



Motivation and Perseverance

The Science of Resilience

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Definition

Motivation and perseverance are unique and complex qualities, each with numerous theories and definitions, some of which will be described in this write-up. For the sake of this write-up, motivation is understood as both the reason for doing something and the act of doing it. To be motivated means “to be moved do something” (Ryan & Deci, 2000a), and people often need something (i.e., a motivation) to motivate them. Social, psychological, emotional, and cultural factors all play important roles in motivation (Bandura, 1986). This write-up will address these factors through discussing the role of motivation in various areas of life, as well as how perseverance factors into goal achievement. While perseverance is the ability to carry on in the face of adversity, this write-up will mostly be focusing on the ability to persevere after failure specifically, which will be discussed more in the section on resilience.

The concept of motivation is incredibly pervasive in all areas of human life. People speak about motivation in every aspect of their personal and professional lives, including finding motivation to get out of bed, answer the phone, write a paper, find a career, exercise, do chores, and learn (Cook & Artino Jr., 2016). Task- and field-specific motivational theories have been developed for the purpose of better understanding its role in productivity, including the social cognitive theory of motivation (SCTM; Bandura et al., 1986), goal-setting theory (Fried & Slowik, 2004), achievement motivation theory (McClelland et al., 1953), learned industriousness theory (Eisenberger, 1992; Steel, 2007), academic motivation theory, and work motivation theories such as expectancy theory (Vroom, 1964) and equity theory (Adams, 1965), to name a few.

The needs and desires that sustain and motivate humans are popular philosophical and psychological topics, with Maslow’s (1954; 1971) hierarchy of needs being one well-known theory of motivation. Maslow’s hierarchy of needs has been reworked over the years but continues to describe the various needs of individuals, regardless of cultural contexts, including: physiological (e.g., food, shelter, sleep), safety and security, social support and love, feeling respected and having pride in activities, mastery of tasks, autonomy and self-direction (Tay & Diener, 2011). According to this model, individuals are motivated by unmet needs, and often obtain them in this order of basic to more complex. Maslow, however, considered this order to be “soft” and not uniform for all, as it still tends to occur in economically impoverished areas with individuals experiencing subjective well-being through the more complex psychological needs of love and feeling of self-mastery without having first obtained basic needs of food and shelter (Tay & Diener, 2011, p. 363). However, individuals will still be motivated to fulfill any deficits in that personal needs structure (e.g., food, sleep, or friendship). Tay & Diener (2011) argue that individuals are also motivated to fulfill the needs of the wider society, as it is advantageous to live in a society with others who have their needs fulfilled. While the pinnacle of Maslow’s traditional hierarchy of needs is a focus on psychological fulfillment, the societal structure is largely responsible for determining whether the basic physiological needs can be

met, such as social support and love. After all basic needs are met, including survival and sense of purpose, Maslow (1971) stated individuals begin a process of ‘metamotivation’ to maintain and grow the process of self-actualization.

As can be seen, the lower end basic needs to the higher social and psychological needs are driven by a mixture of fear and love, or avoidance and approach (Ryan & Deci, 2000a). Similarly, Freud discussed how subconscious fears and desires, and unconscious instinctual impulses can act as motivators to action without the individual being aware of the source of motivation, and stem from evolutionary instincts for sex, survival, and ego- or self-preservation (Deckers, 2018). These subconscious physiological visceral responses can be seen to be exploited today by advertising companies using “subliminal priming techniques” to motivate the masses to buy and consume their products, or vote for certain political candidates (Elgendi et al., 2018). Individuals with addiction issues, such as substance abuse or gambling, are also affected and motivated by certain primers, with the sight, smell, taste, memory or mention of their addiction causing them intense physiological urges. Besides being positively reinforced or motivated toward obtaining pleasurable states, people with addictions are also motivated by negative reinforcement, i.e., of avoiding pain, as they tend to continue giving into the harmful addictive substances or practices in order to avoid or alleviate the aversive withdrawal symptoms (Baker et al., 2004). By being aware of thoughts and surroundings, such as through the practice of mindfulness, individuals can take more control over their actions, and by practicing self-acceptance can have a better understanding of the factors that cause such cravings to happen [see our write-up on Mindfulness & Self-Regulation].

Motivation to move and survive comes naturally to humans and other animals. A recent study found that when mammalian brains perceive a threat from far away, areas of the brain associated with problem-solving are activated, but when the threat is imminent those reasoning attributes are overcome by visceral survival instincts from the sympathetic nervous system’s fight-or-flight response (Faul et al., 2020). Neurologically, motivation has been shown to be intricately connected to dopamine. Traditionally understood as the chemical release that comes after obtaining a reward, recent research has shown dopamine to also be an aspect of motivation and action toward obtaining the reward. Neuroscientists describe this as “seeking” and “liking” phases of motivation (Collins et al., 2016), with this motivational influence becoming excessive or disproportionate among individuals with addiction issues. Dopamine affects the initial decision to engage in tasks, influences motivational decision making regarding the specifics of the task overtime, influences perseverance toward accomplishing the task or reaching the goal, and may play a role in the ability to learn from the task (Hamid et al., 2016; Mohebi et al., 2019; Salamone & Correa, 2012). Different individuals may have different base dopamine levels, with lower levels showing less desire to engage with or stay focused on a lesson or work (Hamid et al., 2016). Dopamine provides a motivation to act, which is also why individuals with depression who have very low levels of dopamine often do not feel energized to do anything, i.e., are unmotivated (Salamone & Correa, 2012). Along with motivation,

dopamine is also strongly connected to emotions (Nieoullon & Coquerel, 2003; Salimpoor et al., 2011), which in turn naturally has a strong connection to motivation (Pekrun et al., 2009, 2011).

The theoretical concept of achievement motivation is associated with a drive developed from an emotional state (McClelland et al., 1953). According to McClelland, three major characteristics of individuals with a strong need to achieve are: (a) preferring an autonomous work environment to solve problems; (b) taking calculated risks and establishing moderate, attainable goals; and (c) the desire for continuous recognition and feedback in order to know how well they are doing. Competition also plays a role in this concept, as achievement motivation is defined as behaviour that involves “competition with a standard of excellence” (McClelland et al., 1953, cited in Brunstein & Heckhausen, 2018). While emotional temperaments have the ability to orient individuals to domain-general positive or negative stimuli, motives are emotion-based tendencies which drive individuals toward domain-specific positive or negative stimuli (Elliot, 2006; McClelland, 1985). However, neither temperaments nor motives provide exact guidelines for how general desires or concerns are to be achieved or avoided, and instead this is accomplished through goal setting, monitoring, and achieving (Elliot, 2006, Elliot & Murayama, 2008). Goals provide a directional focus and function in motivation. Individuals tend to either exhibit approach or avoidance tendencies with regard to achievement and affiliation, i.e., the desire for achievement or the fear of failure, and the need for affiliation or fear of rejection (Elliot, 2006).

‘Achievement goal motivation’ is a concept within the social cognitive theory of motivation (SCTM) that views individuals as agents actively engaging in their own development, including having belief and confidence in themselves to direct their performance (Bandura, 1986; Elliot & Murayama, 2008). According to the SCTM, achievement standards influence cognitive self-motivation which is mediated by three different types of self-reactive influences operating together: affective self-evaluation, perceived self-efficacy, and personal goal setting (Bandura, 1986). An achievement goal can be a motivating reason for individuals to regulate their own behaviors in pursuing their goals (Elliot & Murayama, 2008).

Another theory related to Maslow’s hierarchy of needs is Herzberg’s two-factor ‘motivation-hygiene theory’, which argues that individuals at work tend to be unsatisfied with lower-order needs, such as safe and pleasant working conditions and minimum pay, and instead are motivated more by factors related to higher level psychological needs of responsibility, achievement, recognition, advancement and finding the work interesting (Alshmemri et al., 2017; Herzberg, 2003). Herzberg writes that neither negative or positive ‘hygiene’ factors are as effective as higher-level ‘motivators’, as they tend to cause anxiety-based rumination, or at best create movement but not motivation. This relates to the longer-lasting benefits of intrinsic attitudes and motivators, compared to short-term extrinsic motivators which can become ineffective when a reliance on them develops (Ryan & Deci, 2000a, 2000b)

A similar theory of motivation is McGregor's (1960) X & Y theory which states that when individuals are given more responsibility and the ability to participate in decision making process, employees experience a greater sense of autonomy and creative control, which increases their motivation and feeling of commitment to their organization. Although Herzberg (2003) thought less of the employees' input in the decision-making process for motivation, and more on making the job interesting, both Herzberg and McGregor regard money as a mediocre motivator. Conversely, praise, recognition, and feedback are viewed as much stronger motivators that lead employees to look for better ways to do their jobs and produce more quality and quantity work.

McClelland (1953) further postulated that extrinsic motivators, such as money, can actually stymie employee's intrinsic motivation, such as the innate desire to learn or the competitive desire for achievement. This phenomenon is called "motivation crowding theory", as extrinsic rewards come to 'crowd out' whatever initial motivation an individual had for doing a task (Skov & Holm, n.d.; Titmuss, 2018). A similarity is seen in Ryan and Deci's (2000a, 2000b) cognitive evaluation theory, which is a part of social determination theory, and which states that the significance that people assign to the reward factors into their subsequent motivation. Rewards may be viewed as controlling of behaviour and autonomy, as a status-signal that enhances an individual's sense of competence, as a desire for relatedness, or a mixture. A reward could be perceived as a reason for working so hard (i.e., to win the reward or avoid punishment), or as a simple recognition of the worker's general effort and performance (i.e., a reward from working). If the extrinsic reward is perceived as controlling, or the reason for performing the behaviour, Ryan & Deci (2000a, 2000b) agree with McClelland in saying that this can displace the intrinsic motivation for doing the task or acting a certain way. An individual who initially enjoys his work for its own sake who is then given a reward for that work, and then has his reward removed, may then also lose joy for the work. However, if the extrinsic reward is perceived more as an intangible recognition of one's status or achievement, this will prompt more effort without 'crowding out motivation' occurring. In short, the individual's perception of the extrinsic motivation (i.e., incentive via reward or punishment) being either controlling or status-signalling has an effect on crowding out motivation taking place. Ryan & Deci's conceptualization of motivation seems to fit with Maslow's hierarchy and Herzberg's two-factor model, as individuals are more motivated by intangible psychological and social factors than tangible immediate needs.

