

## The Means-Ends Fusion Model of Intrinsic Motivation

Kaitlin Woolley, Cornell University

Ayelet Fishbach, University of Chicago

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Correspondence:

Kaitlin Woolley  
SC Johnson College of Business  
Cornell University  
114 Feeney Way  
Ithaca NY 14853  
Email: [krw67@cornell.edu](mailto:krw67@cornell.edu)

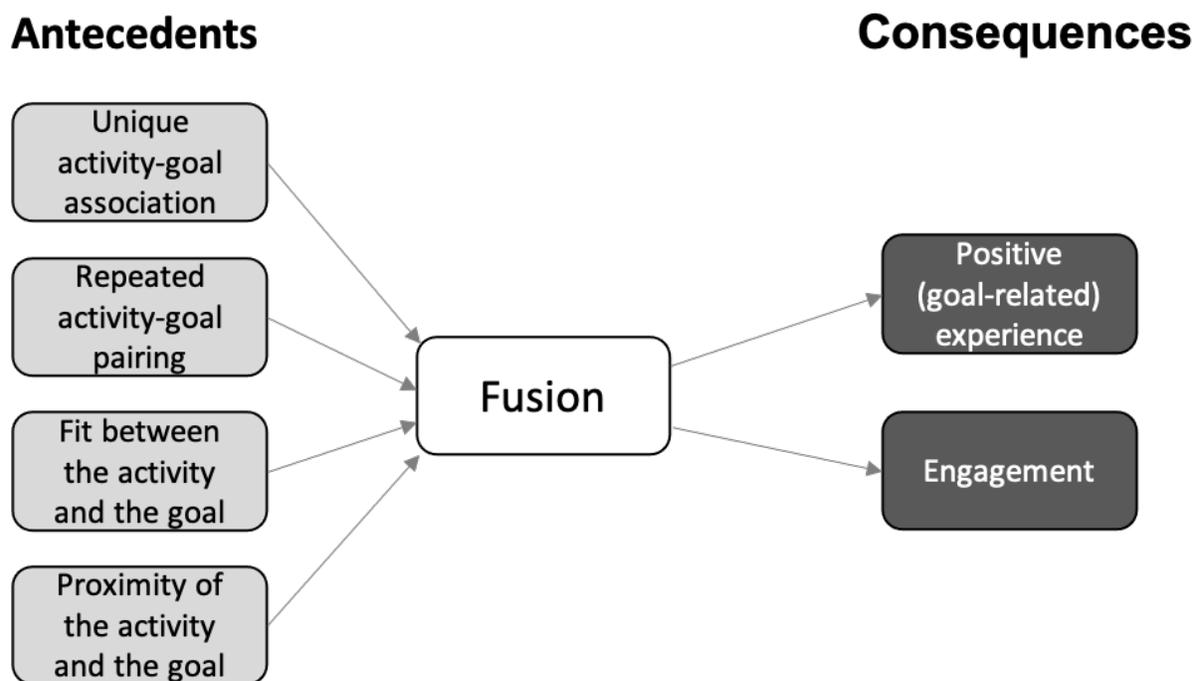
When a reporter in Philadelphia asked George Mallory in 1923 why he wanted to climb Mount Everest, the early mountain explorer answered, “Because it is there.” This answer may seem surprising and unsatisfactory, especially given prior understanding of what motivates behavior. You may have expected Mallory to point to specific reasons for climbing, such as a desire for mastery, to be in control, or possibly to achieve money or fame. Yet Mallory gives none of these reasons.

Our recent research can help explain what Mallory meant. For him, climbing Mount Everest was rewarding in and of itself – he did not have an ulterior goal. Rather, he was intrinsically motivated to climb. Those who are intrinsically motivated cannot separate pursuing the activity from receiving its benefits. They engage in the activity simply to do it – pursuing the activity *is* their goal. In the person’s mind, there is a perceptual fusion between the activity and its purpose; these two are one.

This view of intrinsic motivation is based on a structural perspective, which defines intrinsic motivation as experiencing an activity as its own end. This new perspective is informed by over twenty years of research on Goal Systems Theory (see Chapter 1 in this volume; Kruglanski et al., 2002). It argues that intrinsic motivation arises from the cognitive associations between means and their end goals (Fishbach & Woolley, 2022; Kruglanski et al., 2018). That is, people are intrinsically motivated when the means and end are mentally fused. Thinking about one necessarily brings the other to mind. For a mountain climber with a goal to summit Everest, thoughts about climbing (means) bring about thoughts related to conquering Everest (end) and vice-versa.

The present paper details this structural perspective of intrinsic motivation and the corresponding Means-Ends Fusion (MEF) model (Figure 1). We explain how the MEF model, which identifies intrinsic motivation as the perceptual fusion between an activity and a goal, advances understanding of what it means to be intrinsically motivated. Throughout, we focus on four key antecedents of fusion, and the consequence of this fusion for persistence in goals. By understanding the meaning and causes of intrinsic motivation, we not only enrich theory on how to increase motivation in goal pursuit, but further propose interventions that can help people facilitate achievement of important life goals.

