

**Individual Differences in Prospection Skills: Links with Mentalizing Ability**

**By**

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PREVIEW

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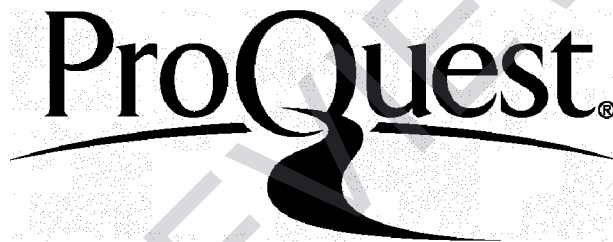
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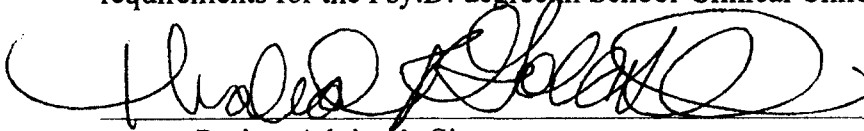
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*"The distinction between the past, present and future is only a stubbornly persistent illusion."* Albert Einstein

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PREVIEW

## **Abstract**

This study sought to determine what individual differences affect ability to prospect, particularly after experiencing an emotionally charged event (e.g. affective prospection). The researchers believed this to be an important skill as it allows one to prepare for the future and accurately plan their lives; thus understanding it better may allow one to increase their accuracy. The researchers hypothesized that those with increased mentalizing skills will be better at affective prospection, as supported by previous research. In addition the researchers hypothesized that actors, who may inherently (or be trained to) mentalize more often, will also be better at affective prospection. In addition, the researchers hypothesized that those with higher levels of grit and mindfulness would demonstrate more accurate affective prospection abilities. The study also originally sought to determine how individuals are able to evaluate their prospection abilities retroactively, by use of a post experiment survey; however this was not deemed possible with current data. Prospection skills were evaluated by use of individual differences measures, and correlated with individual differences in ability to mentalize, grit, and group differences between actors versus non-actors. Group differences in prospection, as well as independent variables that might predict prospection abilities were analyzed. Results of the experiment indicated that having training as an actor did not predict differences in affective prospection. In addition there were no significant differences seen in performance based on mentalizing ability, grit, and/ or mindfulness

# CHAPTER I

## INTRODUCTION

### **Overview**

As humans, we live much of our lives planning for our future. We know that what we do today can greatly impact our tomorrows, and often act in accordance to how we believe our future selves might be. Having credit cards is an example of how one might act today based on the money they plan to have in the future; it is likely why so many Americans are in debt. Thus, though we might think about our future wants, desires, and capacities often- we may not do so accurately. The purpose of this paper is to explore Prospection, how individuals think about the future and plan for their future selves (Gilbert and Wilson, 2007). Chapter two will provide a literature review with regards to prospection, affective forecasting, grit, mindfulness and mentalizing. It will explore how these areas may overlap and affect each other. It will also discuss the field of acting, and how those who are actors may be better at prospection. Chapter three will provide the methods used in the current study to explore these relations and test the hypothesis. Chapter four will discuss results of the current research and statistical analyses that were used. Lastly Chapter five will discuss current results, research limitations, implications and possible future research.

### **Statement of Purpose**

The study sought to measure possible correlates to accurate affective prospection. As indicated, this area of research is understudied and could provide insight into better understanding as well as increasing this ability. It is important to study not only how individuals can forecast their emotions or their actions, but also how one can forecast the

actions or behaviors in emotionally charged situations. In addition, little is known about what kind of individual differences may increase our abilities of accurate prospection. The current research sought to determine how individual differences may account for one's ability to accurately prospect. Specifically, it sought to determine if grit, mentalizing ability, acting training and mindfulness are correlated with the ability to affectively prospect. These skills may impact affective prospection because they may help individuals monitor themselves as well as others. In addition, grit may allow for individuals to better achieve the goals they set for themselves as well as for their future selves. The study also sought to determine if participants were able to accurately assess their previous prospections retroactively- thus rate their prospection abilities and determine what covariate this ability might be related to.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **Prospection**

