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Taken out of context? Cross-level effects of between-person self-efficacy and difficulty on the within-person relationship of self-efficacy with resource allocation and performance

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ABSTRACT

Research examining the within-person relationship among self-efficacy, resource allocation, and performance has been decidedly mixed, with positive, null, and even negative relationships being observed. In the present research, we propose that relationship of within-person changes in self-efficacy with subsequent changes in resource allocation and performance depends upon one's typical level of self-efficacy; that is, increases and decreases in self-efficacy have different implications for individuals that are generally highly efficacious than for individuals who are typically less efficacious. Moreover, we propose that these relationships further depend upon the difficulty of goal being pursued. Support for these arguments is found across two studies. These results provide support for self-efficacy's non-monotonic relationship with resource allocation, including our proposition that the nature of this non-monotonic relationship differs as a function of difficulty. These results also help further illuminate when and for whom selfefficacy is likely to increase or decrease resource allocation and performance.

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Introduction

Over the past decade, the nature of the relationships among self-efficacy, resource allocation, and performance have become a point of debate (e.g., Bandura, 2012; Bandura & Locke, 2003; Vancouver, 2005, 2012). Self-efficacy refers to one's perceived ability for a particular task (Bandura, 1997). When examined via between-person analyses, a positive relationship typically emerges: individuals with greater self-efficacy generally invest more resources (e.g., work longer and/or harder) and achieve greater performance than do those with lower self-efficacy (Judge, Jackson, Shaw, Scott, & Rich, 2007; Moritz, Feltz, Fahrbach, & Mack, 2000; Multon, Brown, & Lent, 1991; Stajkovic & Luthans, 1998). Yet, research using within-person analyses-examining how changes in self-efficacy relate to subsequent changes in resource allocation and performance-has yielded much more variable results ranging from positive (e.g., Seo & Ilies, 2009), to null (e.g., Richard, Diefendorff, & Martin, 2006), and even negative (e.g., Vancouver & Kendall, 2006). Given the central role of self-efficacy in numerous theories of motivation (e.g., Bandura, 1997; Locke & Latham, 1990; Schunk, 1989), and the frequent advocation of efficacy-boosting interventions as a means to increase performance (e.g., Colquitt, LePine, & Noe, 2000; Stajkovic & Luthans, 1998), understanding the factors responsible for the variable effects of self-efficacy on performance is of considerable theoretical and practical importance.

What accounts for the variable relationships observed at the within-person level? We argue that context matters. In the present manuscript, we introduce and test our proposition that the implications of a change in self-efficacy depend upon the individual and situational context within which those changes occur. In Study 1 we examine an individual context factor, predicting that a person's average level of self-efficacy (i.e., between-person self-efficacy) will influence how within-person changes in efficacy relate to subsequent variations in resource allocation. We propose that increases (decreases) in self-efficacy may foster engagement (disengagement) among those with relatively low self-efficacy who might otherwise chose to disengage (engage), whereas similar increases (decreases) may lead already confident individuals to perceive that success can be achieved with minimal (substantial) resource investment. In Study 2, we extend the underlying logic of our theoretical model by examining the impact of a situational context factor-goal difficulty. Specifically, we test the proposition that increases in self-efficacy result in greater resource allocation among those pursuing a difficult goal, but reduced resource allocation among those pursuing an easy goal. In so doing, we seek highlight self-efficacy's role in the judicious allocation of finite resources, such as time and effort-that is, attempting to allocate sufficient resources for success without squandering resources by

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allocating more resources than necessary or by pursuing lost causes. From this perspective, we argue that both positive and negative effects of self-efficacy on resource allocation can serve adaptive functions.

Variable effects of self-efficacy on resource allocation and performance

The construct of self-efficacy has received considerable attention since Bandura introduced the concept in the 1970s (e.g., Bandura, 1977). The vast majority of this research has indicated a positive relationship between self-efficacy and important motivational processes and outcomes, such as self-set goal levels, acceptance and commitment to difficult standards assigned by others, time and effort invested in the pursuit of challenging endeavors, persistence in the face of adversity, and ultimately task performance (e.g., Bandura, 1997; Judge et al., 2007; Moritz et al., 2000; Multon et al., 1991; Stajkovic & Luthans, 1998). Although meta-analyses have naturally observed study-to-study variability in this relationship owing to characteristics such as task complexity (stronger positive effects with lower complexity tasks), the positive direction of the effect seldom appeared in doubt, with the partial exception of Judge et al.'s (2007) meta-analysis, for which the moderate positive bivariate correlation between selfefficacy and performance became non-significant once more distal predictors (Big 5 personality, cognitive ability, work experience) were included in the regression equation.