**Figure 1:** The MEF theoretical model. Light gray shapes indicate antecedents of means-end fusion; dark gray shapes indicate consequences of means-end fusion.



### What Does it Mean to be Intrinsically Motivated?

Intrinsic motivation has received wide attention in the literature, and for good reason. People who are intrinsically motivated experience benefits in the workplace, academics, health,

and beyond (Grant & Berry, 2011; Ng et al., 2012; Van den Broeck et al., 2021; van Egmond et al., 2017). When people are interested in and enjoy activities that facilitate important life goals, they are more likely to achieve these goals (Li, Han, Cohen, & Markus et al., 2021). For example, intrinsic motivation predicted greater school attendance among female students in rural Malawi (van Egmond et al., 2017) and successful pursuit of New Year's resolutions among adults in the USA (Woolley & Fishbach, 2017). The reason? It is easier to pursue activities that are strongly associated with the benefits they achieve.

The rich literature on intrinsic motivation offers several perspectives. This chapter focuses on the structural perspective, that is, the MEF model, which identifies unique antecedents not previously examined as drivers of intrinsic motivation. Predicated from Goal Systems Theory (Kruglanski et al., 2002, 2015, 2018; see also the Introduction in this volume), the MEF model explores the structural relationship between end goals and their means of achievement. Such means-end relationships are knowledge structures organized around associative networks, whereby higher order goals are connected to lower-level means of attainment. According to the MEF model, goals that are closely connected to their means result in greater intrinsic motivation than goals that are clearly separated from their means. In the following section, we first detail how this model arose, as well as why we believe it is a more comprehensive predictor of behavior than other conceptualizations of intrinsic motivation.

### **The Means-Ends Fusion Model of Intrinsic Motivation**

The primary tenet of the MEF model is that intrinsic motivation results from a perceptual fusion between a means and its end (Kruglanski et al., 2018; Woolley & Fishbach, 2018). That is, to be intrinsically motivated means that the action one engages in and the outcome one achieves are strongly connected, such that they form a unified Gestalt and cannot be separated (Heider, 1958).

According to this perspective, intrinsic motivation lies on a continuum based on the strength of the means-ends association. To understand this concept, it helps to understand the underlying theory regarding goal systems (Kruglanski et al., 2002). Within a goal system, goals exist in a hierarchy and are cognitively linked with corresponding means of attainment. A means may achieve, and thus be linked, to a subgoal, which in turn achieves and is linked with an overarching goal. Means that are strongly associated with a goal, such that they are perceptually fused, are experienced as more intrinsically motivated. Means that are more distally connected to a goal are less intrinsically motivated. For example, someone who sees running (means) as the primary way of achieving fitness (ends) will be more intrinsically motivated to run in pursuit of fitness than someone who sees running as one of many means of achieving fitness, in which case running is less strongly associated with the fitness goal. That is, a "unifinal" structure in which there is a single, and thus strong association between means and ends results in greater intrinsic motivation than an "equifinal" structure in which multiple means serve a single ends (see also the Introduction of this volume for goal systems structures).

#### **Empirical Support for the MEF Model**

One of the earliest studies supporting the MEF model explored affect transfer in goal systems (Fishbach, Shah, & Kruglanski, 2004). These studies found that the close association

between a goal and an activity can cause positive affect from a goal to transfer over to the activity by which the goal is achieved. Different goals result in different emotional outcomes (e.g., relief, pleasure, or pride). Accordingly, this research further found that the stronger the means-end association is, the more the emotions that characterize goal attainment—be that relief, pleasure, or pride—come to characterize the activity as well. Importantly, a necessary condition for affect transfer to occur was that the means and ends were closely associated.

More recent empirical support for the MEF model comes from research that formalizes and tests a mathematical model for the association between means and ends (see Chapter 14 of the current volume; Melnikoff et al., 2022). One study manipulated the strength of the association between mouse clicks on a tile (means) and receiving bonuses (ends). In line with the MEF model, when there was a stronger association between the means and ends, such that clicking was more likely to result in receiving a bonus, people were more intrinsically motivated. They found the tile clicking game to be more immersive, engaging, and engrossing.

Other conceptualizations of intrinsic motivation agree with the MEF model (Amabile, 1993; Heath, 1999). Research on academic performance distinguished between work orientation, which focused on long-term rewards from fulfilling career expectations (hence, weak means-end association), and intrinsic motivation, which focused on the short-term rewards of enjoying the ongoing experience (hence, strong means-end association). This research found that intrinsic motivation predicted high-school students' academic achievement (Wong & Csikszentmihalyi, 1991). Whereas students' intrinsic motivation to study predicted the difficulty level of courses they chose in high school, there was no corresponding effect of work orientation.

### **Structural versus Content Models of Intrinsic Motivation**

The structural perspective proposed by the MEF model is not the only model of intrinsic motivation. In particular, this model diverges from the content-based perspective, which explores the content of goals that are intrinsically motivating (Howard et al., 2017; Ryan & Deci, 2000). The content-based perspective assumes that certain goals are more likely experienced as their own end, and thus more likely to be intrinsic. For example, it argued that medical students who enter the profession to help those in need, and business students who desire to improve workers' lives and the economy, are both intrinsically motivated. In contrast, medical and business students who are driven by status, social recognition, or approval from others are extrinsically motivated (Greco & Kraimer, 2020).

