspiration in McConaughey's message of hard-work), or an abstraction of certain core qualities and their re-application in a novel context (e.g. an athlete perceiving McConaughey's message and reapplying it in a sporting context). The motivational speaking industry itself relies upon the premise of novel-context extension. For instance, legendary Rugby League Coach Wayne Bennett is frequently hired as a motivational speaker to inspire corporate audiences (e.g., employees of the National Australia Bank, Virgin Australia Airlines, and shipping company E. Sime Group) despite lacking any notable business expertise (Wayne Bennett- Rugby League's Undisputed Super Coach, 2016). Similarly, people are often motivated to read the biographies of famous people (e.g. musicians, actors, and presidents) to seek inspiration. This also represents novel-context extension; the readership of a biography is not likely confined to people that share the famous person's profession. However, despite its prevalence, it is unknown whether novel-context extension truly occurs and, if so, under what circumstances.

Lockwood and Kunda's (1997) research represents perhaps the only direct examination of novel-context extension. The experimenters recruited 50 female university students who were studying to be either accountants or teachers and exposed them to a bogus newspaper article describing either a model accountant or teacher. Participants then completed a questionnaire that assessed their perceived self-competency regarding career success. Participants exposed to a successful other relevant to their own field (e.g. a teaching student exposed to a successful teacher biography) reported higher self-evaluations than those exposed to an irrelevant model, suggesting that successful others are only inspiring when they are seen as self-relevant. This indicates that context strongly influences the capacity for a successful experience to be inspiring, possibly undermining the viability of novel-context extension.

However, due to methodological ambiguities, there are two possible explanations of these results. Firstly, it is possible that the aspiring accountants did not view a successful teacher as relevant to the task of accounting, while teaching students did not view a successful accountant as relevant to the task of teaching. This interpretation undermines novel-context extension and suggests that successful others are only inspiring in their specific domain. If this account is correct, the aspiring teachers might have found the successful accountants inspirational when completing an accountancy-related task, like a tax return, and the aspiring accountants could have found a successful teacher inspirational when teaching an accountancy class.

An alternative explanation is that participants simply found it difficult to relate to the irrelevant successful other. This interpretation suggests that inspirational objects need to be seen as relevant to the individual to have an effect, irrespective of the task at hand. Crucially, this interpretation does not threaten extension as it allows for inspirational objects to motivate individuals in novel contexts. In their study, Lockwood and Kunda (1977) emphasised the role model's career-specific professional achievements (the successful teacher was described as having motivated students and the successful accountant was one of the youngest employees to receive a partnership at an accounting firm). If the role model descriptions emphasised points of similarity with participants (e.g. I am a university graduate), or portrayed their qualities in more general terms (e.g. I am a hard worker), it may have increased their relevance to participants and subsequent inspirational impact. This account lends itself to the concept of extension, which suggests that universal qualities, such as competence and perseverance, represent universally inspiring qualities.

The Present Study

It is apparent that novel-context extension has hitherto escaped rigorous scientific scrutiny. Two experiments were hence conducted to investigate this concept and determine

under what circumstances inspirational content can be inspiring in a novel context. Participants in both experiments completed a vivid recall task in which they wrote about an event that was either: specifically related to the task at hand (inspiration-related), an unrelated inspirational event (inspiration-unrelated), or a positive event (control). Participants in the inspiration conditions were expected to endorse report higher levels of inspiration than participants in the control condition. More importantly, it was hypothesised that participants in the inspiration-unrelated condition would persist at holding a handgrip longer than control participants, thereby demonstrating novel-context extension. However, due to its direct relevance to the task, participants in the inspiration-related condition were hypothesised to hold the handgrip longest. Experiment 2 additionally examined the way the handgrip task was terminated for each participant. Each handgrip task ended because the participant either (1) “gave up” by saying *stop* (i.e. decided that holding the handgrip had become too uncomfortable) or (2) could not physically hold the handgrip together any longer (i.e. terminated due to fatigue). It was predicted that participants in the inspiration conditions would be less likely to give up than participants in the control condition, thereby demonstrating increased perseverance, and that this effect would be strongest in the inspiration-related condition due to its direct task-relevance. Finally, it was hypothesised that relevant personality variables (e.g. trait inspiration, self-esteem) may moderate the relationship between condition and handgrip score.

Experiment 1

Method

Participants

The sample consisted of 25 males and 50 females aged from 17 to 52 years ($M = 21.43$, $SD = 6.2$). Forty-three participants were Macquarie University students ($M_{age} = 20.3$, $SD_{age} = 5.81$) completing a first year psychology course and were recruited for course credit

through an online participation pool (SONA). Thirty-two participants were community members ($M_{age} = 22.94$, $SD_{age} = 6.46$) and participated for \$15. Five participants were excluded from manipulation check and handgrip analyses: two participants indicated suspicion about the study's cover story, two control participants wrote about inspirational events (success or achievement), and another participant had very poor English skills. A further three participants who had difficulty following experimental procedure for the handgrip task, and three participants who noted that they were injured or tired prior to the second session, were excluded only from handgrip analyses. Thus, 64 participants were included in all analyses.

Materials and Procedure

The Macquarie University Faculty of Human Sciences Ethics Committee granted ethics approval prior to the study's commencement. Participants were then recruited for the study, which was titled "A Study of Personality, Writing and Physical Endurance". Each participant attended two sessions that took place on separate days.

Session One

Upon entering the lab, participants were seated at a desk hosting a laptop and completed an informed consent form. The participants were given the cover story that the experiment was examining whether physical endurance influences writing style (e.g. use of tone, tense and word choice). The duration of the first session was 15 minutes.

Handgrip Task One (Baseline). Participants were given a spring coil handgrip that offered 10kg of resistance and were asked to close the handgrip with their dominant hand. The task required participants to hold a 20 cent coin between the arms of the handgrip for as long as possible. To ensure technique standardisation, each participant was required to place their forearm on the table in the same position for the duration of the task (marked by tape). After watching the experimenter demonstrate the task, participants were asked to hold the

coin using the handgrip for one second to ensure that they were sufficiently familiar with the procedure. Participants then commenced the handgrip task, which was timed by the experimenter using a stopwatch. Timing began as soon the participants commenced gripping the handgrip and stopped when the suspended coin fell from between the handgrip arms.

Demographics and Personality Questionnaires. Participants then provided demographic information (i.e. gender, age) and completed four personality scales. All questionnaires were programmed using Qualtrics survey software and presented on a laptop. The following four personality scales were presented in random order, and the order of items within each scale was randomised.

Physical Exercise Engagement. The Exercise Engagement scale (see Appendix A) assessed the relevance of sport and exercise to the respondent. It was created for the present study to assess the relevance of the sport-related inspiration vivid recall task to inspiration-related participants. Participants rated the extent to which they endorsed six statements using a five-point Likert scale (1=strongly agree, to 5=strongly disagree), such as “Sport is important to me” and “I am an athletic person.” These items were selected so that a high score on this scale would indicate a high level of interest in sport and exercise. The Cronbach’s alpha for this scale was high at .90.

Academic Engagement. The relevance of academia to the participant was assessed with the Academic Engagement scale (Appendix B). This scale was also created for the present study to assess the relevance of the academic inspiration vivid recall task to inspiration-unrelated participants. Participants similarly rated the extent to which they endorsed statements using a five-point Likert scale (1=strongly agree, to 5=strongly disagree), such as “I enjoy understanding difficult concepts” and “My education is important to me.” These items were selected so that a high score on this scale would indicate a high level of interest in academia. The scale’s Cronbach’s alpha was an acceptable .77.

Trait Inspiration. The dispositional level of inspiration experienced by each participant was measured using the Inspiration Scale (Thrash & Elliot, 2003). This was comprised of the following four statements: “Something I encounter or experience inspires me”, “I experience inspiration”, “I am inspired to do something”, and “I feel inspired”. Participants rated on a seven-point Likert scale how often each item occurs (1=never, to 7=very often) and how deeply or strongly in general (1=not at all, to 7=very deeply or strongly). The present study found a Cronbach’s alpha of .87.

Self-Esteem. Participant self-esteem was assessed using the Rosenberg Self-Esteem scale (Rosenberg, 1965). This scale is highly correlated with trait inspiration (Thrash & Elliot, 2003), and consists of ten statements including “I feel that I’m a person of worth, at least on an equal plane with others” and “I am able to do things as well as most other people”. Participants rated how strongly they agreed or disagreed with each statement on a 4-point Likert scale (1=strongly disagree, to 4=strongly agree). The Cronbach’s alpha in the present study was .925.

Condition Allocation. After completing the questionnaires, participants were assigned one of three writing topics (inspiration-related, inspiration-unrelated, or control). They were told there were 25 different writing topics on paper slips in a box and were instructed to pull one of the folded slips out at “random”. In actuality, the participant’s writing topic had been determined prior to the session and all paper slips contained the same topic. This deception was necessary to ensure that the participant did not know that the purpose of the task was to make them feel inspired (or happy in the control condition). The participant was then shown a sheet featuring 25 topics (i.e. 24 fictitious topics and the topic allocated to the participant) and told to indicate the topic they had “chosen” from the box; it was thought that by exposing the participant to the “other topics” the deception would seem more believable.