Self-determination theory involves three main types of motivation (Ryan & Deci, 2000a). The first is intrinsic motivation, which is when an individual is motivated by some internal state, such as an innate curiosity to learn, a desire for excitement, or to seek some inherent form of satisfaction (Vallerand, 1992). Engagement due to the enjoyment of the activity is understood as intrinsic motivation. The second type is extrinsic motivation, which is when an individual engages in an action in response to something external in the form of rewards (e.g., gaining money or praise for work) or punishment (e.g., working to avoid being fired or studying to avoid failing a class). The third type is amotivation, which occurs when individuals either do not act at

all or act out of a sense of having no choice or control over their own behavior (Vallerand, 1992). Amotivation occurs when individuals see no value in an activity, do not feel competent doing it, or do not expect to obtain a desired outcome (Ryan & Deci, 2000b).

SDT focuses on three factors of competence, relatedness, and autonomy in relation to intrinsic motivation and the development of personality and self-regulation (Ryan & Deci, 2000a, 2000b). The theory claims that people are inherently motivated to master inner emotions and internal factors that govern motivation (e.g., motivating oneself to practice self-regulation, to learn and assimilate), and are naturally driven toward personal well-being and social integration with others. As these optimal outcomes do not occur automatically, individuals have capabilities for inherent or intrinsic motivation, such as an athlete playing a sport for fun or a student learning for the sake of garnering wisdom, and are often regularly externally or extrinsically motivated, such as by an athlete competing for a trophy and student studying for good grades. In their taxonomy on human motivations, Ryan & Deci (2000b) illustrate the difference and development away from stages of impersonal amotivation, through four types of extrinsic motivation that increase in levels of autonomy, toward an internalized intrinsic motivation of interest and enjoyment with a sense of autonomous self-determination and increased perceived competence (Ryan & Deci, 2000a, 2000b; see Appendix A).

According to SDT, an individual's motivation to complete a task is increased with regard to how autonomous the task is, and that external pressure offered through extrinsic rewards (e.g., positive incentives to gain, or negative consequences to avoid) can decrease an individual's motivation and desire to complete a task (Ryan & Deci, 2000a). Referencing a number of studies from the 1970s, '80s and '90s, Ryan and Deci write that intrinsic motivation has been shown to be undermined through not only tangible rewards contingent on performance, but also threats, deadlines, directives and competition pressure, as people tend to perceive them as controllers of their behaviour. Conversely, choice and the opportunity for self-direction increased intrinsic motivation as they provide a greater sense of autonomy.

The focus on autonomy within SDT does not refer to being independent, detached, or selfish, but instead to the feeling of personal choice and desire that may accompany any act, "whether dependent or independent, collectivist or individualist" (Ryan and Deci, 2000b, p. 74). Ryan and Deci go on to cite research showing more positive associations between autonomic and collectivist rather than individualist attitudes, including in teenagers' perceived autonomy and their relatedness with parents. Self-determined, intrinsically motivated behaviours are not, therefore, alienating, and indeed are quite the opposite. SDT states that extrinsic motivation can also become internalized (i.e., the ability to 'take in' a value or regulation) and integrated (i.e., "the further transformation of that regulation into their own so that, subsequently, it will emanate from their sense of self"; Ryan & Deci, 2000b, p. 71), and that this intrinsic commitment and authenticity is likely to be most evident when those individuals experience supports for their competence, autonomy, and ongoing sense of relatedness. As such, Ryan &

Deci (2000a, 2000b) state that external reinforcement and feedback can increase an individual's sense of competence, thereby increasing motivation, although the sense of autonomy must remain. An example of this is found in music or sports, where support from coaches, parents or mentors can support growth and autonomy, thereby inciting more intrinsic motivation (Ryan & Deci, 2000b).

Extrinsic motivation has various degrees, from external regulatory styles with a perceived external locus of causality (e.g., doing homework because the teacher said so), to integrated regulatory styles with an internal perceived locus of causality (e.g., doing homework because it will make one smarter about their field of choice and bring good grades to get into college to become a professional in said field). Intrinsic motivation growth can be facilitated through such practices as situational learning, where, for example, teachers may situate their classroom settings to allow students to first experience interest and enjoyment in a specific book of their choosing (Marinak & Gambrell, 2008). As one researcher states, "when students are captivated by a particular text, in a specific situation, with a host of environmental supports, they are enjoying a moment of situational interest" which can then be replicated in a similar scenario with a different book series or educational topic that is still accompanied by a feeling of enjoyment and learning (Guthrie et al., 2010, p. 93).

Elliot (2006; Elliot & Murayama, 2008) state that motivation occurs in the form of approach or avoidance, and goals in the form of mastery or performance. While mastery has to do with confidence and joy, avoidance has to do with fear and nervousness. Individual's goals' either take the form of mastery-approach, mastery-avoidance, performance-approach, or performance-avoidance. Mastery-approach is an emphasis on intrinsic learning and self-improvement, with the goal of gaining competence and becoming a master at something without needing to show off. Mastery-avoidance has to do with the struggle for maintaining one's skills and abilities and making sure one is not incorrect. Such individuals experience more stress, are less likely to take part in activities they may perceive to be unable to master out of fear of seeming incorrect, and tend to have reduced wellbeing (Elliot, 2006). Performance-approach goals focus less on mastery of the task than on the demonstration of competence in relation to others, thus the performance of others acts as an extrinsic motivation, i.e., for oneself to do well in relation to others – better, worse, or the same. Performance-avoidance is a focus on not looking like a failure in front of others, making the fear of poor performance the extrinsic motivator. Individuals with performance-avoidance goals are less likely to seek help because it shows they do not understand, tend to experience higher levels of exam anxiety, and are less likely to seek feedback out of a perception of being viewed as a failure (Elliot & Murayama, 2008; Komarraju et al., 2009). Therefore, "in achievement situations, performance-avoidance and mastery-avoidance goals produce worry and distraction that undermine performance and intrinsic motivation" (Elliot, 2006, p. 115), with mastery-approach emerging from a need for achievement based on intrinsic motivation, and performance avoidance from a fear of failure based on extrinsic motivation, with the other two operating in between (Elliot & Murayama, 2008).

In regard to classroom settings, Komarraju et al. (2009) write that intrinsically motivated students tend to seek challenge and competition, while amotivated students are more likely to disengage or drop out. Learning environments that encourage mastery promote intrinsic motivation, while those emphasizing performance decrease student motivation and achievement (Komarraju et al., 2009). When students see the importance of what they are being taught, they are more likely to be engaged and achieve at a higher level (Martin, 2002). Regarding gender differences in emotion and classroom achievement motivation, Pekrun et al. (2011, n = 389) found that female students reported higher achievement anxiety than male students. Ardeńska et al. (2019) also found significant differences between female and male students regarding motivation when testing a Polish version of the academic motivation scale, with female students showing higher levels of self-determined types of motivation, as well as lower levels of amotivation than male students. As mentioned, amotivation occurs when individuals find no value in the activity or see no connection between their actions and results (Ardeńska et al., 2019). Individuals who experience amotivation are also more likely to drop out of school, thus being a contributor for why males are more likely to drop out of school (Balkis, 2018).

Other researchers of motivation argue for consideration of the role that the desire for basic social connections play in motivation theory, as the desire to form and maintain bonds is one of the most powerful motives (Baumeister & Leary, 1995; Walton et al., 2011). This inclination for “mere belonging” (Walton et al., 2011) is the impetus for establishing stronger and longer lasting social relationships, which lead to a sense of (or a desire for a sense of) social belonging, or relatedness (Ryan & Deci, 2000b, p. 73). Therefore, Walton et al. (2012) argue for the importance of focusing on this initial motive for ‘mere belonging’, which occurs through brief social connections with new people which may be trivial or grow into more lasting social connections. Dopamine is also boosted through socialization and being around people, which as mentioned earlier is directly associated with motivation to initiate and continue or persevere through a task (Krach et al., 2010).

A sense of being a part of a community, even in the slightest sense of social connection to another or others, is important for motivation, as even “a mere sense of social connectedness, even with unfamiliar others, can cause significant changes in the self, personal interests, and motivation” (Walton et al., 2012, p. 529). In short, upon seeing what is deemed good for the society through the actions of others, i.e., being extrinsically motivated by observing how others act for the good of the greater populace, an individual will come to adopt this as their intrinsic motivation (Pewewardy, 2012). Another example of the importance of relatedness in regard to motivation is seen with ‘the Köhler effect’ that occurs in group work, such as team sports, and “which occurs when less skilled group members increase their effort to hold their own and cooperate with the superior members, or simply when individuals work harder (e.g., during physical exercise) when someone else is with them (Irwin et al., 2012).

Lount and Wilk (2014) note that group work can positively or negatively affect employees' motivation and showed that posting workers' feedback and performance reviews publicly triggers motivation through social comparison when employees are working in groups. The authors state, however, that the long-term psychological effects of publicly posting performance reviews are not known, and that this aid in employee motivation does not appear to be effective unless the work being done in the group is identical, and not merely similar. The authors also note that intergroup competition, of employees working alongside rivals, can also be a motivation regardless of the postings.

Another factor in motivation found in groups is the concept of indispensability, or the feeling of belonging with an important purpose. Studies have shown that when individuals' sensed that their efforts were being recognized and their individual contributions to the group were viewed as unique and valuable to the group's success, they were less likely to be unmotivated 'social loafers' who felt that they were dispensable and could be substituted at any moment without consequence to the group's efforts (Baumeister et al., 2016; Baumeister & Leary, 1995).

The power of social connection and feeling of belonging to a group as a motivational factor is an important consideration for individuals in societies with a strong emphasis on the betterment of the community rather than individual gain, such as North American Indigenous students who tend to be motivated by "social/affective emphasis, harmony, holistic perspectives, expressive creativity, and nonverbal communication" (Pewewardy, 2002). Worth mentioning on this topic, Pewewardy describes many Indigenous students as presenting with avoidance behaviours in the classroom described by Elliot (2006; Elliot & Murayama, 2008), due to a variety of societal factors that have affected their self-esteem. To address this, teachers can provide culturally relevant materials and activities to boost self-confidence and cultural pride (Pewewardy, 2002; Ungar, 2011).

