

Chapter 3

The Multifaceted Role of Interest in Motivation and Engagement

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Why does interest matter? *Wanting* to engage in an activity is a powerful motivator for initiating and maintaining engagement, as well as re-engagement, over time (Sansone & Smith, 2000; Chap. 2, this volume). Whether people want to understand something unexpected or novel, or whether they have a deep personal connection with a topic, interest elicits intrinsic motivation to engage in particular content or activities. That is, interest can spark and maintain intrinsic motivation—interest “motivates exploration and learning, and guarantees the person’s engagement in the environment” (Izard & Ackerman, 2000, p. 257). As a motivational variable, interest plays key roles in organizing attention (e.g., Ainley, Hidi, & Berndorff, 2002; McDaniel, Waddill, Finstad, & Bourg, 2000), enhancing self-regulation (e.g., O’Keefe & Linnenbrink-Garcia, 2014; Sansone, Weir, Harpster, & Morgan, 1992), and facilitating achievement (e.g., Hulleman & Harackiewicz, 2009; O’Keefe & Linnenbrink-Garcia, 2014). In this fashion, interest plays a fundamental and multifaceted role in goal pursuit.

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Interest can be elicited both externally and internally, and broadly speaking, researchers classify these two types as *situational interest* and *individual interest*, respectively. Situational interest is elicited by a source external to the individual. A physics professor, for example, might pique students' situational interest by conducting an exciting class demonstration that grabs their attention. By contrast, individual interest refers to the personal interests we hold over time and across situations. They are idiosyncratic, valued, enduring, and part of our identity. Therefore, individual interest is dispositional; although it can be sparked by situational factors, it is not necessary. The same physics professor pursued a career in the field because of her deep, abiding interest in the topic. Once her interest in physics became internalized, she did not need external supports to maintain her motivation. Instead, she was motivated to engage in those interests by her own volition over time.

Furthermore, interest is content specific and has a learning function. Situational interest has a relation to content such that it might be unexpected, novel, complex, or mysterious, which makes salient a gap in one's knowledge—a gap that motivates people to engage with the content. Individual interest, on the other hand, can spark motivation and engagement because of its relation to particular content or activities one personally values. Someone with an individual interest in basketball would be motivated to play and engage in the sport. In other words, individual interest relates to content meaningful to the person. Furthermore, engagement may reinforce the positive feelings they have for the domain and increase understanding and stored knowledge.

Because interest, motivation, and engagement are highly related constructs, and the terms are often used interchangeably, they are worth distinguishing. A first distinction pertains to interest versus intrinsic motivation. Despite the fact that the constructs may correlate, they are conceptually separable. Intrinsic motivation refers to the desire to do something for its own sake, which occurs when engagement satisfies the need for competence and control (Deci & Ryan, 2000; Sansone & Harackiewicz, 2000). Notice that this is void of content—it refers only to a process. By contrast, interest has a relation with particular content and is a psychological state associated with increased attention, effort, concentration, and changes in affect while engaging with that content (Renninger & Hidi, 2016). Second, a distinction should also be made between motivation and engagement. Generally speaking, motivation refers to one's will or desire to do something, whereas engagement refers to one's actual involvement in an activity (Renninger & Hidi, 2016). Like motivation, engagement is theoretically void of content, and both constructs may or may not be influenced by interest.

The purpose of this chapter is to highlight several important roles interest plays in motivation and engagement. We begin by discussing how interest is experienced psychologically, with a focus on its relation to attention, affect, and one's mode of engagement. Next, we discuss implicit theories of interest—whether interests are believed to be inherent and fixed, or developed and subject to growth—and how implicit theories of interest can thwart or facilitate engagement. We then turn to a discussion of research on the relation of interest to task performance and persistence, and how different modes of interested engagement can affect these outcomes.

Finally, we discuss how interest can be an outcome, rather than an antecedent, of engagement. This chapter is not meant to be an exhaustive review but instead highlights important themes and findings in scientific examinations of interest as a motivational variable.

Psychological Engagement: The Experience of Interest

One of the factors that make interest an important motivational process is how it is experienced. Our experience of an activity can influence whether we are intrinsically motivated to maintain engagement or to re-engage in it in the future. How interest influences our attention and affect are two particularly important aspects of the experience. Furthermore, our attention and affect can vary widely, and different patterns of engagement tend to emerge depending on qualities of the situation or the activity. This section will explore these issues in more detail.