Consistent with the content-based approach, when people pursue basic and innate (i.e., "internal") motives such as competence, relatedness, and autonomy, they tend to be intrinsically motivated. People pursuing these goals often experience them as their own end. In contrast, when people pursue motives such as status and money (i.e., "internalized") they tend to be extrinsically motivated, so they do not experience the pursuit as its own end (Ryan & Deci 2000).

Understanding what motives are innate and more likely to be intrinsically motivating, as well as how external motives come to be internalized, is an important aspect of motivation theory. However, this distinction has at times led to the conclusion that certain internal motives *are* always intrinsic, whereas internalized motives *are* always extrinsic. This is not necessarily the case. If an activity is strongly associated with an internalized motive, for example, it will be experienced as its own end and be intrinsically motivated.

To illustrate the distinction between the structural and content-based perspectives, consider the following activities: climbing a mountain and having dinner. Whereas these

activities are typically associated with intrinsic contents—satisfying exploration and affiliation goal contents, respectively—we can think of examples when this does not hold. Climbing a mountain may also achieve celebrity and social recognition, which are considered external contents. Further, dinner may be a means to achieving a job during a recruitment event. Even something like sex, often considered an internal motive, could be associated with external motives for a couple trying to conceive.

By utilizing a structural perspective of intrinsic motivation, we can move beyond content based approaches and identify situations that may be seen as intrinsic based on their contents, but are actually not intrinsically motivated when considering the relationship between the means and ends. At the same time, utilizing the MEF model allows us to harness contents typically seen as more *extrinsically* motivated, and fuse them more tightly with means of goal achievement, such that they instead becoming intrinsically motivating. That is, by associating extrinsic outcomes with their means, we can increase intrinsic motivation.

As an illustration, consider monetary rewards. Financial incentives are typically seen as extrinsic in that payment often arrives after engaging with an activity, and thus is cognitively separate from it. However, financial incentives are not always extrinsic, and in fact, can result in intrinsic motivation to engage in a paid activity when incentives are closely associated with that activity (e.g., for the gambler who experiences gambling as its own end).

Notably, despite the different perspectives, researchers tend to agree on how to assess intrinsic motivation. This is because these perspectives align in their definition of intrinsic motivation as *pursuing an activity as its own end* (Csikszentmihalyi, 2014; Deci, 1975; Deci & Ryan, 1985; Kruglanski, 1975; Kruglanski et al., 2018; Vallerand, 2007).

### **Assessing Intrinsic Motivation**

There are two primary assessments of intrinsic motivation, one which relies on self-reported experience (e.g., interest and enjoyment) during pursuit of an activity and the other that uses a behavioral indicator (engagement during a free-choice period).

To the first measure, actions that are intrinsically motivated are more interesting and enjoyable. As noted previously, from a goals-system perspective, the close association between an activity and its end leads to affect transfer—the positive properties of goal attainment transfer to the means of goal pursuit (Fishbach et al., 2004). Positive affect invested in the goal is transferred to the means assumed to serve that goal in proportion to the strength of the connection between the goals and means. Thus, if people report greater interest, curiosity, enjoyment, and other positive feelings, they are assumed to be intrinsically motivated (Amabile et al., 1994; Grant, 2008; Vallerand et al., 1992; Woolley & Sharif, 2021).

To the second measure, the *free-choice paradigm* assesses intrinsic motivation based on whether people choose to continue the activity during overtime. If people engage in an activity during “free choice” when they have the option to leave, we assume that they are intrinsically motivated (Lepper et al., 1973; Reeve & Deci, 1996; Woolley & Fishbach, 2018). So for example, someone who continues to read an excerpt from a book even after they are no longer required to do so by the experimenter, the teacher or the parent, is said to be intrinsically motivated to read.

Of course, people may at times initiate activities during free-choice for reasons unrelated to intrinsic motivation, such as a desire to show off (Ryan, Koestner, & Deci, 1991) or because the task was interrupted (i.e., the Zeigarnik effect, Reeve, Cole, & Olson, 1986). For this reason, using these two methods of assessing intrinsic motivation concurrently, and measuring their correlation, is beneficial to be certain intrinsic motivation is captured (Reeve & Deci, 1996).

Indeed, it is frequently the case that these measures are correlated, as people often choose to pursue activities during free choice that they anticipate enjoying more (Woolley & Sharif, 2022).

#### Four Antecedents of Intrinsic Motivation

Although the structural and content based perspectives on intrinsic motivation rely on similar measures to assess intrinsic motivation, these perspectives identify different factors that bring about intrinsic motivation. The MEF model offers a set of antecedents of intrinsic motivation that are summarized in Table 1. What connects these four different antecedents is that they strengthen the means-end association.

