
Enhancing Human Motivation

How Leveraging Self-Determination Theory can set the
Conditions for Accelerated and Lifelong Learning



White Paper

Human Dimension Capabilities Development Task Force
Capabilities Development Integration Directorate
Mission Command Center of Excellence (MC CoE)

EXECUTIVE SUMMARY

The Army must take immediate action to develop a capacity for accelerated learning that extends from organizational levels of learning to the individual Soldier whose knowledge, skills, and abilities are tested in the most unforgiving environments. – TRADOC Pam 525-8-2¹

The dynamic and ambiguous nature of future operating environments as predicted by recent US Army publications, paired with anticipated fiscal realities, have presented a unique challenge for developing Soldiers. How can the Army accelerate the development of Soldiers so they not only have the required training and education needed to succeed in any environment, but can also achieve cognitive dominance over any adversaries they may meet? The Army has approached this task by developing a framework designed to promote accelerated and lifelong learning, but how can the Army motivate Soldiers to take advantage of the opportunities presented to them?

Psychologists have long struggled with answering this question concerning motivation in one form or another. What is “it” that moves an individual towards action? Can “it” be shaped or harnessed in a manner that promotes more of “it?” While many theories focus on the individual learner’s values and beliefs, Self-Determination Theory (SDT) is a multi-disciplined approach that instead focuses on the social-contextual factors that either promote or hinder healthy forms of self-regulation. In other words, SDT is focused on how the environment and social interactions can fulfill specific needs, and thus promote the internalization of regulations, causing individuals to endorse the actions they take. By leveraging SDT, the Army can set the environmental conditions that will not only allow Soldiers to enhance their development, but also accelerate it.

SDT’s sub theories, Cognitive Evaluative Theory (CET) and Organismic Integration Theory (OIT), cover both intrinsic and extrinsic motivation. CET focuses on describing the needs which depending on the degree to which the environment and social contexts meet them, can either promote or inhibit intrinsic motivation. OIT focuses on extrinsic motivation, investigating the roles of autonomy, competence and relatedness and their influence on the process of internalization.

By leveraging SDT and its sub-theories, the Army can identify and promote social-contextual “best practices” for developing Soldiers. By supporting and promoting intrinsic motivation and internalized forms of extrinsic motivation, the Army can engage learners in a manner that utilizes and reinforces Soldiers instinctive drive for progress. The Army can also empower

¹ Department of the Army, *The U.S. Army Learning Concept for 2015*. TRADOC Pam 525-8-2, January 2015, Washington, DC: Headquarters, Department of the Army (2011) 5.

learning institutions and classroom facilitators with the knowledge to promote autonomy supportive environments rather controlling environments. Many of the recommendations made in this white paper are similar to potential initiatives being discussed in conjunction with the establishment of the Army University.

To address enhancing motivation in order to accelerate learning and develop lifelong learners in the US Army, the Human Dimension Capabilities Development Task Force (HDCDTF) recommends:

First do no harm to intrinsically motivated learners.	Near-Term	As the Army continues to offer multiple forms of instruction (resident, distributed, and mixed), it should investigate whether the type of instruction offered has an impact on learner motivation, and whether specific courses and course styles attract learners with different forms of motivation. This investigation could have implications for student placement, as well as lead to improvements in the presentation and implementation of resident, distributed, and mixed courses.
	Mid Term	Identify current methods, as well as ideal future practices which will allow learning centers and individual commands to assess, adapt, and develop best practices that promote autonomous forms of motivation (intrinsic, integrated, and identified).
Set the conditions to promote the internalization of Army learning values in Soldiers who may be extrinsically motivated.	Immediate-Near Term	Not every classroom environment the Army creates will need the same degree of autonomy support. In some situations, it may be better to promote a controlling context, depending on the desired learner outcomes. The Army should work towards understanding both the current learning environments that exist, and the desired learning environment in each learning institution.
		For courses lasting longer than four weeks, instructor/facilitators should have students take pre- course surveys, such as the Academic Motivations Scale, in order to identify individual learner motivations. Empowered with this information, instructor/facilitators will be able to create a learner-centric learning environment that enables learners to meet their full potential.
		Begin integrating questions pertaining to internalization and motivation into all “end of course” surveys. By collecting this information, the Army will be able to keep an up to date understanding of the learning environments it is creating. This will empower instructor/facilitators with the information they need to continuously improve their practices after every classroom iteration.

<p>Enable Army instructor/facilitators for success as they shape the leaders of the future.</p>	Near Term	<p>The Army should professionalize what it means to be an instructor/facilitator. Soldiers and Army Civilians bring unique and highly specific field related skills with them when they become instructors. The Army should develop an initiative that sets the conditions for success by training and educating all potential instructors to not only be proficient in their specific field, but also highly skilled in the art of education.</p>
	Near Term	<p>Instructor/facilitator’s set the immediate conditions of the learning environment. They can choose to create a controlling context, or an autonomy supportive environment. But the choice is not entirely theirs, the learning environment they create is shaped by the working environment in which they find themselves. The Army should strive to promote a working environment for instructor/facilitators that mirrors the environments desired for its learners.</p>
	Far Term	<p>Change the perception of instructing billets from being viewed as non-career enhancing positions. Instructors have the unique responsibility of developing and shaping the minds of future Army leaders. The Army should shape the environment so that its best and brightest Soldiers are shaping the Soldiers of the future.</p>
<p>The Army should create routes for learners to broaden their educational horizons by expanding learning opportunities at the contextual level.</p>	Far Term	<p>Increasing autonomy at the situational level can occur in a classroom, but in order to increase autonomy at the contextual level the Army should investigate how to promote autonomy outside of the classroom for its career-long and life-long learners</p>

Introduction and Environment

“The dynamic nature of the 21st-century security environment requires adaptations across the force. The most important adaptations will be in how we develop the next generation of leaders, who must be prepared to learn and change faster than their future adversaries. Simply put, developing these adaptive leaders is the number-one imperative for the continued health of our profession.”

-General Martin Dempsey²

As the US Army recognizes and adapts to meet the challenges presented by an unpredictable future, Soldiers will continue to be expected to prevent conflict, shape the security environment, and win wars.³ To accomplish these tasks, Soldiers will be required to operate in an increasingly varied set of missions, ranging from conventional combat, counterinsurgency, peacekeeping, stability and construction, to humanitarian assistance and disaster relief efforts.⁴

In order to meet these challenges the US Army must continue to develop innovative, and adaptive Soldiers and leaders while optimizing human performance.⁵ As the US Army moves forward from the lessons learned in both Iraq and Afghanistan, a new generation of Soldiers will enter the Army and their education and training will need to take a higher precedence than it has over the last decade of combat.⁶ In anticipation of this shift the Army has begun to develop new learning models which will enable Soldiers to develop a foundation of learning, and better prepare them to meet any challenge across the entire spectrum of conflict.⁷ Any competitive advantage that American Soldier’s may hold over their adversaries directly relates to their capacity to learn faster, and adapt more quickly.⁸

TRADOC Pamphlet 525-8-2, The Army Learning Concept for 2015 (ALC 2015), presents a new learning model for Soldier development aimed at providing a more learner centric focus, networks that can be accessed the world over, and virtual learning environments, all with the purpose of maximizing opportunities for Soldier’s to master fundamental competencies in an accelerated manner.⁹ The end state of this learning model is to create an environment in which Soldiers are able to “mesh together self-development, institutional instruction and operational experience.”¹⁰ ALC 2015 provides Soldiers and leaders with up to date, relevant, and engaging learning experiences which are intended to span entire careers, and inspire Soldiers to become

² GEN Martin Dempsey. "Leader Development." Army, February 1, 2011, 26.

³ Department of the Army, *The U.S. Army Operating Concept: Win in a Complex World*. TRADOC Pam 525-3-1, April 2008, iii.

⁴ Army Capabilities Integration Center (ARCIC), “Army Vision–Force 2025 White Paper,” January 23, 2014, 3

⁵ Department of the Army, *The U.S. Army Operating Concept: Win in a Complex World*, iii.

⁶ Department of the Army, *The U.S. Army Learning Concept for 2015*, 8.

⁷ *Ibid.*, 8.

⁸ *Ibid.*, 5.

⁹ *Ibid.*

¹⁰ *Ibid.*

lifelong learners.¹¹ The operating environment of the future holds one twist however, Soldiers must be prepared for operating in increasing ambiguity with less time for preparation, decreased manpower, and limited resources.¹²

So the question is, how can the US Army accelerate learning, ensuring that Soldiers are learning more than ever before, all while having less funding to spend on Soldier development? There are many solutions that address different aspects of the problem, ranging from the utilization of technology to expand classroom opportunities to outside of traditional brick and mortar schoolhouses; distance learning that can be completed stateside or when forward deployed; and automated training that removes the need for instructors with specific skills in every location. Each of these solutions provides Soldiers the opportunity to learn in a ways unavailable to previous generations. But presenting Soldiers the opportunity to learn more, more rapidly than ever before, does not actually increase the amount of knowledge gained or speed with which Soldiers learn.

If the Army wants to accelerate learning and promote conditions that create lifelong learners, then the Army needs to identify and understand why Soldiers learn. What factors facilitate Soldier development? What current practices inhibit learning, and how can the Army shift these practices in order to promote more conducive learning environments and accelerate learning?

There is a familiar saying that says you can lead a horse to water but you can't make him drink. The sentiment of this saying holds true in the US Army for nearly all ranks across every branch. Nearly every Soldier can probably identify a person in their current or former unit, who once attended a military education course with little or no intention of taking full advantage of the opportunity to learn. How many Captains taking a residence course on Fort Leavenworth have willingly explored the depths of the Combined Arms Library?

When was the last time you witnessed someone logging onto the Joint Knowledge Online (JKO) website without first being tasked to do so?

Figure 1 is an actual social media post made by a Soldier

after completing an annual online

course, that highlights one of the major problems facing Soldier development today. The opportunity to learn is readily available, but unless the Soldier has the proper motivation to learn, the intended transfer of knowledge is unlikely to happen, let alone at an accelerated pace.

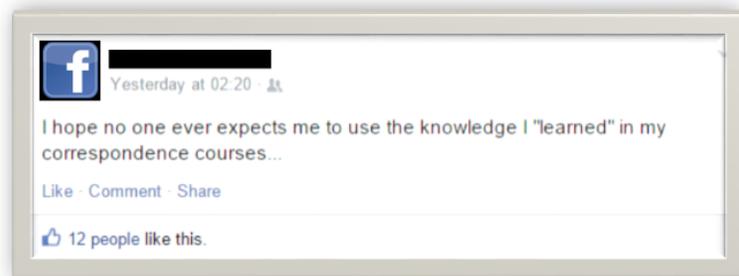


Figure 1: Junior Soldier's Social Media Post

¹¹ Department of the Army, *The U.S. Army Learning Concept for 2015*, 5.

¹² Ibid.