There were three possible topics that a participant could be allocated. Inspiration-related participants were told to “think about a time you felt inspired in a sporting context.” It was reasoned that the handgrip task and sports were relatively closely related and therefore represented the same inspiration domain. They were then given the following suggestions: “You could describe a coach or athlete that was inspirational. You might like to describe an event, such as a sports team winning against the odds, which inspired you.”

Inspiration-unrelated participants were told to “think about a time you felt inspired in an academic context.” Considering that the vast majority of participants were university students, it was expected that academia was a domain that the participants would be sufficiently familiar with. They were also given suggestions: “You could describe a teacher or student that was inspirational. You might like to describe an event, such as an engaging presentation, which inspired you.”

Finally, control participants were told to “think about a time you felt happy unrelated to personal achievement or success.” Happiness was chosen because it mirrors the positivity elicited by inspiration, but not its motivational component. Control participants were instructed to avoid stories of personal achievement and success in order to minimise accidental instances of self-inspiration. They were additionally given the following suggestions: “You could describe a person that made you feel happy. You might like to describe an event, such as a time you received a gift, which made you happy.”

All participants were asked to think about their topic and ensure that they had an experience ready for the next session. In order to maintain the deception, participants were also asked to not discuss their topic or the experiment with anyone else. The experimenter confirmed that the participant understood their writing topic and confirmed a time for session two.

Session Two.

Like the first session, participants were seated at a laptop computer upon arriving and reminded of the purpose of the experiment. The duration of the second session was approximately 30 minutes.

Vivid Recall Task. Participants were first reminded of their topic and asked if they had thought of an appropriate experience to write about. If they had not thought of an experience participants were given a few minutes to think of one, although only one participant required this additional time. Participants were then instructed how to complete the writing task, which was divided into two parts. In the first section participants briefly outlined their personal experience (what happened and who or what was involved). Initial pilot testing indicated that participants often focused on recounting the event and paid only cursory attention to any emotions or feelings the experience elicited. Participants were hence asked to focus on the task's second section, which asked participants to describe how the experience made them feel and how it influenced their thoughts and behaviour. Participants were given 10 minutes to complete the task (they received a time warning after nine minutes had passed) and told to write as much as they could.

Time 1 Manipulation Checks. After indicating they had completed the writing task, participants were asked to complete a five-item manipulation check (see Appendix D) to assess their current emotional state and the effectiveness of the vivid recall task. Participants indicated the extent to which they were currently feeling the following: “inspiration”, “happy”, “powerful”, “competent” and “aroused”. This was completed using a seven-point Likert scale (1=not at all, to 7=very much).

Handgrip Task Two. Participants then completed a second handgrip task. Mirroring the first handgrip task, the experimenter demonstrated the task and asked participants to briefly practice for one second before commencing. The experimenter began timing the

second handgrip task once the participant commenced gripping and stopped timing when the suspended coin fell from between the handgrip arms.

Time 2 Manipulation Checks. Participants completed the manipulation check items again. They used a five-point Likert scale to rate how (a) *easy to write* and (b) *engaging* their topic was. Finally, in order to identify participants that were suspicious of the study's cover story, participants were asked to briefly describe the purpose of the experiment.

Debrief and Conclusion. The purpose of the experiment and all elements of the deception were revealed to participants at the end of the experiment. Participants were then offered the opportunity to re-consent to the use of their data for research.

Results

Overview of Analyses

Statistical Package for Social Sciences (SPSS; version 21.0) was used to analyse all data. An alpha level of .05 was determined *a priori* to control the Type I error rate (rejecting the null hypothesis when it is actually true). Bonferroni tests with two-tailed *p*-values were used for all post-hoc analyses. Firstly, participant stories were coded for narrative themes. An Analysis of Variance (ANOVA) was then used to test manipulation checks, the main effect of the conditions on handgrip scores and interactions with moderators.

Coding of Stories

Story word-counts ranged from 453 to 87 words ($M = 242.16$, $SD = 76.37$). A one-way ANOVA revealed no significant differences between conditions on word-count, $F(2,68) = .275$, $p = .761$. The stories were analysed by two independent coders for narrative themes. In particular, the coders identified the focal object of inspiration (i.e. what caused the participant's inspiration in their story). Inter-rater agreement (73.3%, Cohen's $k = .722$) was high (Landis & Koch, 1977) and differences were resolved through discussion.

Inspirational role models (64%) were the most popular objects of inspiration in the inspiration-related condition (i.e. inspiration in a sporting context), of which 43.8% were famous athletes, 18.8% were amateur athletes (e.g. a school champion), and 31.3% were trainers or coaches. For instance, one participant wrote the following about her personal trainer: “Hearing Liz's transformation story made me believe that I can reach my fitness goals ... Liz has inspired me in more ways than one.” Notably, 16% of participants wrote about an inspirational role model that suffered from a disability. For example, one participant wrote about athlete Kayla Montgomery’s battle with *multiple sclerosis*. Other objects of inspiration included personal sporting success (16%), a positive sporting experience (e.g. inspired from the sense of community surrounding sport; 12%) and adversity (8%).

Similarly, 73% of participants in the inspiration-unrelated condition (i.e. inspiration in an academic context) wrote about inspiring role models, of which 68.4% were educators and 15.8% were family or friends. For example, one participant wrote: “In senior school (year 9), I took a science class with a teacher -Mr C- who was particularly inspiring because of his enthusiasm. As someone who had no interest in science, I ended up being so inspired I began to enjoy and excel in science.” Other objects of inspiration in the inspiration-unrelated condition included adversity (e.g. taking inspiration from being told that something was too difficult; 7.7% of participants), personal academic success (7.7%), interesting educational content (3.8%), and an inspiring educational environment (7.7%).

Finally, stories in the control condition (i.e. happiness unrelated to achievement or success) were analysed for narrative themes. The coders identified two stories in which the source of happiness was related to success or achievement; these participants were subsequently excluded from all further analyses. The story themes varied, although most were related to an environment or experience (e.g. skydiving; 36.4%), a casual social interaction (22.7%), or an intimate interaction (27.3%). A major concern was that, despite

experimental precautions (e.g. dictating that control participants could not write about success or achievement), a large number of stories contained themes that could be deemed inspirational. For example, one participant wrote the following regarding a picnic he had with his girlfriend: “I knew that this was the closest I had ever felt to her... I felt a calming radiance from her, because she has that special something that always makes me feel easy inside... she made me feel like the happiest person in the world.” It is very possible that this story elicited feelings of inspiration; indeed, this participant later endorsed feeling the maximum level of inspiration on the inspiration manipulation check item. Subsequent coding indicated that 71% of stories in the control condition contained elements of inspiration, meaning that it was not possible to simply remove these participants. This potentially confounded comparisons between the experimental and control conditions.

Statistical Assumptions and Demographics

The main dependent measure (handgrip difference score) was created by deducting participant's baseline handgrip score from their post-induction handgrip score. Positive handgrip difference scores indicated an improvement in holding time between the baseline and post-induction trial (i.e. increased physical endurance), whereas a negative score indicated a decline in holding time. Histogram analyses indicated positive skewness in handgrip difference scores (Skew = 1.057; SE Skew = .297) and age (Skew = 3.451; SE Skew = .297). Shapiro-Wilk Tests indicated that residuals for the handgrip difference score and all manipulation checks violated the ANOVA assumption of normality ($p > .05$). Non-normality was addressed using bootstrapping analysis. This process treats the experimental sample as a population, from which numerous samples (called bootstrap samples) are taken (Field, 2013). The mean of each bootstrap sample is calculated and used to create new confidence intervals and p-values. Bootstrapping hence does not alter the raw data, which is a common criticism of data transformations (Games, 1984).

Analyses indicated no notable differences in the types of participants that comprised each condition. A chi-square test showed that each condition had a similar proportion of men and women, $\chi^2(1) = .382, p = .826$, and community and university participants, $\chi^2(1) = .786, p = .675$. A one-way ANOVA similarly indicated no significant differences between the conditions in age, $F(2,68) = .120, p = .887$.

Manipulation Checks

Differences in pre-handgrip manipulation checks were assessed with one-way ANOVAs. The first set of manipulation checks were implemented immediately after the vivid recall task in order to assess its effectiveness. Significant differences between conditions were found on the inspiration manipulation check item, $F(2, 67) = 3.81, p = .027, \eta^2 = .102$. As hypothesised, inspiration-related participants ($M = 5.86, SD = .834$) reported feeling significantly more inspired than control participants ($M = 5.14, SD = 1.20$), $p = .017, d = .697$. However, inspiration-unrelated participants ($M = 4.92, SD = 1.47$) unexpectedly reported significantly less inspiration than inspiration-related participants, $p = .010, d = .787$, and did not differ from control participants, $p = .581$. Post-hoc analyses were repeated after removing four statistical outliers from the inspiration-unrelated condition (i.e. participants that endorsed a two or three out of a possible seven on the inspiration manipulation check item), but produced similar results.