**Table 1**  
*Antecedents of Intrinsic Motivation*

Phenomenon	Definition	Examples
Unique means-end association	A means achieves fewer end goals, and those goals are only achieved by this means	People were more intrinsically motivated to “hang out with others” to pursue a relatedness goal when hanging out with others was described as a single means to achieve relatedness than when it was one of many means (Bélanger et al., 2015).
Repeated pairing of the means with its end	A means frequently achieves an end goal	Repeatedly pairing unknown beer brands with positive affective stimuli (i.e., images of people having fun) increased brand evaluations compared with pairing the beer brands with neutral stimuli (Sweldens, Van Osselaer, & Janiszewski, 2010).
Similarity of means-end pairing	The end goal and the means are similar	Participants playing a computer game with a performance goal were more intrinsically interested in the game when it was described as a “game of skill” (which better matched the performance goal) than when it was described as a “fantasy game” (Sansone, Sachau, & Weir, 1989).
Immediacy of ends in relation to means	A means achieves an end goal earlier	Participants reading a book excerpt who expected payment for reading to arrive that day (vs. that month) enjoyed reading more and chose to continue reading the excerpt when given free time (Woolley & Fishbach, 2018).

#### Unique Means-End Association

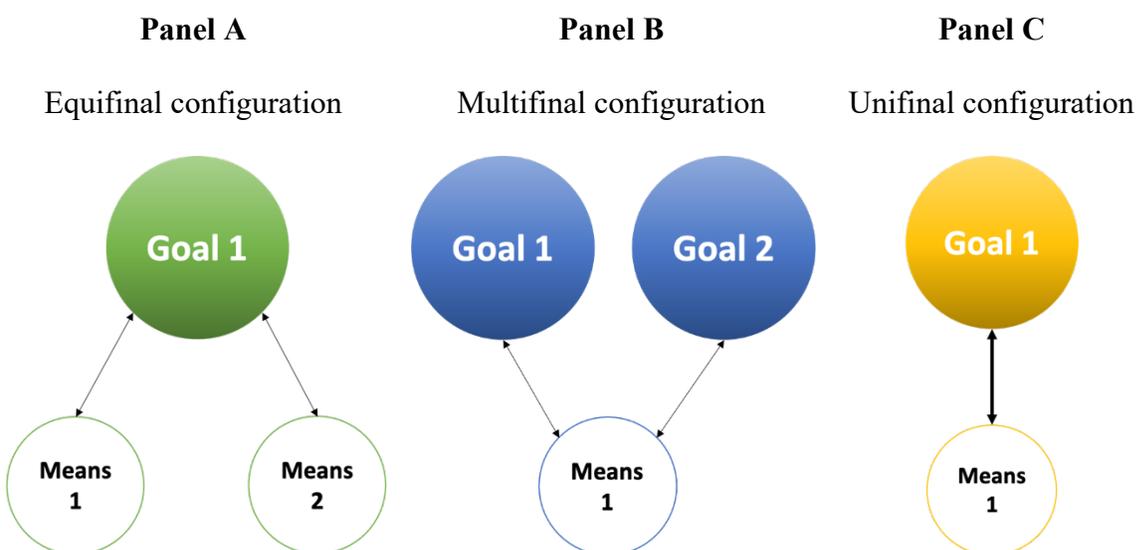
Having a unique association between a means and its end goal strengthens the activity goal connection, and therefore intrinsic motivation. The fewer the number of links between a

means and its end, the stronger the bond between them. This notion reflects Anderson's (1983) *fan principle* whereby the greater the number of links between a cue and a concept, the lower the ability of the cue to activate the concept.

Consider the example of someone who sees running as one of several means of achieving fitness. This is an equifinal configuration, in which running is less strongly associated with the fitness goal (Figure 1, panel A) compared with if running were the only means to achieve fitness. The MEF model proposes that in equifinal configurations, the association between a single means and its corresponding goal may be weakened through the addition of alternative associations between the goal and other means that can achieve the goal. This in turn could reduce intrinsic motivation.

### Figure 1

Having an equifinal configuration (Panel A) or a multifinal configuration (Panel B) results in lower intrinsic motivation than having a unifinal means-end configuration (Panel C).



In one study demonstrating how multiple means undermine intrinsic motivation, adding more means to a goal diluted the means-end association, which in turn reduced intrinsic motivation to engage in the means (Bélanger et al., 2015). Specifically, participants pursuing a

goal of connecting with others (i.e., relatedness) viewed either one means to achieve this goal—hanging out with other people (unifinal)—or two means—(1) hanging out with other people and (2) helping other people (equifinal). Participants believed that hanging out with other people was less effective for achieving their relatedness goal when hanging out with others was one of two means to achieve relatedness than when it was the only means to achieve relatedness.

Furthermore, people reported less intrinsic motivation to hang out with other people when it was one of two means (vs. the only means) of achieving relatedness.

To further highlight the role of uniqueness of means in affecting intrinsic motivation, consider a multifinal configuration. For example, someone may run to improve their fitness, exercise their dog, and connect with other runners. In this case, a single means can serve multiple goals (Figure 1; panel B). Research on the dilution effect found that having multiple goals achieved by a single means undermines the association between the means and the goal (Zhang, Fishbach, & Kruglanski, 2007). A classic demonstration of this comes from research on the over-justification effect (Lepper et al., 1973). Children who love coloring without a reward had lower intrinsic motivation to color when a reward was added and then removed. Presumably, children draw for self-expression and adding a reward diluted the association between drawing and the original goal of self-expression, such that children were less intrinsically motivated to draw.