These examples go to show that learning does not happen just because the opportunity to learn exists. Learners, especially adult learners, need a reason or purpose to engage in learning. Three purposes for adult learners engaging in education have been identified:

Type of Adult Learner	Description
Goal Oriented	Those that use education as a means to an objective. ¹³
Activity Oriented	Those who take part not for the stated purposes, but rather to merely be part of an activity or social setting. ¹⁴
Learning Oriented	Those who seek knowledge for its own sake. ¹⁵

Figure 2: Houle's Types of Adult Learners

These three types of adult learners provide examples of both intrinsic motivation (learning oriented) and extrinsic motivation (goal and activity motivated). Motivation is an integral part of learning, because no learning can occur if there is not first the motivation to learn. Theories on motivation arise from many different fields of study, and in terms of education, many theories focus on individual student beliefs, values and goals.¹⁷ These theories of motivation are helpful when studying a relatively small population size, with a fairly homogenous background; but the Army is an extremely large organization whose diversity is representative of the nation it protects. This Human Dimension Capability Development Task Force (HDCDTF) white paper will focus on a different type of motivation theory, since understanding the beliefs and goals of every Soldier may be a bridge too far. Instead this white paper will focus on the Self-Determination Theory (SDT) of motivation, which is a multi-disciplined approach that describes the social-contextual factors that either promote or hinder healthy forms of self-regulation. Healthy forms of self-regulation

Educational Benefits of autonomous forms of regulation vs controlled forms of regulation.	
Benefit	Citation
Higher Academic Achievement	Miserandino, 1996; Flink et al., 1992
Higher Perceived Competence	Ryan & Grolnick, 1986
Higher Self-Worth	Ryan & Grolnick, 1986
Preference for Optimal Challenge	Shapira, 1976; Boggiano, Main and Katz, 1988; Pittman et al., 1982
Pleasure from Optimal Challenge	Harter, 1974, 1978
Stronger Perceptions of Control	Boggiano and Barrett, 1985
Greater Creativity	Amabile, 1985
Higher Rates of Retention	Vallerand and Bissonette, 1992

Figure 3: Benefits of Autonomous Regulation and Cited Works¹⁶

¹³ Cyril O. Houle, *The Inquiring Mind: A Study of the Adult Who Continue to Learn*. 3rd ed. (Norman, OK: Oklahoma Research Center for Continuing Professional and Higher Education, 1993), 15.

¹⁴ Ibid.

¹⁵ Ibid., 16.

¹⁶ Johnmarshall Reeve, "Self Determination Theory Applied to Educational Settings." In *Handbook of Self Determination*, (Rochester, NY: University of Rochester Press, 2002), 184.

¹⁷ Allen Wigfield, Jenna Cambria, and Jacquelynne Eccles. "Motivation in Education." In *The Oxford Handbook of Human Motivation*, ed. Richard Ryan, (New York: Oxford University Press, 2012), 463.

are linked to higher educational achievement, perceived competence, self-worth, preference for and pleasure from optimal challenges, stronger perceptions of control, greater creativity, and higher rates of learning retention.¹⁸

The intent of this paper is to initiate conversation within the institutional Army and the greater human dimension community of practice, addressing not how or what Soldiers learn, but rather how to set the conditions which influence *why* Soldiers choose to learn. In other words, what factors play a role in terms of influencing Soldier motivation, and how can the Army actively work to positively shape these factors?

In addition to focusing on the Army's professional developmental processes, this white paper also has implications pertaining to how the Army approaches keeping Soldiers in the Army (retention), virtual training environments, improving Soldier fitness and mental health.

Scope and Structure

This paper outlines aspects of Self-Determination Theory, to include several of its sub-theories with military examples when appropriate, as well as the associated Hierarchical Model of Motivation. While this paper will primarily be focused on SDT as it relates to education. SDT has also been applied in studies focused on multiple fields including: work environments, health, sports and exercise, small group leadership, and faith.

At the end of this paper, several current initiatives will be described and recommendations will be made for how the Army can continue to improve Soldier development by shaping the factors it can control which influence motivation.

Self-Determination Theory

The term motivation is derived from the Latin verb *movere*, which means to move. Theories on motivation attempt to address exactly what "it" is that moves individuals or groups towards initiating an activity or taking a particular action.¹⁹ SDT, developed by Richard Ryan and Edward Deci, is aimed at addressing the factors that either facilitate or undermine both intrinsic and extrinsic motivation.²⁰ One of the primary agendas of SDT is to deconstruct what is known about motivation, and to build a framework that integrates viewpoints from different fields (i.e. humanistic, psychoanalytic, developmental, behavioral, cognitive and post-modern theories) in

¹⁸ Johnmarshall Reeve. "Self Determination Theory Applied to Educational Settings." In *Handbook of Self Determination*, (Rochester, NY: University of Rochester Press, 2002), 184.

¹⁹ Paul Pintrich. "A Motivational Science Perspective on the Role of Student Motivation in Learning and Teaching Contexts." *Journal of Educational Psychology* 95, no. 4 (2003): 669.

²⁰ Richard Ryan and Edward Deci. "Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions." *Contemporary Educational Psychology*, no. 25 (2000): 58.

order to describe the degree to which an individual's behavior may be self-determined.²¹ What differentiates SDT from other theories on motivation is its emphasis on distinguishing between self-determined (or autonomous regulation) and controlled forms of regulation.²²

Within SDT, there are four sub-theories: Cognitive Evaluation Theory (CET), Organismic Integration Theory (OIT), Causality Orientations Theory (COT), and the Basic Needs Theory (BNT). This paper will focus primarily on the Cognitive Evaluation Theory and Organismic Integration Theory, but will mention the other two supporting sub-theories when applicable.

Sub-Theories within Self-Determination Theory	
Sub-Theory	Focus
Cognitive Evaluation Theory	Explores the factors which produce variability in Intrinsic Motivation. ²³
Organismic Integration Theory	Investigates the roles of autonomy and internalization in identifying forms of Extrinsic Motivation. ²⁴
Causality Orientations Theory	Specifies three causality orientations (Autonomy orientation, controlled orientation, and impersonal orientation) and the degree to which they represent self-determination. ²⁵
Basic Needs Theory	Hypothesizes that the needs outlined within SDT are universal, and linked to satisfaction and well-being. ²⁶

Figure 4: Sub-Theories of Self-Determination Theory

Qualities of Self-Determination

According to SDT, the concept of self-determination is built upon three separate yet supportive qualities. These three qualities, *locus of causality* and *volition*, and *perceived choice*, have been shown to constitute indicators of the experience of self-determination.²⁷

Locus of causality is a concept which conveys that intentional behavior can arise from either personal (internal) causation or environmental (external) causations. An individual's Perceived Locus of Causality (PLOC) is their perception of whether the causal factor of their action was

²¹ Richard Ryan and Edward Deci. "Overview of Self-Determination Theory: An Organismic Dialectical Perspective." In *Handbook of Self Determination Research*, (Rochester, NY: University of Rochester Press, 2002), 4-5.

²² Edward Deci, Robert Vallerand, Luc Pelletier, and Richard Ryan. "Motivation and Education: The Self Determination Perspective." *Educational Psychologist* 26, no. 3 & 4 (1991): 326.

²³ Ryan and Deci, Overview of Self-Determination Theory, 9.

²⁴ Ibid.

²⁵ Ibid., 10.

²⁶ Ibid.

²⁷ Johnmarshall Reeve, Glen Nix, and Diane Hamm. "Testing Models of the Experience of Self Determination in Intrinsic Motivation and the Conundrum of Choice." *Journal of Educational Psychology* 95, no. 2 (2003): 387

internal to themselves or influenced by an outside pressure.^{28,29} Causality Orientations Theory (COT) specifies that an individual can have three different personal orientations that shape the likelihood of whether they perceive an event as internally caused or externally caused. The three orientations are: autonomous, controlled, and impersonal. COT investigates an individual's inner resources, rather than the environmental factors which shape motivation orientations.³⁰

Volition is a "sense of unpressured willingness to engage in an activity."³¹ An individual's volition is considered higher when they have endorsed the actions which they are conducting.³² In other words, an individual who has endorsed an activity and then engaged in that activity has acted with volition, just as an individual who endorsed not conducting an activity and then refrained from engaging in the activity is also acting with volition.

Perceived choice is a construct concerned with an individual's decision to act or not to act. Self-Determination Theory posits that self-determined actions are the result of an individual's choice to act, rather than reinforcement contingencies, external pressures, or controlling obligations propelling an individual towards action.³³

Intrinsic, Extrinsic, and Amotivation

In order to conceptualize the concepts contained within SDT, it is necessary to first clarify and define the basics of motivation. **Intrinsic motivation** is defined as the "doing of an activity for its inherent satisfactions rather than for some separable consequence."^{34,35} In their work on SDT, Ryan and Deci have stated that intrinsic activities are initiated by an individual's interest or for the challenge involved rather than due to external prompts.³⁶ The factors which produce variability in intrinsic motivation will be discussed in further detail in the section on the Cognitive Evaluation Theory.

²⁸ Richard deCharms. *The Internal Affective Determinants of Behavior*. (New York: Academic Press, 1986).

²⁹ Daniel B. Turban., Hwee Hoon Tan, Kenneth G Brown, and Kennon M. Sheldon. "Antecedents and Outcomes of Perceived Locus of Causality: An Application of Self Determination Theory." *Journal of Applied Social Psychology* 37, no. 10 (2007): 2377.

³⁰ Ryan and Deci, Overview of Self-Determination Theory, 20-22.

³¹ Reeve, Nix, and Hamm. Testing Models of the Experience, 376-77.

³² Ibid.

³³ Edward Deci and Richard Ryan. *Intrinsic Motivation and Self-Determination in Human Behavior*. (New York: Plenum Press, 1985), 38.

³⁴ Ryan and Deci, Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions, 56.

³⁵ Ryan and Deci, Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being, 70.

³⁶ Ryan and Deci, Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions, 56.

While intrinsic motivation explains the catalyst to conduct activities that are inherently interesting to an individual, **extrinsic motivation** explains how external pressures and forces, both positive and negative, can also provide a catalyst which pushes individuals towards an action. Classic definitions of extrinsic motivation describe it as a “construct that pertains whenever an activity is done in order to attain some separable outcome.”³⁷ Unlike the classic theories of motivation, SDT goes beyond explaining extrinsic motivation in general terms and further breaks it down along a spectrum showing controlled versus autonomous behavior. The section on the Organismic Integration Theory will cover the spectrum of extrinsically regulated motivation in more detail.

Amotivation is the state of lacking any intention to act.³⁸ When an individual is amotivated, he or she may lack the intent to take action, or if forced to act will most likely “just go through the motions.”³⁹ In contrast to intrinsic motivation, which is positively linked to greater activity persistence, amotivation has a negative relationship to persistence.⁴⁰

Cognitive Evaluation Theory (CET)

During their work on SDT, Ryan and Deci found that there are certain factors which can produce variability in intrinsic motivation.⁴¹ CET is a sub-theory within SDT developed to describe what the factors that create variability are.⁴² Rather than attempting to understand the causes or outcomes of intrinsically motivated activity, CET aims to examine the conditions that elicit and bolster intrinsic motivation rather than subdue or diminish it.⁴³ From an education standpoint, the concepts outlined within CET are important for developing a healthy learning environment, which supports and promotes intrinsic motivation. When considering CET “it is critical to remember that people will be intrinsically motivated only for activities that hold intrinsic interest for them, activities that have the appeal of novelty, challenge, or aesthetic value. For activities that do not hold such appeal, the principles of CET do not apply, because those activities will not be experienced intrinsically to begin with.”⁴⁴

Three Basic Needs

CET begins by outlining three basic, universal, and generalizable psychological needs which

³⁷ Ryan and Deci, *Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions*, 60.

³⁸ *Ibid.*, 61.

³⁹ Richard Ryan and Edward L. Deci "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." *American Psychologist* 55, no. 1 (2000): 72.

⁴⁰ Robert Vallerand, and Robert Bissonnette. "Intrinsic, Extrinsic, and Amotivational Styles as Predictors of Behavior: A Prospective Study." *Journal of Personality* 60, no. 3 (1992): 612-613.