There are a number of issues that may explain the failure of the inspiration manipulation check item for the inspiration-unrelated condition. Firstly, it is possible that control participants experienced an unacceptably high amount of inspiration, making it difficult to distinguish from the experimental conditions. However, considering that the manipulation check for the inspiration-related condition was successful, this does not offer a complete explanation. An alternative explanation is that the topic of academic inspiration was not sufficiently inspiring. While a one-way ANOVA revealed no significant differences

regarding how easy each topic was to write about, $F(2, 67) = 1.022, p = .365$, there were differences regarding how engaging each topic was, $F(2, 67) = 3.31, p = .043, \eta^2 = .099$. Post-hoc analyses indicated that control participants ($M = 5, SD = .186$) rated their story topic as significantly more engaging than inspiration-unrelated participants ($M = 4.27, SD = .219$), $p = .017, d = 3.59$, suggesting that academic inspiration was not as compelling to university students as originally predicted.

The only other pre-handgrip manipulation check approaching significance was the happiness item, $F(2, 67) = 1.91, p = .061, \eta^2 = .08$. Considering that performing contrasts only after a significant omnibus test reduces statistical power (Bernhardson, 1975), many statisticians recommend performing post-hoc tests even in the presence of a non-significant overall ANOVA (Hsu, 1997; Maxwell & Delaney, 2004; Wilcox, 2012). Post-hoc analyses were hence conducted and found that control participants ($M = 5.59, SD = 1.01$) reported feeling significantly more happy than inspiration-unrelated participants ($M = 4.81, SD = 1.27$), $p = .013, d = .68$, but not inspiration-related participants ($M = 5.32, SD = 1.13$), $p = .418$. It was predicted that all conditions would elicit comparable amount of happiness; these results again suggest that the inspiration-unrelated vivid recall task did not function as intended. Considering that inspiration is typically portrayed as an arousing experience, it was somewhat surprising that inspiration-related ($M = 3, SD = 1.75$) and inspiration-unrelated ($M = 2.81, SD = 1.58$) participants reported relatively low levels of arousal. It is possible that participants misunderstood the meaning of arousal; anecdotally, a few seemed amused while responding to the item, suggesting that it may have been misinterpreted (perhaps as sexual arousal).

The post-handgrip manipulation checks were also assessed with one-way ANOVAs. Considering that the manipulation checks were likely affected by participant performance in the handgrip task (i.e. participants who performed well may be more likely to rate themselves

as happier etc.), all participants who were excluded from handgrip analyses (i.e. participants that were injured for the seconds handgrip test or failed to follow instructions) were also excluded from the following analyses. Significant differences between conditions were found on the inspiration manipulation check item, $F(2, 61) = 5.891, p = .005, \eta^2 = .162$. Inspiration-related participants ($M = 5.16, SD = 1.12$) reported feeling significantly more inspired than control participants ($M = 3.76, SD = 1.22$), $p = .001, d = 1.2$, and inspiration-unrelated participants ($M = 4.21, SD = 1.5$), $p = .026, d = .718$. Mirroring the first inspiration manipulation check, there was no significant difference in inspiration between inspiration-unrelated and control participants, $p = .271$. This suggests that the inspiration-related condition consistently elicited a higher level of inspiration than the control condition throughout the handgrip task.

Additionally, there were significant differences between conditions regarding the power manipulation check item, $F(2, 61) = 3.84, p = .027, \eta^2 = .112$. Post-hoc analyses revealed that inspiration-related participants ($M = 4.79, SD = 1.08$) reported feeling significantly more powerful than control participants ($M = 3.62, SD = 1.16$), $p = .002, d = 1.04$. Considering that the inspiration-related condition was the only condition to significantly increase self-reported inspiration, this provides limited evidence for the assertion that inspiration may increase perceptions of self-power.

Inspiration and Handgrip Performance

An omnibus F test revealed no significant differences between conditions on handgrip difference scores, $F(2, 61) = 2.48, p = .170$, although the means did lie in the expected direction (see *Figure 1*). Moderation analyses of the relationship between condition and handgrip difference were conducted using participant type (i.e. paid or course credit), age, sex, educational engagement, exercise engagement, trait inspiration, and self-esteem, but

revealed no significant interactions. Overall, these results indicated that inspiration vivid recall tasks did not significantly increase the length of time participants held the handgrip.

Figure 1 shows the standard error statistics associated with each condition's handgrip difference score, and suggests that there may have been a large degree of within-group variability. It is possible that this variability reflected imprecision in the handgrip task. In particular, a number of participants told the experimenter that they had failed the handgrip task prematurely; that is, the coin accidentally slipped from between the handgrip arms before the participant felt fatigued. A plausible explanation is that, in the less strenuous early stages of the task, participants became complacent, lost concentration, and relaxed their grip causing the coin to drop. This may have introduced additional error into the handgrip scores, thereby obscuring significant differences between the conditions.

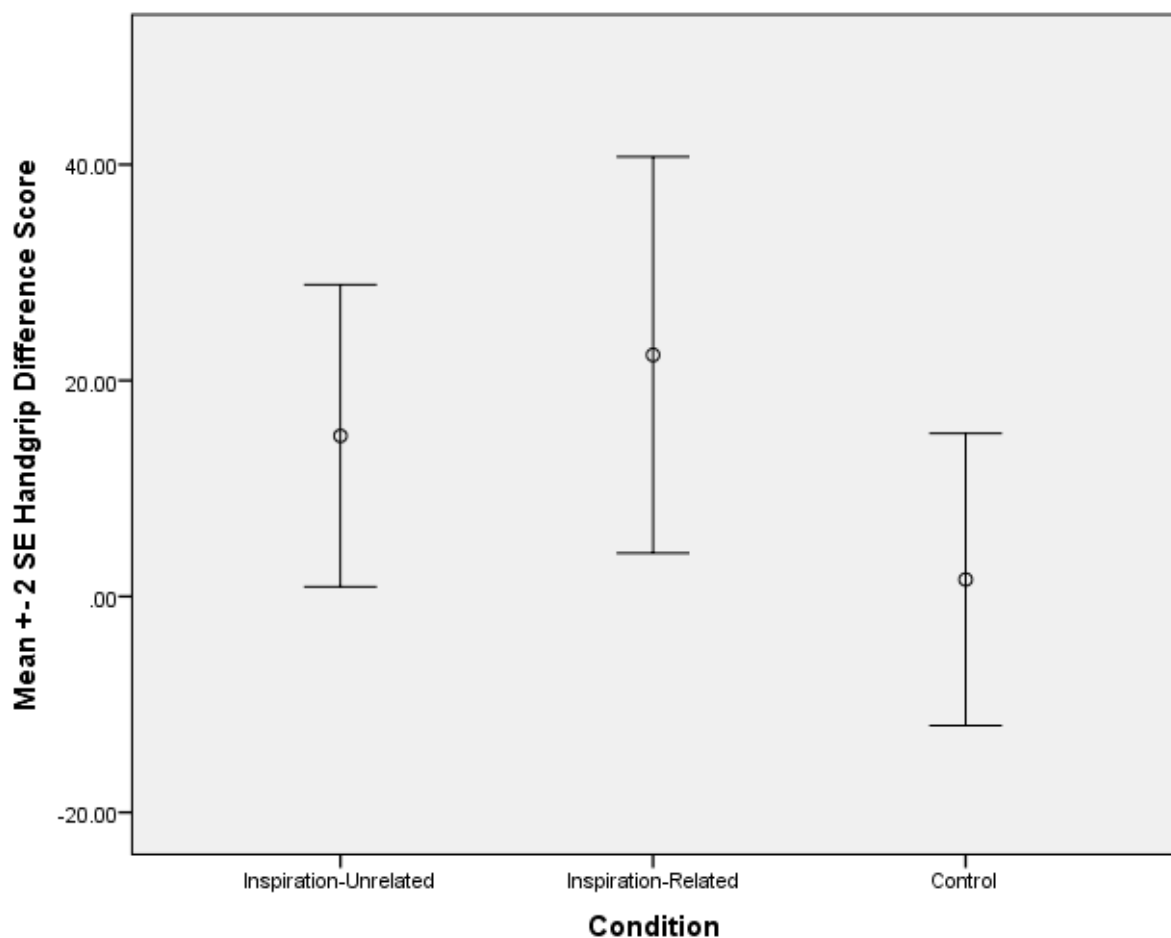


Figure 1. Mean handgrip difference for each condition, with error bars.

Discussion

It was predicted that inspiration-unrelated participants would hold the handgrip for significantly longer than control participants, thereby demonstrating novel-context extension, and that this effect would be enhanced for inspiration-related participants. Surprisingly, analyses revealed no significant differences between conditions on handgrip score, indicating that the inspiration conditions did not increase physical endurance. This may undermine previous research suggesting inspiration has a positive effect on physicality (Figgins et al., 2016; Gonzalez et al., 2011; Gucciardi, 2015), and makes any conclusions about the viability of novel-context extension difficult to make.