Research on healthy eating makes a similar point. In one study, 3-5 year old children who learned that carrots or crackers delivered benefits beyond good taste (i.e., served an additional goal, such as helping them to read or count) ate fewer carrots and crackers (Maimaran & Fishbach, 2014). The additional goal reduced the association between the means (eating carrots/crackers) and the initial goal (positive taste), undermining children's desire to eat these foods. Interestingly, in this research, unlike in the over-justification findings, the additional goal

(health benefits) was never removed. Nonetheless, because children mainly eat food because it is tasty, they were less interested in food presented as healthy. Adults show a similar effect. In a study conducted at campus dining halls (Turnwald et al., 2019), people ate more of a healthy food when the taste was emphasized (the primary motivation for eating food) than when the health was emphasized (an additional goal that eating food achieves). Presenting vegetables with taste-focused labels, such as “twisted citrus glazed beets” increased vegetable consumption relative to using health-focused labels, such as “heart healthy beets with oranges.”

Other research explores how a unique means-end relationship fosters intrinsic motivation. For example, a study on review writing (Woolley & Sharif, 2021) had participants write a review (means) either for a bonus payment (strong means-end association) or as part of a study that also offered a bonus unrelated to the review (weak means-end association). When a bonus was more strongly associated with reviewing, participants were more intrinsically motivated – they reported that review writing was more interesting and enjoyable, and they were more interested in writing a review in the future.

These findings highlight how a unique association between means and ends facilitates intrinsic motivation. Across these examples, the fewer links between means and ends, whether by having fewer means to achieve a single goal or fewer goals achieved by a single means, the greater the resulting intrinsic motivation.

### **Repeated Pairing of the Means with its End**

A second avenue for increasing the association between means and ends is through their repeated pairing. When an activity and outcome are frequently encountered together, they become cognitively linked.

Initial evidence for how this affects motivation comes from research on conditioning animal behavior. In a classic demonstration, chimpanzees learned to complete tasks to receive tokens, and to insert tokens to receive grapes (Hilgard & Bower, 1966). Whereas “earning” tokens was a neutral activity for chimpanzees, receiving grapes was a positive reward. In time, the repeated pairing of grapes for tokens led the activity of obtaining tokens to take on a positive value – activities performed to earn tokens became fused with the goal of food obtainment. The excitement of receiving the reward transferred to the behavior that led to it. Pulling the lever to receive tokens became enjoyable in itself.

With humans, a similar effect arises. Repeated pairing of an activity with its outcome causes positive associations from the outcome to transfer to the activity. Research on evaluative conditioning highlights this effect. Associating a neutral activity with a reward through repeated pairing facilitates liking of the neutral activity, even after the reward is removed (De Houwer et al., 2001). Extending this finding to brand and product evaluations, researchers found that pairing a pen with liked (vs. disliked) music increased preference for the pen (Gorn, 1982) and repeatedly pairing unknown beer brands with positive affective stimuli (i.e., images of people having fun) versus neutral images increased evaluations of the beer brands (Sweldens et al., 2010).

Overall, repeated pairing of an activity and a goal increases intrinsic motivation. The repeated experience of the activity and its outcome leads to greater perceptual fusion between the two.

### **Similarity of Means-End Pairing**

Greater similarity or fit between an activity and its goal also increases intrinsic motivation. Activities and goals that appear more similar or that otherwise fit together are

mentally connected (Higgins, 2005). This in turn, increases intrinsic motivation. For example, receiving payment in a coin-toss game, in which coins prominently featured in the game and fit with the outcome of winning money, increased intrinsic motivation to play (Kruglanski et al., 1975); playing the game was closely associated in players' minds with earning money. Although in other contexts it may be unintuitive to consider intrinsic motivation as resulting from payment, it was the similarity between the activity (coin-toss) and the outcome (winning coins) that enabled the connection. Thus, in the absence of monetary reward, players were no longer interested in the coin-toss game.

In another study, participants playing a computer game with a performance goal were more intrinsically motivated when the game was described as a "game of skill" (which better matched the performance goal) than when it was described as a "fantasy game" (Sansone et al., 1989). The better match, or perceived similarity, between the goal of the game and the means of achieving the goal facilitated intrinsic motivation.

A desire for fit can also affect reward choice. In one study, people were asked to review either 30 songs or 30 movies and then choose a reward to receive (three music CDs vs. three movie DVDs). A greater percent of people chose to receive CDs as their reward when their activity involved evaluating songs (56%) versus movies (19%), suggesting people desire a fit between activities and rewards (Kivetz, 2005). Rewards that are congruent or "fit with" the activity reinforce intrinsic motivation.

Other times, the activity fits the goal only in a particular time and place. Most people are intrinsically motivated to work during workdays and not during holidays or weekends. Students studying during a federal holiday, which was not a university holiday, thus experienced greater intrinsic motivation to work when they perceived this time as "standard work time" than when

they perceived this time as “non-standard” (i.e., as a holiday; Giurge & Woolley, 2022). The perception that one is working during non-standard work time undermines intrinsic motivation due to the lack of fit.