Interest and Attention

Millions of items of the outward order are present to my senses which never properly enter into my experience. Why? Because they have no interest for me. My experience is what I agree to attend to. Only those items which I notice shape my mind—without selective interest, experience is an utter chaos. Interest alone gives accent and emphasis, light and shade, background and foreground—intelligible perspective, in a word. (James, 1890/1950, p. 402)

As William James suggested, interest has tremendous influence on our attention. More recently, research has shown that the relation between interest and attention is fascinatingly paradoxical, as interest can heighten attention yet reduce the need for attentional resources. When interest is aroused by external contextual features—whether it is because of something novel or complex, or whether it elicits uncertainty or conflict—our attention is piqued so that we can appraise and understand what we are experiencing (Berlyne, 1960; Silvia, 2005). To this end, interest can initiate intrinsically motivated learning and exploration (Silvia, 2008), such that the attention triggered by interest leads to learning about the world, others, and oneself.

Paradoxically, although we intuitively experience heightened attention while working on an interesting task, interest tends to reduce the need for attentional resources. Research shows that attention allocated during interesting tasks minimizes the self-regulatory resources needed (McDaniel et al., 2000; O’Keefe & Linnenbrink-Garcia, 2014). That is, interest can elicit spontaneous, rather than controlled, allocation of attention (Hidi, 1990, 1995). If a task is interesting, then it requires little-to-no effort to attend to it. In contrast, a boring task requires more attentional resources because people must self-regulate in order to maintain focus.

In a study by Shirey and Reynolds (1988), undergraduates read a set of individual sentences, one by one. After reading each sentence, students rated how interesting they thought it was. On half of the trials, a tone would sound and they were asked to indicate when they heard it. The researchers found that the greater the students' interest, the faster they were to recognize and respond to the tones. In other words, interesting sentences freed up attentional resources, allowing students to more quickly detect the tone. Similar results have been obtained in other research (e.g., Anderson, 1982; McDaniel et al., 2000).

Shirey and Reynolds (1988) also found that students' interest predicted recall of the sentences and shorter reading durations. Thus, although interest decreased the use of their attentional resources, it appeared to have increased the efficiency of engagement. Students spent less time reading while also recalling more content. How? Interest is also associated with a deep level of processing. For example, Schiefele and Krapp (1996) asked students to read a psychology essay and to then recall as much of it as they could. Their responses were later coded for various levels of processing. As predicted, the higher students' interest in the text, the more likely they were to recall individual ideas from the text and its main ideas. Furthermore, students were more likely to report new ideas—which demonstrated they had elaborated on the information in the essay—and to more accurately recall the sequence in which the ideas were presented. Similar findings have been found in longitudinal studies conducted in more naturalistic settings, such as classrooms (e.g., Krapp, 1999).

Interest and Affect

Although we tend to think of interest as a generally positive experience, interest—particularly situational interest—can feel either positive or negative. For example, when viewing the Milky Way on a clear night, people might experience it positively, accompanied by feelings of enjoyment, awe, or fascination. On the other hand, people could have their interest likewise piqued while driving passed a horrific traffic accident, causing them to examine the wreckage for something tragic. Horror and thriller films have a similar effect—we might be drawn to watch something that we know will fill us with fear, anxiety, or disgust, demonstrating that we can be both powerfully allured and attracted even as we are repelled (Miller, 1998).

Particular positive and negative experiences can also elicit interest. Silvia (2006; Chap. 5, this volume) argues that interest, in part, functions to counteract enjoyment and anxiety. If we continue to re-engage in something that we know will be enjoyable, we might never try anything new and forgo important learning opportunities. Similarly, if we avoid anything novel—possibly evoking uncertainty or conflict—we would not learn anything new. Interest, whether it is motivated by a positive or negative experience, motivates engagement.

Although situational interest can be associated with both positive and negative affect, people's more enduring and dispositional interests (i.e., individual interests),

however, are typically associated with positive affect. We tend to engage with content and activities that make us feel good or contribute to the possibility of positive affect in the future, such as making progress toward our long-term goals. The four-phase model of interest development, proposed by Hidi and Renninger (2006), suggests that, although interest can be experienced positively or negatively when situational interest is triggered, it becomes experienced more positively as interest develops. As people begin to find relevance or personal value in particular content or activities, interest becomes more internalized and enduring. In turn, people develop positive feelings for the content or activity and freely choose to re-engage in them over time.

