Chapter 6
What Shapes Academic Self-efficacy?

Viviana Macakova and Clare Wood

Abstract Self-efficacy has long been considered a predictor of academic achievement as well as other learned skills. But, we know little about what factors influence self-efficacy itself, and whether these other factors can impact self-efficacy's relationship with academic achievement. In this chapter, we review the evidence relating to three factors that have the potential to influence the strength of the relationship that exists between academic self-efficacy and academic achievement: mindset, basic psychological needs satisfaction, and other possible factors. We will consider the evidence in relation to both child and adult learners and argue that academic self-efficacy is a belief influenced by factors associated with not just prior experiences of learning but also home-based relationships and psychological security.

Keywords Self-efficacy · Academic achievement · Implicit theories · Psychological needs

Introduction

Self-efficacy is a term applied to the beliefs that a person holds about their own abilities (Bandura, 1997). We acquire a sense of academic self-efficacy through our experience with our learning environments, which becomes the basis for a set of beliefs about our own capabilities. As Bandura explains in his Social Cognitive Framework, every behavior we witness can influence our own behavior and how we think about that observed behavior. Self-efficacy is one of the key concepts of Social Cognitive Theory. It is argued that self-efficacy can be influenced in several ways. Firstly, by the experience of success and failure—when we experience success, this contributes to positive self-efficacy, and failure undermines this. Secondly, we can watch others who are 'like us' and incorporate their experiences of success and failure as if they were our own. Another influence is that of persuasion—we can influence the self-efficacy of others by persuading them that they will be successful

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in a particular situation, but these appeals should be realistic and are unlikely to be successful if the person we are persuading has already experienced failure. Finally, our emotional reactions to a situation are important. Specifically, if we can control or change negative emotional responses to situations that we experience, this can support the development of self-efficacy.

It is argued that the better our sense of self-efficacy, the better we are able to cope with situations that we may encounter, and this has been supported by empirical work examining perseverance in university students (e.g., Wright et al., 2013). Also, it is noted that the higher self-efficacy we possess, the better we are at adopting or adapting an observed behavior. As such, observation is seen as crucial for the learning of new skills and how to deal with unfamiliar situations—both of which are experienced in the context of higher education. It is therefore not surprising that there is a considerable amount of research supporting the existence of a relationship between self-efficacy (both in general and academic self-efficacy specifically) and academic achievement, be it at school or later at university (e.g., Alivernini & Lucidi, 2011; Feldman & Kubota, 2015; Richardson et al., 2012; Vuong et al., 2010). Specifically, students who score higher on scales of academic self-efficacy show better academic performance than students who score lower on academic self-efficacy. Moreover, Richardson et al. (2012) found in their systematic literature review that university students' beliefs regarding their performance (sense of self-efficacy) accounted for up to 9% of the change in their grade point average.

Although the links between academic achievement and academic self-efficacy are well documented, less is known about the factors that contribute to that relationship. Specifically, the factors that underpin academic self-efficacy itself remain under researched. We argue that for adult learners in particular, there is likely to be a range of factors that contribute to their academic self-efficacy. By mapping the full range of influences on academic self-efficacy in adults, this not only improves our understanding of what contributes to and maintains academic self-efficacy, but also creates a framework for more effective intervention where the underpinning factors we have identified are open to change. In this way, we can develop intervention strategies for non-compulsory education that ultimately have the potential to impact student engagement, achievement, and university drop out.

In this chapter, we will explore three factors which have been found to impact academic self-efficacy in learners, namely their implicit theories, basic psychological need satisfaction, and social support along with attachment, and we will consider how satisfactory they are at accounting for self-efficacy in adult learners in particular. These three factors have been identified because they are supported by empirical evidence in school age samples, but also because of their alignment with the mechanisms proposed by Bandura to contribute to the development of self-efficacy, which highlight the importance of how success and failure are experienced (and, how we may be persuaded to adopt more positive interpretations) and the importance of others in both modeling behaviors and in supporting and nurturing our own experiences of success. We begin by discussing one that has received much research and popular attention: implicit theories of intelligence, otherwise known as 'growth mindset' (Dweck, 2000).