Other studies further find that doing things at the “right” time feels intrinsic. People prefer to eat breakfast food at breakfast time, and dinner food at dinner time (Markman, Brendl, & Kim, 2007). Relatedly, people prefer to receive good news at “the right time.” Learning that a goal *has been* attained results in more positive emotion than learning that a goal *will* be attained (Klein & Fishbach, 2014). As such, participants were happier when they received an official decision letter offering them a job, compared with if they first received an early, unofficial decision letter offering them a job followed by an official decision letter. Early positive news disrupted people’s script for their goal, such that it may be more intrinsically motivating to learn positive news about the goal at the time of goal attainment.

Similarly, research on regulatory fit identified that rewarding approach goals with rewards and avoidance goals with removal of rewards increases the perception of fit and hence, increases motivation (Higgins, 2005). So, for example, watching a highbrow movie fits a learning goal more than a relaxation goal. Therefore, people could be more intrinsically motivated to watch a highbrow movie when their goal is to learn. To facilitate intrinsic motivation, it helps to ensure a close fit between means and their end goals.

### **Immediacy of Ends in Relation to Means**

Activities that result in earlier goal achievement are more strongly associated with the goal. For this reason, an earlier arrival of a goal increases intrinsic motivation.

Consider a study in which students completed a survey in return for a chocolate reward (Woolley & Fishbach, 2018). Half of students received the chocolate while they were working

on the survey (but were not allowed to eat the chocolate until after they finished the survey) whereas the rest only received the chocolate after completing the survey. We found that when the chocolate prize was delivered *while* participants worked on the task, they were more intrinsically motivated—they indicated the survey was more interesting and fun. An earlier arrival of the chocolate reward led participants to associate it with working on the survey, which increased intrinsic motivation. Note however, that it is possible for a reward to be too early (i.e., before the activity), which might disrupt the means-end association rather than strengthen it. People likely do not want to celebrate goal achievement before they have officially completed the work (Klein & Fishbach, 2014); thus, to increase intrinsic motivation, the reward should arrive earlier in time, but should not be consumed before the work has started.

In another study, participants read a book excerpt with the goal of receiving a monetary bonus (Woolley & Fishbach, 2018). The bonus for reading either arrived earlier (that day) or later (that month). Participants who expected an earlier (vs. later) bonus reported greater interest and enjoyment of reading the book excerpt. They were also more likely to choose to continue reading during a free choice period, when they could either continue reading the book or do another task (with no effect of their choice on their bonus payment).

In the same study, we also tested whether the effect of reward timing on intrinsic motivation was due to a greater perceptual fusion between the means (reading) and ends (reward). We asked participants to rate how much they associated “reading” with “rewards” on a set of Venn diagrams, with more overlapping circles representing a stronger association. We found a stronger association in the immediate (vs. delayed) reward condition, which in turn mediated the effect of reward timing on intrinsic motivation to read the book excerpt.

At first glance, the finding that rewards can increase intrinsic motivation may appear to contradict the earlier findings on the dilution effect (Zhang et al., 2007). Recall that the dilution effect found adding new goals can decrease the association between a means and any one goal. Importantly, however, when there is no addition of a goal, manipulating the timing of when the goal arrives can affect intrinsic motivation. Rewards can increase intrinsic motivation when they are delivered earlier (vs. later) and are the sole purpose of pursuing the activity.

Providing an earlier (vs. later) reward can also facilitate healthy eating. As previously noted, people eat primarily for enjoyment. Serving healthy (but less tasty) food with tastier (but less healthy) food may be more effective than serving the tastier food later (e.g., as a dessert). For example, giving children healthy vegetables with less healthy peanut butter or cream cheese dips could encourage vegetable consumption and enjoyment of vegetables more than when offering children a tasty dessert for eating their veggies. Indeed, if children learn that eating vegetables gets them dessert, they may see vegetables as a means to dessert and not an end in themselves.

In general, outcomes that are typically seen as extrinsic (i.e., monetary rewards) can be used to facilitate intrinsic motivation when they are more immediately tied to the means. Thus, paying workers sooner facilitates greater intrinsic motivation to work and emphasizing the immediate benefits of vegetables (i.e., positive taste) increases intrinsic motivation to eat healthily.

### **Increasing Intrinsic Motivation and Persistence**

Understanding antecedents of means-end fusion gives us some insight into how to increase intrinsic motivation. In what follows, we detail three tested interventions to increase

persistence in long-term goals: factoring intrinsic motivation into choice, adding immediate benefits to goal pursuit, and shifting focus to immediate benefits (Table 2).

**Table 2**

*Interventions to increase intrinsic motivation and persistence in long-term goals*

<b>Phenomenon</b>	<b>Definition</b>	<b>Examples</b>
Factoring intrinsic motivation into choice	When people incorporate intrinsic motivation into choice, they persist longer.	Gym-goers who selected a workout from a limited set of options that were equally difficult completed more of the work when choosing one they would “enjoy doing” rather than one that was “useful for their health goals” (Woolley & Fishbach, 2016).
Adding immediate benefits	When people add immediate benefits to the activity, intrinsic motivation increases.	Pairing rewards with means, such as listening to fun audiobooks at the gym, increases gym attendance.
Shifting focus to immediate benefits	When people attend to immediate benefits (including the immediate, positive experience inherent in much of goal pursuit) intrinsic motivation increases.	People who focused on the positive taste of carrots consumed more carrots than those who focused on delayed benefits (health) or no benefits (color; Woolley & Fishbach, 2016).