⁴¹ Ryan and Deci, *Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions*, 58.

⁴² *Ibid.*

⁴³ Ryan and Deci, *Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being*, 70.

⁴⁴ *Ibid.*, 71.

foster greater intrinsic motivation to the extent to which they are satisfied.⁴⁵ The three needs which have been shown to be generalizable across cultures and populations, are autonomy, competence, and relatedness.⁴⁶ Each of the three needs fulfill a role in supporting intrinsic motivation, and when an environment no longer allows for the fulfillment of a need, the likelihood that an individual will remain intrinsically motivated decreases.

Autonomy	An individual's desire to be in control of or to feel autonomous and self-determining in terms of one's own behavior. ⁴⁷
Competence	An individual's ability to master and be confident in their interactions with their environment. ⁴⁸
Relatedness	An individual's wanting to belong, or desire to be attached to a group. ⁴⁹

Figure 5: Self-Determination's Three Needs

Within SDT, **autonomy** is an individual's desire to be in control of or to feel autonomous and self-determining in terms of one's own behavior.⁵⁰ Said another way, autonomy is regulation by self-governance.⁵¹ The opposite of autonomy is heteronomy. This is regulation by an external agency in the form of internal pressure or external rewards and punishment.⁵² Autonomy relates directly to an individuals' perceived locus of causality. Whether an individual feels autonomous in an action or not, is dependent upon whether the cause of the action is viewed as being internal or external (perceived locus of causality).

When considering autonomy, it is important to separate it from the concepts of independence, separateness, and individualism.^{53,54} For example, Ryan and Deci believe that it is possible for an individual to be autonomously dependent upon another person, as long as the person chooses to be dependent.⁵⁵ The spectrum of motivation orientations between heteronomy and autonomy will be discussed further in the section on the Organismic Integration Theory.

Competence is described as an individual's ability to master and be confident in their interactions with their environment.⁵⁶ CET states that an individual's motivation orientation is

⁴⁵ Andrew Przybylski, C. Scott Rigby, and Richard Ryan. "A Motivational Model of Video Game Engagement." *Review of General Psychology* 14, no. 2 (2010): 1553

⁴⁶ Ryan and Deci. "Overview of Self-Determination Theory." 10-12.

⁴⁷ Ibid., 11-12.

⁴⁸ Ibid.

⁴⁹ Ibid., 13-14.

⁵⁰ Ibid., 11-12.

⁵¹ Richard Ryan and Edward Deci. "Self-Regulation and the Problem of Human Autonomy: Does Psychology Need Choice, Self-Determination, and Will?" *Journal of Personality* 74, no. 6 (2006): 1562-63.

⁵² Ibid., 1563.

⁵³ Ibid., 1558-59.

⁵⁴ Valery Chirkov, Richard Ryan, Youngmee Kim, and Ulas Kaplan. "Differentiating Autonomy from Individualism and Independence: A Self-Determination Theory Perspective on Internalization of Cultural Orientations and Well-Being." *Journal of Personality and Social Psychology* 84, no. 1 (2003): 98.

⁵⁵ Ryan and Deci. "Self-Regulation and the Problem of Human Autonomy." 1560-61.

⁵⁶ Ryan and Deci. "Overview of Self-Determination Theory." 11-12.

not impacted by their actual competence level, but by their perceived competence level.⁵⁷ When an individual's need for perceived competence is fulfilled and an activity is performed with a sense of autonomy, intrinsic motivation is supported.⁵⁸ Likewise, if a person lacks perceived competence in an activity, their intrinsic motivation may be undermined.⁵⁹ Perceived competence can be manipulated through both positive and negative verbal feedback on performance.⁶⁰

Relatedness is described in SDT as a wanting to belong, or desire to be attached to a group.⁶¹ While autonomy and competence play an important role in regards to intrinsic motivation, relatedness is viewed as playing a more "distal role in the promotion of intrinsic motivation."⁶² While there are examples of intrinsic motivation for activities performed in isolation in which relatedness plays little to no role, relatedness does seem to play an "important role in the expression of intrinsic motivation" within social settings.⁶³

Research has shown that events which decrease autonomy (or lead to a more external perceived locus of causality) will undermine intrinsic motivation, and events that increase autonomy (or lead to a more internal perceived locus of causality) will promote or support intrinsic motivation.^{64,65} The same positive relationship has been shown for perceived competence and to a lesser degree, relatedness.⁶⁶

Learning environments can either be supportive or antagonistic to each of these three needs. Healthy social environments that allow for the satisfaction of each of the three needs are viewed as supportive; while environments that frustrate the satisfaction of each need are viewed as antagonistic to intrinsic motivation.⁶⁷ Examples of environmental factors that can negatively impact how an individual perceives autonomy, competence, and relatedness are:

⁵⁷ Ryan and Deci. "Overview of Self-Determination Theory." 11.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Robert Vallerand, and Greg Reid. "On the Causal Effects of Perceived Competence on Intrinsic Motivation: A Test of Cognitive Evaluation Theory." *Journal of Sport Psychology* 6 (1984): 99.

⁶¹ Ibid., 13-14.

⁶² Ryan and Deci. "Overview of Self-Determination Theory." 14.

⁶³ Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," 71.

⁶⁴ Ryan, and Deci. "Overview of Self-Determination Theory." 13-14.

⁶⁵ Edward Deci, Richard Koestner, and Richard Ryan. "Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again." *Review of Educational Research* 71, no. 1 (2001): 15.

⁶⁶ Ryan and Deci. "Overview of Self-Determination Theory." 13-14.

⁶⁷ Ibid., 13-14, 22-28.

rewards and punishments,^{68,69} evaluations and deadlines,⁷⁰ competition,⁷¹ and externally imposed goals.⁷² It has also been found that in addition to supporting intrinsic motivation, the fulfillment of these three needs may also be positively related to psychological well-being.⁷³

While an understanding of how to support intrinsic motivation is important within an educational setting, it is also important to acknowledge that intrinsically motivated learners are more likely to be outliers within a population rather than in the majority. As individuals age, environmental factors create an increasing amount of external pressures, which shape and impact an individual's motivation orientation. Stress, work, family, and unforeseen events can all present external pressures upon an individual's locus of causality. It is for this reason that the next sub-theory, Organismic Integration Theory, was created.

Organismic Integration Theory (OIT)

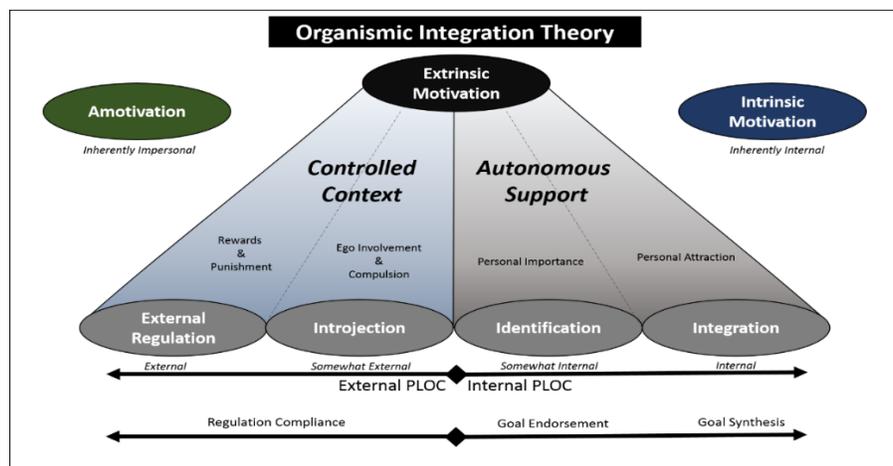


Figure 6: Self-Determination Continuum⁷⁴

Organismic Integration Theory (OIT) is the second sub-theory of SDT. OIT is based on the premise that people are naturally inclined to integrate their experiences as long as the nutrients that promote integration are available.⁷⁵ During the process of studying intrinsic

⁶⁸ Deci, Koestner, and Ryan. "Extrinsic Rewards and Intrinsic Motivation in Education." 1-27.

⁶⁹ Wilson Emerson Smith, "The Effect of Anticipated vs. Unanticipated Social Reward on Subsequent Intrinsic Motivation." Unpublished Doctoral Dissertation, Cornell University, Ithaca, NY. 1975.

⁷⁰ Teresa Amabile, William DeJong, and Mark Lepper. "Effects of Externally Imposed Deadlines on Subsequent Intrinsic Motivation." *Journal of Personality and Social Psychology* 34 (1976): 92-98.

⁷¹ Edward Deci, Gregory Betley, James Kahle, Linda Abrams, and Joseph Porac. "When Trying to Win: Competition and Intrinsic Motivation." *Personality and Social Psychology Bulletin* 7 (1981): 79-83.

⁷² Kevin Mossholder. "Effects of Externally Mediated Goal Setting on Intrinsic Motivation: A Laboratory Experiment." *Journal of Applied Psychology* 65, no. 2 (1980): 202-210.

⁷³ Harry Reis, Kennon Sheldon, Shelly Gable, Joseph Roscoe, and Richard Ryan. "Daily Well-Being: The Role of Autonomy, Competence, and Relatedness." *Personality and Social Psychology Bulletin* 26, no. 4 (2000): 420.

⁷⁴ Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," 72.

⁷⁵ Ryan and Deci. "Overview of Self-Determination Theory." 15.

motivation, researchers found that some intentional behaviors were initiated and regulated autonomously, whereas others were initiated and regulated by coercive and pressuring environmental and intra-psychic forces.⁷⁶ It was from these findings that the concept of extrinsic motivation was created

OIT describes the process of internalizing regulations. Internalization is a natural process in which individuals actively or passively transform an external regulation into a self-regulation.⁷⁷ SDT rejects the classical understandings of extrinsic motivation which characterize the concept as being non-autonomous and negatively related to intrinsic motivation. Instead, SDT hypothesizes that not only is it possible to be autonomously-extrinsically motivated, but also that extrinsic motivation can have an internal locus of causality.⁷⁸ In OIT, Ryan and Deci have placed extrinsic motivation on a spectrum which ranges from non-self-determined to self-determined, externally perceived causation to internally perceived causation, and regulation compliance to goal synthesis.^{79,80}

Type of Regulation	Degree of Self-Regulation	Perceived Locus of Causality	Description
External	Very Low	External	Behavior controlled by demands or contingencies external to the person.
Introjected	Moderately Low	Somewhat External	Behavior controlled by demands or contingencies inside the person such as self-esteem.
Identified	Moderately High	Somewhat Internal	Behavior chosen because the person identifies with the importance of the activity.
Integrated	Very High	Internal	Behavior experienced as “wholly free” because the regulation has been integrated with the person’s sense of self.

Figure 7: Forms of Extrinsically Motivated Behavior⁸¹

External Regulation (Controlled)

According to SDT, the least self-determined form of extrinsic motivation is external regulation. The concept of external regulation is what comes to mind for many people when they think of extrinsic motivation.⁸² Behaviors that are externally regulated are performed in order to satisfy

⁷⁶ Edward Deci and Richard Ryan, *Intrinsic Motivation and Self-Determination in Human Behavior*, (New York: Plenum Press, 1985).

⁷⁷ Roy Schafer, *Aspects of Internalization*, (New York: International Universities Press, 1968).

⁷⁸ Ryan and Deci, "Overview of Self-Determination Theory." 14-15.

⁷⁹ Ibid.

⁸⁰ Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." 70-72.