Implicit Theories and Self-efficacy

Dweck (2000) proposed the idea that individuals hold implicit theories about intelligence or ability, which have the potential to influence their academic engagement. Specifically, she suggested that people tend to possess one of two broad mindsets: incremental (or 'growth') mindset or entity (or 'fixed') mindset. Individuals with a fixed mindset hold the belief that intelligence and general ability are stable traits, consistent with the general view that people either are, or are not, intelligent or capable. Consequently, such individuals tend to focus on evidencing their abilities rather than engaging in activities to develop further, because they hold a belief that success is the result of talent 'without effort'. This contrasts with the beliefs of those who hold a growth mindset. This mindset holds that success is the outcome of dedicated effort, that ability can be developed through practice, and although some people may be talented, effort is required to fulfill potential.

Dweck argues that such beliefs can impact the way children engage with school, with some students believing that they cannot do an activity or subject and withdrawing effort accordingly because they do not believe that they are capable of learning it. For example, in their study, Blackwell et al. (2007) observed that the possession of growth mindset attributes and beliefs among seventh-grade students was strongly associated with better academic performance. Not only that, but they also found that this relationship was causal, with students who were exposed to teaching that promoted a growth mindset achieving better academic outcomes relative to a control group. Interestingly, Claro et al. (2016) also found an association between academic achievement and growth mindset in general for a sample of Chilean high school students. They found that a growth mindset was less likely to be observed in children from lower income families, although where such children did hold a growth mindset, it acted as a significant buffer against the effects of poverty on their academic achievement.

More recently, Yeager et al. (2019) conducted a large-scale, pre-registered intervention study of secondary school students in the US to better understand when a short (one hour) growth mindset intervention was successful at significantly impacting academic outcomes in school children. They found that the intervention was successful for lower ability pupils, but there was a context effect: the intervention was found to be particularly effective when peer group norms were in alignment with the messages of the intervention session. Although Miller (2019) notes that the results of this study have been criticized for demonstrating only small effect sizes, he also points out the importance of understanding context and heterogeneity of effects (which Yeager et al. set out to do) and the need for educators to temper their expectations regarding the impact that growth mindset approaches will have at a practical level. He also flags the need for research to map 'the cognitive, social, and behavioral mechanisms explaining the improved grades' (p. 911). For example, Burnette et al. (2013) discovered in their meta-analysis, where more than half of the participants were above the age of 18, that mindset did not influence academic performance directly but rather indirectly via self-regulation.

It makes sense to suggest that growth mindset should align with better academic self-efficacy, and it may be that self-efficacy is what is driving individual differences in academic outcomes, rather than growth mindset per se. We argue that some explanations of growth mindset conflate students' mindset (i.e., theories about the stability of ability or intelligence as a fixed trait in general) with self-efficacy. That is, it will be recalled that self-efficacy is a set of beliefs held by a person about their own abilities, rather than about ability in general. Where Dweck argues that mindset beliefs impact the way students engage with their learning, because children with fixed mindset are more likely to withdraw effort because they do not believe they can learn something, she is describing an effect of mindset on a child's sense of self-efficacy. In other words, growth mindset is important because it is one of the factors that underpins learners' sense of academic self-efficacy.

Although there appears to be a large, if debated, body of experimental work that has demonstrated the potential for growth mindset training to benefit children's academic outcomes and other studies that have demonstrated associations between academic outcomes and mindset in school age children, less work has been conducted with adult learners. Moreover, where it has been conducted, the results are not as convincing as the data from child studies. For example, Bahnik and Vranka (2017) were unable to detect a significant relationship between mindset and academic ability in their sample of over 5000 university students, and Macnamara and Rupani (2017) similarly failed to observe a relationship between growth mindset and academic outcomes in their sample of university students. It should be noted, however, that in both these studies, the measures of academic achievement were collated from a time-point prior to the assessment of participants' mindset, and so it is difficult to draw conclusions from these data.