The Scope of Attention and Modes of Engagement

As discussed earlier, we often experience interest as something that *narrows* and focuses the scope of attention, such as when we try to solve a fascinating puzzle or when learning a challenging song on guitar. Narrowed attention can seemingly shut out competing stimuli, and the world appears to fade into the background. Other times we find ourselves in a more exploratory mindset where attention is *broad* in scope and our curiosity guides our engagement, such as when we explore different strategies for solving a puzzle. Both modes are important and lead to different modes of engagement.

One instantiation of extreme interest where attention feels narrowed and focused is *flow* (Csíkszentmihályi, 1990). Flow is a relatively rare psychological state during which one experiences several things. First, one's full attention is on the activity at hand. There is a loss of self-awareness, and objects outside of one's immediate interaction are not noticed. This seemingly contradicts prior work showing that interest reduces the need for controlled attentional resources (e.g., Anderson, 1982; McDaniel et al., 2000; Shirey & Reynolds, 1988); however, it could be argued that interest in particular sentences—as examined by Shirey and Reynolds (1988)—is qualitatively different than being enraptured by an activity. Furthermore, in a flow state, people feel a complete sense of control. Perhaps more importantly, they lack anxiety about losing control, such as a baseball pitcher experiencing flow in the middle of a no-hitter. Finally, a flow state alters one's sense of time. One is so invested in his or her moment-to-moment experiences that they lose track of the duration of their engagement. Although this is often the case during flow states, it is not exclusively so. Activities that are time sensitive, such as many competitive sports, require people to be conscious of time.

How do flow states come about? Csíkszentmihályi, Abuhamdeh, and Nakamura (2005) outline three primary conditions. First, flow requires a clearly set goal. The goal provides purpose and direction during engagement. Second, there must be a balance between the perceived required skill level for the task and one's perception of their actual skill level. In other words, they must be working at the edge of their

abilities. For example, it would be difficult for professional musicians to experience flow if they were merely practicing scales. If they were in the middle of a challenging improvisation, however, it would require their full attention. Finally, the activity must provide clear and immediate feedback. Such feedback allows people to make online evaluations of their performance and progress.

While engaged, however, we are not always so narrow in focus. Flow is a relatively rare occurrence, after all. Instead, sometimes our interest causes us to be more broadly attentive. As previously noted, with some exceptions, interest is typically experienced positively. Fredrickson (1998; also see Izard, 1977) argued that positive emotions have a “broaden-and-build” effect, such that they broaden people’s momentary thought-action repertoire, which in turn builds physical, intellectual, and social resources. Interest, she argues, is one of these emotions and has the function of exploration.

Carver and Scheier (2004) posited a somewhat similar thesis. They argued that affect operates as a self-regulatory feedback loop to inform people about their progress toward goals—it signals what action is needed. Negative affect signals that goal progress is deficient. Positive affect, on the other hand, signals that one is on track or has done better than needed. In this case, positive affect would last a relatively short period of time and ease on back to a neutral state. During that time, however, people are free to explore more broadly because their current needs are met. This process is called “coasting” (Carver, 2003).

What causes interest to broaden versus narrow the scope of one’s attention? Often the goals in an exploratory state are not well defined, thus leading to a broader scope of attention. Working on a novel puzzle, for example, might motivate us to explore strategies for solving it, but without much familiarity with a particular type of puzzle, clear goals for solving it cannot be articulated. Furthermore, the perceived required skill level is too discrepant from one’s perception of their current skill level. Without familiarity of a particular type of puzzle, our skill level does not match the skill needed to solve the puzzle. Consequently, obtaining immediate performance feedback would not be possible. Finally, the purpose of engagement might specifically be to explore, such that one searches for novel strategies for solving the puzzle without being concerned about performance. By contrast, a narrow scope of attention is likely to result from a focused state in which one seeks to perform well on a familiar activity for which one’s skill level is appropriate to the demands of the task. Thus, interest can broaden or narrow attention for various reasons.

To sum, the psychological and experiential effects of interest are complex and varied. Interest can increase attention without increasing the allocation of attentional resources, it can instigate and cause both positive and negative affect, and it can cause us to narrow or broaden our attention. Together, interest, along with its attendant effects on affect and attention, serves to fill gaps in our knowledge and to aid the pursuit of goals. Additional empirical research will be needed to further understand how interest can influence the narrow and broad scope of attention.