⁸¹ Deci, Ryan, and Williams. "Need Satisfaction and the Self-Regulation of Learning." 168.

⁸² Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," 72.

an external demand or reward contingency.⁸³ These behaviors have an externally perceived locus of causality, thus an individual will experience externally regulated behaviors as being alien and controlling.⁸⁴ Often times, the control mechanisms related with external regulation consist of non-verbal rewards and/or punishments. SDT states that when rewards are introduced into a scenario, an individuals' perceived locus of causality shifts towards being more external regardless of whether they were previously motivated by intrinsic or extrinsic motivation.⁸⁵ By taking action in order to receive rewards or avoid punishments, an individual would be complying with regulatory factors rather than endorsing them.^{86,87}

The example below describes a scenario where a learner's motivation is externally regulated:

2LT Smith, an Infantry Officer, is told by his command that he should enroll in a distributed education course pertaining to administration but is not told how the course relates to his current billet or chosen career field. 2LT Smith has no experience with administrative tasks, and feels that he may lack the competence to succeed at many tasks during the course. Since the course is distributed, he does not know or have any personal interactions with other students or instructors. 2LT Smith is also told by his command that the level of responsibility placed upon him in the future may depend on his successful completion of the course. 2LT Smith does not see how this course relates to his role as an infantry officer, but is afraid that he may be punished if he does not perform well. 2LT Smith decides that it is best to comply with his command, and take the course. In this case, 2LT Smith's motivation for taking and completing the course is externally regulated.

Introjected Regulation (Controlled)

The second form of controlled regulation within OIT is introjection. While introjection is slightly more internalized than external regulation, it still represents a form of controlled rather than autonomous regulation. In contrast to the interpersonal control seen with external regulation, introjected regulation is a form of intrapersonal control.^{88, 89} The perceived locus of causality for an individual's actions is no longer caused by external contingencies, but rather internal

⁸³ Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," 72.

⁸⁴ Ibid.

⁸⁵ Deci, Koestner, and Ryan. "Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again." 15.

⁸⁶ Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," 72.

⁸⁷ Richard Ryan and Edward Deci. "When Rewards Compete with Nature: The Undermining of Intrinsic Motivation and Self-Regulation." In *Intrinsic and Extrinsic Motivation*, (San Diego, CA: Academic Press, 2000), 48.

⁸⁸ Geoffrey C. Williams., Virginia Grow, Zachary Freedman, Richard Ryan, and Edward Deci, "Motivational predictors of weight loss and weight-loss maintenance." *Journal of Personality and Social Psychology* 70 (1996): 115-126.

⁸⁹ Ryan and Deci. "Overview of Self-Determination Theory." 17.

conflict, which is driven by external contingencies.⁹⁰ Individuals who are experiencing introjected regulation are typically engaging in a specific activity in order to avoid guilt, anxiety, or to attain ego enhancements.⁹¹ While there is a degree of internal conflict involved with introjection, it is important note that the individual is still complying with external regulations rather than internally endorsing the actions.

The example below describes a scenario of a learner whose motivation is regulated by introjection:

1LT Wilson is being sent to Ranger School by his command. Due to a variety of past experiences, he believes that on first impression soldiers often assess combat arms officers with a Ranger Tab as superior to those without one. This opinion has been influenced and supported by his superiors, peers, and subordinates. Upon arrival at Ranger School, 1LT Wilson becomes anxious over whether he will complete the course and earn a Tab or not. He is concerned that if he does not earn the Ranger Tab that he will be viewed as inferior to his peers who have. 1LT Wilson's perceived locus of causality for attending Ranger School is external, and his desire to succeed in the course is driven by his ego rather than by a personal endorsement of learning what the course has to offer. In this case, 1LT Wilson's motivation for completing the training is regulated by introjection.

Identification (Autonomous)

Regulation by identification is the next form of motivation orientation within OIT. The change between introjection and identification represents a shift between taking action in a controlled context to taking action autonomously. While identification is still a form of extrinsic motivation, the purpose for conducting the action has been internally endorsed by the action taker.⁹² Whereas with introjection, an individual may be taking action based on ego attainment or guilt, with identification the individual has attached a personal importance to the outcome of the action.⁹³ One of the primary differences between introjection and identification is the shift from an external perceived locus of causality to an internal perceived locus of causality.

The example below describes a scenario of a learner whose motivation is regulated by identification:

1LT Miller, who knows 1LT Wilson from ROTC but was assigned to a different unit, is also attending the same iteration of Ranger School. Prior to his arrival at Ft. Benning, 1LT Miller's command had asked for volunteers to attend Ranger School.

⁹⁰ Ryan and Deci, Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being, 72-73.

⁹¹ Ibid.

⁹² Ryan and Deci. "Overview of Self-Determination Theory." 17.

⁹³ Ibid.

After volunteering, his command then ensured that he fully understood what he was expected to learn from the course and how it would influence his future actions. They downplayed the stigma of not having a Ranger Tab, and ensured that 1LT Miller began to internalize the reasons that he, as a small unit leader, must succeed at Ranger School. Because he has begun internalizing the reasons for attending Ranger School, 1LT Miller has endorsed participating and is internally driven to succeed. In this case, 1LT Miller's actions are regulated by identification rather than introjection or external regulation.

Integration (Autonomous)

Regulation by integration represents the most internalized form of extrinsic motivation described by SDT.⁹⁴ While the ultimate cause of an action motivated by integration is still external, the individual taking the action has fully endorsed taking the action to the point that they have a personal attraction to it.⁹⁵ This means an individual acting with an integrated regulation is perceiving an internal locus of causality.⁹⁶

The example below describes a scenario of a learner whose motivation is regulated by integration:

Major Jackson has been selected for the Performance Based Graduate School Incentive Program (PB-BSIP) and will be given the opportunity to attend an accredited university and attain a graduate degree in one of ten fields identified by the Army. Major Jackson, based on his experience conducting Counter-Insurgency Operations (COIN) in Afghanistan, has chosen to pursue an advanced degree in sociology. He is genuinely interested in the field, and believes that learning more about it will help not only his career but also the careers of the soldiers he leads. He has told his close friends that he would likely pursue a graduate level degree in sociology whether he remained in the Army or not. Major Jackson has an internal PLOC due to the fact that he desires this specific degree, the ability to choose certain aspects of his education gives him some autonomy, and he fully endorses his involvement in the program because he believes that it will not only further his career but allow him to develop his own interests. Because of each of these factors, Major Jackson's motivation for completing the degree is regulated by integration, and is as near to intrinsic motivation as extrinsic motivation can be.

Promoting Internalization and Integration

⁹⁴ Ryan, and Deci. "Overview of Self-Determination Theory." 18.

⁹⁵ Ibid.

⁹⁶ Ibid.

OIT provides a spectrum which details different orientations towards extrinsic motivation. As described, this spectrum provides for multiple variables (internalization, PLOC, compliance v. endorsement, etc.) and an individual's orientation towards a specific action will fall somewhere along this spectrum depending upon the degree each variable is present in the environment. An individual's regulation style can shift along the spectrum without following a developmental continuum or order.⁹⁷ An action can shift from being externally regulated to integrated without first progressing through the other stages as long as the environment provides for the needed nutrients. SDT states that in order to shift an individual's motivation from one side of the spectrum to the other, the individual must experience feelings of relatedness, support for competence, and perceptions of autonomy.⁹⁸ In addition to the three needs, SDT also states that internalization is most likely to occur when individuals experience a sense of choice, volition, and a degree of freedom from external demands.⁹⁹ This means that the same factors identified as being supportive of intrinsic motivation also promote the internalization of regulations and a more autonomous form of extrinsic motivation.

A Hierarchical Model for Motivation

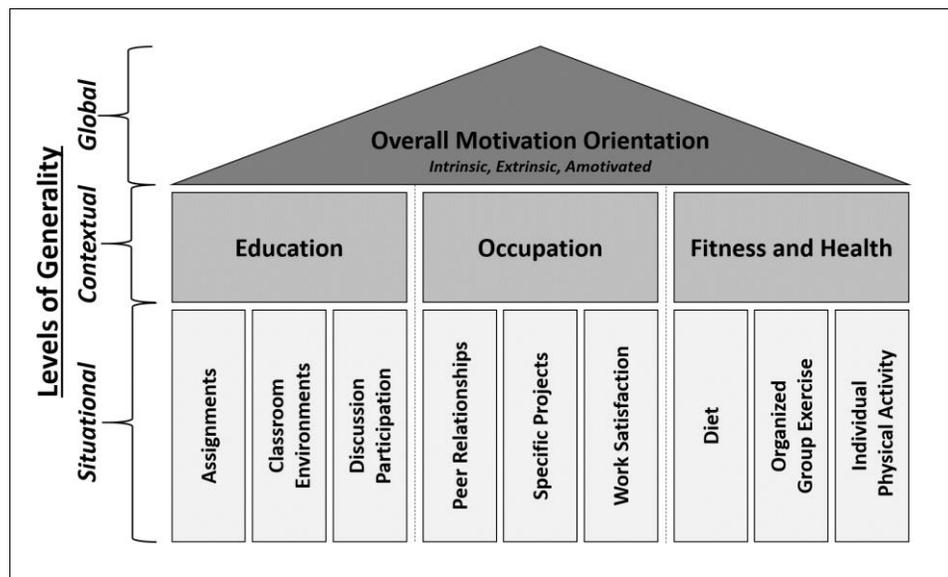


Figure 8: Graphic showing the Hierarchical Model

Hierarchy of Intrinsic and Extrinsic Motivation

Using SDT as a theoretical template, Robert Vallerand developed a hierarchical model that

⁹⁷ Ryan, and Deci. "Overview of Self-Determination Theory." 18.

⁹⁸ Ibid., 19.

⁹⁹ Ibid., 20.

describes how an individual's motivation orientation towards a specific behavior or action can influence their motivation orientation towards other behaviors or actions.¹⁰⁰ This influence happens not only between like actions, but also between different contexts and levels of generality.¹⁰¹ Based on this understanding, Vallerand developed a hierarchical model for intrinsic and extrinsic motivation. This model separates motivation into three specific domains: the situational, the contextual and the global.¹⁰²

Levels of Generality

The lowest level of generality is the **situational level**. The situational level refers to specific activities performed at a particular time.¹⁰³ This activity could be exercise, studying, working, or any number of other ventures. Since this level of generality deals with motivation on a moment to moment basis, it has very little stability and is vulnerable to changes in the environment as well as social factors.¹⁰⁴ In an educational context, events at the situational level may refer to specific assignments, course attendance, presentations, or a classroom environment.

The **contextual level** is the next level of generality above the situational level. Vallerand defines this level as a "motivation orientation towards a distinct sphere of human activity."^{105,106} Education, leisure, and interpersonal relationships have all been identified as examples of contextual spheres in which an individual can be motivated.^{107,108} Compared to the situational level, the degree of stability within each sphere at the contextual level is seen as relatively stable.¹⁰⁹

The capstone of the hierarchy is the **global level**, which consists of a general, enduring motivation orientation towards interaction with the environment.¹¹⁰ Just as with the other levels, orientations at the global level can take the form of intrinsic, extrinsic or amotivated motivation. Because motivation at the global level is so generalized, it has been identified as the

¹⁰⁰ Robert Vallerand, and Catherine Ratelle. "Intrinsic and Extrinsic Motivation: A Hierarchical Model." In *Handbook of Self-Determination Research*, (Rochester, NY: University of Rochester Press, 2002), 38-39.