However, the results of Experiment 1 also revealed a number of methodological problems. For instance, the control condition elicited an unexpectedly high level of inspiration. The control condition was intended to produce a similar level of positivity as the inspiration conditions, while not eliciting inspiration itself. Although efforts were made to prevent control participants from writing about an inspiring experience (participants were told not to write about achievement or success), it became apparent that many coincidentally wrote about inspiring experiences, such as romantic love. In sum, the happy vivid recall task might have inspired control participants to persevere longer with the handgrip task, thereby making physical endurance improvements among participants in the inspiration conditions difficult to detect.

Another issue concerned the level of inspiration elicited by the academic inspiration vivid recall task. Inspiration-unrelated participants reported significantly less inspiration than inspiration-related participants and did not differ from control participants, suggesting that the academic inspiration vivid recall task did not elicit sufficient inspiration. It was initially assumed that a sample consisting almost entirely of university students would be able to generate compelling academic inspiration stories (e.g. an inspiring teacher or lecturer).

However, participants rated the academic inspiration topic as unengaging and, anecdotally, often remarked that they were infrequently inspired in an academic context. It seems self-evident that inspirational objects are necessarily engaging; hence, a lack of engagement may explain the failure of the academic inspiration vivid recall task. Ultimately, it is likely that inspiration-unrelated participants simply did not experience enough inspiration to affect their physical endurance.

Finally, there was reason to doubt the accuracy of the handgrip task. Firstly, it was difficult to ensure that the first and second handgrip tasks were completed under identical conditions. In fact, a number of participants were excluded from analyses because they injured themselves in the interim between handgrip tasks. Moreover, it seemed apparent that some participants became distracted during the handgrip task (especially soon after starting, when the task was less taxing) and prematurely dropped the coin. These problems may have introduced excessive error into handgrip difference scores and obscured differences between the conditions.

Experiment 2

Experiment 2 endeavoured to re-examine the existence of novel-context extension by rectifying the methodological short-comings of Experiment 1. Firstly, the “happy” control condition was replaced with an “amusement” control condition. It was reasoned asking participants to write about a time they felt amused would still be a positive experience; however, due to the specificity of the task, it would also be very unlikely to elicit inspiration (in contrast to the broad term “happy”). The vivid recall methodology in the inspiration-unrelated condition was also altered to better induce inspiration. Considering that creative inspiration is likely the most prevalent and well-researched domain of inspiration (see Oleynick, Thrash, LeFev, Moldovan, & Kieffabler, 2014 for a review), it was predicted that inspiration in a creative context would be a more engaging and accessible topic than

academic inspiration. These changes were expected to ensure that the inspiration-unrelated condition elicited more inspiration than the control condition, and an approximately equal amount as the inspiration-related condition.

There were also a number of amendments made to improve the reliability of the handgrip task. Firstly, the problem of participants not completing the handgrip task was addressed by restricting the activities participants could undertake immediately prior to the experiment. Participants were told to not exercise for two hours prior to the experiment, and asked to tell the experimenter if anything had occurred that might jeopardise their physical endurance performance (e.g. injury, illness). More importantly, Experiment 2 measured handgrip endurance using an electronic handgrip dynamometer. This device measures the force exerted in kilograms (kgf) when holding the handgrip, and has been used previously to measure physical endurance (e.g. Hone & McCullough, 2015; Ukegbu, Maselko, Malhotra, Perera, & Østbye, 2014). Participants were required to hold the handgrip dynamometer for as long as possible at a specified kgf until they said *stop*, or deviated from their specified kgf by more than .05kgf for three seconds. This revised methodology was designed to increase preciseness and reduce the amount of error associated with the handgrip task.

This task had a number of strengths over the previous handgrip methodology. Firstly, the task calibrates an appropriate level of resistance for each participant by first assessing their Maximal Voluntary Contraction (MVC; i.e. a participant's maximum handgrip strength). This allowed the endurance task to be tailored to each individual participant, representing an obvious advantage over the fixed 10kg handgrip previously used. The .05kgf lee-way was also less punishing to participants that were momentarily distracted; they were allowed three seconds to return to the required kgf range. Finally, as a baseline endurance task was no longer needed, the experiment could now be conducted in a single session.

The dual method of handgrip task termination was used to assess participant perseverance. It was reasoned that inspired participants would be more likely to fail the task from fatigue (i.e. they could no longer hold the handgrip at the required kgf) than from giving up (i.e. saying *stop*). Instructions specifically stated that saying *stop* meant the participant had given up; participants in the inspiration conditions were predicted to be inspired to resist this and instead persevere until fatigue. A potential downside to using a handgrip dynamometer was that the endurance test was no longer measuring physical endurance improvement (i.e. the baseline MVC test examined strength, not endurance), which is why the previous handgrip methodology was used in Experiment 1. Nevertheless, it was expected that the improvement in accuracy would offset this disadvantage and warrant its inclusion in Experiment 2.

Method

Participants

The sample for experiment two consisted of 20 males and 57 females aged from 18 to 59 years ($M = 21.49$, $SD = 6.17$). Fifty were Macquarie University psychology students ($Mage = 21.62$, $SDage = 7.33$) and participated for course credit. The remaining 27 participants were community members ($Mage = 21.23$, $SDage = 2.96$) and participated for \$15. Two participants that indicated suspicion about the study's cover story, and four control participants who wrote about inspiration, were excluded from manipulation check and handgrip analyses. A further three participants were excluded only from handgrip analyses: one participant had sustained a hand injury, and another was an extreme outlier. The final sample was 70 participants.

Materials and Procedure

The second experiment closely followed the format of Experiment 1, albeit across a single session. Upon entering the laboratory participants were seated at a laptop and asked to

complete a debrief form. It was then confirmed that participants had not exercised in the past two hours, and that nothing had occurred that might impact their physical endurance. If any issue was raised then the experiment was rescheduled (this did not occur with any participants).

MVC Assessment. Participants were first asked to sit comfortably and hold a Camry Electronic Handgrip Dynamometer (Model EH101) in their dominant hand, with their forearm resting on the table. They were then required to grip the handgrip as hard as possible for three seconds; this was repeated three times, with a 30 second rest period between attempts. The participant's highest kgf was taken as the participant's MVC. Participants were then told that they would later complete a physical endurance task, which would require the handgrip to be held at 30% of their MVC for as long as possible. The experimenter demonstrated the task and asked the participant to practice the task for 10 seconds, although participants were allocated additional practice time if the experimenter was not satisfied that they understood the task instructions (it was noted if additional practice time occurred). Once the participant had stopped practising, the experimenter began the stopwatch measuring rest-time.

Personality Questionnaires. Participants then completed a battery of personality questionnaires. These were identical to the questionnaires presented in Experiment 1, aside from the addition of the Creative Engagement scale and Big Five Inventory (BFI; Openness to Experience subscale only), and exclusion of the Academic Engagement scale. Reliability analyses again found strong internal consistency for exercise engagement ($\alpha = .943$), trait inspiration ($\alpha = .901$), and self-esteem ($\alpha = .908$).

Creative Engagement. The Creative Engagement scale (see Appendix C) assessed the relevance of creative pursuits to the respondent. It was created for the present study to assess the relevance of the vivid recall task to participants in the inspiration-related condition.

Participants rated the extent to which they endorsed six statements using a five-point Likert scale (1=strongly agree, to 5=strongly disagree), such as “Being creative is important to me” and “I am interested in art.” These items were selected so that a high score on this scale would indicate a high level of interest in creative pursuits. The Cronbach’s alpha for this scale was adequate at .763.

Openness to Experience. The BFI (John, Donahue, & Kentle, 1991) was used to assess Openness to Experience. It was reasoned that participants high in Openness to Experience, which is characterised by imagination and a preference for variety (McCrae & John, 1992), may be more capable of experiencing novel-context extension. Participants were required to complete the sentence “I am someone who...” for 10 items, including “is original, comes up with new ideas” and “is ingenious, a deep thinker”, and rate their agreement using a five-point Likert scale (1=disagree strongly, to 5=agree strongly). John, Naumann, and Soto (2008) reported an acceptable Cronbach’s alpha for Openness to Experience ($\alpha = .83$) in a Californian student sample. The present study reported a lower Cronbach's alpha of .573, suggesting relatively poor internal consistency.

Vivid Recall Task. Participants then “selected” their writing topic from a box in a method identical to Experiment 1, and were given a few minutes to think of an appropriate experience. Each participant wrote about either inspiration in a sporting (inspiration-related; identical instructions to Experiment 1), or creative context (inspiration-unrelated), or wrote about a time they felt amused (control). Inspiration-unrelated participants were told to “think about a time in your life when you felt inspired in a creative context”. They were also advised they could: “describe a time you heard a piece of music or saw an artwork and became inspired to create something. You might like to write about a time you had a creative idea and became inspired.” These instructions mirrored the instructions given to inspiration-related participants. Control participants were similarly told to “think about a time in your life when

you felt amused” and were told: “You could describe a time you heard a funny joke, or when something funny happened.” They were also directed to recall a specific event that was amusing, not just a general period of time, replicating a procedure that has successfully elicited amusement in previous research (Griskevicius, Shiota, & Neufeld, 2010). All participants then completed the vivid recall task in an identical method to Experiment 1.