The Role of Implicit Theories of Interest in Triggering Engagement

What prompts interest-based engagement in the first place? As discussed above, there are a number of reasons interest is elicited by an external source—novelty, complexity, conflict, or something unexpected. Another reason that has received less attention in the literature, however, concerns people’s beliefs about the nature of interests—that is, the role of *implicit theories of interest*. Before engaging in particular activities or content areas, people approach the situation armed with different beliefs about the malleability of interest. They might believe that interests are fixed, inherent, and “revealed” at some point, or they might instead believe interests are developed and able to change and grow. These distinct beliefs about the nature of interest create meaning systems that influence the way people interpret their involvement with certain activities and content areas, as well as how to manage their engagement. Consequently, these two implicit theories have important implications for motivation and engagement, which have been examined by O’Keefe, Dweck, and Walton (2015).

First, if interests are believed to be inherent (a “fixed” theory) and one’s interests have already been discovered, then it should preclude the adoption of other interests. In other words, if one’s “true” interests have already been found, why keep looking for others? By contrast, engagement has a different meaning for someone who believes interests are developed (a “growth” theory). If interests are believed to be developed, then new interests can be fostered despite having already established core interests.

To examine these hypotheses, O’Keefe and colleagues (2015) designed an experiment that introduced fixed and growth theorists to topics that either matched or mismatched their core interests. They recruited college students who reported a well-developed interest in either the arts and humanities or science and technology in prescreening (those who reported interest in both or neither were not invited to participate). During the prescreen, they also measured students’ implicit theory of interest by asking them to report their level of agreement with questions such as “You can be exposed to new things, but your core interests won’t really change.” At a later date, students came to the lab and read two articles taken from real academic journals. One was related to the arts and humanities and the other was related to science and technology. After reading each article, they rated their level of interest in it. The stronger students’ fixed theory, the less interested they were in the mismatching article. For example, someone with a well-developed interest in the arts and humanities expressed relatively little interest in the science and technology article, as compared to students with a stronger growth theory. Both fixed and growth theorists, however, expressed the same amount of interest in the article that matched their area of well-developed interest. Critically, these findings held when controlling for the strength with which students held their core interest and the degree to which they were open to new experiences. These results were also replicated in a study that experimentally induced theories of interest by having participants first read a persuasive editorial-type article that either promoted a fixed or growth theory.

Another implication stemming from implicit theories of interest is that they will influence one’s motivation to pursue a new, strong interest (i.e., a passion) in different ways. If interests are thought to be inherent, then when discovered, they should provide limitless motivation and be relatively easy to pursue. If an activity is difficult and one’s motivation wavers, then it must not be a “true” interest after all. By contrast, if interests are developed, then they should grow over time, and the developmental process should be expected to present challenges along the way. Supporting these assertions, a survey in which undergraduates wrote about what it is like to find a passion showed that those with a stronger fixed theory were more likely to believe that passions would provide limitless motivation. By contrast, those with a stronger growth theory were more likely to mention that pursuing passions would be difficult at times.

If a fixed theory is associated with the belief that pursuing a new interest should be limitlessly motivating, then what happens when pursuing that interest actually becomes difficult? To answer this question, O’Keefe and his colleagues (2015) recruited undergraduates early in their college career—when students are “finding” their interests—and brought them to the lab. The students were first randomly induced to hold either a fixed or growth theory of interest. Then, to spark an interest, students watched a short, fun, animated video on Stephen Hawking’s theories about black holes, which most (80%) found fascinating. Those participants moved on to the next part of the study, in which they read the first page of an article on black holes taken from *Science*—significantly more substantive and more difficult to understand than the video. Afterward, they rated their interest in black holes and also reported their perceived difficulty in understanding the article.

What happened to people’s interest in black holes now that engaging in the topic became difficult? Would their motivational expectations be confirmed and affect their level of interest? For those who thought the article was easy to understand, there was no difference in the level of interest in the black holes article between those induced with a fixed or growth theory—after all, pursuing their new interest never became difficult. But for those who perceived the article to be difficult to understand, a different pattern emerged. For those induced with a fixed theory, their interest dropped dramatically. For those induced with a growth theory, their interest dropped a bit, but not nearly as much compared to those in the fixed condition. In fact, the mean for those in the fixed-theory condition was statistically significantly below the midpoint of the scale, suggesting that a topic they found fascinating approximately 5 min earlier was now uninteresting to them. In comparison, those in the growth condition maintained an interest in the topic, presumably because the difficulty they encountered did not conflict with their expectations or cause them to second-guess their initial excitement about the topic.