[A] reluctance to try to solve a problem may be associated with the fear of being shamed if one does not succeed, which may account for the seemingly passive behavior of the American Indian/Alaska Native student. Unfortunately, teachers may mistake this behavior as disinterest or lack of motivation. (Pewewardy, 2002, p. 31)

Pewewardy (2002) emphasizes that when differences in learning styles are addressed, students are more likely to become motivated and encouraged to succeed. For Indigenous students who "prefer harmony, unity, and basic oneness", especially those with low self-esteem, they do not want to be raised above or lowered below others (Pewewardy, 2002, p. 36). Although competition may work in some workplace settings and cultural contexts, the author argues that within these Indigenous classrooms, competition has proven to be an ineffective motivational approach. When highly praised for superior work, such students tend to feel 'put on the spot', and out of a sense of shame will do worse next time to regain their place with the group. Conversely, cooperative learning approaches have shown to be much

more effective at increasing engagement and motivation for these groups of individuals (Pewewardy, 2002).

Baumeister et al. (2016) state that individuals will be motivated to contribute to group welfare for two reasons beyond self-interest. If they love or passionately identify with the group, the individual will want to improve its wellbeing and derive satisfaction from doing so. Secondly, individuals may feel pressure from other group members through material incentives (e.g., rewards, punishment) or social incentives (e.g., laws, reputation), which reverts to appealing to the individual's self-interest but aligns it with prosocial group behaviour. Therefore, groups motivate people to contribute even to the short-term detriment of an individual's own selfish personal goals. However, maintaining an individual's identity and sense of autonomy is also important for individual motivation in the group. When people feel confident acting as their individual selves in a group they are more motivated to take part in intelligent and creative problem-solving with other individual group members, thereby positively influencing the wellbeing of the group. Baumeister et al. (2016) write that this is best brought about when the individual group members' have an expectation of being individually evaluated for accountability, and are given unique, individual roles to perform. Baumeister and colleagues (2016) state that the most successful groups will (a) build a sense of shared social identity, and (b) increase differentiation of roles and individuality. Citing evidence from research on a Dutch bank's middle-management team as an example, the authors state that the promotion of a strong sense of shared identity improved helping and caring for others, while a strong emphasis on distinctiveness and unique skills was linked to creative performance

Ryan & Deci's cognitive evaluation theory also factors in social aspects of extrinsic positive feedback in motivating people to persevere through difficulty towards their goal which they may have been intrinsically motivated to pursue (Ryan & Deci, 2000b). Even this sense of belonging, what Ryan & Deci call the desire for 'relatedness' (2000a, 2000b), can be important for motivating individuals to do well in relation to others, and forms the basis for Walton et al.'s (2012) theory of 'mere belonging'. Ryan & Deci (2000a, p. 64) state that starting point for developing internalization (and intrinsic motivation) is through "providing a sense of belongingness and connectedness to the persons, group, or culture disseminating a goal", which in classrooms means students feeling respected and supported by the teacher.

While some fear and anxiety can be useful in the short-term, SDT shows that ultimately a sense of joy is more important for fostering motivation than fear- and anxiety-based avoidance. One method of disrupting anxious rumination, or unproductive negative thoughts, a common symptom of anxiety and depression, is to practice self-compassion (Raes, 2010). Studies on self-compassion have been found to improve wellbeing in individuals with anxiety, and consequently self-compassion has also been shown to improve motivation after experiencing failure (Breines & Chen, 2012). Rather than beating themselves up for personal weaknesses, moral transgressions or test failure, individuals who instead adopted a self-compassionate approach across four experiments were more motivated to correct the

behaviour and performance in the future, including in comparison to a group focused on improving self-esteem. In one experiment, individuals who were reminded to be self-compassionate following a test failure were more likely to study longer for the next test, compared to individuals given self-esteem or no reminders. Further, study time was found to be correlated with test performance, indicating self-compassion's positive role in motivation, perseverance, and performance outcomes. Self-compassion was also more helpful than engaging in positive distractions or doing nothing and was described by students as more helpful than self-esteem. The authors posit that both self-esteem and self-compassion may act as a barrier against debilitating self-criticism, but unlike self-esteem, self-compassion lacks exaggerated self-evaluations that may hinder one's motivation to improve (Breines & Chen, 2012). This study offers a unique approach to dealing with shortcomings or failures without causing self-deprecating paralysis or defensive self-enhancement, neither of which have proven to be beneficial for enhancing motivation in the long run. In contrast, while the authors cite past literature showing mixed benefits of self-enhancement, it has also been shown to be associated with greater defensiveness, low academic performance, and lower resilience (Breines & Chen, 2012). Breines & Chen (2012) also cite research showing that although inflated self-esteem assessments are not as beneficial to motivation, self-criticism and self-deprecation also impede goal progress through their association with associated with rumination and procrastination. In contrast, self-compassion has been shown to be negatively associated with procrastination.

Regarding procrastination, Steel et al. (2007, 2018) coined the term temporal motivation theory as a way to explain procrastination and a lack of motivation as a failure of self-regulatory behaviour. This is explained in relation to a variety of theoretical approaches, including personality, economics, psychobiology, goal setting, and expectancy theory. The authors developed a formula (below) to describe procrastination, with Motivation (or utility) being the desire one has for a particular outcome (as people tend to pursue desires with the highest utility), Expectancy or self-efficacy being the probability of success, Value being the reward associated with the outcome, Impulsiveness being one's sensitivity to delay, and Delay being the time to realization. According to this formula, activities that are high in expectancy and value should be more desirable, and that the self-regulatory failure of procrastination is often caused by an undue sensitivity to delay. Despite making an effort to begin and desiring to feel motivated to work, motivation becomes "contingent on a goal's temporal distance, where motivation increases hyperbolically as the time to the deadline draws near" (Steel et al., 2018, p. 2).

$$\text{Motivation} = \text{Expectancy} \times \text{Value} / 1 + \text{Impulsiveness} \times \text{Delay}$$

Another motivation-related equation is found in the job characteristics model (JCM), which measures the motivational potential of workplaces in relation to an employee's psychological state (Katz, 2005). The JCM states can be described in terms of five characteristics: Skill Variety (the degree to which the job requires the use of different skills and

talents), Task Identity (the degree to which the job has contributed to a clearly identifiable larger project), Task Significance (the degree to which the job affects the lives or work of other people), Autonomy (the degree to which the worker has independence, freedom and discretion in carrying out the job), and Task Feedback (the degree to which the worker is provided with clear, specific, detailed, actionable information about the effectiveness of his or her job performance). These are measured in relation to employees' psychological states and combined into a predictive "motivating potential score" index (MPS) using the following calculation:

$$\text{MPS} = \text{Autonomy} \times \text{Feedback} \times (\text{skill variety} + \text{task identity} + \text{task significance} / 3)$$

This calculation states that jobs high in motivating potential must be high in autonomy and feedback, as well as be high on at least one of the three other factors that contribute to a sense of meaningfulness (Hinton & Biderman, 1995). Individuals in jobs with a higher MPS are more likely to experience higher motivation, performance, and job satisfaction, and a reduction in truancy and turnover. In a study of 60 professionals aged 20-45 who were randomly selected from UAE organizations, Singh et al. (2016) found that women scored higher on MPS than men, and Indian men showed higher motivation than men from other countries.

Important to note, intrinsic motivation is not always beneficial. Although it involves a self-determination to succeed, intrinsic motivation has also been associated with problematic behaviour (Clarke, 2004). Clarke writes that in a study on gambling problems, although extrinsic motivation tends to be the main issue in problem gambling (e.g., to relieve boredom, to get a perceived award), all three aspects of internal motivation (stimulation, knowledge and accomplishment) plus one aspect of extrinsic motivation (approval seeking) were associated with skill-based gambling rather than games of luck. In a study of video game addiction, Wan & Wen-Bin (2007) found higher rates of addiction in intrinsically motivated individuals, as they fulfill seemingly endless challenges that fulfill a participants intrinsic motivation to learn, to accomplish, and experience stimulation. Another study found that the intrinsic motivation to experience stimulation, combined with extrinsic motivation for identified regulation, and amotivation were the strongest motivational predictors of problematic video game playing (King & Delfabbro, 2009)

When individuals are intrinsically motivated, they are more apt to enter into productive and engaged 'flow states' (Biddiss et al., 2010; Schüler, 2007). Research on flow states has shown its positive association with wellbeing, work and exam performance, with individuals who experience flow states having more positive work-related attitudes and higher energy levels after work (Peifer et al., 2020; Schüler, 2007). Research on the association of psychological mindsets and the ability to enter into flow states through measuring participants' achievement motivation before and after an academic lecture found that individuals motivated by a 'hope of success,' were more likely to experience flow during the lecture compared to those who were motivated by a 'fear of failure' (Schüler, 2007). Another recent study found a negative association between flow states and unfinished work or study tasks, and a positive

association between undesirable ‘hindrance stress’ (rather than more positive ‘challenge stressors’) and unfinished tasks, with the authors stating the importance of finishing tasks before leaving work to increase the likelihood of entering flow states in and outside of work, thereby improving wellbeing (Peifer et al., 2020).

Studies have also shown connections with flow and ‘hyperfocus’ experienced in individuals with ADHD, which involves the tendency to experience a lost sense of time and difficulties with time estimation (Ashinoff & Abu-Akel, 2019; Ptacek et al., 2019). While this can be beneficial for becoming engaged with a topic of interest, Ashinoff & Abu-Akel (2019) remark how this can become detrimental to productivity when one falls behind in responsibilities due to being hyperfocused on enjoyable elements of the job (Ashinoff & Abu-Akel, 2019). The inattentive-type ADHD has been to show associations with autism spectrum disorder (ASD) regarding hyperfocus, including “difficulties in diverting attention between tasks” and “difficulties in sustaining attention” (Ashinoff & Abu-Akel, 2019, p. 14).