We explored this idea that growth mindset might underpin academic self-efficacy in our own study (Macakova & Wood, 2020). We asked university students from multiple universities to complete measures of their implicit theories, self-efficacy, and basic psychological needs satisfaction and to report recent grades from the current year of their courses. We then used structural equation modeling to analyze the relationships between these factors. We found that self-efficacy was predicted by both implicit theories (mindset) and basic psychological needs satisfaction and that, in line with prior research, self-efficacy was able to predict academic achievement. There was no evidence that mindset could explain individual differences in academic achievement directly.

Locating these results in the broader literature on mindset, we can see that although there appears to be evidence of a direct effect of mindset on achievement for children, this seems to be dependent on contextual effects, rather than being a strong direct influence for all learners. For adult students, mindset becomes more of an indirect influence on attainment, mediated by self-efficacy. These differences between the two age groups could be because schoolchildren's beliefs about ability in general are more easily changed than those of older students, whose beliefs are likely to be better established. Also, self-efficacy is a belief about one's own ability to perform, which is likely to be more stable in adult learners whose sense of self-efficacy is consolidated by more extensive life and academic experience. Another important

consideration for adult learners relative to school children is the fact that they are engaged in post-compulsory education. Where children are at school, this is subject to legal and cultural expectations about attendance and engagement, which apply less to students at university. Consequently, there are important differences in adult students' motivation and the context of their learning that need to be acknowledged. For us, one area that is important, but is often overlooked, is the contribution of basic psychological needs satisfaction to students' sense of academic self-efficacy.

Basic Psychological Needs Satisfaction

Basic Psychological Needs Theory (BPNT) is derived from Self-determination Theory outlined by Deci and Ryan (2000). It is one of the six sub theories of Self-determination theory, and it centers on the importance of competence, relatedness, and autonomy as fundamental psychological needs that must be satisfied (or 'nutrients' that must be accessible) if we are to develop, adjust, and function successfully (Deci & Ryan, 2000; Ryan & Deci, 2017). *Competence* refers to the experience of mastery and a sense of being effective. *Relatedness* refers to the ability to experience connections with others and establish a sense of belonging and nurture. *Autonomy* refers to volition and will and the need to engage in self-endorsed and authentic actions, thoughts, and feelings. Together, these three needs are seen as essential for psychological wellbeing (Vansteenkiste et al., 2020). Arguably, these needs are particularly salient in the case of adult students, who may be more vulnerable to frustration of these needs as a consequence of living away from established support networks, needing to adjust to new ways of living and working, and new methods of learning and assessment, all of which may represent threats to established senses of competence, relatedness, and autonomy. Moreover, when we think about these ideas in relation to those of Bandura regarding how self-efficacy develops, we can see that competence and autonomy both relate to the idea of experiencing success and the authentic emotional reactions that result from this, and that relatedness connects to the idea that salient others influence our views about ourselves.

It has been argued that if components of basic psychological needs are satisfied, self-efficacy will be enhanced (e.g., Diseth et al., 2012; Macakova & Wood, 2020). Importantly, Vansteenkiste et al. (2020) summarize a range of costs associated with the frustration of basic psychological needs, which include loss of motivation, disengagement, and distress. In particular, frustration of basic psychological needs has been linked to cheating (Kanat-Maymon et al., 2015), stress (Campbell et al., 2017), anxiety (Ng et al., 2012), and suicidal ideation and behaviors (Britton et al., 2014; Rowe et al., 2013).

Consistent with this theoretical account, several studies have found that basic psychological need satisfaction can affect adult students' academic achievement. For example, Trenshaw et al. (2016) found that university students' academic achievement was affected by basic psychological need satisfaction and by the relatedness

component in particular. Trenshaw et al. found that relatedness was the most prominent need among the three, and that if it was fulfilled, it served as a supporting component for fundamental motivation toward university studies.

Interestingly, we see a different pattern for younger students. Among school age children, the most salient predictor of the three psychological needs is found to be autonomy (Reeve, 2009; Sierens et al., 2009). Young learners have their relatedness fulfilled by the fact that they have the same classmates and the same teachers for longer period of time, and they also live at home and so can access family support. Autonomy, however, represents a bigger challenge for school age children, where the ability to make decisions or act authentically may be more open to challenge by adults (parents or teachers).