This research shows that people’s basic beliefs about the nature of interest—whether interests are inherent or if they grow through a developmental process—have important consequences for motivation and engagement. A fixed theory limits the scope of possible interests and creates potentially maladaptive expectations about how easy it is to pursue “true” interests. By contrast, a growth theory is

associated with a larger scope of interests and potentially adaptive motivational patterns once pursuing those interests becomes difficult.

The Role of Interest in Task Performance and Persistence

As we have discussed, interest can elicit intrinsic motivation, but does it facilitate effective goal pursuit? In a word, yes, but its relation to task performance and persistence is not straightforward. Because interest can narrow or broaden one's attention, it has the potential to increase or decrease task performance and persistence. As previously mentioned, broadened attention is associated with exploration, which can be critical for learning and other goal pursuits. It may, for example, increase persistence but decrease performance on a novel task because the individual might prioritize finding new strategies for solving problems over their actual performance on those problems. Narrowed attention, however, is usually associated with a clearly defined goal and a reasonable understanding of how to achieve it. Therefore, it can decrease time spent on the task but increase performance. In other words, interest can lead to different modes of engagement. In this section, we discuss research demonstrating this complex relation between interest and task performance and persistence.

Interest and Performance

To begin, it is well documented that interest can increase learning and performance (e.g., Durik, Shechter, Noh, Rozek, & Harackiewicz, 2015; Harackiewicz, Barron, Tauer, & Elliot, 2002; Hulleman, Godes, Hendricks, & Harackiewicz, 2010; O'Keefe & Linnenbrink-Garcia, 2014; Schiefele, Krapp, & Winteler, 1992). For example, in a study by Hulleman and Harackiewicz (2009), high school science students were asked to write about science topics throughout the semester. In a control condition, students periodically summarized what they were learning in their class—not dissimilar from what teachers typically ask their students to do. In the treatment condition, students periodically wrote about how what they were learning was relevant to their lives. In other words, the latter group made personal connections between the material and its usefulness. The benefits of the treatment condition were most apparent among students who had initially reported that they expected to perform relatively poorly in the course. After all, they had the most to gain from developing interest in science. At the end of the semester, those students not only reported increased interest in science, but also earned a higher grade—nearly a full letter grade higher—than those in the control condition who expected to perform poorly.

Interest, Performance, and Self-Regulation

How does interest increase performance? As previously mentioned, engagement driven by interest requires less attentional (or cognitive) resources. Conserving resources can help sustain engagement, especially during challenging tasks. Solving the Rubik's Cube, for example, could have a different effect on people depending on whether or not they find it interesting. Those with little interest might become mentally taxed in minutes and give up. Others who have a lot of interest might get deeply engaged, work on it for hours, and make good progress toward solving it. Rather than feeling mentally taxed, they might feel exhilarated by the experience.

Inspired by Csíkszentmihályi's (1990) work on flow, O'Keefe and Linnenbrink-Garcia (2014) sought to understand how people sustain deep levels of focused effort, perform at high levels, and feel energized by the task rather than mentally exhausted. They assumed that two facets of interest played an important role in maintaining mental energy during a task: affect-related interest and value-related interest. Affect-related interest refers to one's feelings of enjoyment, excitement, or fascination with regard to a particular activity, which plays a role in initiating and sustaining engagement. By contrast, value-related interest refers to how important the activity is to oneself or the personal connection one has with it. The researchers theorized that performance would be highest, and energy would be sustained rather than depleted, when both affect-related and value-related interest are high because the experience would be both positive and focused by the value of doing well on the task.

First, the researchers conducted a lab study to test the prediction that performance would be highest when both facets of interest are high. Undergraduates read instructions for a word puzzle they would work on next. After reading the task instructions, but before completing the task, they reported their level of affect-related interest. Afterward, the researchers manipulated participants' value-related interest by framing their performance on the task as either diagnostic of intellectual ability or not diagnostic. Subsequently, participants worked on each puzzle and could progress to the next one at any time until they were done with all five. As predicted, those in the high value condition who also reported high affect-related interest performed the best.

To test their second hypothesis—that high affect-related and high value-related interest would optimize performance while buffering against mental exhaustion—the researchers conducted a second study in which participants first read the instructions for an anagram task that was to follow. Before beginning, the task, participants reported their affect- and value-related interest for the task; then they worked on a set of 20 anagrams for 5 min. Up to this point, however, participants were under the impression that the anagrams were for an unrelated pilot study. This cover story was used to ensure

that the anagram task was not framed as a challenge and that engagement would not be motivated by the desire for achievement, but instead by their interest in the task.