Time 1 Manipulation Checks. The first set of manipulation checks, which was more extensive than those completed in Experiment 1, were then completed. The “arousal” item was replaced by “energetic” and “excited”, which were taken from the Perceived Arousal Scale (Anderson, Deuser, & DeNeve, 1995) to assess arousal. These items were judged to be less ambiguous, thereby reducing the likelihood of misinterpretation. A “motivation” item was also added to confirm that participants in the inspiration conditions experienced increased motivation, and an “amusement” item was included to assess the validity of the control condition’s vivid recall task.

Handgrip Dynamometer Endurance Task. Participants were then reminded how to complete handgrip endurance task. In particular, participants were told: “The task will end when you deviate from this figure (i.e. 30% of a participant’s MVC) by more than 0.5kgf for more than 3 seconds, or indicate that you give up by saying *stop*.” This ensured that participants knew that saying *stop* was the equivalent to giving up; participants were told to hold the handgrip for as long as possible and hence had a motivation to not give up. When ready, the participant held the handgrip dynamometer for as long as they could (the experimenter also stopped the stopwatch measuring rest-time). After task termination the experimenter recorded the endurance duration, the cause of task termination (i.e. participant gave up, or deviated from allocated endurance weight for more than three seconds), and rest-time.

Time 2 Manipulation Checks. Participants completed the same manipulation checks as Time 1, assessed the degree to which they found their story (a) easy to write and (b) engaging, and explained what they thought the purpose of the experiment was (identical to Experiment 1).

Debrief and Conclusion. All elements of the deception were revealed to participants at the end of the experiment. Participants also completed a debrief consent form.

Pilot Test

A short pilot test examined the effectiveness of the revised vivid recall instructions use in Experiment 2. A sample of 12 males and 16 females, aged from 17 to 54 years ($M = 21.64$, $SD = 7.23$), completed the revised vivid recall tasks and subsequent manipulation check items. Nineteen were community members ($M_{age} = 22.89$, $SD_{age} = 8.43$) and participated for \$15, while nine were Macquarie University psychology students ($M_{age} = 19.2$, $SD_{age} = 2.2$). As previously outlined, participants wrote about either an inspiring sporting experience, an inspiring creative experience, or a time they felt amused, and then completed manipulation check items.

A one-way ANOVA found significant differences between conditions on the inspiration manipulation check item, $F(2, 25) = 4$, $p = .031$, $\eta^2 = .242$. Further post-hoc analyses indicated that inspiration-unrelated participants ($M = 5.25$, $SD = 1.48$) reported significantly more inspiration than control participants ($M = 3.8$, $SD = .919$), $p = .027$, $d = 1.18$. As expected, inspiration-related participants ($M = 5.2$, $SD = 1.4$) similarly reported more inspiration than control participants, $p = .013$, $d = 1.8$. This suggests that adopting the amusement vivid recall task topic successfully reduced the inspiration experienced by control participants. Similarly, the absence of a significant difference between the inspiration conditions suggests that inspiring creative experiences are as effective at eliciting inspiration as inspiring sporting experiences.

There were also significant differences between conditions on the amusement manipulation check item, $F(2, 25) = 5.39, p = .011, \eta^2 = .301$. As expected, post hoc analyses indicated control participants ($M = 5.9, SD = 1.1$) elicited more amusement than inspiration-related ($M = 4.7, SD = .823$), $p = .013, d = 1.24$, and inspiration-unrelated participants ($M = 3.75, SD = 2.12$), $p = .028, d = 1.27$. Finally, in contrast with Experiment 1, the degree to which participants found their story topic engaging did not differ between conditions, $F(2, 25) = .267, p = .768$. This indicates that the three vivid recall topics were equally engaging.

Results

Overview of Analyses

Statistical analyses were completed in an identical manner to Experiment 1; participant stories were coded, and one-way ANOVAs were used to test manipulation checks and the main effect of conditions on handgrip scores. Handgrip analyses were repeated with relevant moderators, and an Analysis of Covariance (ANCOVA) was used to control for rest-time. Finally, a logistical regression examined the effect of condition on the type of handgrip termination (i.e. gave up or fatigue).

Coding of Stories

Story word-counts ranged from 22 words to 376 words ($M = 172.28, SD = 65.59$). A one-way ANOVA analysing differences between conditions on word-count was marginally significant, $F(2,67) = 3.08, p = .052$. Post-hoc analyses revealed that inspiration-related participants ($M = 189.58, SD = 12$) wrote significantly more words than inspiration-unrelated ($M = 152.21, SD = 12.75$), $p = .038, d = 3.02$, and control participants ($M = 151.81, SD = 13.35$), $p = .049, d = 2.98$. Nevertheless, word-count was significantly positively correlated with both trait inspiration, $r = .277, p = .020$, and Time 1 inspiration manipulation checks, $r = .425, p < .001$, reflecting previous research that suggests inspiration increases writing productivity (Thrash & Maruskin et al., 2010).

The coding method mirrored Experiment 1, and inter-rater agreement (67.5%, Cohen's $k = .651$) was adequate (Landis & Koch, 1977). Inspiration-related participants largely reflected their Experiment 1 counterparts; inspirational role models (71.5%) were still the most reported object of inspiration, with famous athletes (28.6%) and non-famous athletes (28.6%) the most popular. Positive sporting experiences (10.7%) and adversity (7.1%) also featured in some stories.

The range of objects in the inspiration-unrelated condition (i.e. inspiration in a creative context) was far more diverse. Seeing an artwork (16.7%) or hearing music (16.7%) were the most common, although this is unsurprising considering they were both suggested to participants as examples. For example, one participant wrote about listening to singers from the TV show 'The X-Factor': "I felt like I was in this realm of positivity where the world was calling me to take in the light from amazing voices that I listened to. It literally sparked a flame in me to take up singing as a passion." Other inspirational objects included an inspiring artist or musician (12.5%), a creative idea (8.3%), and creative success (8.3%).

Analysis of the control condition (i.e. write about an amusing experience) revealed that the most common topic was another's misfortune (32%). For example: "I was at work with my colleagues behind the bar. We thought it would be funny to replace one of the girl's... drinks with a drink filled with salt and pour Tabasco sauce into her straw. We watched her take a sip and all started laughing." Participants also wrote about jokes they had heard (20%) and other funny situations (28%). The coders identified four participant story topics that contained major inspirational elements: winning a prize, watching Australian athlete Mack Horton winning gold at the Olympics, being inspired by a comedian, and inspiration from a creative idea. To ensure that these participants did not inflate inspiration in the control condition, they were excluded from subsequent analyses.

Statistical Assumptions and Demographics

Shapiro-Wilk Tests indicated that the handgrip score and all manipulation checks violated the ANOVA assumption of normality ($p > .05$), which was again corrected using bootstrapping analysis. A chi-square test showed that the proportion of men and women in each condition differed, $\chi^2(1) = 6.434, p = .04$. Although there is disagreement regarding appropriate chi-square post-hoc tests, a common method is to examine the standardised residual associated with each cell and reject the null hypothesis only if it exceeds 2 or -2 (Sharpe, 2015). No standardised residuals exceeded this, which suggests the proportion of men and women in each condition were not wildly dissimilar. A further chi-square test suggested that there were similar proportions of community and university participants, $\chi^2(1) = 4.364, p = .113$, and a one-way ANOVA indicated no significant differences in age between conditions, $F(2,67) = .192, p = .826$.

Manipulation Checks

The inspiration manipulation check only marginally approached significance, $F(2, 67) = 2.49, p = .09, \eta^2 = .069$. Further analyses revealed that control participants ($M = 4.14, SD = 1.46$) were marginally less inspired than inspiration-related ($M = 4.92, SD = 1.26$), $p = .056, d = .572$, and inspiration-unrelated participants ($M = 4.96, SD = 1.4$), $p = .061, d = .573$. There was no significant difference between the inspiration conditions, $p = .936$, indicating that neither condition elicited more inspiration than the other. Notably, when the inspiration conditions were combined they elicited significantly more inspiration than the control condition, $p = .029, d = .573$. The amusement manipulation check also approached significance, $F(2, 67) = 3.02, p = .056, \eta^2 = .083$. Post-hoc analyses indicated that control participants ($M = 4.95, SD = 1.47$) reported significantly more amusement than inspiration-related participants ($M = 3.92, SD = 1.41$) $p = .022, d = .715$, but unexpectedly not more than inspiration-unrelated participants ($M = 4.26, SD = 1.45$) $p = .135$.

There were no other significant manipulation checks or significant differences between conditions regarding how easy, $F(2, 67) = .42, p = .659$, or engaging, $F(2, 67) = .131, p = .877$, each writing topic was rated. The absence of significant post-handgrip manipulation checks suggests that the effects of the vivid recall task were relatively short lived (i.e. did not persist throughout the entire handgrip task).