Despite the relatively consistent view of self-efficacy's relationships with resource allocation and performance noted above, over the past decade scholars have turned a more critical eye towards the role of self-efficacy in the self-regulatory process (e.g., Heggestad & Kanfer, 2005; Vancouver, Thompson, & Williams, 2001. In particular, these authors have argued that the positive correlation between self-efficacy and performance observed in research using an observational between-person approach may result-at least in part-from the strong positive relationship between *past* performance and subsequent self-efficacy, even if or when the relationship of self-efficacy with *subsequent* performance may be null or negative. An increasingly prominent approach to reducing such ambiguity is the use of longitudinal, within-person research designs that allow one to distinguish the relationship of past performance with subsequent self-efficacy from the relationship of self-efficacy with subsequent performance (e.g., Richard et al., 2006; Seo & Ilies, 2009; Vancouver & Kendall, 2006; Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver et al., 2001; Yeo & Neal, 2006). Research taking this within-person approach has observed a wide range of relationships of self-efficacy with resource allocation and performance, ranging from positive to negative.

Several studies have sought to understand the sources of variability in self-efficacy's relationship with resource allocation and performance. Vancouver, More, and Yoder (2008) provided evidence for a non-linear relationship between efficacy and resource allocation, showing that self-efficacy's role differs across goal setting and goal striving decisions. Using a multi-round task, they found self-efficacy was *positively* related to the decision to engage in a particular round; participants tended to skip rounds on which they were unconfident they could succeed. However, on the rounds participants did chose to engage, self-efficacy was negatively related to time allocated to the round, with participants allocating less time to the easiest rounds. Schmidt and DeShon (2009) found that the self-efficacy/performance relationship differed depending upon whether one was facing challenging or undemanding circumstances. Consistent with the logic of social cognitive theory (Bandura, 1997), self-efficacy was positively related to subsequent performance following a poor prior performance, presumably due

to redoubling one's efforts to remedy their prior deficiencies rather than giving up. However, following successful performance, high self-efficacy was associated with reduced subsequent performance, as individuals in these situations appear to have concluded that continued success could be achieved easily, obviating the need for additional resource allocation. In another study, Schmidt and DeShon (2010) found self-efficacy was negatively related to effort and performance when performance feedback was ambiguous, vet positively related to effort when one's performance could be unambiguously gauged during task engagement. These results indicate that individuals use self-efficacy to help gauge their progress, with potential for inaccurate assessments of where one stands, how much remains to be accomplished, and how many resources are needed to do so. Finally, Beck and Schmidt (2011) found that individuals taking a mathematics test under timed conditions spent less time on portions of the exam where they were more confident, conserving scarce time for use on sections for which they were less confident. However, when time was unlimited, self-efficacy was positively related to resource allocation, as spending more time on an item increased the chances of finding the correct solution.

In our view the studies reviewed above illustrate self-efficacy's role in helping individuals to allocate resources efficiently. It is not adaptive to allocate resources to goals that a person feels they have no chance of achieving, nor is it adaptive to allocate too many resources to goals that can be achieved easily with minimal investment. Thus, we propose that the relationship between self-efficacy and resource allocation is non-linear. We contend that such a perspective may help explain the variable effects of self-efficacy on effort at the within-person level of analysis.

Non-linear relationship between self-efficacy and resource allocation

Although the studies reviewed above begin to shed light on the variable nature of self-efficacy's role in resource allocation and performance, more work is needed to fully understand this complex process. Toward this aim, we consider a non-linear relationship between self-efficacy and resource allocation, such as that illustrated in Fig. 1. With low levels of self-efficacy, success may be seen as so unlikely as to not warrant much, if any, investment of resources (Vancouver et al., 2008). As self-efficacy increases, the perceived chances of success increase, justifying some initial investments of resources (Seo & Ilies, 2009). Yet, confidence is not yet sufficient to warrant full investment into the task. For example, consider crafting hobbies, like woodworking. As a person gains confidence in his or her woodworking ability, he or she may allocate more time (and money) to the hobby, yet remain unwilling to quit his or her day job and focus solely on woodworking. However, with further increases in efficacy, he or she may conclude that additional allocation of resources is worthwhile, perhaps prompting one to embark on a full-time woodworking career. At this point,



Fig. 1. Hypothesized non-linear relationship between self-efficacy and resource allocation.

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