After the anagram task, the experimenter returned to inform the participants that they would now begin the “real” study, which involved holding a hand grip—the type used for exercise—closed for as long as they could. If they felt they had exhausted themselves on the anagram task, then they would be less able to override the impulse to let go of the grip when it became difficult. In other words, the longer participants were able to hold the grip closed, the more perceived resources they would have had left over from the prior task. As predicted, people who reported both high affect- and value-related interest solved among the most anagrams but showed the least depletion on the hand-grip task—their high performance did not come at the cost of mental exhaustion. On the whole, these findings suggest that the combination of high affect- and value-related interest buffers against depletion, which has important implications for the role of interest in sustaining engagement.

Modes of Engagement and Performance

The study by O’Keefe and Linnenbrink-Garcia (2014, Study 2) also found that different combinations of affect- and value-related interest impacted performance differently, which may have been influenced by variations in participants’ mode of engagement. For example, engaging in a task that is high in affect-related interest but low in value-related interest led to relatively poor performance. This may not be detrimental, however. It might reflect a different mode of interested engagement—an exploratory mode—in which participants prioritized the experience of the task (such as their enjoyment and fascination with the task) and prioritized performing well to a lesser extent. Alternatively, these individuals might have been in another type of exploratory mode, in which they experimented with new strategies for completing the problems instead of prioritizing a high score on the task. By contrast, engaging in a task that was low in affect-related interest and high in value-related interest not only led to relatively poor performance, but was also depleting. This result may have stemmed from a different mode of interested engagement—a focused mode—such as when studying for an exam because you want to do well, but you do not enjoy the topic or activities. We encourage future research to empirically investigate how the affect- and value-related interest people hold for particular tasks give rise to different modes of engagement.

Modes of Engagement and the Trade-off Between Task Performance and Persistence

If one's interest is more exploratory in nature, then the purpose of one's engagement will likely be their experience (e.g., fascination, enjoyment) or to understand the task at hand. By contrast, if one's interest in an activity is more focused, performance will likely be of higher priority. This distinction between modes of interested engagement highlights a potential trade-off between task performance and persistence, such that performance may suffer if individuals persist on a task in order to enjoy themselves or hone their skills rather than immediately excel.

These trade-off effects would be expected to go in the opposite direction as well, such as when the needs of a given goal dictate the mode of engagement. In other words, when the purpose of engagement is the experience or to understand, an individual would likely enter into an exploratory mode; when the purpose of engagement is performing well, however, an individual would likely enter into a focused mode of engagement. Along these lines, in a study by Sansone and colleagues (1992), participants worked on a task that was either uninteresting (copying letter matrices) or interesting (searching for words in those matrices). Half of the participants in the uninteresting condition were also told that there were health benefits to copying the letter matrices, thereby giving them a reason to persist on the task. Those in the uninteresting condition who also had a reason to persist spent their time exploring ways to make it more interesting, such as varying the copying procedure, but copied fewer letters overall, suggesting that they had shifted toward an exploratory mode of engagement and prioritized the experiential aspect of the task over performance.

In another study conducted by Sansone, Smith, Thoman, and MacNamara (2012), undergraduates taking an upper-division course online (vs. on campus) tended to explore the online course materials to a greater extent than on-campus students, in an effort to make studying for an exam more enjoyable. Moreover, the subset of online students who reported greater exploration of course materials also reported just as much interest in the course as those who took it on campus, although they did not perform as well. Their efforts to increase their interest through exploration may have detracted from their goal to perform well in the course.

Therefore, interested engagement that is exploratory in nature can come at the cost of performance. But this is not necessarily a problem. Exploration can increase interest and aid learning, which can improve future performance.

Engagement Can Promote Interest

As we have seen, interest can spark intrinsic motivation. This spark can then lead to re-engagement over time, so it is important to consider what qualities of engagement best lead to interest. In this section, we discuss research from multiple theoretical approaches that demonstrates how interest can result from engagement.

Cognitive Dissonance, Insufficient Justification, and Overjustification

In their seminal study, Festinger and Carlsmith (1959) examined how cognitive dissonance could affect beliefs and ultimately one's interest in an activity. They had participants work on two boring tasks. In the first, participants put spools on a tray, one by one, then emptied the tray and repeated this process for half an hour. Next, they were presented with a grid of pegs and were asked to turn each a quarter of the way, one by one. When they finished all of the pegs in the grid, they started the procedure over again and repeated this process for another half an hour. Painfully boring, right? After completing the two tasks, the experimenter asked if the participant would be willing to tell the next participant—a confederate of the study—how great the tasks were. Depending on the condition, participants were told that they would be paid either \$1 or \$20 in return for their help. Those in the control condition were simply asked to wait in another room.