¹⁰¹ Vallerand and Ratelle. "Intrinsic and Extrinsic Motivation: A Hierarchical Model," 39-40.

¹⁰² Ibid.

¹⁰³ Frederic Guay, Genevieve Mageau, and Robert Vallerand. "On the Hierarchical Structure of Self-Determined Motivation: A Test of Top-Down, Bottom-Up, Reciprocal and Horizontal Effects." *Personality and Social Psychology Bulletin* 29, no. 8 (2003): 993.

¹⁰⁴ Vallerand and Ratelle. "Intrinsic and Extrinsic Motivation: A Hierarchical Model," 45.

¹⁰⁵ Ibid., 44-45.

¹⁰⁶ Guay, Mageau, and Vallerand. "On the Hierarchical Structure of Self-Determined Motivation." 993.

¹⁰⁷ Emmons, R.A. "Levels and Domains in Personality: An Introduction." *Journal of Personality* 63 (1995): 341-64.

¹⁰⁸ Marc Blais, Robert Vallerand, Alain Gagnon, Nathalie Briere, and Luc Pelletier. "Significance, Structure, and Gender Differences in Life Domains of College Students." *Sex Roles* 22 (1990): 209.

¹⁰⁹ Vallerand and Ratelle. "Intrinsic and Extrinsic Motivation: A Hierarchical Model," 44-45.

¹¹⁰ Guay, Mageau, and Vallerand. "On the Hierarchical Structure of Self-Determined Motivation," 993.

most stable level of generality throughout an individual's life time.¹¹¹

Each of the three levels of generality have been shown by empirical evidence to interact with each other in both a bottom-up and top-down manner.^{112,113} Bottom-up influences are likely to occur over an extended period of time, and within the context of a developmental framework.¹¹⁴ Top-down influence has been shown to also take place over time, but may also be found in specific situations over short periods of time when an individual experiences or encounters new experiences.¹¹⁵

The two examples below show how motivation at one level of generality can influence the other levels in both positive and negative ways:

Bottom-Up

SFC Brown has recently completed a series of courses and was recognized by several instructors as an excellent learner. She found the assignments, her classmates, and her instructors to be not only interesting but intellectually stimulating. Prior to this course she was not thrilled about her continuing military education, but her recent experience has caused her to readdress these feelings. Upon returning to her unit, she informed her command that she would like to continue taking classes, regardless of whether they are resident courses or distributed. She also wants to take on a larger role in the development of junior soldiers. Her experience has reinvigorated her outlook towards her continued development within the Army profession.

Top-down

SFC Mitchell has always enjoyed not only learning new skills but the overall learning process. Unfortunately SFC Mitchell recently found out that he was passed over for a promotion to Master Sergeant, and has begun to question whether or not it is time to pursue a new career outside of the military. Despite his current reservations, his unit is still pushing him to continue to enroll in and complete new PME coursework. He knows that failure to enroll in the courses may have a negative impact on his day to day interactions with his command, so he enrolls in order to avoid damaging any relationships. However his interactions with the instructor, classmates, and his performance on individual assignments suffers because he is still struggling with the question to reenlist at the end of his current contract.

What does this mean for the Army?

¹¹¹ Vallerand and Ratelle. "Intrinsic and Extrinsic Motivation: A Hierarchical Model," 44.

¹¹² Ibid., 47, 51.

¹¹³ Guay, Mageau, and Vallerand. "On the Hierarchical Structure of Self-Determined Motivation," 993.

¹¹⁴ Ibid., 1001.

¹¹⁵ Ibid.

With the implementation of ALC 2015, the Army has laid its aiming stakes and is moving forward with a focus on learner driven education processes, expanded classroom accessibility, blended learning, and virtual environments among many other initiatives. The concepts introduced by ALC 2015 bring the Army closer to its goal of creating life-long learners. The next steps taken by the Army should address why Army learners will want to learn. This includes taking the concepts outlined in the Self-Determination Theory, and begin shaping the environmental factors that have been shown through academic research to enhance and reinforce learner motivations.

If the Army were a small organization, with only a few mission sets requiring a minimal number of occupations, then utilizing the concepts within SDT would be a simple endeavor. But the Army is a very large organization, with numerous mission sets and several hundred military occupational specialties, each of which requires specialized training and education. This means there is no “one size fits all” answer, and the Army will need to identify and implement a number of different ways to enhance and reinforce motivation

There are three initial ways in which the Army can address motivation enhancement and reinforcement. First, the Army should strive to understand the specific learning environments it creates. No two classroom settings are the same, educators bring their own styles, and curricula their own demands. Each classroom environment falls somewhere on the spectrum between controlling and autonomy supportive. The challenge will be identifying which environment is most appropriate for each specific course. By developing an understanding of what learning environment is presented by each course, the Army can empower its educators with the knowledge and ability to adapt the environment as they see fit, dependent upon the needs of the learners.

Second, the Army should endeavor to understand the learner. By identifying individual learner’s situational and contextual motivation orientations at the onset of each course, the Army can equip its educators with the information they need to ensure that every learner is provided the necessary environmental nutrients they need to succeed.

The third way focuses not on providing for the learner, but providing for the educator. An Army educator is on the frontline in the battle for developing Soldiers capable of obtaining cognitive dominance over our adversaries. Just as the Army strives to ensure that Soldiers in combat are prepared to meet the enemy, the Army should strive to ensure that educators are fully prepared to develop Soldiers. This means that educators should not only be technically competent and knowledgeable in their respective field, but also knowledgeable in the science and art of educating others. Just as the Marine Corps says that every Marine is a rifleman, every facilitator in the Army must be a professional educator in addition to their particular expertise. In addition to focusing how to train and prepare educators, the Army should also review the contexts in which the educators work. Research has shown that educators should not only work to promote autonomy supportive environments for their students, but that they best

accomplish this task by being part of an autonomy supportive environment themselves.¹¹⁶ When an Army educator is experiencing controlled circumstances or is externally regulated by their organization or command, it is likely that the educator’s classroom will also reflect that regulation and control.^{117,118}

Current Initiatives

The initiatives below consist of an Army-centric, a sister service, and a private industry initiative, that either promote aspects found within Self-Determination Theory or promote work from the theory itself. This list provides an example of initiatives that have the potential to set the conditions that lead to accelerated learning as well as the creation of life-long learners.

- **Performance Based Graduate School Incentive Program (PB-GSIP):** Beginning in the Fall of 2016 or Spring of 2017, roughly 50 Captains or Majors will be selected from the Operations, Operations Support, and Force Sustainment Function Categories for an opportunity to complete an advanced degree with 18-months’ worth of Army funding. Officers selected will be able to attend a public accredited U.S. institution and study in one of ten academic fields.¹¹⁹

This program increases the perceived autonomy of a select group of Field Grade Officers, as it allows them to determine their developmental path. By offering a group of ten different fields of study, the Army has narrowed choices ensuring that each participant’s development will benefit the Army, but is still allowing the learners to develop their skills in a variety of fields which they may find interesting.

By giving Army leaders an opportunity to pursue an advanced degree in a field of their choosing, the Army is increasing the learner’s educational autonomy. It is likely that Soldiers participating in this program experience identified or integrated regulation in regards to their professional education.

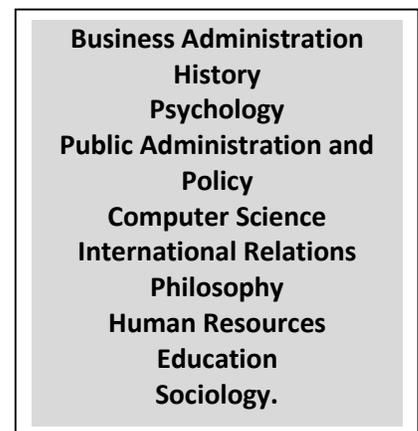


Figure 9: Fields of Study within PB-GSIP

¹¹⁶ Johnmarshall Reeve, "Self Determination Theory Applied to Educational Settings." In *the Handbook of Self Determination*, (Rochester, NY: University of Rochester Press, 2002), 191.

¹¹⁷ Ibid., 190-192.

¹¹⁸ Ryan and Deci, Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being, 76.

¹¹⁹ Jim Tice, "Army Launches New Graduate School Program." Army Times. December 24, 2014. Accessed March 1, 2015.

- **Making Good Instructors Great:** Making Good Instructors Great (MGIM) is an educational initiative started by the United States Marine Corps Training and Education Command (TECOM), developed by MESH Solutions LLC in 2012. This initiative is a two week course and is part of a larger TECOM push to professionalize instructors throughout the Marine Corps. The MGIM initiative is government owned, and available through USMC TECOM.

By being an initiative aimed at professionalizing and improving the instructor cadre available to the Marine Corps, MGIM has created a forum through which the Marine Corps can influence the frontline leaders charged with shaping the future of the Marine Corps.

- **Immersyve Inc.:** Immersyve is a private company founded by both Richard Ryan and Edward Deci, among others, which is aimed at employing the concepts within Self-Determination Theory in a professional environment. The company states its mission as advancing an objective and data-driven understanding of motivation that can be applied to the benefit customers and businesses alike, building deeper satisfaction and success simultaneously. Immersyve offers:
 - Next-generation customer experience research for your project
 - Expert consultation on project development strategy and design
 - Tools to implement Immersyve’s cutting-edge metrics into data collection efforts
 - Training in key principles that deepen customer motivation to stay engaged
 - Application design and development services that integrate principles of sustained engagement from start to finish

Recommendations

The following recommendations are aimed at implementing concepts based on Self-Determination Theory. They are focused on shaping and creating environments that: are supportive of intrinsic motivation, promote internalization, meet the needs of the facilitators, and create broadened academic paths that promote learner autonomy. Many of these recommendations align with potential initiatives that may be unveiled with the official establishment of the Army University in June of 2015.

1. **Do no harm;** the Army’s first priority should be to ensure that its educational practices at the situational and contextual level do not work towards undermining intrinsic interests or motivations that Soldiers may have towards learning. Based on literature that point towards autonomy, competence and relatedness as being essential for maintaining intrinsic motivation, the Army should introduce the concepts to learning institutions in a manner that ensures the

Army does not unintentionally inhibit its most intrinsically motivated learners in any way.

a. Near Term:

- i. As the Army continues to offer multiple forms of instruction (resident, distributed, and mixed), it should investigate whether the type of instruction offered has an impact on learner motivation, and whether specific courses and course styles attract learners with different forms of motivation. This investigation could have implications for student placement, as well as lead to improvements in the presentation and implementation of resident, distributed, and mixed courses.

b. Mid-Term:

- i. Identify current methods, as well as ideal future practices which will allow learning centers and individual commands to assess, adapt, and develop best practices that promote autonomous forms of motivation (intrinsic, integrated, and identified).

2. Promote the Internalization of Academic Values; not every course a Soldier will be asked to take is inherently interesting, and it is unrealistic to assume that Soldiers will always bring a healthy motivation orientation with them when they report to a schoolhouse. While some courses and training cycles must exhibit controlled contexts by design, other courses may benefit by providing students with more autonomous support. The Army should work to identify the appropriate level of autonomy/control required in each course, as well as develop an approved course of action that can be taken to shift classrooms towards the desired state.

a. Immediate-Near Term:

- i. Not every classroom environment the Army creates will need the same degree of autonomy support. In some situations, it may be better to promote a controlling context, depending on the desired learner outcomes. The Army should work towards understanding both the current learning environments that exist, and the desired learning environment in each learning institution.
- ii. For courses lasting longer than four weeks, instructor/facilitators should have students take pre- course surveys, such as the Academic Motivations Scale, in order to identify individual learner motivations. Empowered with this information, instructor/facilitators will be able to create a learner-centric learning environment that enables learners to meet their full potential.
- iii. Begin integrating questions pertaining to internalization and motivation into all “end of course” surveys. By collecting this information, the Army will be able to keep an up to date understanding of the learning environments it is creating. This will empower instructor/facilitators with the information they need to continuously improve their practices after

every classroom iteration.