As mentioned earlier extrinsic motivation in the form of constructive feedback and positive reinforcement is important for reeling in this problematic aspect of intrinsic motivation, rather than solely negative feedback in the form of anxiety-inducing deadline reminders and threats of consequences. To improve low achievement motivation levels in such individuals, Gut et al. (2002) discuss how intervention approaches ought to promote their desire for success through instilling confidence in them to overcome obstacles, while also reducing their increased likelihood for negative fear of failure through constructive reactions to the possibility of failure (e.g., “so what?”). An important finding of this study was that the highly motivated individuals with ADHD (i.e., who were not burdened by anxieties) were able to perform just as well on tests of mathematical thinking and receptive language. When considering motivational interventions for students with ADHD, ASD, anxiety and other disorders, researchers ought to consider:

the extent to which these students constantly worry about past mistakes and potential future ones... As a result of their history of repeated negative experiences and failed efforts, they come to distrust themselves and their ability to achieve their goals, which leads to further demoralization, loss of motivation, and progressive worsening of their functioning over time. Therefore, when providing interventions, it is necessary to repeatedly reduce negative feedback and to reinforce positive motivation for the future; this is an important implication arising from this study. (Kwon et al., 2018, p. 7)

More generally, a teacher’s delivery of praise and feedback to students is also important, with Maclellan (2005) writing that feedback towards the individual student emphasizes a ‘fixed intelligence’ which comes with a number of vulnerabilities, while feedback toward the student’s effort or strategy promotes a view of a ‘malleable intelligence’ which is more beneficial. Feedback of all kinds is important along the student’s trajectory, but praise ought to be focused on the process.

Overall, through a self-determination theory lens, students' need for autonomy, competence and relatedness ought to be supported (Katz & Shahar, 2015; Reeve, 2009; Ryan & Deci, 2000a). When these needs are supported by teachers, students have been found to adopt a more autonomous type of motivation, display greater interest and engagement in lessons, place a higher value on learning, and show greater self-regulation, greater achievement, and a higher quality of well-being (Reeve, 2009). Conversely, studies have shown that controlling teaching styles that make students feel coerced tend to lead to students demonstrating poor engagement, less ability to self-regulate their learning, they tended to achieved less, and had a lower sense of well-being (Katz & Shahar, 2015). Teachers can be supported to adopt a more intrinsic motivational teaching style through discussions and support with their fellow teachers, administration, and school psychologists or counselors (Katz & Shahar, 2015).

In relation to psychological personality traits, motivation and perseverance have been likened to the concept of self-efficacy, which as Bandura (1986) puts it, has to do with the belief and confidence one has in oneself to be able to accomplish or master a task [see our write-up on Self-Efficacy for more information]. According to Schunk (2003, p. 161), unlike students who doubt their learning capabilities, "those who feel efficacious for learning or performing a task participate more readily, work harder, persist longer when they encounter difficulties, and achieve at a higher level". Such students obtain information to evaluate their self-efficacy through their actual presentations and performance, through observing and comparing with others, external persuasion and support (e.g., from teachers or parents saying, "you can do this"), and internal physiological reaction (Schunk, 2003). While other factors such as skill, knowledge, outcome expectations (i.e., beliefs about the anticipated consequences of actions; e.g., students are more likely to engage when they believe it will lead to positive outcomes), self-esteem and perception of value towards a project are important factors in motivation and achievement, Schunk (2003) states that self-efficacy sustains motivation and promotes future learning.

Komaraju et al.'s (2009) research adds to the literature on the role personality traits play in academic motivation and achievement. Their regression analyses of the Big Five personality traits' relation with undergraduate students' (n = 308) academic motivation and achievement found that conscientiousness plays a major factor, with conscientiousness and openness accounting for 17% of the variance in intrinsic motivation; conscientiousness and extraversion explaining 13% of the variance in extrinsic motivation; and conscientiousness and agreeableness explaining 11% of the variance in amotivation. Intrinsic motivation explained 5% of the variance in GPA, with conscientiousness being a partial mediator between them. The association of openness with intrinsic motivation suggests that individuals with this trait are more likely to enjoy learning, with pleasure playing a role in motivation and perseverance. [See our write-up on Conscientiousness].

While motivation is strongly associated with self-efficacy (Bandura et al., 1986; Clarke et al., 2004), it has also been shown to be associated with self-esteem (Baumeister & Leary, 1995;

Di Paula & Campbell, 2002). While self-esteem refers to “a person’s overall evaluation or appraisal of his or her own worth... a global cognitive appraisal of the self-concept”, self-efficacy refers to “a context-specific assessment of competence to perform a specific task or a range of tasks in a given domain” (Anseel et al., 2015, p. 323), or “how well one can execute courses of action required to deal with prospective situations” (Bandura et al., 1982, p. 122). Although individuals with low self-esteem and low-self efficacy may benefit most from feedback as a source of extrinsic motivation, they are less likely to seek it due to the potential detrimental negative feedback costs to their perceptions of self-worth. Anseel notes that intervention programs to increase self-efficacy and self-esteem are well established (Stajkovic & Luthans, 1998; Swann, Chang-Schneider, & McClarty, 2007). [See our write-ups on Self-Esteem, and Self-Efficacy].

Relationship to Resilience

Motivation and perseverance are concepts that have been discussed since antiquity, including among the ancient Greek and Roman philosophers who discussed the virtues of hedonism in being driven toward approaching pleasure and avoiding pain (Elliot, 2006), and the fortitude and imperviousness of the Stoics (Hart & Albarracin, 2009). The love for family and community (*philia*) could drive individuals to overcome many natural barriers and internal dilemmas in order to struggle on and persevere following adversity.

The concept of perseverance is often understood in relation to the individualized (i.e., not socioecological) concept of resilience, or grit, which is one’s individual ability to carry on in the face of adversity (Duckworth et al., 2007). Various researchers claim that grit is similar to, but different from, self-control, which is the ability to regulate one’s attention, emotions, and behaviour despite predilections, temptations, and diversions, and from self-efficacy which is the confidence one has in being able to set and follow through with goals (Duckworth & Seligman, 2005). The two facets of grit are perseverance of effort and consistency of interests over time, which are influenced by an individual’s distinct interests (Von Culin et al., 2014). Grit is the tendency to sustain interest in and persevere toward long-term goals and is highly correlated with conscientiousness in the Big Five personality traits (Duckworth et al., 2007). In fact, recent analysis has shown a genetic correlation of 0.86 between grit and conscientiousness (Rimfeld et al., 2016), and a recent meta-analysis showed that grit essentially functions as a measure of conscientiousness, i.e., that they are more or less one and the same (Credé et al., 2017).

This section is interested in the persevering facet of grit, particularly the ability of individuals to bounce back and continue on after experiencing failure. Walton et al. (2012) question how individuals are able to motivate themselves to persevere after adversity without any clear rewards or incentives (Walton et al., 2012), and cite Ryan & Deci’s (2000a, 2000b) emphasis on autonomy and competence. They also describe the role relatedness plays in

having role models to guide their thoughts of demonstrated success in similar situations to boost motivation. In their own theory of mere belongingness, Walton et al. (2012) state that the simple sense of being part of a social group or something bigger than oneself can be an important factor in carrying on despite all adversity. The authors state that “social influence creates the self, instilling in people the goals and motivation that inspire them to act and to persevere in the face of challenge”, and that even the most seemingly insignificant, trivial, and subtle cues of social connectedness can significantly effect persistence and achievement, even from a perceived connection with unfamiliar others or a simple sense of belonging to an intellectual community (Walton et al., 2012, p. 515).

Regarding being able to recover from a stressful situation, Rosowsky (2010, p. 43) states that it involves a self-regulation process that includes the abilities to control emotions, the choice “(volition, motivation, cognition)” to refocus after the event, and the ability to incorporate the experience into future actions in a way that reinforces “self-continuity and a sense of survivorship”. This all depends on the individual’s ability to reflect, observe a pattern, use the pattern as an object of evaluation, and recognize one’s role in it. Being able to do this defines one as resilient. Another chapter in this collection by Resnick et al. (2010) states that depressive symptoms of withdrawal and loss of motivation tend to interfere with these resilient processes, especially as resources tend to diminish later in life. Referencing Bandura’s (1986) social cognitive theory of motivation, Resnick (2010) states that motivation is highly associated with resilience, with similar associations with self-efficacy, determination, openness and willingness to experience, and social supports, but they differ in that resilience depends on some form of adversity.

The socioecological model of resilience looks not only at the individual’s innate ability to succeed, but at the available supports that nurture and facilitate their success and wellbeing (Ungar, 2011). These supports include family, education, work prospects, social programs, health centres, and so on. The grittiness of the former definition is an important consideration and attribute of the socioecological model, yet while an individual may indeed self-motivate to rise through adversity and persevere to meet their goals completely by themselves, this is not only less likely (or impossible) but much more difficult without considering and accepting the role of external supports. Once those supports are considered, and the viewpoint of individual ability to thrive is pushed to the external, then they can be advocated for and adopted.

A prime contemporary example of ‘resilient perseverance’ is the ongoing advocacy of rights and freedoms, most notable through the plight of African American or Black individuals during the 1960’s Civil Rights Movement. Resilient perseverance is not only in relation to the grit of the individuals themselves, i.e., to show the ability to stand up against oppression with determination and humanity, but in relation to the larger social movement of demanding societal change regarding social structures like the education system, health care, public areas, government services, and other social supports. Not only was this the case for Black people during the 1960, but it was also for other people of colour, for people with disabilities requiring

louder voices and more accessible public spaces, and people openly expressing their sexuality and desire to partake in the same societal constructs as the rest of society, such as marriage and adoption, without having to hide and feel shame. These individual movements themselves also acted as supportive social factors in contributing to each individual movement's wellbeing. Although individuals within social movements tend to be extrinsically motivated to obtain something (e.g., equal rights and opportunities) and avoid pain (e.g., the greater likelihood of living in fear), they are also driven to action by a similar intrinsic motivation for justice, to inform others of injustice (i.e., to have their competence recognized) and for the wellbeing of others (i.e., a sense of relatedness).

Intrinsic motivation has shown to be an important factor in many areas of life, yet it can also have implications for carrying on and persevering after experiencing failure. Students who are motivated by a stronger internal locus of control tend to be more academically successful (Whyte, 2018), but neurological imaging studies of 3rd to 5th grade students have shown that intrinsically motivated individuals are more likely to have stronger internal responses to perceived failure and successes (Fisher et al., 2009). Compared to more extrinsically motivated students, children with strong academic intrinsic motivation are also more likely to make internal attributions regarding non-academic task successes and failures, and they had greater neurophysiological reactions to failure. The findings suggest intrinsically motivated individuals tend to experience a greater internalization and emotional connection to error monitoring, which is also related to deeper cognitive processing strategies (Fisher et al., 2009). Whereas extrinsically motivated students thrive on the external incentive following the outcome of their performance (e.g., praise for good performance; Deci & Ryan, 2000), intrinsically motivated individuals can become more affected by external feedback, whether that is praise or criticism. As Vallerand (1997) state, intrinsically oriented students continually strive toward mastery and acquisition of new knowledge, whereas others value the performance outcome for external incentives (e.g., respect or praise). Therefore, in line with other earlier-mentioned research, praise is a more all-around beneficial tool than threats in promoting motivation, especially when given the possibility of it bring directed toward a more intrinsically motivated individual.