Inspiration and Handgrip Performance

A one-way ANOVA revealed no significant differences between conditions on handgrip score, $F(2,65) = .692, p = .504$, suggesting that the inspiration conditions did not significantly improve handgrip performance. Moderation analyses (with participant type, age, sex, creative engagement, exercise engagement, trait inspiration, Openness to Experience, and self-esteem) revealed no significant interactions, and an ANCOVA (controlling for rest-time) did not alter results. Again, the standard error associated with each condition's mean handgrip score suggest that there may have been considerable within-group variability (see *Figure 2*). This could reflect a failure of the MVC task to accurately assess an appropriate level of resistance for each participant's handgrip endurance trial. For instance, the participant who recorded the highest MVC (61.2kgf) only achieved a relatively low handgrip score (79 seconds). Similarly, the participant with the lowest MVC (9kgf) had to be told to stop the handgrip endurance task after exceeding 10 minutes. Notably, these participants recorded MVC scores outside of the normal range for their age. The latter participant represented an extreme handgrip score outlier (more than 3SDs from the mean) and, considering that this was likely the result of an abnormal MVC, was removed from analyses.

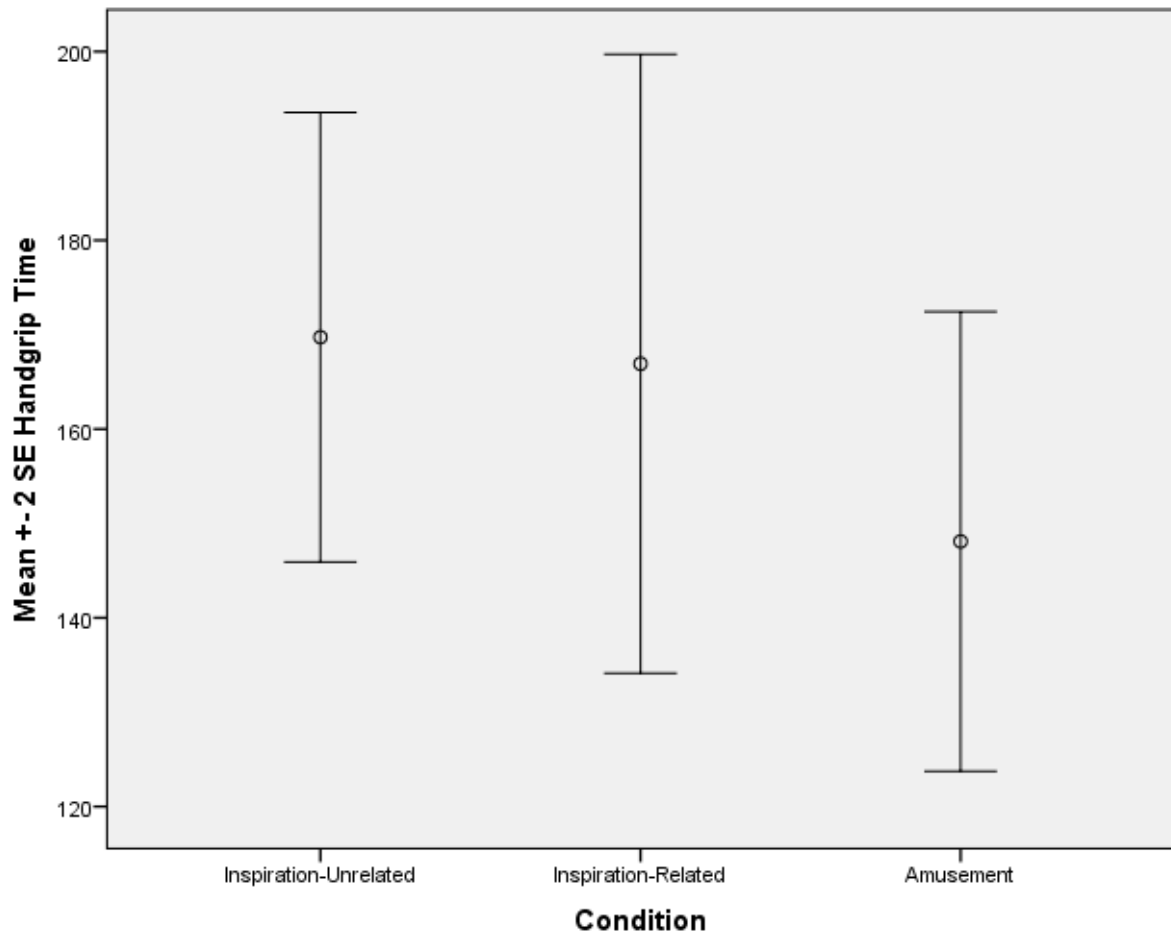


Figure 2. Mean handgrip score for each condition, with error bars.

Inspiration and Cause of Handgrip Task Termination

The effect of condition on handgrip task termination type was analysed using a logistic regression. It was assumed that participants who terminated the handgrip task by saying *stop* had given up, but could have continued (it was explained to participants in the task instructions that saying *stop* meant that they gave up). Contrastingly, participants that deviated from their allocated kgf for more than three seconds were judged to have terminated the task through fatigue (i.e. they could not physically persist any longer). A test of the full model against a constant only model was significant, indicating that condition reliably distinguished between participants who gave up but could have continued, and those who terminated the task due to fatigue, $\chi^2(2) = 8.04, p = .018$. The model explained 15.7% (Nagelkerke's R^2) of the variance in termination type and correctly classified 69.1% of cases.

Furthermore, Wald criterions demonstrated that the inspiration-unrelated ($p = .039$) and inspiration-related conditions ($p = .006$) were significant predictors of termination type. Odds ratio analyses indicate that control participants were 5.08 times more likely to give up than inspiration-unrelated participants ($B = 1.62$), and 8.04 times more likely than inspiration-related participants ($B = 2.08$). This suggests that both inspiration conditions caused a greater proportion of participants to persevere with the handgrip task until fatigue (i.e. not give up) than the control condition, however overlapping confidence intervals indicated no significant difference between the odds ratios of the inspiration-related and inspiration-unrelated conditions. An analysis controlling for rest-time produced very similar results and was hence not reported. Moreover, moderation analyses (with participant type, age, sex, creative engagement, exercise engagement, trait inspiration, Openness to Experience, and self-esteem) did not produce any significant interactions.

Discussion

Experiment 2 was conducted to rectify the methodological issues associated with Experiment 1. Specifically, the experiment was designed to ensure that both inspiration conditions elicited equivalent amounts of inspiration, the control condition elicited minimal amounts of inspiration, and the handgrip task accurately assessed physical endurance. Although individually the inspiration conditions only elicited marginally more inspiration than the control condition, the combined analysis (both inspiration conditions versus the control condition) and pilot study results support the assertion that the inspiration conditions elicited more inspiration than the control condition, but not significantly more than each other. This suggests that changes made to the inspiration-unrelated vivid recall task were successful. Similarly, results suggest that participants in the control condition tended not to write about inspirational events, although coders did identify four stories in the control condition that included inspirational themes. This may have been due to the vivid recall

instructions, which asked participants to think about how the experience made them feel and to concentrate on their emotions at the time; control participants may have mistakenly believed that the experimenters desired a story that included more than “mere” amusement.

Nevertheless, there were no significant differences between conditions on handgrip score. This may be partially explained by the failure of improvements made to the handgrip endurance task. Most notably, using MVC to calibrate endurance resistance implicitly assumes that handgrip strength closely reflects handgrip endurance. Although it seems reasonable that handgrip endurance and strength are linked, and the MVC task has been used in much published research (e.g. Hone & McCullough, 2015; Ukegbu et al., 2014), the strength of relationship between MVC and handgrip endurance has never been formally tested. Indeed, it seemed apparent that a number of participants who achieved particularly high MVC scores also obtained low handgrip endurance scores. This may have contributed to the high standard error associated with the handgrip score, and explain why significant handgrip score differences between conditions were not detected.

The revised handgrip task protocol offered the method of task termination as an additional source of data. Results indicated that control participants were 5 times more likely to give up than inspiration-unrelated participants, and 8 times more likely than inspiration-related participants. Although the effect size was stronger for the inspiration-related condition, the difference between odds ratios between conditions was not significant. This suggests that both inspiration conditions were equally effective at increasing participant perseverance, providing evidence of the motivational benefits of inspiration in a sporting context. More importantly, the effectiveness of the inspiration-unrelated condition supports the concept of novel-context extension, suggesting that transcendent objects can be inspirational in novel contexts.

General Discussion

The primary purpose of the present research was to determine whether novel-context extension, wherein an object is inspiring in a novel context, can be demonstrated experimentally. Specifically, two experiments predicted that writing about an inspirational experience (regardless of its specific relevance to the endurance task) would increase physical endurance, but that this would be enhanced for participants whose inspirational experience was directly related to physicality. In Experiment 1 participants wrote about an inspiring sporting experience (inspiration-related), an inspiring educational experience (inspiration-unrelated), or a happy experience (control), and then completed a handgrip task. Although there were no differences between conditions on handgrip performance, several methodological issues cast doubt on the validity of these findings. Experiment 2 addressed these problems by altering the writing tasks for the inspiration-unrelated (inspiration in a creative context) and control (amusement) conditions, and improving the handgrip task. While handgrip performance still did not differ between conditions, results indicated that participants in the inspiration conditions were more likely to terminate the handgrip task due to fatigue (rather than give up). In particular, the increased perseverance of inspiration-unrelated participants provides partial support for the hypothesis of novel-context extension, suggesting that inspirational objects have the capacity to inspire in unrelated contexts.