Students may be more susceptible to psychological distress and reduced wellbeing when their basic needs are not fulfilled, which then leads to lower academic performance (Cordeiro et al., 2015; Trenshaw et al., 2016). However, most research that has investigated the relationship between academic performance and basic psychological needs satisfaction has not considered the idea that basic psychological needs may underpin self-efficacy, and it is self-efficacy influences, that is, driving individual differences in academic achievement. We would suggest that this connection between basic psychological needs and self-efficacy is most strongly rooted in the idea of competence. If competence is frustrated, then this will contribute to a reduction in academic self-efficacy because the individual will not be able to form beliefs based on positive experiences of successful engagement. If relatedness is frustrated, this may negatively impact personal beliefs about social competence. Where autonomy is frustrated, self-efficacy may also be impacted because the authenticity of actions and feelings may be compromised, leading to the formation of anxiety or doubt in relation to personal effectiveness.

Our study found that basic psychological needs are an important influence on self-efficacy for university students: Where they were satisfied, academic self-efficacy was enhanced (Macakova & Wood, 2020), which was also suggested by previous research (Diseth et al., 2012). However, and importantly, we also found that there was no direct concurrent relationship between academic performance and basic psychological needs satisfaction for our university students. This relationship was found to be indirect. It makes sense to suggest that because basic psychological need satisfaction is a higher concept that is related to healthy functioning it is likely to influence our sense of self-efficacy, which in turn will influence academic performance.

The related notion that self-efficacy functions better when one's emotional and physical state is improved is also suggested by Social Cognitive Theory (Bandura, 1977, 1997). Specifically, there are studies which suggest that when mental state is heightened (e.g., you no longer have stress or depression), self-efficacy heightens. For example, Medrano et al. (2016) suggested in their study of college students that when students' mood was heightened, their self-efficacy was positively impacted too, and if the students' mood was lowered, their self-efficacy was also depressed. From this, one can see why emotional state as well as basic psychological need satisfaction is an important predictor of academic self-efficacy.

Emotional states matter, but as Bandura notes so does how we perceive them. For example, there might be a situation where you fear something. Fear is the emotion. After a friend or parent talks to you and points out that the fear you are experiencing could be perceived as something good, new, and exciting, you stop viewing fear as fear and start to view it as a feeling of opportunity. It is the same feeling, but it has been relabeled, and self-efficacy is affected positively as a result. Also, how you perceive your emotional state can also depend on social support and attachment relationships from parents or close friends.

Attachment, Parental, and Social Support

So, our mindset and the extent to which we feel our basic psychological needs are satisfied appear to underpin students' sense of self-efficacy. A third factor of interest is that of attachment quality. Attachment, broadly speaking, is a term used to refer to the bond that exists between people. It originates from the work of John Bowlby and others who were interested in the impact of early parent–child relationships on subsequent development. The idea that early attachment may impact self-esteem and the way adult relationships are formed and develop (and, the importance of these adult relationships for successful adjustment) has also been a topic of wider interest.

It has some relevance to the present discussion because of studies that have found that the more securely the person is attached at a young age, the better self-esteem and self-reliance they possess. For example, Wright and Perrone (2010) found that attachment has a significant impact on self-efficacy. They also found that secure attachment early in life can support self-efficacy and subsequent academic achievement. Moreover, secure attachment has also been linked to enhanced beliefs regarding studies competence to perform academically. Specifically, if students have a secure attachment, they are more confident and believe more in their academic decisions and that they have made the right decisions (Wright et al., 2014).

In addition to secure attachment supporting better self-efficacy, Davila and Kashy (2009) found that secure attachment can also contribute to experience of enhanced social support. Specifically, they found in their 14-day trial among couples that secure attachment was associated with higher malleable support experience. This is especially useful when one needs to trust other people's suggestions or opinions as is often the case in academic tutoring situations or when interpreting academic feedback. Moreover, Wright et al. (2014) found out that participants who had more secure attachment had better social support experiences and reported fewer core obstacles than those who had an insecure attachment.