Improving

Workplace Motivation

Related to Maslow's hierarchy of needs, Herzberg's two-factor 'motivation-hygiene theory' argues that individuals at work tend to be unsatisfied with lower-order needs, such as safe and pleasant working conditions and minimum pay, and instead are motivated more to achieve higher level psychological needs of responsibility, achievement, recognition, advancement and finding the work interesting (Alshmemri et al., 2017; Herzberg, 2003). Herzberg also argued that workers are often ineffectually driven by a need to avoid unpleasantness, largely influenced by hygiene, or extrinsic dissatisfaction-avoidance factors,

which include company policies, administration, supervision, interpersonal relationships, working conditions, salary, and status. Hygiene factors influence the doing of the work in the short term and tend to focus on incentives of benefits or assurance of continued employment. Conversely, motivators, or growth factors have a longer influence on positive job attitudes and performance, and include a sense of achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. Herzberg states that providing a feeling of making worthwhile contributions fits with the higher psychological need for self-actualization, and is therefore a more effective motivator than various forms of incentives or threats, including supposed motivational policies around better team communication, counseling, or relationship-building exercises (Herzberg, 2003). Management's provision of a "big picture approach" is also not enough to enhance motivation, as the worker only gets a "a sense of achievement rather than a substantive achievement in the task", which is only possible through actual task achievement (Herzberg, 2003, p. 91).

Herzberg (2003) argues that the opposite of job satisfaction and motivation is not job dissatisfaction, but rather no job satisfaction; they are separate entities, and a decrease in one does not equal an increase in the other. 'No job satisfaction' might be understood similar to amotivation. In a 1968 study of 1,685 employees from various sectors, including military, food handling, teaching, hospitals and manufacturing, Herzberg (2003) showed that 81% of all factors contributing to job satisfaction were 'motivators', and 69% of all factors contributing to job dissatisfaction involved 'hygiene' elements. The motivation-hygiene theory states that employers need to attend to both factors. To decrease dissatisfaction, employers ought to attend to and reduce emphasis on workplace 'hygiene' factors by paying fair wages, ensuring job security, and creating a positive workplace culture. To increase satisfaction and motivation, the work needs to be psychologically enriching to best utilize personnel at all levels. This can be seen in vertical 'job enrichment' initiatives that aim to foster the employee's psychological growth—to want to take on the tasks rather than feel obligated to—opposed to horizontal 'job loading' schemes which add continuously more and/or different mundane tasks in an attempt to motivate employees to work harder, but only increases the feeling of meaningless for the job. As Herzberg states, "multiplying or adding zero by zero still equals zero" (2003, p. 93). By applying job enrichment principles (see Appendix B for the full list), one experiment showed that although the beginning showed a dip in positive outcomes, after six months employees showed a marked increase in liking their jobs, were outperforming their colleagues, had lower truancy rates, and had much higher rates of promotion (Herzberg, 2003).

Of course, not all individuals or all occupations are the same; what one finds satisfying or dissatisfying may differ to another, which is likely influenced by their upbringing, personality, and behaviour. Indeed, Herzberg (2003) states that not all jobs can nor need to be enriched. However, he also states that if just a fraction of the time and money spent on hygiene were devoted to job enrichment efforts, there would be an incredible return in human satisfaction and economic capital in the industry and larger society.

Interventions

Motivational Interviewing

One common intervention for addictions, including eating disorders, is motivational interviewing (MI), which is a method of shifting an individual's motivation to change their behaviour (Knight et al., 2006). Some research on the efficacy of MI has shown beneficial outcomes for reducing smoking and alcohol consumption, improving diet, and managing chronic diseases (Edwards et al., 2015; Knight et al., 2006). However, Knight et al.'s (2006) systematic review notes that the general quality of interventions tend to be poorly designed and insufficient. In a more recent systematic review of 104 reviews of the efficacy of motivational interviewing in the health and social sciences fields, including 39 meta-analyses, Frost et al. (2018) found that most evidence was graded low, with only moderate positive effects (less than six months) being shown in 7% of meta-analyses comparisons, including with binge-drinking, frequency of alcohol consumption, substance abuse, and increasing participation in physical activity.

Situational Learning

Motivation is a means of offering but not creating a reliance on extrinsic motivators, as this can make motivation to begin or persevere through work difficult when the extrinsic rewards disappear (Williams, 2004). Instead, the aim is to provide extrinsic motivators that foster intrinsic or internal drives, with a focus on the individual's pursuits. While extrinsic rewards can dampen individuals' sense of intrinsic motivation, Marinak & Gambrell (2008) found that the type of extrinsic reward matters, and if selected and allocated correctly the extrinsic motivator can foster intrinsic motivation. This scenario was seen in a class of third graders (n=75) from high-poverty (18-25%) mid-Atlantic suburban schools, who were rewarded their choice of books (autonomy) for doing their reading work (recognition of competence), which in turn strengthened their intrinsic motivation for reading. These findings are important as across international student academic assessments, those who enjoy reading perform significantly better than those who do not (Gambrell, 2011). Gambrell's (2011) study suggests that reading engagement is even more important than family background.

Guthrie et al. (2010) examined whether situational reading could improve long-term intrinsic motivation to read. The authors also investigated whether and how situational interest and intrinsic reading motivations were associated with information books and narrative books independently; they anticipated they would not be across genres. The classroom setting for the study was a Concept-Oriented Reading Instruction (CORI) program, which uses reading strategy instruction and motivational practices designed to enhance children's intrinsic motivation, using lessons on ecological issues and scientific concepts of species survival. Students got to observe and have hands-on investigation to interact with the topic of ecology as a way to build interest, and were then provided a wide variety of interesting texts (many of which were trade books

with table of contents, index, illustrations, headings and subsections) to build on their situational interest. Students chose which books would be most relevant for answering their self-generated questions and the issues they wanted to learn, and then shared and discussed with their peers to build conceptual knowledge. At the same time, students had access to an equal amount of literature (chapter books, legends, poetry) on conceptually related topics, and were expected to spend an equal amount of time reading both types of books. The aim was to build both reading comprehension and long-term intrinsic reading motivation, which were measured with appropriate scales. The study's participants were 3rd grade students (n=120) from seven classrooms in two mid-Atlantic schools. Students completed Reading Interest Logs (RIL) to assess their intrinsic and extrinsic reasons for picking certain books. The RIL was administered after weeks two and seven to assess change in students' level of interest and reasons for reading the books. Students who chose information books showed an increase in intrinsic motivation; students who increased their situated interest for information books also increased their general reading motivation scores.

Oppositional Defiance Disorder

Oppositional Defiance Disorder (ODD) is a tendency to want to argue and win rather than find a common ground. It is often comorbid with other mental health conditions, including anxiety, depression, ADHD, conduct disorder, and other mood disorders, and is often associated with substance abuse and behavioural problems (Riley et al., 2016). How do you help to motivate someone to do well when they do not want to be told what to do? The literature mentioned above on motivation in classrooms and workplaces seems clear: rather than simply telling them, or anyone what to do, and setting hard negative extrinsic motivators, a more effective approach is to increase a sense of autonomy, provide feedback, and encourage socialization or a sense of relatedness with others to promote greater engagement. Indeed, an ideal approach to working with individuals with ODD is Collaborative Problem Solving, which is less about directly trying to teach and motivate individuals to comply with directives, and more about instilling skills to collaborate and problem solve (Riley et al., 2016). Again, similar to the above literature on increased socialization, a collaborative problem-solving approach to ODD has been found to be effective, with multiple studies showing 50% of children no longer meeting ODD criteria six months post-treatment (Greene et al., 2004; Ollendick et al., 2015). The emphasis is not on increasing their ability to listen, but to motivate them to find middle grounds on their own.

Group Exercise

In line with the polyvagal theory [see our write-ups on Self-Esteem, and Mindfulness & Self-Regulation], Lucas, Rejeski and colleagues (2016) used mindfulness-based movement (MBM) as a means of increasing motivation and developing self-regulatory skills, originally using it with individuals but shifted to focus on the relational value of group experience. Group-based MBM has been shown to be effective for individuals in similar situations to have heartfelt

connections with one another, engage more fully with their treatment, and develop self-compassion which is central to psychological wellbeing. For example, Rejeski et al. (2014) created a home-based, group-mediated cognitive behavioral (GMCB) walking intervention for individuals with peripheral artery disease (n = 178, 49.4% male, ages 65+, living in Chicago), for which movement is an important treatment to improve blood flow to the lower extremities. After six months, compared to a health education control group, the GMCB group significantly improved their 6-minute walk performance by 53.5 metres and had more activity per week. The intervention group also showed statistically significant psychological and social improvements in satisfaction with physical function, pain acceptance, social functioning, and walking self-efficacy.

“Exergaming” in a Situated Learning Framework

Citing current research in the field of technology-driven physical activities, Ennis (2013) states that exergaming has been shown to enhance strength, balance, interest, enjoyment, engagement, perceptual motor skills, and motivation in students. While exergames can be situationally engaging, some authors have shown that this interest can gradually decrease overtime. Ennis and others argue that as this situational interest tends to decrease, the student’s ability to play these exergames increase, which results in higher levels of physical activity intensity. As well as an option for physical activity and tool for motivation to participate in physical education, Ennis argues exergames can also be used to increase student learning, problem solving, and self-regulation, and can be adapted to facilitate life-long participation. Ennis (2013) describes how exergaming, including using the Nintendo Wii, successfully motivated students traditionally uninterested in physical education to not only participate but increase their positive feelings towards physical activity. Another aspect of increased motivation was found by students enjoying the challenge continuously moving to “power” the exergame and keep it from pausing, thereby reducing exercise boredom. Activity choice is largely determined by student’s levels of enjoyment (desire for excitement), and the most common reason for children’s participation in physical activity is the intrinsic motivation for “fun”, with self-initiation and choice (autonomy) being other motivational factors for engagement in physical activity (Biddiss et al., 2010).