Inspiration, Extension and Physical Endurance

Evidence of an inspirational effect on physical endurance was mixed. In Experiment 1 inspiration-related and inspiration-unrelated participants had higher handgrip difference scores than control participants, yet these differences were unexpectedly non-significant. This could suggest that inspiration has no effect on physical endurance, regardless of the viability of extension. However, further analyses revealed a number of methodological issues that might have affected the results, principally: the inspiration-unrelated condition elicited too

little inspiration, the control condition elicited too much inspiration, and the large amount of error associated with handgrip difference scores.

These issues were addressed in Experiment 2. The inspiration-unrelated condition writing topic was changed to inspiration in a creative context, which was judged to be more engaging than academic inspiration. The control condition writing task similarly was changed to a time the participant felt amused; this was judged likely to elicit feelings of positivity, but not inspiration. The pilot study results and Experiment 2 manipulation checks suggest that these alterations were largely successful. The handgrip protocol was also revised to increase its endurance measuring accuracy; however, again no significant differences between conditions on handgrip score were detected. This can likely be explained by the methodological problems associated with the revised handgrip task; principally, the dubious validity of MVC as a method of calibrating the handgrip endurance task kgf. Alternatively, it is possible that the inclusion of a positive control condition (i.e. the happiness/amusement conditions) made it overly difficult to detect an improvement in endurance, as it is not evident that inspiration should improve physical performance relative to other positive emotions. The study may have hence benefited from the inclusion of a neutral control condition, such as the International Affective Picture System (Lang, Bradley, & Cuthbert, 2005), which would serve as a more benign baseline.

Nevertheless, analyses of handgrip task termination type supported the existence of novel-context extension (as outlined by Thrash et al., 2014). Results indicated that control participants were more likely to give up than participants in the inspiration conditions, providing evidence for the role of inspiration as a powerful motivator. Most importantly, inspiration-unrelated participants, although inspired in a creative context, still demonstrated an increased tendency to persist with the handgrip task until fatigue. This suggests that novel-context extension took place; participants were able to perceive an admirable quality in their

creative inspirational object (e.g. mastery exhibited in an art work) and apply it in a new context (e.g. mastery over the handgrip task). Ultimately, these results indicate that the qualities of transcendent objects can be inspiring in multiple domains, regardless of relatedness.

The termination type and handgrip endurance score results are somewhat difficult to reconcile. If participants in the inspiration conditions were more likely to be inspired to hold the handgrip until exhaustion, it follows that their handgrip scores should have also been significantly higher. However, it is possible that persevering until fatigue only afforded participants a slight handgrip advantage that was undetectable with the present sample size. Participants who gave up likely did so when they felt relatively close to being unable to continue, suggesting that persevering until fatigue may have only added a few seconds onto handgrip endurance scores. Hence, these results do not necessarily suggest that inspiration cannot improve physical endurance.

Inspiration, Motivation, Arousal, Power and Competence

Close analysis of the manipulation checks revealed a number of unexpected results. Firstly, analyses revealed no significant differences between conditions on the motivation manipulation check. Motivation is a defining aspect of both the tripartite and component process conceptualisations (Thrash & Elliot, 2003, 2004), and distinguishes inspiration from emotions like awe and elevation. Considering its pivotal role, it is difficult to explain why the inspiration conditions did not also elicit higher levels of motivation than the control condition. A possible explanation is that participants interpreted motivation not as a consequence of inspiration, but as an entirely separate concept. Motivation may have slightly negative connotations; that is, a person must “motivate” themselves to do something they do not necessarily want to do (e.g. finish school work). This is in contrast with feeling inspired, which is uniformly a positive experience (i.e. when a person is inspired they tend to enjoy

work), and may explain why participants in the inspiration conditions did not rate themselves as highly motivated. This reflects qualitative research which suggests that motivation is often described as either an outcome of inspiration, or a totally distinct construct (Hart, 1998).

However, this explanation is speculative; future research could employ more detailed manipulation checks (e.g. provide a short definition of “motivation”) to properly test the effect of inspiration on motivation. Manipulation checks could also be expanded to examine self-reported levels of other related phenomena, such as the related transcendent emotions of awe, elevation and admiration.

Moreover, analyses revealed no significant arousal differences between conditions. As current conceptualisations portray inspiration as an evoked and arousing force (Thrash & Elliot, 2003), two items (“excited” and “energetic”) were taken from the Perceived Arousal Scale (Anderson, Deuser, & DeNeve, 1995) to assess participant arousal. It was expected that participants in the inspiration conditions would report significantly higher scores than control participants on these items, yet no differences were detected. This reflects research conducted by Gonzalez et al. (2011) which found that an inspirational speech did not affect athlete arousal. However, research indicates that trait inspiration is highly correlated with absorption (Thrash & Elliot, 2003), suggesting that inspiration may be more associated with focused attention than unbridled arousal. Perhaps the items chosen to assess arousal reflect an unfocused arousal, and hence were not more endorsed by participants in the inspiration conditions.

It was also expected that the inspiration conditions would instil an “*I can do this*” feeling in participants, thereby elevating self-report levels of competence and power.

Although Experiment 1 inspiration-related participants reported more power than control participants following the handgrip task, no competent or power manipulation checks were significant in Experiment 2. A possible explanation lies in Lockwood and Kunda’s (1997)

finding that role models are only inspiring if their abilities are deemed attainable, suggesting that competency and power are pre-requisites for inspiration rather than consequences. For example, an inspiration-related participant wrote the following regarding a friend who had become a table tennis professional: “I could have done that as well, if I had the motivation.” Clearly this participant already considered the role model’s abilities as attainable (“I could have done that”); the inspirational experience replenished a lack of motivation, not perceived competence or power. Hence, perhaps inspiration compels people not to do things they never thought they could do, but rather to do things they already knew they could do.

Implications

This study represents an important demonstration of the power of inspirational objects to motivate individuals, regardless of context. This has profound implications for an 11 billion USD self-improvement industry that often relies upon the premise that motivational speakers are universally inspiring (Schulz, 2013). The present results support this assertion by demonstrating that inspirational content can be inspiring in novel contexts, suggesting that motivational speakers have the power to inspire outside of their domain of expertise or experience. This implies that an impressive accomplishment in any area is inspiring, regardless of task relevance. Moreover, the results indicate that inspiration can have a tangible effect on perseverance at a physical task. This has particular relevance in a sporting context, and suggests that inspiration may motivate athletes to work harder on the field.

Of course, the absence of an observed association between inspiration and handgrip performance might suggest that its effect on physicality is negligible. If inspiration only slightly increases performance, then its value may be questioned. The importance of inspiration has consistently been derided throughout history, most famously when Thomas Edison decried that genius is 1% inspiration and 99% perspiration. Regardless of the dubious nature of Edison’s claim (see Thrash et al., 2014, for a discussion), even a small advantage

provided by inspiration can still prove decisive in a sporting scenario. This effect is reflected in the Australian football term a *one percenter* which describes the extra labours players undertake that often go unrecognised in a game's official statistics, such as applying pressure on an opponent or smothering a kick (Zitterschlager, 2016). While a one percenter on its own will not change the direction of a game, the accumulation of multiple “extra little efforts” can prove the difference between tightly matched teams. Inspiration in a sporting scenario could be conceptualised similarly; while inspiration alone is unlikely to dramatically improve task performance, it can offer a motivational edge that may prove crucial.

Also of concern is the finding that the inspirational effects of the inspiration vivid recall tasks in Experiment 2 were short-lived and did not persist after handgrip task termination. If inspiration is only a fleeting phenomenon, prone to wear off quickly, then this could reduce the effectiveness of any practical applications. However, Experiment 1 inspiration-related participants still reported higher levels of inspiration after the handgrip task. This is likely a result of differences in methodology; Experiment 1 allowed participants the time between sessions to think of a suitable topic, whereas Experiment 2 participants were only given a few minutes. Experiment 1 participants may have used this extended time period to consider a broader range of experiences and select topics of greater emotional impact, thereby increasing the effectiveness of the vivid recall task. This suggests that the duration of inspiration may be influenced by the quality of the inspirational object; this represents a point of consideration for any practical applications of inspiration.

Strengths and Limitations

This study has a number of methodological strengths. Firstly, an observed behavioural measure like the handgrip task represents an obvious advantage over more subjective methods of assessing inspirational effects, such as Winter's (1973) use of a TAT to measure power. Moreover, unlike research reliant on self-report methodology (e.g. Gonzalez et al.,

2011), the handgrip provides tangible evidence that inspiration has a real-world effect. The use of a vivid recall task also allows participants to choose an event that they personally consider inspiring, thereby ensuring that each inspirational stimulus is tailor-made for its associated participant.