Prospection is an advanced skill that allows people to “pre-experience” by simulating events that have not yet occurred, or perhaps will not occur, in the future (Gilbert & Wilson, 2007). It is the act of anticipating, looking forward, or of providing for future wants or events; foresight. Prospection is important and useful for individuals, and allows them to plan and predict for their future selves. A wide range of evidence suggests that prospection is a central organizing feature of perception, cognition, affect, memory, motivation, and action (Seligman, Railton, Baumeister, & Sripada, 2013). This capacity to predict one’s future internal states and abilities is a part of an individual’s self-knowledge (Wilson, 2009). Research suggests the prospection occurs through incorporation of episodic memory, to provide detail, as well as general autobiographical information that context and sequences imagined events by more general themes and orders (D’Argembaud & Demblon, 2012).

While this idea of prospection is not new, there is currently increased research on it as a means of better understanding human behavior. Prospection has been researched in relation to a variety of concepts including but not limited to individual and interpersonal views on corruption (Köbis, van Prooijen, Righetti, & Lange, 2016), schizophrenia (Painter and Kring, 2016), depression (Roepke and Seligman, 2016), dementia (Irish & Piolino, 2016), trust and reciprocity (Evans and Kruger, 2016), gambling (Wiehler, Bromberg, & Peters, 2015), prospective memory and variance in age (Gardner & Ascoli, 2015) and cigarette smoking (Verde, 2015). More specific exploration of their research is will be discussed further below.

Köbis and colleagues (2016) used previous research to demonstrate that dependent on the type of corruption (e.g. individual or interpersonal) occurring, individuals utilized different prospective processes. For their research they defined individual corruption as abuses of power in order to obtain personal gains (e.g. embezzlement and theft) without the help of others and interpersonal corruption as abuses of power in which the individual needs assistance from other parties (e.g. needing assistance from other employees). Thus they defined corruption as abusing power for personal gains and differentiated the type based on if the corruption occurred in isolation or with the assistance of others. Similarly Evans and Kruger (2016) discussed how the creation of trust (for entities, corporations, as well as others) might occur through prospection, more specifically how too little or too much trust may occur through inaccurate prospections (e.g. predicting outcomes but not their actual likelihood). Painter and Krings (2016) determined that individuals with schizophrenia or schizoaffective disorder created less elaborate prospections and had more difficulty drawing on past memories for prospection, suggesting their ability in this domain is lacking. Similar research has demonstrated that smokers (Verde, 2016) have structural brain abnormalities in areas of the brain correlated with prospection and that the amount of brain abnormality was directly related to the amount of cigarette smoking and dependence. Irish and Piolino (2016) demonstrated that dementia was correlated to decreased prospection skills. Interestingly their research also demonstrated how deficits in future thinking related to difficulties in everyday adaptive functioning. On a similar vein, Roepke and Seligman (2016) hypothesized that faulty prospections (e.g. poor production of potential futures, poor appraisal of possible futures, and negative beliefs about the future) were the cause of

depression. Comparably, Wiehler and colleagues (2015) believed gamblers might suffer from similar difficulties in prospection, resulting in their increased gambling, however their research did not support this notion. Lastly, Gardner and Ascoli (2015) demonstrated that as people grow older the frequency of time engaged in prospective memory tasks (the prospection of future events) increased. Overall results of the aforementioned research speaks to how individual factors and situational factors affect prospection skills, as well as how prospection skills may have a causal effect (create experiences e.g. depression) on the individual.

Prospection can help in the understanding of effective and efficient adaptive learning and regulation of behavior (Gilbert & Wilson, 2007). It is believed to be at the core of four kinds of mental simulations; navigational (imagining directions), social (imagining social interactions and reactions), intellectual (imagining and exploring intellectual subjects), and memorial (i.e thinking about how you might change the past) (Goldman, 2006; Spreng, Mar, Kim, 2009; Seligman et al., 2013). The first three types of mental simulations appear to exemplify how prospection allows for the mental running of hypothetical simulations in the future. The latter illustrates the mental creation of counterfactual simulations of the past. In these scenarios, the individual explores, assesses, and learns from simple possibilities without being tied down from actual conditions (Seligman et al., 2013).