Assessments

Motivation

Intrinsic Motivation Inventory (IMI; Ryan & Deci, 2000)

- 28-item measure
- Six subscales originally: Interest/Enjoyment; Perceived Competence; Effort/Importance; Pressure/Tension; Perceived Choice; Value/Usefulness. A seventh subscale (Relatedness) was added but has not yet been validated

- Short version by Vos et al. (2011) adapted a pre- and post-test design, and includes three scales (competence, interest, effort)
- Ostrow & Heffernan (2018) adapted the original version to 19-item with four subscales (alpha scores included): interest/enjoyment (.92); competence (.92); autonomy (.83); and belonging (.56).
- Found here (requires account; free for academic use):
<http://selfdeterminationtheory.org/intrinsic-motivation-inventory/>
 - <http://selfdeterminationtheory.org/questionnaires/>
 - [https://selfdeterminationtheory.org/intrinsic-motivation-inventory/#:~:text=The%20Intrinsic%20Motivation%20Inventory%20\(IMI,target%20activity%20in%20laboratory%20experiments.](https://selfdeterminationtheory.org/intrinsic-motivation-inventory/#:~:text=The%20Intrinsic%20Motivation%20Inventory%20(IMI,target%20activity%20in%20laboratory%20experiments.)

Situational Motivational Scale (SIMS; Guay et al., 2000)

- 16-item measure
- In line with Self-Determination Theory (SDT; Ryan & Deci, 2000), the SIMS was developed to measure situational (or state) motivation
- Four-factor structure: intrinsic motivation, identified regulation, external regulation, and amotivation.
- Cronbach's alpha scores for the subscales: intrinsic motivation = .95; identified regulation = .85; external regulation = .62; amotivation = .83).
- Østerlie et al. (2019) looked at SIMS in physical education in a Norwegian sample
 - N=318 students from six schools
 - Explorative and confirmatory factor analyses suggests the 14-item version of the SIMS to be superior to the 16-item version (removed items 10 and 11).
 - Cronbach alpha scores = .74 - .92
 - Composite reliability coefficient = .78 - .92

Academic Motivation Scale (AMS; Vallerand et al., 1992)

- 28-item assessing student's motivation for academic pursuits.
- Based on self-determination theory, the AMS is a measure of intrinsic motivation (three subscales of four items each: to know, to accomplish things, and to experience stimulation), extrinsic motivation (three subscales of four items each: external regulation, introjected regulation, and identified regulation), and amotivation (four items) in academic contexts.
- 7-point scale (1 = does not correspond at all, to 7 = corresponds exactly)
- Cronbach alpha avg for all scales = 0.81 (min=0.62, max=0.91).
- Komarraju et al. (2009) found the following internal consistency coefficients: total intrinsic motivation = .92 (intrinsic motivation to know .82, intrinsic motivation to accomplish .85, intrinsic motivation to experience stimulation .85,); total extrinsic

motivation = .88 (extrinsic motivation identified .77, extrinsic motivation introjected .87, extrinsic motivation external regulation .82); and amotivation = .82.

- Ardeńska et al.'s (2019) Polish version found total alpha values to be .87
- Further information on the scale is available here: <https://www.rand.org/education-and-labor/projects/assessments/tool/1989/academic-motivation-scale-high-school-ams.html>
- Full measure is available here: https://www.lrcs.uqam.ca/wp-content/uploads/2017/08/HS-emes_en.pdf

Achievement Emotions Questionnaire (AEQ; Pekrun et al., 2011)

- 24-item measure
- Three subcategories (class-related emotions, learning-related emotions, test emotions) measuring nine different emotions: enjoyment, hope, pride, relief, anger, anxiety, hopelessness, shame, and boredom. These occur in four emotion categories comprising “valence and activation”: positive activating (enjoyment, hope, pride); positive deactivating (relief); negative activating (anger, anxiety, shame); and negative deactivating (hopelessness, boredom).
 - See Appendix C for example items
- Cronbach alpha = above .75 for all scales and above 0.85 for 15 of the 24 scales.

Harter's Intrinsic/Extrinsic Motivation Scale (Harter, 1981)

- 30-item scale
- For ages 8-18 (Children or teacher can complete)
- Assesses whether children are intrinsically or extrinsically motivated in each of the five subscales:
 - Subscales: Learning for curiosity / to please the teacher; Incentive to work for one's own satisfaction / working to get grades and please the teacher; Preference for challenge / preference for easy work; Desire to work independently / dependence on the teacher; Internal criteria of success and failure / external criteria
- Questions are formatted with a checkbox option of whether a statement is true, and another similar statement and checkbox separated by a “but” (see scale manual)
 - Scale manual available for download here: <https://portfolio.du.edu/SusanHarter/page/44343>
- Cronbach alpha = .54 - .84

The Behavioural Regulation in Exercise Questionnaire (BREQ, Ryan & Connell, 1989; BREQ-2, Markland & Tobin (2004)

- BREQ-2 has 19 items

- Assesses participants' motivation for physical activity, covering the types of motivation on the self-determination continuum: amotivation (4 items), external regulation (4 items), introjected regulation (3 items), identified regulation (4 items), and intrinsic regulation (4 items).
- 5-point Likert scale (0 = not true for me; 4 = very true for me)
- Cronbach alpha = .73 to .86
- Full questionnaire available here: https://elcentro.sonhs.miami.edu/research/measure-library/breq-2/BREQ-2_Items_Eng_Spa.pdf
 - Scoring: <http://exercise-motivation.bangor.ac.uk/breq/brqscore.php>

The Achievement Motivation Inventory (AMI; Schuler & Prochaska, 2001)

- 170-item, 17-dimensions
- Based on McClelland's (1953) theory of the need for achievement, the AMI assesses children's achievement motivation as a composite score the following subscales: desire to approach success (confidence in success, engagement, eagerness to learn) and desire to avoid failure (fear of failure, compensatory effort, avoidance of difficult tasks)
- 4-point Likert scale (1 = rarely, to 4 = often), graded by the trained professional researcher
 - Desire to approach success: "The child was eager to learn"; "The child liked solving new tasks"; "If the child managed to solve a difficult task, he or she felt proud"; "The child was confident in solving a task even if there were obstacles to overcome"
 - Desire to avoid failure: "The child liked difficult tasks" (reverse coded); "The child was able to postpone his or her immediate needs in order to finish the tasks"; "The child gave up easily" (reverse coded); "The child tried hard to work focused even if he or she was tired or exhausted."
- Cronbach alpha = .96 (total score), with ranges from $\alpha = .66$ to $\alpha = .83$ for individual scales

Achievement Goal Questionnaire-Revised (AGQ-R; Elliot & Murayama, 2008)

- 12-item measure
- Measures people's behaviours and aspirations to accomplish tasks in different situations
- 5-point Likert scale (1 = strongly disagree to 5 = strongly agree)
- Each of the following goal subcategories have three items: mastery-approach (focus on attaining task-based or intrapersonal competence), mastery-avoidance (avoiding task-based or intrapersonal incompetence), performance-approach (attaining normative competence), and performance-avoidance achievement goals (avoiding normative incompetence).
- Cronbach alphas = mastery-approach (.84), mastery-avoidance (.88), performance-approach (.92), and performance-avoidance (.94)

- Mastery-approach goal items:
 - My aim is to completely master the material presented in this class.
 - I am striving to do well compared to other students.
 - My goal is to learn as much as possible.
- Master-avoidance goal items:
 - My aim is to avoid learning less than I possibly could.
 - I am striving to avoid an incomplete understanding of the course material.
 - My goal is to avoid learning less than it is possible to learn.
- Performance-approach goal items:
 - My aim is to perform well relative to other students.
 - I am striving to understand the content as thoroughly as possible.
 - My goal is to perform better than the other students.
- Performance-avoidance goal items:
 - My goal is to avoid performing poorly compared to others.
 - I am striving to avoid performing worse than others.
 - My aim is to avoid doing worse than other students.

Perseverance/Grit

Grit Scale (GRIT-O; Duckworth et al., 2007)

- 12-items and 8-item (GRIT-S; Duckworth & Quinn, 2009)
- Two-factor structure (consistency of interests and perseverance of effort)
- 5-point Likert
- Cronbach alpha for original = .85
- Both the 12-item and 8-item version can be obtained from the researcher's website:
<https://angeladuckworth.com/research/>

Connor-Davidson Resilience Scale (CD-RISC; Connor-Davidson, 2003)

- 2, 10, and 25-item scales
- Measures resilience as a function of five interrelated functions: Personal Competence; Acceptance of Change and Secure Relationships; Trust/Tolerance/Strengthening Effects of Stress; Control; and Spiritual Influences
- In a study of 19 resilience measures, the CD-RISC was one of only three that received superior psychometric ratings (Windle, Bennett, & Noyes, 2011). The others were the Resilience Scale for Adults (RSA; Friborg et al., 2003) and the BRS (below).
- Cronbach alpha = .67 to .85 (McTighe, 2009)

Brief Resilience Scale (BRS; Smith et al., 2008)

- 6-items (three positively worded and three negatively worded items)

- Self-questionnaire aimed at measuring an individual's ability to "bounce back" from adversity and stress, e.g., health-related stress.
- Cronbach alpha = .80—91