3. **An Investment in Instructor/Facilitators is an Investment in Learners;** SDT posits that motivation orientations are needs based, and that the status of the needs are determined by the environmental conditions in which an individual finds themselves. Instructor/Facilitators are on the front line for setting the academic environment. If instructors/facilitators do not understand scope of the impact that their actions can have on learners, then they may unintentionally harm learner motivations. In addition to ensuring that instructors understand how to promote healthy learning environments, it is important that administrators create a healthy environment for instructors to work in. If a schoolhouse presents a controlling environment over its instructors, then it is likely that the instructors will present a controlling environment over the learners.

a. Near Term

- i. Develop a program similar to the USMC's Making Good Instructors Great, in order to professionalize how Soldier Instructors approach developing Soldier capabilities.¹²⁰ The Army should professionalize what it means to be an instructor/facilitator. Soldiers bring unique and highly specific field related skills with them when they become instructors. The Army should develop an initiative that sets the conditions for success by training and educating all potential instructors to not only be proficient in their specific field, but also highly skilled in the art of education.
- ii. Instructor/facilitator's set the immediate conditions of the learning environment. They can choose to create a controlling context, or an autonomy supportive environment. But the choice is not entirely theirs, the learning environment they create is shaped by the working environment in which they find themselves. The Army should strive to promote a working environment for instructor/facilitators that mirrors the environments desired for its learners.

b. Far-Term

- i. If the Army is truly invested in improving its capacity to develop Soldiers who are adaptable and able to achieve cognitive dominance over their adversaries, then the Army must invest in the individuals that guide learner development. As ALC 2015 states, instructor positions must no longer be viewed as non-career enhancing positions. Talent in the Army should be managed in way that the best and the brightest become professional educators who shape the next generation of soldiers. The skills they learn during their time as a facilitator will continue to enhance

¹²⁰ Sae Schatz, Kathleen Bartlett, Nichole Burley, David Dixon, Kenneth Knarr, and Karl Gannon. "Making Good Instructors Great: USMC Cognitive Readiness and Instructor Professionalization Initiatives." Lecture, Interservice/Industry Training, Simulation, and Education Conference, Orlando, FL, 2012.

the Soldiers around them throughout the rest of their career.

4. **Broadening Routes for Academic Achievement;** increasing autonomy at the situational level can occur in a classroom, but in order to increase autonomy at the contextual level the Army should find investigate how to promote autonomy outside of the classroom for its career-long and life-long learners.
 - a. Mid-Far Term:
 - i. Investigate ways to utilize existing ROTC programs at public universities in order to develop graduate level programs for field grade officers. This could potentially expand the number of available slots for continued education for senior O4's and O5's, and also better integrate the future leaders of the Army with the future leaders of various professional communities.
5. **SDT Outside of Education;** as discussed in Appendix A, SDT is applicable in multiple fields outside of education and training. The Army should look to incorporate the concepts involved in SDT as it continues to strive for improvements and advances in the following fields:
 - a. Physical Fitness
 - b. Realistic Virtual Training/Gaming scenarios and systems
 - c. General Work satisfaction and Soldier Retention
 - d. Mental Health and Well-being.

Appendix A: Self-Determination Theory in other Contexts

Work

Self-Determined behavior and motivation play a large role in how individuals approach their day to day responsibilities. One aspect of work which has been studied by Self-Determination Theory is work turnover and retention. A study published in the *Journal of Applied Social Psychology* found that emotional exhaustion was positively linked to turnover intentions, while self-determined behavior in an autonomy supportive environment was positively related to work satisfaction and negatively related to emotional exhaustion.¹²¹ The promotion of autonomous forms of motivation (intrinsic, integrated, and identified) as opposed to controlled forms of motivation (external regulation and introjection) has also been linked to greater feelings of work commitment.¹²² Additional studies have shown that managers who promote autonomy supportive behavior within their subordinates report higher trust levels within their organizations and greater work satisfaction.¹²³

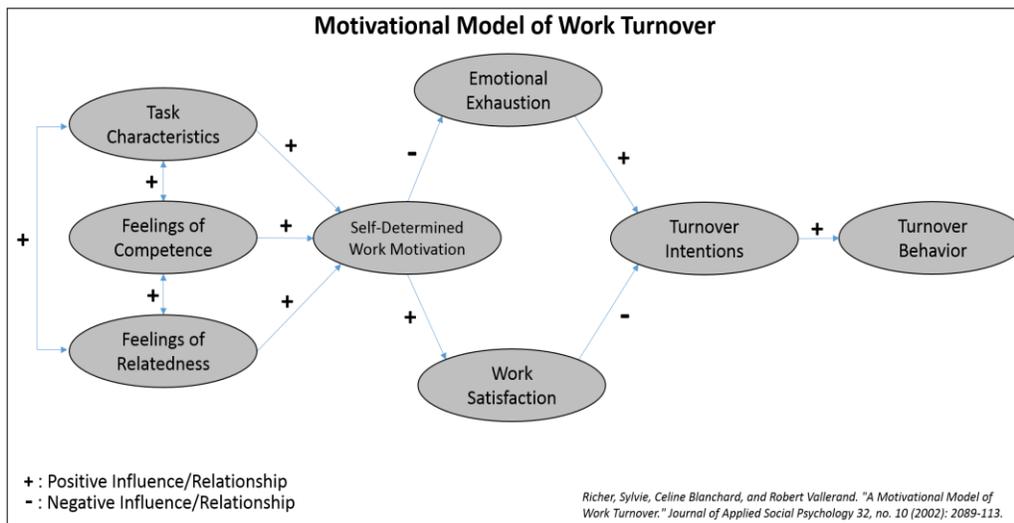


Figure 10: Motivational Model of Work Turnover

Health and Fitness

Soldiers are athletes, who in the line of duty are asked required to perform tasks involving physical fitness. SDT and the hierarchical model of motivation have both indicated in multiple

¹²¹ Sylvie Richer, Celine Blanchard, and Robert Vallerand. "A Motivational Model of Work Turnover." *Journal of Applied Social Psychology* 32, no. 10 (2002): 2014.

¹²² Claude Fernet, Stephanie Austin, and Robert Vallerand. "The Effects of Work Motivation on Employee Exhaustion and Commitment: An Extension of the JD-R Model." *Work & Stress* 26, no. 3 (2012): 225.

¹²³ Edward Deci, James Connell, and Richard Ryan. "Self-Determination in a Work Organization." *Journal of Applied Psychology* 74, no. 4 (1989): 588-89.

studies, that when coaches provide their athletes with an autonomy supportive contexts, along with structure, rather than controlling contexts that involve consequences, athletes report greater need fulfillment, more self-determined motives for engaging in the activity, and put forth more perceived effort.¹²⁴ While previous research indicates that autonomy supportive contexts are beneficial for athletes, experts in the field believe that more research should be done in order to validate the findings, and identify specific interpersonal behaviors exhibited by coaches and their consequences for athletes.¹²⁵ This could have an impact on Soldiers due to the fact that every Soldier at one time or another is a leader, a peer, and a team member engaged in improving not only their physical fitness but the physical fitness of others.

Virtual Reality/Virtual Gaming

Over the past decade the development of increasingly popular and increasingly advanced virtual gaming worlds has led the Army to begin investing in virtual training and real time simulation environments in order to develop more realistic training. Academic research has also begun looking closely at what “it” is that motivates or drives gamers to engage in certain games for longer periods of time, and what keeps them coming back for more. Multiple studies have pointed towards the fulfillment of the three basic needs within Self-Determination Theory (autonomy, competence, relatedness) as being an indicator of how likely individuals are to enjoy the game, continue to play the game in the future, and experience learning within the context of the game.^{126,127,128}

¹²⁴ Jacueline Paige Pope and Philip M. Wilson. "Understanding Motivational Processes in University Rugby Players: A Preliminary Test of the Hierarchical Model of Intrinsic and Extrinsic Motivation at the Contextual Level." *International Journal of Sports Science and Coaching* 7, no. 1 (2012): 103-104.

¹²⁵ Ibid., 104.

¹²⁶ Richard Ryan, C. Scott Rigby, and Andrew Przybylski. "The Motivational Pull of Video Games: A Self-Determination Theory Approach." *Motivation and Emotion* 30, no. 4 (2006): 344-64.

¹²⁷ Przybylski, Rigby, and Ryan. "A Motivational Model of Video Game Engagement." 154-66.

¹²⁸ Wei Peng, Jih-Hsuan Lin, Karin Pfeiffer, and Brian Winn. "Need Satisfaction Supportive Game Features as Motivational Determinants: An Experimental Study of a Self-Determination Theory Guided Exergame." *Media Psychology* 15, no. 2 (2012): 175-96.

Appendix B: Assessment tools

There are many tools and methodologies that have been developed over the years to measure and identify individual and group motivations. The two categories that many of the research tools fall into are observation and self-report measures. One of the most well-known observation methodology is the Free Choice Paradigm which is commonly used to identify whether social controls have an impact on intrinsic motivation.¹²⁹ The Free Choice Paradigm provides an opportunity to observe external indicators of intrinsic motivation, however it does not give observers a clear understanding of internal processes of the subject being observed. In order to identify the internal processes, researchers have developed numerous self-report questionnaires that can be tailored to the specific topic and level of generality in question. Self-report measures allow researchers to identify and determine the types of extrinsic motivation regulating specific actions taken by an individual.

Below is a list of self-report measures that have been successfully verified and used in peer-reviewed studies, along with the topic they investigate, and the level of generality they are focused on.

Assessment Tool	Topic	Level of Generality
General Causality Orientations Scale ¹³⁰	Perceived Locus of Causality	Global, Contextual, and Situational
Global Motivation Scale ¹³¹	Life in General	Global
Leisure Motivation Scale ¹³²	Leisure	Contextual
Academic Motivation Scale ^{133,134}	Education	Contextual
Sport Motivation Scale ¹³⁵	Sports and Fitness	Contextual
The Exercise Causality	Sports and Fitness	Contextual

¹²⁹ Deci, Edward. "Effects of Externally Mediated Rewards on Intrinsic Motivation." *Journal of Personality and Social Psychology* 18 (1971): 105-15.

¹³⁰ Deci, Edward, and Richard Ryan. "The General Causality Orientations Scale: Self Determination in Personality." *Journal of Research in Personality* 19 (1985): 109-34.

¹³¹ Frederic Guay, Marc Blais, Robert Vallerand, and Luc Pelletier. "The Global Motivation Scale." Unpublished Manuscript, Universite Du Quebec a Montreal, 1999.

¹³² Luc Pelletier, Robert Vallerand, Isabelle Green-Demers, Nathalie Briere, and Marc Blais. "Construction and Validation of the Leisure Motivation Scale." *Loisir et Societe* 19 (1996): 559-85.

¹³³ Vallerand, et. al. "The Academic Motivation Scale: A Measure of Intrinsic, Extrinsic and Amotivation in Education." 1003-1019.