Afterward, participants were interviewed about their interest in the tasks and provided ratings. Those in the \$1 (vs. \$20) condition reported greater enjoyment and desire to re-engage in the activities (although this latter effect fell just short of statistical significance). Participants in the \$20 condition had a strong justification for why they lied to the confederate—they were being paid quite well. In the \$1 condition, however, there was insufficient justification. Participants did not have a good reason for claiming the tasks were fun, so their belief about the interestingness of the task changed to become more aligned with what they said, thereby resolving the dissonance.

Just as insufficient justification can increase interest, overjustification can decrease it. In a classic study, Lepper, Greene, and Nisbett (1973) examined the consequences of offering an external reason for doing what one would normally do for intrinsic reasons. In their study, children who had a preexisting interest in drawing were randomly assigned to one of three conditions. In one condition, children were told they would earn an award for drawing pictures. In the other conditions, they either earned an unexpected award after drawing some pictures or were not told anything about an award. What decreased interest in drawing? Earning an expected award. Expecting the award changed how children interpreted their engagement in the activity. It provided an external reason for doing what they already enjoyed, thereby decreasing their interest in the activity.

Making the Uninteresting Interesting

Aside from resolving dissonance, interest can result from motivated modifications of engagement. For example, when given an uninteresting task, people tend to develop strategies to make it interesting, thus helping them maintain engagement (Sansone et al., 1992; Sansone et al., 2012). Furthermore, when people are permitted to choose

how long they work on an activity, they apply these strategies and persist longer (Sansone, Wiebe, & Morgan, 1999). As described earlier, a study by Sansone and colleagues (2012) showed that undergraduates who took a psychology course online—which yielded less overall interest in the course than for those who took it on campus—reported higher levels of interest if they had explored the material on the course website. Together, these studies suggest that people modify their behaviors in order to make engagement more interesting and to maintain motivation.

Social Engagement

Interest can also be sparked by social engagement. Humans are inherently social creatures, and over millennia, we have learned to cooperate and coordinate our collective behaviors. Doing so improved our evolutionary fitness. So it should not be surprising that interacting with others is often experienced positively. Notably, social interaction—whether real or imagined—can maintain or increase interest in particular activities. For example, when participants were led to believe they were working with another person on a challenging task, they persisted longer, reported higher interest and enjoyment in the task, and spent less self-regulatory resources while engaged (Carr & Walton, 2014). Other work by Plass, O'Keefe, and colleagues (2013) examined the effect of playing an educational math video game alone, in competition, or in cooperation with another student. In comparison to playing the game alone, both competition and cooperation—social modes of engagement—increased interest and enjoyment of the math game.

Another person's responsiveness during a social interaction can also influence interest. Pasupathi and Rich (2005) had pairs of friends participate in a study for which one was randomly assigned to play a game and the other was assigned to listen to the player's description of the game afterward. Unbeknownst to the players, these "listeners" were further instructed to be attentive, disagreeable, or distracted (i.e., unresponsive) while listening to their friend's description. Post-game interest was maintained for players whose friend was responsive to their description; that is, their friend was either attentive or disagreeable. When the listener appeared distracted, however, players' interest decreased. Thoman, Sansone, Fraughton, and Pasupathi (2012) found similar results when they examined structured discussions in a forum for an online psychology class. The frequency with which other students responded to students' posts was positively related to their interest in the course. In sum, social interaction can promote interest, and increase motivation and engagement.

Goal Orientations

People vary with regard to their reasons for engaging in particular activities, which color our interpretations of relevant events and how we respond to them. Generally speaking, these are known as goal orientations, which can play an important role in determining whether we sustain or lose interest.

Higgins (1997, 2000) posits that when people engage in a manner that supports rather than disrupts their goal orientation, they experience *regulatory fit*, which makes them “feel right” about their engagement. For example, a student eagerly working to earn an A in a course might do reading beyond what is required or visit a relevant museum. Because the student’s eagerness supports the manner of her engagement, she would experience regulatory fit. If that same eager student instead focused on simply meeting the course requirements, she would experience regulatory nonfit. The experience of fit (vs. nonfit), in turn, has been shown to strengthen and sustain engagement (e.g., Freitas & Higgins, 2002; Higgins, Idson, Freitas, Spiegel, & Molden, 2003).