References

- Alshmemri, M., Shahwan-Akl, L., & Maude, P. (2017). Herzberg's two-factor theory. *Life Science Journal*, 14(5), 12-16. doi:10.7537/marslsj140517.03.
- Ardeńska, M., Ardeńska, A., & Tomik, R. (2019). Validity and reliability of the Polish version of the academic motivation scale: A measure of intrinsic and extrinsic motivation and amotivation. *Health Psychology Report*, 7(3), 254-266. <https://doi.org/10.5114/hpr.2019.86198>
- Ashinoff, B. K., & Abu-Akel, A. (2019). Hyperfocus: The forgotten frontier of attention. *Psychological Research*. <https://doi.org/10.1007/s00426-019-01245-8>
- Balkis, M. (2018). Academic amotivation and intention to school dropout: The mediation role of academic achievement and absenteeism. *Asia Pacific Journal of Education*, 38(2), 257-270. <https://doi.org/10.1080/02188791.2018.1460258>
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122-147. <https://doi.org/10.1037/0003-066x.37.2.122>
- Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology*, 4(3), 359-373. <https://doi.org/10.1521/jscp.1986.4.3.359>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Biddiss, E., & Irwin, J. (2010). Active video games to promote physical activity in children and youth. *Archives of Pediatrics & Adolescent Medicine*, 164(7). <https://doi.org/10.1001/archpediatrics.2010.104>
- Bowers-Campbell, J. (2008). Cyber “pokes”: Motivational antidote for developmental college readers. *Journal of College Reading and Learning*, 39(1), 74-87. Doi:10.1080/10790195.2008.10850313
- Breines, J. G., & Chen, S. (2014). Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin*, 38(9), 1133–1143. <https://doi.org/10.1037/e512142015-364>
- Brunstein J. C., Heckhausen H. (2018) Achievement Motivation. In J. Heckhausen, & H. Heckhausen (eds.), *Motivation and action*. Springer, Cham
- Clarke, D. (2004). Impulsiveness, locus of control, motivation and problem gambling. *Journal of Gambling Studies*, 20(4), 319-345. <https://doi.org/10.1007/s10899-004-4578-7>
- Collins, A. L., Aitken, T. J., Greenfield, V. Y., Ostlund, S. B., & Wassum, K. M. (2016). Nucleus Accumbens acetylcholine receptors modulate dopamine and motivation. *Neuropsychopharmacology*, 41(12), 2830-2838. <https://doi.org/10.1038/npp.2016.81>
- Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ADO about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, 113(3), 492-511. <https://doi.org/10.1037/pspp0000102>
- Deckers, Lambert (2018). *Motivation: Biological, Psychological, and Environmental*. Routledge.

- Duckworth, A., Peterson, C., Matthews, M. D., & Kelly, D. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087-101. doi:10.1037/0022-3514.92.6.1087
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the short grit scale (Grit-S). *Journal of Personality Assessment, 91*(2), 166-174. <https://doi.org/10.1080/00223890802634290>
- Eisenberger, R. (1992). Learned industriousness. *Psychological Review, 99*(2), 248-267. <https://doi.org/10.1037/0033-295x.99.2.248>
- Elliot, A. J., & Murayama, K. (2008). On the measurement of achievement goals: Critique, illustration, and application. *Journal of Educational Psychology, 100*(3), 613-628. <https://doi.org/10.1037/0022-0663.100.3.613>
- Ennis, C. D. (2013). Implications of exergaming for the physical education curriculum in the 21st century. *Journal of Sport and Health Science, 2*(3), 152-157. <https://doi.org/10.1016/j.jshs.2013.02.004>
- Fisher, K. R., Marshall, P. J., & Nanayakkara, A. R. (2009). Motivational orientation, error monitoring, and academic performance in middle childhood: A behavioral and electrophysiological investigation. *Mind, Brain, and Education, 3*(1), 56-63. <https://doi.org/10.1111/j.1751-228x.2008.01053.x>
- Fried, Y., & Slowik, L. H. (2004). Enriching goal-setting theory with time: An integrated approach. *The Academy of Management Review, 29*(3), 404. <https://doi.org/10.2307/20159051>
- Frost, H., Campbell, P., Maxwell, M., O'Carroll, R. E., Dombrowski, S. U., Williams, B., Cheyne, H., Coles, E., & Pollock, A. (2018). Effectiveness of motivational interviewing on adult behaviour change in health and social care settings: A systematic review of reviews. *PLOS ONE, 13*(10), e0204890. <https://doi.org/10.1371/journal.pone.0204890>
- Gambrell, L. B. (2011). Seven rules of engagement: What's most important to know about motivation to read. *The Reading Teacher, 65*(3), 172-178. <https://doi.org/10.1002/trtr.01024>
- Grunschel, C., Patrzek, J., Klingsieck, K. B., & Fries, S. (2018). "I'll stop procrastinating now!" Fostering specific processes of self-regulated learning to reduce academic procrastination. *Journal of Prevention & Intervention in the Community, 46*(2), 143-157. <https://doi.org/10.1080/10852352.2016.1198166>
- Gut, J., Heckmann, C., Meyer, C. S., Schmid, M., & Grob, A. (2012). Language skills, mathematical thinking, and achievement motivation in children with ADHD, disruptive behavior disorders, and normal controls. *Learning and Individual Differences, 22*(3), 375-379. <https://doi.org/10.1016/j.lindif.2011.12.002>
- Hamid, A. A., Pettibone, J. R., Mabrouk, O. S., Hetrick, V. L., Schmidt, R., Vander Weele, C. M., Kennedy, R. T., Aragona, B. J., & Berke, J. D. (2015). Mesolimbic dopamine signals the value of work. *Nature Neuroscience, 19*(1), 117-126. <https://doi.org/10.1038/nn.4173>

- Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology*, 17(3), 300-312. <https://doi.org/10.1037/0012-1649.17.3.300>
- Hinton, M., & Biderman, M. (1995). Empirically derived job characteristics measures and the motivating potential score. *Journal of Business and Psychology*, 9(4), 355-364. <https://doi.org/10.1007/bf02230975>
- Ho, V. T., Kong, D. T., Lee, C., Dubreuil, P., & Forest, J. (2018). Promoting harmonious work passion among unmotivated employees: A two-nation investigation of the compensatory function of cooperative psychological climate. *Journal of Vocational Behavior*, 106, 112-125. <https://doi.org/10.1016/j.jvb.2018.01.005>
- Katz, I., & Shahar, B. (2015). What makes a motivating teacher? Teachers' motivation and beliefs as predictors of their autonomy-supportive style. *School Psychology International*, 36(6), 575-588. <https://doi.org/10.1177/0143034315609969>
- Kerr, N. L., Feltz, D. L., & Irwin, B. C. (2012). To pay or not to pay? Do extrinsic incentives alter the Köhler group motivation gain? *Group Processes & Intergroup Relations*, 16(2), 257-268. <https://doi.org/10.1177/1368430212453632>
- Knight, K. M., McGowan, L., Dickens, C., & Bundy, C. (2006). A systematic review of motivational interviewing in physical health care settings. *British Journal of Health Psychology*, 11(2), 319-332. <https://doi.org/10.1348/135910705x52516>
- Komarraju, M., Karau, S. J., & Schmeck, R. R. (2009). Role of the Big Five personality traits in predicting college students' academic motivation and achievement. *Learning and Individual Differences*, 19(1), 47-52. <https://doi.org/10.1016/j.lindif.2008.07.001>
- Krach, S., Paulus, F. M., Bodden, M., Kircher, T. (2010). The rewarding nature of social interactions. *Frontiers in Behavioral Neuroscience*, 4(22). <https://doi.org/10.3389/fnbeh.2010.00022>
- Kwon, S. J., Kim, Y., & Kwak, Y. (2018). Difficulties faced by university students with self-reported symptoms of attention-deficit hyperactivity disorder: A qualitative study. *Child and Adolescent Psychiatry and Mental Health*, 12(1). <https://doi.org/10.1186/s13034-018-0218-3>
- LeBoeuf, M. (1989). *The greatest management principle in the world*. New York: Berkely Books
- Maclellan, E. (2005). Academic achievement. *Active Learning in Higher Education*, 6(3), 194-206. <https://doi.org/10.1177/1469787405057750>
- Markland, D., Tobin, V. (2004). A modification to the behavioral regulation in exercise questionnaire to include an assessment of amotivation. *Journal of Sport & Exercise Psychology*, 26(2), 191-196. doi:10.1123/jsep.26.2.191
- Martin, A. (2002). Motivation and academic resilience: Developing a model for student enhancement. *Australian Journal of Education*, 46(1), 34-49. <https://doi.org/10.1177/000494410204600104>
- Maslow, A. H. (1971). *The farther reaches of human nature*. Viking Press.
- McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive*. New York, NY: Appleton-Century-Crofts.

- McGregor, D. (1960). *The human side of enterprise*. New York : McGraw-Hill
- Mojarad, S., Essa, A., Mojarad, S., & Baker, R. S. (2018). Data-driven learner profiling based on clustering student behaviors: Learning consistency, pace and effort. *Intelligent Tutoring Systems*, 130-139. https://doi.org/10.1007/978-3-319-91464-0_13
- Nieoullon, A., & Coquerel, A. (2003). Dopamine: A key regulator to adapt action, emotion, motivation and cognition. *Current Opinion in Neurology*, 16, S3-S9. <https://doi.org/10.1097/00019052-200312002-00002>
- Ostrow, K. S., & Heffernan, N. T. (2018). Testing the Validity and Reliability of Intrinsic Motivation Inventory Subscales Within ASSISTments. In R. Goebel, Y. Tanaka, & W. Wahlster (Eds.), *Artificial Intelligence in Education, 19th International Conference, AIED 2018, London, UK, June 27–30, 2018, Proceedings, Part I*. (pp. 381–394). Retrieved from https://doi.org/10.1007/978-3-319-93843-1_28
- Pekrun, R., Elliot, A. J., & Maier, M. A. (2009). Achievement goals and achievement emotions: Testing a model of their joint relations with academic performance. *Journal of Educational Psychology*, 101(1), 115-135. <https://doi.org/10.1037/a0013383>
- Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The achievement emotions questionnaire (AEQ). *Contemporary Educational Psychology*, 36(1), 36-48. <https://doi.org/10.1016/j.cedpsych.2010.10.002>
- Peifer, C., Syrek, C., Ostwald, V., Schuh, E., & Antoni, C. H. (2020). Thieves of flow: How unfinished tasks at work are related to flow experience and wellbeing. *Journal of Happiness Studies*, 21(5), 1641-1660. <https://doi.org/10.1007/s10902-019-00149-z>
- Pewewardy, C. (2002). Learning styles of American Indian/Alaska Native students: A review of the literature and implications for practice. *Journal of American Indian Education*, 41(3), 22-56. <https://www.jstor.org/stable/24398583>
- Ptacek, R., Weissenberger, S., Braaten, E., Klicperova-Baker, M., Goetz, M., Raboch, J., Vnukova, M., & Stefano, G. B. (2019). Clinical Implications of the Perception of Time in Attention Deficit Hyperactivity Disorder (ADHD): A Review. *Medical Science Monitor*, 25, 3918-3924. doi:10.12659/MSM.914225
- Raes, F. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Personality and Individual Differences*, 48(6), 757-761. <https://doi.org/10.1016/j.paid.2010.01.023>
- Resnick, B., Gwyther, L. P., & Roberto, K. A. (2010). *Resilience in aging: Concepts, research, and outcomes*. Springer Science & Business Media.
- Resnick, B. (2010). The relationship between resilience and motivation. In B. Resnick, L. P. Gwyther, & K. Roberto (Eds.), *Resilience in Aging: Concepts, Research, and Outcomes* (p. 199-215). https://doi.org/10.1007/978-1-4419-0232-0_13
- Rimfeld, K., Kovas, Y., Dale, P. S., & Plomin, R. (2016). True grit and genetics: Predicting academic achievement from personality. *Journal of Personality and Social Psychology*, 111(5), 780-789. <https://doi.org/10.1037/pspp0000089>