¹³⁴ Robert Vallerand, Luc Pelletier, Marc Blais, Nathalie Brier, Caroline Senecal, Evelyne Vallieres. "On the assessment of intrinsic, extrinsic, and amotivation in education: Evidence on the concurrent and construct validity of the Academic Motivation Scale" *Educational and Psychological Measurement* 53 (1993): 159-172.

¹³⁵ Nathalie Briere, Robert Vallerand, Marc Blais, and Luc Pelletier. "On the Development and Validation of the French Form of the Sport Motivation Scale." *International Journal of Sport Psychology* 26 (1995): 465-89.

Orientation Scale ¹³⁶		
Blais Work Motivation Inventory ¹³⁷	Work Motivation	Contextual
Interpersonal Motivation Inventory ¹³⁸	Interpersonal Relationships	Contextual
Situational Motivation Scale ¹³⁹	Situational Motivation	Situational
Free Choice Paradigm ¹⁴⁰	Intrinsic Motivation	Situational
Self-Determination Index (aka Relative Autonomy Index)	General	Global, Contextual, and Situational
Player Experience of Need Satisfaction ¹⁴¹	Virtual Gaming and Simulation	Situational

Figure 11: Inventory of Self-Report Collection Tools

¹³⁶ Elaine Rose, David Markland, and Gaynor Parfitt, "The development and initial validation of the Exercise Causality Orientations Scale." *Journal of Sports Sciences* 19 (2001): 445-462.

¹³⁷ Marc Blais, Nathalie Briere, L. Lachance, A. S. Riddle, and Robert Vallerand. "The Blais Work Motivation Inventory." *Revue Quebecoise De Psychologie* 14 (1993): 185-215.

¹³⁸ Marc Blais, and Robert Vallerand. "Construction and Validation of the Inventory of Interpersonal Motivations." Unpublished Manuscript, Universite Du Quebec a Montreal, (1994).

¹³⁹ Frederic Guay, Robert Vallerand, and Ceyline Blanchard. "On the Assessment of Situational Intrinsic and Extrinsic Motivation: The Situational Motivation Scale (SIMS)." *Motivation and Emotion* 24 (2000): 175-213.

¹⁴⁰ Deci, "Effects of Externally Mediated Rewards on Intrinsic Motivation." 105-15.

¹⁴¹ Ryan, Rigby, and Przybylski. "The Motivational Pull of Video Games: A Self-Determination Theory Approach." 344-64.

References

- Amabile, T.M. "Motivation and Creativity: Effect of Motivational Orientation on Creative Writers." *Journal of Personality and Social Psychology*, no. 48 (1985): 393-99.
- Amabile, T.M., W. DeJong, and M.R. Lepper "Effects of Externally Imposed Deadlines on Subsequent Intrinsic Motivation." *Journal of Personality and Social Psychology* 34 (1976): 92-98.
- Army Capabilities Integration Center (ARCIC). "Army Vision – Force 2025 White Paper." January 23, 2014. Accessed March 18, 2015. http://www.arcic.army.mil/app_Documents/USArmy_WhitePaper_Army-Vision-Force-2025_23JAN2014.pdf
- Blais, M. R., N. M. Briere, L. Lachance, A. S. Riddle, and R. J. Vallerand. "The Blais Work Motivation Inventory." *Revue Quebecoise De Psychologie* 14 (1993): 185-215.
- Blais, M. R., R. J. Vallerand, A. Gagnon, N. M. Briere, and L. G. Pelletier. "Significance, Structure, and Gender Differences in Life Domains of College Students." *Sex Roles* 22 (1990): 199-212.
- Boggiano, A.K. and M. Barrett "Performance and Motivational Deficits of Helplessness: The Role of Motivational Orientations." *Journal of Personality and Social Psychology* 49 (1985): 1753-1761.
- Boggiano, A.K., D.S. Main, and P.A. Katz. "Children's Preference for Challenge: The Role of Perceived Competence and Control." *Journal of Personality and Social Psychology* 54 (1988): 134-41.
- Briere, N. M., R. J. Vallerand, M. R. Blais, and L. G. Pelletier. "On the Development and Validation of the French Form of the Sport Motivation Scale." *International Journal of Sport Psychology* 26 (1995): 465-89.
- Brown, A. L., J. D Bransford, R. A. Ferrara, and J. C. Campione. "Learning, Remembering, and Understanding." In *Handbook of Child Psychology: Cognitive Development*, 77-166. Vol. 3. New York: Wiley, 1983.
- Chirkov, Valery, Richard Ryan, Youngmee Kim, and Ulas Kaplan. "Differentiating Autonomy from Individualism and Independence: A Self-Determination Theory Perspective on Internalization of Cultural Orientations and Well-Being." *Journal of Personality and Social Psychology* 84, no. 1 (2003): 97-110.
- deCharms, Richard. *The Internal Affective Determinants of Behavior*. New York: Academic Press, 1986.
- Deci, Edward. "Effects of Externally Mediated Rewards on Intrinsic Motivation." *Journal of Personality and Social Psychology* 18 (1971): 105-15.
- Deci, Edward, Gregory Betley, James Kahle, Linda Abrams, and Joseph Porac. "When Trying to Win: Competition and Intrinsic Motivation." *Personality and Social Psychology Bulletin* 7 (1981): 79-83.
- Deci, Edward, James Connell, and Richard Ryan. "Self-Determination in a Work Organization." *Journal of Applied Psychology* 74, no. 4 (1989): 580-90.
- Deci, Edward L., Haleh Eghrari, Brian C. Patrick, and Dean R. Leone. "Facilitating Internalization: The Self Determination Theory Perspective." *Journal of Personality* 62, no. 1 (1994): 119-42.
- Deci, Edward, Richard Koestner, and Richard Ryan. "A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation." *Psychological Bulletin* 125, no. 6 (1999): 627-668.
- Deci, Edward, Richard Koestner, and Richard Ryan. "Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again." *Review of Educational Research* 71, no. 1 (2001): 1-27.

- Deci, Edward, and Richard Ryan. "The General Causality Orientations Scale: Self Determination in Personality." *Journal of Research in Personality* 19 (1985): 109-34.
- Deci, Edward, and Richard Ryan. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York, New York: Plenum Press, 1985.
- Deci, Edward, and Richard Ryan, eds. *Handbook of Self-Determination*. Rochester, New York: University of Rochester Press, 2002.
- Deci, Edward, Richard Ryan, Marylene Gagne, Dean Leone, Julian Usunov, and Boyanka Kornazheva. "Need Satisfaction, Motivation, and Well-Being in the Work Organizations of a Former Eastern Bloc Country: A Cross-Cultural Study of Self-Determination." *Personality and Social Psychology Bulletin* 27, no. 8 (2001): 930-42.
- Deci, Edward, Richard Ryan, and Geoffrey Williams. "Need Satisfaction and the Self-Regulation of Learning." *Learning and Individuals Differences*, no. 8 (1996): 165-183.
- Deci, Edward, Robert Vallerand, Luc Pelletier, and Richard Ryan. "Motivation and Education: The Self-Determination Perspective." *Educational Psychologist* 26, no. 3 & 4 (1991): 325-46.
- Deci, Edward, and Maarten Vansteenkiste. "Self-Determination Theory and Basic Need Satisfaction: Understanding Human Development in Positive Psychology." *Ricerche Di Psicologia* 27, no. 1 (2004): 23-39.
- Deci, Edward, Robert Vallerand, Luc Pelletier, and Richard Ryan. "Motivation and Education: The Self Determination Perspective." *Educational Psychologist* 26, no. 3 & 4 (1991): 325-346
- Dempsey, Martin. "Leader Development." *Army*, February 1, 2011, 25-28.
- Department of the Army, Training of Military Personnel at Civilian Institutions. AR 621-1. August 28, 2007.
- Department of the Army, Military Personnel Requirements for Civilian Education. AR 621-108. March 26, 2007.
- Department of the Army. *The U.S. Army Operating Concept: Win in a Complex World: 2020-2040*. TRADOC Pamphlet 525-3-1. October 31, 2014.
- Department of the Army. *The U.S. Army Human Dimension Concept*. TRADOC Pam 525-3-7. May 21, 2014.
- Department of the Army, *The U.S. Army Learning Concept for 2015*. TRADOC Pam 525-8-2. January 20, 2011.
- Dweck, Carol. "Motivational Processes Affecting Learning." *American Psychologist* 41, no. 10 (1986): 1040-1048.
- Eisenberger, Robert, and Judy Cameron. "Detrimental Effects of Reward: Myth or Reality?" *American Psychologist* 51, no. 11 (1996): 1153-1166.
- Emmons, R.A. "Levels and Domains in Personality: An Introduction." *Journal of Personality* 63 (1995): 341-64.
- Fernet, Claude, Stephanie Austin, and Robert Vallerand. "The Effects of Work Motivation on Employee Exhaustion and Commitment: An Extension of the JD-R Model." *Work & Stress* 26, no. 3 (2012): 213-229.
- Flink, C., A.K. Boggiano, D.S. Main, M. Barrett, and P.A. Katz "Children's Achievement-related Behaviors: The Role of Extrinsic and Intrinsic Motivational Orientations." In A.K. Boggiano and T.S. Pittman (Eds.), *Achievement and Motivation: A Social-developmental Perspective*, 189-214. New York: Cambridge University Press, 1992.

- Guay, F., M. R. Blais, R. J. Vallerand, and L.F. Pelletier. "The Global Motivation Scale." Unpublished Manuscript, Universite Du Quebec a Montreal, (1999).
- Guay, F., R. J Vallerand, and C. Blanchard. "On the Assessment of Situational Intrinsic and Extrinsic Motivation: The Situational Motivation Scale (SIMS)." *Motivation and Emotion* 24 (2000): 175-213.
- Guay, Frederic, Genevieve Mageau, and Robert Vallerand. "On the Hierarchical Structure of Self-Determined Motivation: A Test of Top-Down, Bottom-Up, Reciprocal and Horizontal Effects." *Personality and Social Psychology Bulletin* 29, no. 8 (2003): 992-1004.
- Hagger, Martin S., and Nikos L.D. Chatzisarantis. "Causality Orientations Moderate the Undermining Effect of Rewards on Intrinsic Motivation." *Journal of Experimental Social Psychology* 47, no. 2 (2011): 485-89.
- Hagger, Martin S., Panagiotis Rentzelas, and Nikos L. D. Chatzisarantis. "Effects of Individualist and Collectivist Group Norms and Choice on Intrinsic Motivation." *Motivation and Emotion* 38 (2013): 215-23.
- Harter, S. "Pleasure Derived by Children from Cognitive Challenge and Mastery." *Child Development* 45 (1974): 661-69.
- Harter, S. "Pleasure Derived from Optimal Challenge and the Effects of Extrinsic Rewards on Children's Difficulty Level Choices." *Child Development* 49 (1978): 788-99.
- Hassandra, Maria, Marios Goudas, and Stiliani Chroni. "Examining Factors Associated with Intrinsic Motivation in Physical Education: A Qualitative Approach." *Psychology of Sport and Exercise* 4 (2003): 211-223.
- Hodgins, Holley, Richard Koestner, and Neil Duncan. "On the Compatibility of Autonomy and Relatedness." *Personality and Social Psychology Bulletin* 22, no. 3 (1996): 227-37.
- Houle, Cyril O. *The Inquiring Mind: A Study of the Adult Who Continue to Learn*. 3rd ed. Norman, Oklahoma: Oklahoma Research Center for Continuing Professional and Higher Education, 1993.
- Kelman, Herbert. "Compliance, Identification and Internalization: Three Processes of Attitude Change." *Conflict Resolution* 2, no. 1 (1958): 51-60.
- Knowles, Malcolm. "What Is Andragogy?" In *The Modern Practice of Adult Education: From Pedagogy to Andragogy* (Revised and Updated), 40-59. Englewood Cliffs, NJ: Cambridge Book Company, 1988.
- Koestner, Richard, Frank Bernieri, and Miron Zuckerman. "Self-Regulation and Consistency between Attitudes, Traits, and Behaviors." *Personality and Social Psychology Bulletin* 18, no. 1 (1992): 52-59.
- Koestner, Richard, and Gaetan Losier. "Distinguishing Three Ways of Being Internally Motivated: A Closer Look at Introjection, Identification, and Intrinsic Motivation." In *Handbook of Self Determination*, 101-122. Rochester, New York: University of Rochester Press, 2002.
- Koestner, Richard, and Nancy Otis, Theodore Powers, Luc Pelletier, and Hugo Gagnon. "Autonomous Motivation, Controlled Motivation, and Goal Progress." *Journal of Personality* 76, no. 5 (2008): 1201-229.
- Li-Ping Tang, Thomas. "Factors Affecting Intrinsic Motivation among University Students in Taiwan." *The Journal of Social Psychology* 130, no. 2 (1989): 219-30.
- Miserandino, M. "Children Who Do Well in School: Individual Differences in Perceived Competence and Autonomy in Above-average Children." *Journal of Educational Psychology* 88 (1996): 203-14.