In a study examining the role of regulatory fit in promoting interest, Higgins, Cesario, Hagiwara, Spiegel, and Pittman (2010) had participants play a fun game, who were then given a reward contingent on their performance. Those who were given a reward in a fun and enjoyable way, as opposed to in a serious way, were more likely to voluntarily re-engage in the activity. The manner in which the reward was delivered fit with the participants’ goal orientation, thereby sustaining their orientation to have fun. Conversely, the researchers also found increased likelihood of task re-engagement when a serious reward was provided after an important (vs. fun) task.

Research from a different theoretical perspective has also shown a reciprocal relation between the manner of engagement and interest. With regard to competency-related goals, achievement goal theory suggests that there are two main goal orientations that guide engagement. A *learning goal* (also known as a mastery goal) refers to a focus on learning and improvement. A *performance goal*, by contrast, refers to a focus on either demonstrating competencies when positive judgments are expected or avoiding appearing incompetent when negative judgments are expected. Harackiewicz, Durik, Barron, Linnenbrink-Garcia, and Taueret (2008) found a reciprocal relation between interest and a learning goal. Across a semester in an introductory psychology course, students’ initial interest in the topic predicted their tendency to adopt a learning goal. That is, having an interest in psychology motivated them to learn more about the subject. In turn, delving into the material enriched their understanding of it, increasing their interest. Not only did engagement in the material lead to increased interest, but this recursive process also continued throughout the semester. Taken together, the various goal orientations we hold while engaged can powerfully shape our level of interest.

Personal Relevance and Utility Value

When one’s engagement is personally relevant, interest can increase. As mentioned earlier, Hulleman and Harackiewicz (2009) demonstrated this by having students periodically write about the relevance of what they were learning in their science class to their lives. For students with low perceived competence, not only did writing about the class’s relevance increase their interest in the subject, but it also increased their performance. Later, in a randomized controlled field study, researchers targeted high school students indirectly through their parents (Harackiewicz, Rozek, Hulleman, & Hyde, 2012), as parents are an often untapped resource for conveying the importance of science, technology, engineering, and math (STEM) to their children. Across 15 months, the researchers provided parents with brochures and a website with information about the usefulness of STEM in daily life and for various careers. The materials also included suggestions about how to talk with their children about the relevance of STEM to their lives. As compared to the control condition, in which parents did not receive any of the materials described above, the children in the intervention took, on average, nearly one more science and math course in the last two years of high school and reported greater utility value for STEM fields after graduation—both reliable indicators of interest.

Conclusion

Interest sparks a motivational process in which people become driven by what they *want* to do rather than what they feel they *must* do. This chapter has revealed ways in which interest can influence why we initiate, maintain, and re-engage in our goals over time. Because interest can be piqued either by encountering something new and unknown, or by feeling a personal connection to a content area or an activity, it can elicit intrinsic motivation. Moreover, interest can manifest itself in different modes of engagement that aid learning and performance; specifically, interest can either broaden attention, leading us to explore, or narrow attention, causing us to focus. Both modes can help individuals problem-solve and perform well.

That being said, much of the work examining the exploratory (e.g., Fredrickson, 1998; Izard, 1977) and focused (e.g., Csíkszentmihályi, 1990) modes of engagement elicited by interest has been theoretical, with limited empirical evidence. Given that interest serves these two functions, each with different associated outcomes, it is important for researchers to more clearly understand how and why they manifest. Such research will add to our understanding of interest’s important role in problem solving and goal pursuit.

Researchers should also consider the role of implicit theories of interest (O’Keefe et al., 2015) in the development of interest. Hidi and Renninger (2006) proposed a four-phase model of interest development, beginning with triggered situational interest and transitioning into well-developed individual interest across several

phases of increased stored knowledge, positive feelings associated with the content or activity, and personal relevance. Research on implicit theories of interest, however, suggests that the entire process might be thwarted if one does not believe that interests can be developed in the first place. Consequently, the research suggests that implicit theories of interest should be incorporated into the four-phase model.

More generally, we hope that insights from this chapter will inspire researchers to empirically investigate this important area of motivation science and will sharpen our understanding of the interplay between interest, motivation, and engagement. A clearer understanding of the multifaceted role of interest will help elucidate the functional role it plays in goal pursuit and how it is best promoted.

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