According to Trope and Liberman (2010) prospection is best understood through the lens of Construal Level Theory (CLT). CLT proposes that prospection occurs through the creation of abstract mental construals of distal (i.e. distanced or far away) objects. This allows us to make predictions about the future, remember the past, identify other's



possible experience, and simulate what might have been. According to CLT, both analogical simulations (e.g. imagined future events based on personal experience or memory) and symbolic representations (e.g. imagined future events based on general knowledge) might change in level of construal for prospecting. Thus, distance may govern whether an analogical representation or symbolic representations is created and the amount of abstractions at which it is built (Trope & Liberman, 2010). More specifically, representations intensify in abstraction as mental simulations change from events in the near to far future (e.g., starting post-doc tomorrow vs. next year). High-level construals are abstract, decontextualized depictions that express the essence or significance of a prospective experience (e.g., being happy when my dissertation is finished); low-level construals encompass specific, detailed descriptions of an event (e.g., submitting the proposal, having it signed, thanking professors). These ideas will later be exemplified in common mistakes that can occur within prospecting and why that is.

Recent research has suggested that prospecting is impacted by the cultural organization of time and space (Palitsky, Sullivan, Keefer & Stewart, 2016). Palitsky and colleagues (2016) theorized that social-structural and cultural differences form how people establish their relationships, arrange information, and ultimately imagine possible futures. They proposed using a Time-Space Distinction framework to integrate the study of cultural variation and the science of prospecting. A Time-Space Distinction framework refers to the degree to which (a) time and space are conceptualized from one another within a society through their exact quantity and control as distinct, measurable dimensions (Allan, 2012), and (b) actions tend to be conceptualized and systematized across great distances and long spans of time (Waters, 2001). Time and space can be

viewed as closely interrelated (when people see changes in time as synonymous with changes in space) or vastly separate (when people view temporal changes as independent of spatial changes). These variances can be seen as largely related to the cultural context. That is, some societies may closely relate time and space, viewing little to no conceptual separation between the two concepts while other societies may see the two concepts as vastly different and less related (Palitsky et al, 2016).

These researchers also noted that conceptualization of time is heterogeneous and largely impacted by culture (Palitzky, et al, 2016). One way of understanding this concept is to differentiate between societies that see time as cyclical (reincarnation) and those that see time as more linear (finality in death). In addition they remarked that these distinctions in how one views time affects how one navigates time and prospects. The purpose of implying such a framework to understanding prospection is it illuminates target variables in prospection, creates ways to nuance existing research, and allows for the integration of current knowledge on discrepancies in prospection with areas of specific need for continued research and exploration (Palitsky et al, 2016).

As noted before, there are four models of prospection. Palitsky (2016) posits that the time-space distinction could bridge these four modes into relation with each other. These four types of prospection epitomize everyday means of connecting places with times, as people embark in mental travel through time and/or space. In order to better bridge these concepts it is first important to understand these modes within a space-time distinction model. Time-space distance symbolizes a facet of lived environments that may function clearly (e.g., in the magnitude to which people theorize time as a valued resource), but which may also non-consciously structure the ways in which people frame

time-based anticipations and plot for the future. For example, navigational prospections can occur in multiples ways. Individuals may use egocentric, or first- person perspective, in order to determine directions (i.e. picturing themselves within the map) (Kelly & McNamara, 2008). Another modality used for navigational prospection is allocentric spatial navigation, using a bird-eye view (Levinson, 2003). Researchers noted that the cultural context of the individual vastly impacted which modality of navigational prospection was used.

Other research on prospection has been geared more toward practical use of this ability, as it is called ‘pragmatic prospection’ (Baumeister, Vohs, & Oettingen, 2016). These researchers defined pragmatic prospection as “thinking about the future in ways that will have practical utility, which is to say ways that will guide action” (Baumeister et al 2016, pg. 3). According to Baumeister and colleagues the purpose of pragmatic prospection, and possibly prospection in general, is not just to predict what will happen, but to affect, and if feasible, regulate what will occur. They elaborate that the goal of pragmatic prospection is to change current behavior based on what will increase desired future outcomes.