### **Factoring Intrinsic Motivation into Choice**

The first strategy involves factoring in immediate gratification when choosing an activity that serves long-term benefits. People who choose workouts that they enjoy doing exercise more than those who dislike their workout routine (Segar, 2015). In a demonstration of this effect, we found that gym-goers who selected a workout from a limited set of options that were equally difficult completed more of the exercise when choosing one they would “enjoy doing” rather than one that was “useful for their health goals” (Woolley & Fishbach, 2016). Although people

reported primarily exercising for long-term health benefits, it is the immediate experience that determines persistence.

Whenever possible, people should aim to choose activities that enable them to experience intrinsic motivation. Although it appears straightforward, in practice it is not always intuitive. People often choose foods, jobs, or workout routines mainly based on the long-term benefits, yet whether they persist depends on their intrinsic motivation—they persist when pursuing the goal is immediately rewarding and feels like an end in itself.

### **Adding Immediate Benefits**

To increase intrinsic motivation, people can add immediate benefits that are associated with the activity. As noted above, an earlier arrival of a reward is a surefire way to increase intrinsic motivation. Thus, pairing rewards with activities, such as by listening to fun audiobooks at the gym (Milkman, Minson, & Volpp, 2014) or meeting a friend at the gym (Gershon et al., 2020) increases gym attendance.

Other research suggests that it is the *immediacy* that matters for intrinsic motivation, not necessarily the *positivity* of the benefits. For example, in a study on tangential immersion, the authors found that adding an attention grabbing video can increase toothbrushing (Lieberman et al., 2022). The additional activity needed to be immersive, but not necessarily positive, to affect persistence. Thus, in one study, students persisted longer in an exercise when the exercise was bundled with a less enjoyable, but more immersive task (reading a story scrolling across a screen) than when the exercise was bundled with a more enjoyable, but less immersive task (viewing a pleasant image accompanied by piano music; Lieberman et al., 2022). An immersive task can increase persistence by preventing boredom – and does not need to be pleasant to do so.

Pushing this one step further, our recent research highlights that immediacy can be motivating even when the immediate experience is negative (Woolley & Fishbach, 2022). That is, immediate feedback on goal progress can increase intrinsic motivation, in particular for activities that are uncomfortable to pursue. For example, feeling awkward and uncomfortable when taking an improvisation class can increase engagement in the class to the extent that people seek out this uncomfortable experience as their goal. When we instructed improv students to feel awkward and uncomfortable during their class exercise as a sign that the exercise was working, they persisted longer than when we instructed students to feel their skills develop or when we did not offer students explicit instructions (Experiment 1; Woolley & Fishbach, 2022). The reason? People know when they feel uncomfortable, it is an immediate negative experience that they can harness as a cue of goal progress – thus, they feel they advance their goal of taking improv whenever they feel uncomfortable during the exercise.

This lesson extends beyond students taking improvisation classes and can increase persistence for many self-growth goals that are uncomfortable to pursue. For example, writing about difficult experiences is hard, but facilitates mental coping. We found that people were more motivated to write when we instructed them to seek discomfort as a signal of progress relative to when we provided typical instructions for expressive writing exercises (Experiment 2; Woolley & Fishbach, 2022). Furthermore, when we instructed people to seek discomfort (vs. to learn), they were more willing to open themselves to useful, but threatening information, such as learning about opposing political viewpoints, negative health information, or issues related to gun violence. Seeking discomfort was motivating even when participants were not explicitly instructed to reappraise discomfort as a signal of progress, suggesting that instructions to seek discomfort can lead to spontaneous reappraisal of discomfort as a signal of growth (Experiment

5; Woolley & Fishbach, 2022). When people see discomfort as a sign of progress, they can harness this experience to facilitate persistence in important goals.

### **Shifting Focus to Immediate Benefits**

Although we find that people can harness immediate negative experience to increase goal pursuit (i.e., feeling of discomfort), many goals people pursue come with immediate benefits, yet these benefits may not readily come to mind. A third strategy for increasing intrinsic motivation is therefore to attend to these benefits. By shifting the focus to the immediate, positive experience inherent in much of goal pursuit people can increase intrinsic motivation.

Take healthy eating. People frequently go on diets or try and increase their vegetable intake for the health benefits that losing weight or consuming more vitamins and minerals provides (i.e., delayed benefits). Yet a simple shift in focus, to consider the positive taste of healthy food, can better motivate people to increase healthy food consumption. In one study, we instructed students to either choose carrots that they liked (immediate benefit focus), choose carrots that they thought were healthy (delayed benefit focus), or choose carrots that were “more orange” (control condition). Students who were encouraged to focus on the positive taste of carrots consumed more carrots than those in the delayed benefit or control conditions (Woolley & Fishbach, 2016).