It would seem then that secure attachments formed at the beginning of life as well as a strong attachments among friends are important factors affecting academic self-efficacy and are related to the basic psychological need of relatedness. In terms of application, it may seem that it has less potential application in the context of informing educational interventions. However, previous research also found that the relationship between attachment and achievement is mediated by social support. In

other words, if one has good social support, be it from parents or fellow students, the relationship between attachment and academic achievement is even stronger. And so, there is scope for later intervention that can influence self-efficacy by focusing on availability of key relationships for learners.

For younger students, the social support of parents has been found to significantly impact the academic self-efficacy of learners (Adler & Dozier, 2020). It has also been found that parents' educational ambitions for their teenage children can positively influence their children's academic self-efficacy. Not just that, but school-initiated contact among parents also increased students' academic self-efficacy (Fan & Williams, 2010). From the research conducted in this area, it is clear that attachment and social support, especially the perception of social support from peers or parents, are important factors in academic achievements. In fact, research has shown that almost half of the variance in academic self-efficacy is due to the two factors of attachment and social support (Wright, et al., 2014).

Social support is also considered as one of the key variables that can increase self-efficacy, and it is a part of Social Cognitive Theory (Bandura, 1997) through verbal persuasion and social modeling, where encouragement is given to perform a specific behavior (Glanz et al., 2008). In social modeling, it is good practice when one can observe how a task is tackled by others before trying it yourself. This is especially true when this task is performed by someone we know and can relate to because we have shared characteristics. We can tell ourselves 'if they can do it, I can do it too'. Also, if we have a positive influence around us, we are more likely to copy those positive behaviors. Another form of a social support from Social Cognitive Theory is verbal persuasion. For example, Luzzo and Taylor (1993) found that verbal encouragement or persuasion in college students can substantially increase self-efficacy. Lundberg et al. (2008) found that mature students only receive limited social support and would benefit from more support during their studies. They also explain that when there is a sincere interest from your spouse/partner's side, this is viewed by mature students as a good social support, resulting in enhanced self-efficacy.

Implications for Intervention

In the first section, we considered the literature that has shown that growth mindset interventions can be effective for school children, although it would seem that mindset interventions may only be effective for particular types of learner and if subject to context-based effects: Yeager et al. (2019) found that for high school students at least, the intervention was effective for students from lower income backgrounds. But importantly, they also pointed to the need for the learners to be located in peer groups where the ideas embedded in the mindset intervention were consistent with peer group values. And so, we can see that social relationships are an important indirect influence on mindset and self-efficacy. However, the evidence for adult learners is complicated by the failure to attend to some of the important contextual

factors that impact their experiences of higher education, such as the satisfaction of basic psychological needs.

Basic psychological need satisfaction should, in principle, offer a more successful route into improving self-efficacy because of its fundamental nature—where a fixed mindset may become entrenched or self-serving (and so harder to change), the drive to satisfy our needs for competence, relatedness, and autonomy does not abate or diminish, although their frustration can result in some maladaptive behaviors. And so, it would seem that there is real potential for university settings to consider interventions which focus on addressing threats to competence, relatedness, and autonomy in academic setting through thoughtful application of formative assessment and feedback, models of academic tutoring and peer support, and the creation of learning activities and assignments that offer students independence and self-expression.

The research into attachment has reiterated the potential impact that the formation of key relationships will have on young people's sense of academic self-efficacy. What is encouraging is that there is evidence that both early attachment and later social support contribute to self-efficacy in important ways, and so this underscores the need for educational settings to create space for the development of these relationships and to recognize the importance of these relationships as influences on learners' developing sense of self-efficacy. Taken together with the observation about the importance of peer voices in the effectiveness of mindset interventions and the impact of relatedness satisfaction in adult learners when understanding the relationship between psychological needs and self-efficacy, we argue that self-efficacy interventions should benefit from incorporating a peer support component.

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