In Baumeister and colleague’s (2016) research on pragmatic prospection they discussed its pervasiveness and its inherent utility. They cited research by Baumeister, Hofman, and Vohs (2015), which indicated that individuals were likely to think about the future 2-3 times more than the past in everyday thoughts. Furthermore, their research indicated that those who thought of the past often did so involving “implications of the past for the future”. As further support of the possible innate utility of prospection they discuss the Zeigarnik Effect (Zeigarnik, 1927, as cited in Baumeister et al 2016).

According to Zeigarnik, thoughts about unfinished goals and tasks will randomly interject in conscious thoughts. For example, every day that I have not finished my dissertation, it randomly comes to mind (sometimes ad nauseam). Research has indicated that when individuals make plans to finish or complete these goals, these intrusive thoughts decrease (Masicampo & Baumeister, 2011). These results indicate that merely planning by use of prospection can be beneficial in decreasing overall anxiety. Comparable to how guilt may be viewed as useful when it affects change for the future, prospection can be beneficial when it allows one to plan for the future.

Despite the growing wealth of knowledge on the importance of prospection, less is known on the exact process. While some theorists believe it is an unconscious process that occurs through recreation of past events to simulate future ones (Gilbert & Wilson, 2007) others believe it is heavily based in the consciousness and one of the reasons humans need consciousness (Seligman et al. 2013). Researchers such as de Vito et al (2012) view prospection as a constructive process encompassing new recombination and maneuverings of aspects of various memories to conceive or simulate possible future situations. A process such as this would entail high demands on executive functioning. de Vito and colleagues (2012) believed this hypothesis was supported by their research in which individuals with Parkinson's and no memory difficulties but executive functioning problems demonstrated weaknesses in future thinking (de Vito et al, 2012).

However, other research indicates that prospection is often more prototypically represented (Kane, van Boven, & McGraw, 2012). In Kane et al's (2012) research they determined that individuals use more scripts, schemas, and stereotypes when engaging in prospection than they do when engaging in retrospection. When people engaged in a

prospection task they were thus more likely to use the abstract, central and typical representation of an event to describe it than when they engaged in retrospection. Support of this difficulty can be seen in research regarding the ‘planning fallacy’ (Buehler, Griffin, & McDonald, 1997). According to their research, when individuals plan for future tasks they tend to not think about how long it has taken them in the past. This research is at odds with previous definitions of prospection where the assumption is that one would be incorporating salient history from the past to view the future. According to Koehler and Poon (2006) this occurs because individuals are more likely to think about when they would like to complete a task and when they intend to, not when they have in the past. However, similar research has indicated that one can minimize planning fallacy by explicitly asking individuals to contemplate how past tasks are similar to future tasks and past task completion times (Buehler, Griffin, & Ross, 2002).

These results imply that individuals do not necessarily naturally incorporate their own subjective experiences as much as would be expected into their concepts of their future. One might hypothesize that this suggests that individuals who are intrinsically more inclined, or even taught, to utilize past experiences for future or present thinking may be better at prospection. This idea will be reviewed again later when discussing ‘actors’.

Other researchers have indicated that prospection should be viewed more broadly, as there are many forms of it (Burgess, Gonen-Yaacovi, & Volle, 2011). They believed that due to the different types of prospection that can occur, it is not plausible to define the underlying mechanisms quite as simplistically. For example, what underlies prospecting for an event that will occur in the near future (e.g. several days) may be

vastly different than determining future ability in the more distal future. As noted previously, prospection can be altered based on a multitude of variables.