Importantly, focusing on immediate benefits is only effective at motivating goal pursuit to the extent that there are immediate benefits in the first place. Indeed, we found that adopting a taste focus when eating healthy food increased healthy food consumption to the extent that the food was in fact tasty. Focusing people on the good taste (vs. health benefits) of apples, a tasty food, increased consumption, but the same did not occur for raw and plain spinach, a less tasty food (Woolley & Fishbach, 2016; see also; Laran & Janiszewski, 2011).

Mindfulness research has documented a similar strategy. Instructing people to focus on their immediate, subjective experience when engaging in various actions can prompt healthier habits (Ludwig, Brown, & Brewer, 2020). Someone who eats an apple can bring their awareness to the results of their behavior, and potentially how energized they feel from eating this healthy food. Alternatively, someone who eats a bag of potato chips when stressed can bring awareness to the results of their behavior: While eating chips may have resulted in a short-term distraction from stress, what people are left with is potentially stomach bloating (i.e., negative body sensation) and guilt (i.e., unpleasant emotions). In this way, people practicing mindfulness and awareness of their immediate subjective experience may come to realize that they feel good when eating healthy food, and feel worse when eating unhealthy food. Mindfulness research suggests that behavior can be shifted in a less effortful and more pleasant way by attending to immediate outcomes of one's actions.

Overall, immediacy is an effective motivator. Immediate benefits motivate action by making the experience more positive, thus people can focus on the immediate benefits inherent in long-term goals (i.e., treat healthy food consumption as an indulgence and think about the positive taste, rather than the health benefits). Yet not all actions come with immediate benefits, and some may instead come with immediate negative outcomes (e.g., feeling awkward when practicing public speaking skills). In this case, people can reframe the discomfort they feel as progress on the goal; doing so is motivating, because people come to experience goal achievement when they feel uncomfortable.

### **Remaining Questions**

The MEF model outlined in this chapter offers many exciting areas for future research. We detail two here. First, future research can examine antecedents and consequences of the MEF

model in different cultures, which may incorporate different goal and means contents. Recent research assessing 1.2 million students in 59 societies suggests that what increases intrinsic motivation in one culture may be different in another (Li et al., 2021). Specifically, whereas passion (interest, enjoyment, and self-efficacy) is important in individualistic cultures, and is strongly associated with achievement in science, math, and reading, the same is not true in collectivist cultures. Collectivist cultures value contributing to familial success and well-being; in such cultures, parental support increased intrinsic motivation and thus, parental support predicted achievement as much as passion.

Related to these findings, cultural differences also moderate the effect of providing free choice on experiencing intrinsic motivation. European American children performed best on puzzles they chose themselves (vs. ones their parents or an experimenter chose). However, Asian American children solved more puzzles that their parents chose (vs. ones they or an experimenter chose). Personal choice was critical for motivation among European Americans; Asian Americans were more driven by a desire to meet family expectations (Iyengar & Lepper, 1999).

To date, most of the research testing the MEF model has focused on individualistic cultures. Thus a fruitful avenue for future research is to examine whether, regardless of culturally valued means, intrinsic motivation results from a strong means-end association. Such research is needed to examine the role of culture when conceptualizing the various goals people hold, and the relationship between their actions and these goals.

Second, more work is needed to understand when a justification for engaging in an action becomes an over-justification, and undermines intrinsic motivation. That is, the MEF model proposes and finds that adding earlier rewards is motivating when rewards are already associated with an activity, yet other research finds that adding rewards can reduce intrinsic motivation

when rewards are not already associated with an activity. Because most activities people engage in come with some form of reward (i.e., people work for payment), the addition of rewards is unlikely to undermine intrinsic motivation, and earlier rewards can serve to strengthen it. However, when activities are not associated with rewards (i.e., donation behavior), adding extrinsic motivators, such as incentives, may reduce motivation via dilution.

In this vein, adding goals can increase intrinsic motivation, so long as they do not change the meaning behind engaging in an activity. As an illustration, paid fire-fighters were more motivated when they held both intrinsic and prosocial motivation to work (Grant, 2008). However, West Point cadets were less motivated when they held both intrinsic and extrinsic motivation to work (Wrzesniewski et al., 2014). Conceptually, the MEF model can help make sense of these seemingly contradictory findings. Possibly, prosocial motivation is strongly associated with serving as a fire-fighter, such that adding prosocial motivation does not detract from intrinsic motivation. However, for West point cadets, adding an extrinsic motive that was less strongly associated with their service may have undermined their motivation. More research is needed to formally test these assumptions to provide a fuller understanding of when over-justification occurs, in order to develop interventions to successfully increase intrinsic motivation.

## **Conclusion**

We describe a new and exciting look at intrinsic motivation – the MEF model – which was heavily inspired by work over the past 20+ years on Goal Systems Theory. According to this model, intrinsic motivation arrives from the strong association between an activity and its goal (i.e., means-end fusion). When actions are closely associated with their goals, either by

uniqueness, repeated pairing, similarity, or immediacy of means and ends, the resulting fusion causes greater intrinsic motivation.

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