- Rosowsky, E. (2010). Resilience and personality disorders in older age. In B. Resnick, L. P. Gwyther, & K. Roberto (Eds.), *Resilience in Aging: Concepts, Research, and Outcomes* (p. 31-50). https://doi.org/10.1007/978-1-4419-0232-0_3
- Salamone, J., & Correa, M. (2012). The mysterious motivational functions of Mesolimbic dopamine. *Neuron*, 76(3), 470-485. <https://doi.org/10.1016/j.neuron.2012.10.021>
- Salimpoor, V. N., Benovoy, M., Larcher, K., Dagher, A., & Zatorre, R. J. (2011). Anatomically distinct dopamine release during anticipation and experience of peak emotion to music. *Nature Neuroscience*, 14(2), 257-262. <https://doi.org/10.1038/nn.2726>
- Schunk, D. H. (2003). Self-efficacy for reading and writing: Influence of modeling, goal setting, and self-evaluation. *Reading & Writing Quarterly*, 19(2), 159-172, doi:10.1080/10573560308219
- Singh, A., Singh, S. K., & Khan, S. (2016). Job characteristics model (JCM): Utility and impact on working professionals in the UAE. *International Journal of Organizational Analysis*, 24(4), 692-705. <https://doi.org/10.1108/ijoa-04-2016-1022>
- Skov, P. R., & Holm, A. (n.d.) Mental health, disruptive behavior and extrinsic motivation. Retrieved from: https://www.econ.ku.dk/cam/calendar/seminars/17092013/Mental_Health_paper_draft_3.pdf/
- Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, 101(2), 354-365. <https://doi.org/10.1037/a0023779>
- Titmuss, R. (2018). *The gift relationship (Reissue): From human blood to social policy*. Policy Press.
- Touré-Tillery, M., & Fishbach, A. (2014). How to measure motivation: A guide for the experimental social psychologist. *Social and Personality Psychology Compass*, 8(7), 328-341. <https://doi.org/10.1111/spc3.12110>
- Ungar, M. (2011). The social ecology of resilience: Addressing contextual and cultural ambiguity of a nascent construct. *American Journal of Orthopsychiatry*, 81(1), 1-17. <https://doi.org/10.1111/j.1939-0025.2010.01067.x>
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. *Advances in Experimental Social Psychology*, 29, 271-360. [https://doi.org/10.1016/s0065-2601\(08\)60019-2](https://doi.org/10.1016/s0065-2601(08)60019-2)
- Van Eerde, W., & Klingsieck, K. B. (2018). Overcoming procrastination? A meta-analysis of intervention studies. *Educational Research Review*, 25, 73-85. <https://doi.org/10.1016/j.edurev.2018.09.002>
- Vroom, V. H. (1964). *Work and motivation*. Wiley.
- Von Culin, K. R., Tsukayama, E., & Duckworth, A. L. (2014). Unpacking grit: Motivational correlates of perseverance and passion for long-term goals. *The Journal of Positive Psychology*, 9(4), 306-312. <https://doi.org/10.1080/17439760.2014.898320>
- Walton, G. M., Cohen, G. L., Cwir, D., & Spencer, S. J. (2012). Mere belonging: The power of social connections to shape achievement motivation. *Journal of Personality and Social Psychology*, 102(3), 513-532. <https://doi.org/10.1037/e634112013-025>

- Whyte, C. B. (1978). Effective counseling methods for high-risk college freshmen. *Measurement and Evaluation in Guidance, 10*(4), 198-200.
<https://doi.org/10.1080/00256307.1978.12022132>
- Williams, R. L., & Stockdale, S. L. (2004). Classroom motivation strategies for prospective teachers. *The Teacher Educator, 39*(3), 212-230.
<https://doi.org/10.1080/08878730409555342>
- Wolters, C. A. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology, 95*(1), 179-187. <https://doi.org/10.1037/0022-0663.95.1.179>
- Zacks, S., & Hen, M. (2018). Academic interventions for academic procrastination: A review of the literature. *Journal of Prevention & Intervention in the Community, 46*(2), 117-130.
<https://doi.org/10.1080/10852352.2016.1198154>

Appendix A: Taxonomy of Human Motivation

Ryan & Deci (2000b)

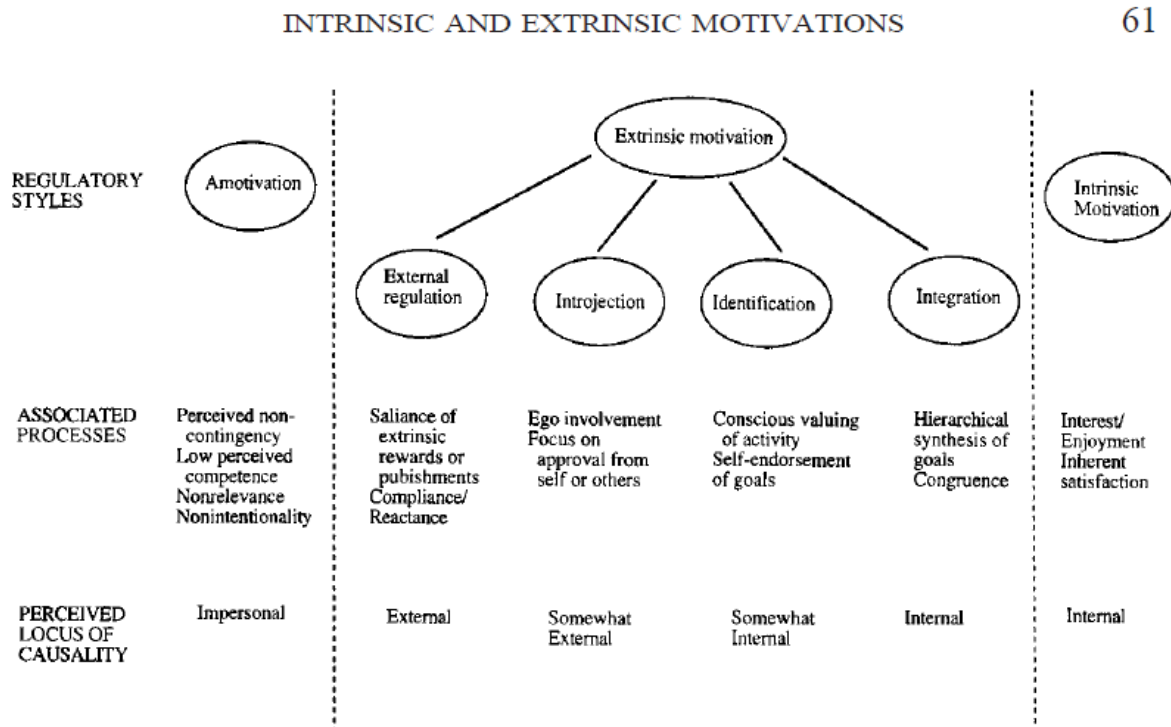


FIG. 1. A taxonomy of human motivation.

Appendix B: Principles of Job Enrichment

Herzberg (2003, p. 93)

EXHIBIT 2

Principles of vertical job loading

| Principle | Motivators involved |
|--|--|
| A. Removing some controls while retaining accountability | Responsibility and personal achievement |
| B. Increasing the accountability of individuals for own work | Responsibility and recognition |
| C. Giving a person a complete natural unit of work (module, division, area, and so on) | Responsibility, achievement, and recognition |
| D. Granting additional authority to employees in their activity; job freedom | Responsibility, achievement, and recognition |
| E. Making periodic reports directly available to the workers themselves rather than to supervisors | Internal recognition |
| F. Introducing new and more difficult tasks not previously handled | Growth and learning |
| G. Assigning individuals specific or specialized tasks, enabling them to become experts | Responsibility, growth, and advancement |

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Appendix C: Achievement Emotions Questionnaire Scales and Sample Items

Pekrun et al. (2011)

Achievement Emotions Questionnaire (AEQ): scales and sample items.

Class-related emotions

- | | |
|----------------|---|
| 1 Enjoyment | I enjoy being in class (d) |
| 2 Hope | I am confident when I go to class (b) |
| 3 Pride | I am proud of myself (a) |
| 4 Anger | I am angry (a) |
| 5 Anxiety | Thinking about class makes me feel uneasy (b) |
| 6 Shame | I get embarrassed (d) |
| 7 Hopelessness | I feel hopeless (b) |
| 8 Boredom | I get bored (d) |

Learning-related emotions

- | | |
|----------------|--|
| 1 Enjoyment | I enjoy acquiring new knowledge (d) |
| 2 Hope | I have an optimistic view toward studying (b) |
| 3 Pride | I'm proud of my capacity (d) |
| 4 Anger | Studying makes me irritated (d) |
| 5 Anxiety | I get tense and nervous while studying (d) |
| 6 Shame | I feel ashamed that I can't absorb the simplest of details (d) |
| 7 Hopelessness | I feel hopeless when I think about studying (b) |
| 8 Boredom | The material bores me to death (d) |

Test emotions

- | | |
|----------------|---|
| 1 Enjoyment | For me the test is a challenge that is enjoyable (d) |
| 2 Hope | I have great hope that my abilities will be sufficient (b) |
| 3 Pride | I'm proud of how well I mastered the exam (a) |
| 4 Relief | I feel very relieved (a) |
| 5 Anger | I am fairly annoyed (a) |
| 6 Anxiety | I feel panicky when writing an exam (d) |
| 7 Shame | I feel ashamed (a) |
| 8 Hopelessness | I have lost all hope that I have the ability to do well on the exam (d) |
-

Note: b/d/a = before/during/after the situation of attending class, studying, or taking tests and exams, respectively.



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