While some research has indicated that there may be a number of variables that account for differences in prospection or perhaps different prospection process, other research have explained the variance in prospection as related to the 'step' within a more specified prospection process. According to Baumeister (2016) and cohorts prospection is a two-step process. In the first step, the individual imagines the desired outcome. During this step there is increased, if not unrealistic, optimism and positive thinking. The latter step consists of anticipating obstacles to the goal and preparing for them, this may result in increased realism and perhaps pessimism. Baumeister's view on prospection appears supported by previous research in which it appears that most individuals are unlikely to incorporate subjective experience and more likely to use desire and motivation as indicators of future capability or capacity. Their view on prospection may also account for possible difference seen in prospecting for near or far future events (e.g. amount of detail used, information used to create prospection). Another way of viewing this is that prospection includes internally motivated cognition (e.g., imagining future experiences) and goal-directed cognition (e.g., problem-solving to attain personal goals)

Yet another way of understanding prospection is by understanding where in the brain such activities occur. A single core network has been proposed to trigger a number of cognitive fields formerly seen as separate, specifically: (a) remembering, (b) prospection, (c) spatial navigation, and (d) theory of mind (Buckner & Carroll, 2007). According to Buckner and Carol (2007), prospection, theory of mind and autobiographical memory all require simulating an experience that is separate from

stimulus driven behavior. D'Argembeau & Van der Linden (2004) demonstrated that autobiographical memory and prospection are connected in the phenomenological detail (i.e., sensorial, contextual, and emotional details). In support of the similarities between autobiographical memory and prospection is their shared temporal distribution within the area of the brain (Spreng & Levine, 2006). Thus, the two share considerable behavioral and neural connection. Similarly, theory of mind requires the individual to recreate and experience beyond their current moment (Buckner & Carroll, 2007). That is, theory of mind requires one to try to experience the 'other's experience' which is inherently outside of what they are currently experiencing.

The network of brain regions believed to be common to these domains comprise the frontopolar and anterior midline structures in addition to the medial-temporal lobe, medial parietal, and a lateral posterior parietal region, the temporoparietal junction (Spreng, Mar, & Kim, 2009). In a quantitative meta-analysis by Spreng, Mar and Kim (2009) they demonstrated that prospection engages the parahippocampus and the hippocampus bilaterally, the precuneus, the posterior cingulate, the retrosplenial cortex, the left temporo-parietal lobe, left ventrolateral prefrontal cortex, frontal pole, frontal midline sections, and the lateral temporal lobe in the left hemisphere. Overall their research supported the theory of a core network that underlies several cognitive domains. In addition their research demonstrated areas that were not believed to be involved or overlap did as well (i.e. the lateral prefrontal cortex and lateral temporal cortex). Interestingly, the occipital lobe was the only area that was not involved in prospection, despite involvement of the other cognitive domains (Spreng, Mar, & Kim, 2009). Of most importance for the current study is that brain areas involved in prospection

overlapped with those utilized for theory of mind, this idea will be explored further later.

Some theorists have posited that remembering and future-oriented thinking may mirror a single fundamental process (Atance & O'Neill, 2001; Suddendorf & Corballis, 1997). This idea has only recently been supported by empirical data. In one study, for example, the temporal spreading of self-generated, probable future events (the “intention function”, Spreng & Levine, 2006) maps almost exactly onto the circulation of recalled past events (the “retention function”, Spreng & Levine, 2006); this close comparison repeats across individuals at different points in their lifespan (Spreng & Levine, 2006). Other researchers have shown that the explanations of both past and future events show declining phenomenological richness with amassed time from the present (D'Argembeau & Van der Linden, 2004), and that the episodic specificity of past and future events decays with age in a similar fashion (Addis, Wong, & Schacter, 2008). It is thus expected that a shared mechanism for remembering and prospection exists, and reflects a shared neural substrate.

Perhaps the varying theories related to implications of prospection skills may be more related to the type of prospection. According to Oettingen and Mayer (2002) there are two distinct types of prospections, expectations/beliefs and fantasies/images. They define beliefs as expectation judgments that utilize the likelihood of an occurrence and images or fantasies as representing the individual's stream of thought. They theorize that the type of prospection affects motivation and performance. Thus, fantasies may decrease likelihood of achieving goals as they merit no basis in reality or reflection of past abilities and do not allow for preparatory action. Collectively, though positive expectations of success can expect effortful achievement and prosperous implementation, positive