- Mossholder, Kevin. "Effects of Externally Mediated Goal Setting on Intrinsic Motivation: A Laboratory Experiment." *Journal of Applied Psychology* 65, no. 2 (1980): 202-210.
- Pelletier, L. G., R. J. Vallerand, I. Green-Demers, N. M. Briere, and M. R. Blais. "Construction and Validation of the Leisure Motivation Scale." *Loisir et Societe* 19 (1996): 559-85.
- Peng, Wei, Jih-Hsuan Lin, Karin Pfeiffer, and Brian Winn. "Need Satisfaction Supportive Game Features as Motivational Determinants: An Experimental Study of a Self-Determination Theory Guided Exergame." *Media Psychology* 15, no. 2 (2012): 175-96.
- Pintrich, Paul. "A Motivational Science Perspective on the Role of Student Motivation in Learning and Teaching Contexts." *Journal of Educational Psychology* 95, no. 4 (2003): 667-686.
- Pintrich, Paul, Ronald Marx, and Robert Boyle. "Beyond Cold Conceptual Change: The Role of Motivational Beliefs and Classroom Contextual Factors in the Process of Conceptual Change." *Review of Educational Research* 63, no. 2 (1993): 167-99.
- Pittman, T.S., J. Emery, and A.K. Boggiano. "Intrinsic and Extrinsic Motivational Orientations: Reward Induced Changes in Preference for Complexity." *Journal of Personality and Social Psychology* 42 (1982): 789-797.
- Pope, Jacqueline Paige, and Philip M. Wilson. "Understanding Motivational Processes in University Rugby Players: A Preliminary Test of the Hierarchical Model of Intrinsic and Extrinsic Motivation at the Contextual Level." *International Journal of Sports Science and Coaching* 7, no. 1 (2012): 89-107.
- Przybylski, Andrew, C. Scott Rigby, and Richard Ryan. "A Motivational Model of Video Game Engagement." *Review of General Psychology* 14, no. 2 (2010): 154-66.
- Reeve, Johnmarshall. "Self Determination Theory Applied to Educational Settings." In *Handbook of Self Determination*. 183-204. Rochester, New York: University of Rochester Press, 2002.
- Reeve, Johnmarshall, Glen Nix, and Diane Hamm. "Testing Models of the Experience of Self Determination in Intrinsic Motivation and the Conundrum of Choice." *Journal of Educational Psychology* 95, no. 2 (2003): 375-92.
- Reis, Harry, Kennon Sheldon, Shelly Gable, Joseph Roscoe, and Richard Ryan. "Daily Well-Being: The Role of Autonomy, Competence, and Relatedness." *Personality and Social Psychology Bulletin* 26, no. 4 (2000): 419-435.
- Richer, Sylvie, Robert Vallerand. "Supervisors' Interactional Styles and Subordinates' Intrinsic and Extrinsic Motivation." *The Journal of Social Psychology* 135, no. 6 (1995): 707-722.
- Richer, Sylvie, Celine Blanchard, and Robert Vallerand. "A Motivational Model of Work Turnover." *Journal of Applied Social Psychology* 32, no. 10 (2002): 2089-2113.
- Robinson, John, and Brian Davis. "Army Learning Concept 2015 Is Underway." *Military Review*, Nov-Dec, 2014, 42-46.
- Rose, E. A., Markland, D., & Parfitt, G. "The development and initial validation of the Exercise Causality Orientations Scale." *Journal of Sports Sciences* 19 (2001): 445-462.
- Rotter, Julian. "Generalized Expediencies for Internal Versus External Control of Reinforcement." *Psychological Monographs: General and Applied* 80, no. 1 (1966): 1-28.
- Ryan, Richard, ed. *The Oxford Handbook of Human Motivation*. New York, New York: Oxford University Press, 2012.

- Ryan, Richard M., and Edward L. Deci. "Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions." *Contemporary Educational Psychology*, no. 25 (2000): 54-67.
- Ryan, Richard M. and Edward L. Deci "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." *American Psychologist* 55, no. 1 (2000): 68-78.
- Ryan, Richard, and Edward Deci. "When Rewards Compete with Nature: The Undermining of Intrinsic Motivation and Self-Regulation." In *Intrinsic and Extrinsic Motivation*, 13-54. 1st ed. San Diego, CA: Academic Press, 2000.
- Ryan, Richard M., and Edward L. Deci. "Overview of Self-Determination Theory: An Organismic Dialectical Perspective." In *Handbook of Self Determination Research*, 3-33. Rochester, New York: University of Rochester Press, 2002.
- Ryan, Richard M., and Edward L. Deci. "Self-Regulation and the Problem of Human Autonomy: Does Psychology Need Choice, Self-Determination, and Will?" *Journal of Personality* 74, no. 6 (2006): 1557-1585.
- Ryan, Richard, and Wendy Grolnick. "Origins and Pawns in the Classroom: Self-report and Projective Assessments of Individual Differences in Children's Perceptions." *Journal of Personality and Social Psychology* 50 (1986): 550-58.
- Ryan, Richard, Richard Koestner, and Edward Deci. "Ego-Involved Persistence: When Free-Choice Behavior Is Not Intrinsically Motivated." *Motivation and Emotion* 15, no. 3 (1991): 185-205.
- Ryan, Richard, C. Scott Rigby, and Andrew Przybylski. "The Motivational Pull of Video Games: A Self-Determination Theory Approach." *Motivation and Emotion* 30, no. 4 (2006): 344-64.
- Sansone, Carol, and Judith Harackiewicz, eds. *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*. 1st ed. San Diego, CA: Academic Press, 2000.
- Schafer, Roy. *Aspects of Internalization*. New York, New York: International Universities Press, 1968.
- Schatz, Sae, Kathleen Bartlett, Nichole Burley, David Dixon, Kenneth Knarr, and Karl Gannon. "Making Good Instructors Great: USMC Cognitive Readiness and Instructor Professionalization Initiatives." *Lecture, Interservice/Industry Training, Simulation, and Education Conference*, Orlando, FL, 2012.
- Shapira, Z. "Expectancy Determinants of Intrinsically Motivated Behavior." *Journal of Personality and Social Psychology* 34 (1976): 1235-244.
- Sheldon, Kennon, Linda Houser-Marko, and Tim Kasser. "Does Autonomy Increase with Age? Comparing the Goal Motivations of College Students and Their Parents." *Journal of Research in Personality*, no. 40 (2006): 168-78.
- Smith, W. E. "The Effect of Anticipated vs. Unanticipated Social Reward on Subsequent Intrinsic Motivation." *Unpublished Doctoral Dissertation*, Cornell University, Ithaca, NY. 1975.
- Tice, Jim. "Army Launches New Graduate School Program." *Army Times*. December 24, 2014. Accessed March 1, 2015.
- Turban, Daniel B., Hwee Hoon Tan, Kenneth G Brown, and Kennon M. Sheldon. "Antecedents and Outcomes of Perceived Locus of Causality: An Application of Self Determination Theory." *Journal of Applied Social Psychology* 37, no. 10 (2007): 2376-404.
- Utman, Christopher. "Performance Effects of Motivational State: A Meta-Analysis." *Personality and Social Psychology Review* 1, no. 2 (1997): 170-82.
- Vallerand, Robert. "Toward a Hierarchical Model of Intrinsic and Extrinsic Motivation." *Advances in Experimental Social Psychology* 29 (1997): 271-360.

- Vallerand, Robert, and Robert Bissonnette. "Intrinsic, Extrinsic, and Amotivational Styles as Predictors of Behavior: A Prospective Study." *Journal of Personality* 60, no. 3 (1992): 599-620.
- Vallerand, R. J., L. G. Pelletier, M. R. Blais, N. M. Brier, C. Senecal, E. F. Vallieres. "The Academic Motivation Scale: A Measure of Intrinsic, Extrinsic and Amotivation in Education." *Educational and Psychological Measurement* 52 (1992): 1003-1019.
- Vallerand, R. J., L. G. Pelletier, M. R. Blais, N. M. Brier, C. Senecal, E. F. Vallieres. "On the Assessment of Intrinsic, Extrinsic, and Amotivation in Education: Evidence on the Concurrent and Construct Validity of the Academic Motivation Scale" *Educational and Psychological Measurement* 53 (1993): 159-172.
- Vallerand, Robert, and Catherine Ratelle. "Intrinsic and Extrinsic Motivation: A Hierarchical Model." In *Handbook of Self-Determination Research*, 37-63. Rochester, New York: University of Rochester Press, 2002.
- Vallerand, Robert, and Greg Reid. "On the Causal Effects of Perceived Competence on Intrinsic Motivation: A Test of Cognitive Evaluation Theory." *Journal of Sport Psychology* 6 (1984): 94-102.
- Vansteenkiste, Maarten, Geoffrey Williams, and Ken Resnicow. "Toward Systematic Integration between Self-Determination Theory and Motivational Interviewing as Examples of Top-down and Bottom-up Intervention Development: Autonomy or Volition as a Fundamental Theoretical Principle." *International Journal of Behavioral Nutrition and Physical Activity* 9, no. 23 (2012).
- Walberg, H.J, and M. Uguroglu, "Motivation and Educational Productivity: Theories, Results, and Implications." In L.J. Fyans Jr. (ed.), *Achievement Motivation: Recent Trends in Theory and Research*. New York: Plenum, 1980.
- Wiechman, Ben, and Suzanne Gurland. "What Happens during the Free-choice Period? Evidence of a Polarizing Effect of Extrinsic Rewards on Intrinsic Motivation." *Journal of Research and Personality* 43 (2009): 716-19.
- Wigfield, Allen, Jenna Cambria, and Jacquelynne Eccles. "Motivation in Education." In *The Oxford Handbook of Human Motivation*, edited by Richard Ryan, 463-478. New York: Oxford University Press, 2012.
- Williams, Geoffrey, Virginia Grow, Zachary Freedman, Richard Ryan, & Edward Deci, "Motivational predictors of weight loss and weight-loss maintenance." *Journal of Personality and Social Psychology* 70 (1996): 115-126.