However, the vivid recall methodology also has limitations. Most importantly, it greatly reduces the level of control an experimenter has over the induction; two participants tasked with the same topic could write about completely different experiences. This was especially problematic in Experiment 1 in which a substantial number of control participants wrote about experiences that were coincidentally inspiring. Furthermore, inspirational experiences are rare and can be difficult to think of. This was illustrated by the numerous inspiration-unrelated participants in Experiment 1 that could not generate an engaging experience of feeling inspired in an academic context. Alternative methods of inducing inspiration that could be considered for future research include the use of video clips (e.g. McClelland & Kirshnit, 1988; Thrash, Elliot et al., 2010; Gonzalez et al., 2011); however, this relies on the premise that a particular stimulus is universally inspiring. In any case, the success of the manipulation checks in the pilot study and Experiment 2 indicates that vivid recall tasks can elicit inspiration, particularly if steps are taken to ensure that writing topics are unambiguously worded, and engaging.

A lack of ecological validity represents a further limitation of the present study. It is difficult to equate handgrip endurance with performance at other sports, which may rely on a diverse set of physical skills. This limits the degree to which this research can be applied to real-world sporting scenarios, like rugby or soccer. A clearer contrast can be made with sports like weight lifting that are similarly focused on short, high intensity behaviours. In any case, the handgrip task needed to be simple and avoid the complexities of actual sporting experiences in order to effectively isolate the effect of inspiration on physical endurance.

Moreover, it is difficult to determine the relevance of the handgrip to participants; perhaps some participants were suitably inspired, but lacking a meaningful connection to the handgrip task did not demonstrate increased perseverance. Also of concern was the high degree of within condition variability present within both versions of the task, which may have made differences between conditions difficult to detect. Future research could consider employing methods of measuring physical endurance that have been employed in other experiments, such as endurance running (Gísladóttir, Haga & Sigmundsson, 2013) or number of continuous push-ups (Henderson, 2010).

A final limitation of Experiment 2 is the possibility that participants may have terminated the handgrip task by saying *stop* simply because they knew they reached their physical limit (i.e. they could not physically hold the handgrip any longer). This implies that some control participants actually reached their maximum level of fatigue (like the participants that deviated from their allocated kgf for more than 3 seconds), and hence did not give up. However, this potential criticism seems unwarranted. Firstly, the instructions were in no way ambiguous; participants were reminded twice that saying *stop* meant they had given up. Moreover, it is logical to expect that if participants were truly determined to not give up, but said *stop* because they knew they had reached their physical limit, this would occur when they had already deviated from their allocated kgf for a significant period of time (i.e. when it was clear that they could not physically hold the handgrip any longer). It is telling that a solitary control participant said *stop* after deviating for three seconds (just short of the termination threshold), and only two control participants said *stop* after deviating for two seconds. This suggests that the vast majority of control participants who said *stop* did so, not because they had reached their physical limit, but because they were not inspired to persevere against the discomfort of the task. While the cause of handgrip termination could be assessed by interviewing participants, it would likely be difficult to obtain objective results (i.e.

considering that the task specifically asks participants to hold the handgrip for as long as possible, they may be reluctant to admit that they stopped before reaching their physical limit). Ultimately, this suggests that analysing handgrip termination type represents a valid means of measuring inspiration-elicited perseverance.

Future Research

This study opens a number of avenues for future research. Firstly, inspiration should continue to be investigated in domains other than creativity. For example, the effect of inspiration on mental stamina (a person's capacity to endure cognitively taxing tasks; Morgan & Banker, 1938) could be operationalised by measuring persistence at an impossible puzzle or memory task. Future studies should also consider testing the association between inspiration and task performance in real-world environments, such as a sports match, which are removed from the contrivances of the laboratory. Non-experimental research could examine if pre-game ratings of inspiration correlate with athletic performance (e.g. tackles made in a game of rugby). In particular, an experiment could test whether pre-game inspiration predicts the prevalence of one percenters, which reflect the extra efforts players undertake in a game.

The present study also tentatively suggests that the method by which inspiration is elicited influences the length of its effect; future research should be conducted to confirm that object quality predicts inspiration duration. Experiments could compare the effectiveness of varying inspirational objects, perhaps differing in emotional impact, through conducting multiple manipulation checks at specified intervals after the inspiration induction. Similarly, research could consider whether repeated exposures to an inspirational object limit its effectiveness (i.e. inspiration desensitisation). The *by* component of inspiration involves the accommodation of a transcendent object; if the object is no longer novel, then presumably some level of accommodation has already occurred and its ability to inspire is reduced.

However, anecdotal evidence suggests that people repeatedly listen to the same pieces of music for inspiration, implying that particularly meaningful or complex objects may never be fully accommodated and represent a continuous source of inspiration. Finally, future research could examine whether downward comparisons are ever inspiring. For example, disabled athletes were a common inspirational object in the inspiration-related condition of both experiments, despite evidence that disabled people are often disingenuously hailed as inspirational and commonly represent downward comparisons (Young, 2014). Future research could examine whether downward social comparisons are ever inspiring and, if so, under what circumstances.

Conclusion

This study has important theoretical and practical implications for the scientific study of inspiration. The findings provide evidence for the previously untested phenomenon of novel-context extension, which suggests that transcendent objects can be inspirational in unrelated domains. Furthermore, results indicate that inspired individuals are less likely to give up at a physical endurance task. This implies that inspiration increases perseverance, although its relationship with task performance remains less clear. These results may prompt further research on the motivational role of inspiration, especially in a sporting context. Finally, the present research raises the intriguing possibility that competence and power are pre-requisites of inspiration rather than consequences.

Future research will continue to examine inspiration and shed light on the psychological mechanisms that underpin it, such as the fascinating concept of novel-context extension. It is apparent that inspiration is not bound by context and can come from a range of sources- even places one might not expect. Many may doubt that Hollywood actor Matthew McConaughey's words had the power to inspire the players of the Texas Longhorns

on the eve of an important game; after all, the trials and tribulations of surviving the film industry seemingly bear no resemblance to the rigours of a football field. However, success itself is a universally inspiring concept no matter the task at hand. This may explain why successful people continue to inspire others from all walks of life to overcome challenges- perhaps made apparent when a dominant Texas Longhorns outfit triumphed 23-0 over the Kansas Jayhawks.

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Appendices**Appendix A**Exercise Engagement Scale

The following questions investigate attitudes towards sports. Please assess each statement as it applies to you.

1. Sport is important to me.
2. I enjoy watching sport.
3. I enjoy playing sport.
4. I am an athletic person.
5. I am a sportsperson.
6. I am a physical person.

Scale:

1=Never

2=Rarely

3=Sometimes

4=Often

5=Very Often

Appendix BAcademic Engagement Scale

The following questions investigate attitudes towards education. Please assess each statement as it applies to you.

1. My education is important to me
2. I enjoy learning new things.
3. I enjoy understanding difficult concepts
4. I am an intellectual person.
5. I am an educated person.
6. I am academic.

Scale:

1=Never

2=Rarely

3=Sometimes

4=Often

5=Very Often

Appendix CCreativity Engagement Scale

The following questions investigate attitudes towards creativity. Please assess each statement as it applies to you.

1. Being creative is important to me.
2. I am interested in art.
3. I enjoy creating new things.
4. I am a creative person.
5. I am an imaginative person.
6. I am an artistic person.

Scale:

1=Never

2=Rarely

3=Sometimes

4=Often

5=Very Often

Appendix D

Manipulation Checks

Please indicate the extent to which you are currently feeling the following emotions. All items are rated on a scale from 1 (*not at all*) to 7 (*very much*).

1. Inspired
2. Happy
3. Aroused
4. Powerful
5. Competent

The following items were presented in experiment two:

1. Inspired
2. Happy
3. Powerful
4. Competent
5. Motivated
6. Energetic
7. Excited
8. Amused

Appendix E

Macquarie University Ethics Approval

10/5/2016

Macquarie University Student Email and Calendar Mail - RE: HS Ethics Application - Approved (5201600235)(Con/Met)



JACK KLEIN <jack.klein@students.mq.edu.au>

RE: HS Ethics Application - Approved (5201600235)(Con/Met)

Fhs Ethics <fhs.ethics@mq.edu.au>

Fri, Apr 15, 2016 at 11:49 AM

To: Dr Trevor Case <trevor.case@mq.edu.au>

Cc: Mr Jack Klein <jack.klein@students.mq.edu.au>

Dear Dr Case,

Re: "A study of personality, writing and physical endurance" (5201600235)

Thank you very much for your response. Your response has addressed the issues raised by the Faculty of Human Sciences Human Research Ethics Sub-Committee and approval has been granted, effective 15th April 2016. This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Dr Trevor Case
Mr Jack Klein

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 15th April 2017
Progress Report 2 Due: 15th April 2018
Progress Report 3 Due: 15th April 2019
Progress Report 4 Due: 15th April 2020
Final Report Due: 15th April 2021

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/current_research_staff/human_research_ethics/application_resources

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Sub-Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).
4. All amendments to the project must be reviewed and approved by the Sub-Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website: