Chapter 8

Self-regulation theories

This chapter considers theories that focus on the role individuals play in directing the course of their development as they select and pursue goals and modify goal pursuit based on both personal and environmental opportunities and constraints. Self-regulation theories address factors that make certain goals especially valued, how people evaluate the likelihood of achieving their goals, and the forces that contribute to perseverance or the disruption of goal pursuit. The study of self-regulation is confounded by the use of a variety of definitions. The chapter focuses on theories that address the identification and motivation to achieve voluntarily selected goals and the factors that sustain progress or detract from the achievement of these goals.

Self-regulation can be observed from the earliest period of infancy as children accept or reject new foods, seek new activities, and engage in playful exploration. There is strong evidence that capacities for self-regulation, especially the ability to resist temptations and delay gratification observed in infancy and early childhood, are predictive of subsequent school success and social competence (Mischel, Shoda, & Peake, 1988). Adolescence brings new challenges for self-regulation in the context of changing physical, cognitive, emotional, and social capacities, and an ever-widening sphere of educational, social, and societal demands and opportunities. Self-regulation takes on new adaptive significance in adolescence as it addresses the capacity to select and pursue personally meaningful and societally valued goals and the ability to resist or redirect impulses that might pose risks to health, growth, and life satisfaction.

What are the origins and intellectual traditions from which self-regulation theories emerged?

In previous chapters, the origins of the theories and their intellectual traditions are attributed to a particular person. In contrast, self-regulation theories have emerged more recently as products of a variety of historical and intellectual threads. Scholars whose theoretical concepts will be reviewed in following sections of the chapter acknowledge their debts to predecessors who have paved the pathway by characterizing the nature of the self, the motivational bases of goal

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selection, the capacity to reflect upon alternative strategies for goal attainment, and the ability to envision a view of a future self. Five themes are reviewed here that provide a conceptual background for the emergence of self-regulation theories.

William James and the concept of the self

One of the earliest psychological analyses of self-theory was provided by James (1892/1961). He described two elements of the self, the *me* and the *I*. The *me* is the self as object, the self one can describe, including physical characteristics, personality traits, social roles and relationships, thoughts, and feelings. The *I* is the self who is aware, and who feels, knows, and plans one's actions. It can be characterized by four features: (1) a sense of agency or initiation of behaviors; a sense of voluntary action or free will; (2) a sense of uniqueness; (3) a sense of continuity from moment to moment and from day to day; and (4) an awareness of one's own awareness (i.e., metacognition). This sense of the self as the *I*, deliberately guiding actions toward goals, forms the core of the self in theories of self-regulation.

Psychoanalytic theory and the ego

Ego refers to all mental functions that have to do with the person's relation to the environment. It includes a multitude of cognitive processes, such as perception, learning, memory, judgment, self-awareness, and language skills that allow a person to take in information, process and assess its implications, and select a course of action. Freud hypothesized that the ego emerged over the first year of life as infants experience delays in the gratification of their physical needs. Delay of gratification results in a growing awareness of the distinction between the self and the other. Freud introduced the concept of ego and its "executive" functions in managing the expression of impulses, negotiating between the id and the superego, striving to attain goals embedded in the ego ideal, and assessing reality.

The field of ego psychology was enhanced through the work of Heinz Hartmann. In his book, *Ego Psychology and the Problem of Adaptation* (1939/1964), Hartmann suggested that not all aspects of the ego's functioning arise out of conflict with the id and the superego. He introduced the concept of the conflict-free sphere of the ego, including basic adaptive functions such as perception, recognition of objects, logical problem solving, motor development, and language. These functions help the person assess and adapt to reality. Hartmann thought that the concepts of ego, id, and superego were more accurately viewed as three interrelated components of mental functioning that could expand or contract under the influence of one another. He offered a developmental picture of the ego beginning with early differentiation and distinction between id and ego. He postulated a process of increasing clarity

between self and the external reality, a shift from early narcissism to investment in others, and the eventual achievement of adaptive, secondary process thinking (Boesky, 1995). Hartmann expanded the scope of interest within psychotherapy to include more attention on problem solving and the goal-oriented nature of thought and behavior. Building on Hartmann's work, Jacobson (1964) described how the self is shaped through identification with others and achieves new levels of autonomy through the incorporation of moral codes and ethical values.

Ego psychology has become a study of the development and differentiation of the ego as integrative, adaptive, and goal directed. The ego is at once an intricate composite of multiple capacities, including planning, assessing, defending, coping, and mediating, and the integration of these with other aspects of self-concept, self-esteem, and personal identity that give the person substance, individuality, and location in the social world. The field of ego psychology addresses maturing capacities to sense and organize experience, achieve self-regulation in the face of strong needs and drives, and integrate cognitive capacities with strategies for attaining valued goals.

Fulfillment theory and self-actualization

The *humanistic* or *fulfillment* theorists emphasize the purposive, goal-oriented strivings that characterize adult life. In contrast to the emphasis of psychoanalytic theory and the learning theories on drive reduction and striving for equilibrium, fulfillment theories suggest that human motivation includes growth-oriented strivings. Charlotte Buhler was one of the earliest and most continuously productive of the humanistic or fulfillment theorists. Her work emphasized the centrality of life goals and intentionality through the life course (Buhler & Massarik, 1968). In her view, each person experiences life within a complex orientation to past, present, and future time. It is the hope for meeting future goals and for achieving a sense of fulfillment that prompts psychological growth. Buhler saw the years of early and middle adulthood as a time of setting definite goals and striving to achieve them. Toward the end of middle adulthood, there is focused preoccupation with the assessment of goals and the analysis of successes and failures. This process ends with a sense of fulfillment, partial fulfillment, or despair. Three concepts from fulfillment theory are especially relevant for understanding the directions of growth in adolescence and adulthood: competence, self-acceptance, and self-actualization.

Competence

White (1959, 1960, 1966) introduced the term *competence motivation* to explain behaviors that are motivated by a desire for new levels of mastery and control. People strive to increase their competence through repetition and practice of skills, by gaining new information, through education and

training, and through feedback from earlier efforts at mastery. Exploration is a basic human behavior that results in opportunities that potentially expand and extend the range of control in the environment. When exploratory actions result in new mastery or competence, they are accompanied by positive emotions of pride, satisfaction, and confidence (Heckhausen, 2011). Competence is expanded through a deepening of interests, by pursuing information and experiences that contribute to what we often term "expert knowledge." When goals are reached or deemed unattainable, the adaptive response is to disengage from the goal and set one's sights on new areas of mastery.

Self-acceptance

According to Carl Rogers' theory of personality development, an essential component of continued growth is to experience and accept the authentic self (Rogers, 1959, 1961). This means achieving a sense of trust in one's ideas and impulses rather than denying or constantly disapproving of them. It means fostering acceptance and trust in relationships with others so that people bring their most authentic selves into interactions. *Self-acceptance* is a product of the positive feelings that come from being direct and from the acceptance one receives from others.

In Rogers' view, barriers to self-acceptance come largely from conditions that others place on their love or approval. If significant others give approval based only on meeting certain conditions, then the person learns to modify his/her behavior so that it conforms to those conditions. However, these modifications are made at the price of self-acceptance. They lead a person into a pattern of inhibiting or rejecting new thoughts and relying more and more on the opinions of others. The greater the discrepancy between the authentic self as one perceives it and daily experience, the more one is likely to experience life as threatening and stressful. The greater the harmony between the authentic self and experience, the more likely one is to experience a sense of trust, freedom, and creativity in daily functioning. An implication of this theory is that well-being is a product of person-environment coadaptation. In the search for self-acceptance, the person seeks social settings where his or her thoughts, beliefs, and actions are highly valued and where the social setting can be modified to value and endorse the talents of those who participate in it.

Self-actualization

According to Abraham Maslow's theory, human beings are always in a state of striving (Maslow, 1968). *Self-actualization* is a powerful, growth-oriented motive that sits atop a pyramid of needs. In Maslow's view, the primary human motives concern physiological needs, such as hunger, thirst, and a need for sleep. The second level focuses on safety and security—the need to find protection from dangers and threats. At this level, one might include security of employment, safety for oneself and one's family, and concerns about one's health and the health of one's family. As those needs are satisfied and

maintained at a relatively stable level, people direct their energy to satisfy needs for belongingness and love, including friendship, intimate relationships, family, and kinship ties. At the next level, one is motivated to enhance and protect self-esteem by building confidence in oneself, achieving valued goals, and gaining the respect and admiration of others. Finally, if those needs can be met and sustained, the person directs energy to self-actualization, a motive to make optimal use of one's full potential, to become a fully effective, creative participant in daily life.

The need for self-actualization, like White's idea of competence, becomes a driving force, urging the person to seek new levels of insight and fulfillment. People who are characterized as self-actualized are described as authentic, having a reality-based orientation about themselves and others. They are spontaneous, interested in solving problems, and accepting of others. They lack prejudice. These qualities result from a continuous force toward growth as the richness of a person's human capacities are allowed to flourish (Maslow, 1943)

The fulfillment theories suggest that growth and maturation are characterized by successful encounters with life challenges that result in the development of a sense of purpose, meaning, and mastery. Contemporary self-regulation theories incorporate this perspective, emphasizing the notion of voluntary, goal-oriented actions as contrasted with behaviors that are controlled by external rewards, societal norms, and rules, or the need to garner the approval of others

Psychosocial theory and identity

Erik Erikson's examination of the meaning and functions of individual identity, as summarized in Chapter 6, provided another approach to understanding the self as one deliberately charts a course toward the future. The psychosocial theory provides the clear developmental framework for identity formation, situating it at the close of critical ego developments of infancy, toddlerhood, early and middle childhood, and locating it as a beacon to guide the important choices and personal assessments of adult life. Identity achievement requires the integration of past identifications, future aspirations and an assessment of contemporary resources and opportunities. The identity process includes examining alternative goals, making personal and interpersonal commitments to achieve these selected goals, and taking active steps to achieve them. Under optimal conditions, identity achievement is accompanied by an internal sense of uniqueness and direction as well as a social or community validation about the direction one has chosen

Cognitive developmental theory and formal operational reasoning

Piaget's characterization of formal operational thought, which was discussed in Chapter 7, provides a cognitive framework for theories of self-regulation. Formal operational reasoning permits a person to think about many variables interacting simultaneously. It allows for the creation of a system of logical principles

that can be used for problem solving. Thought becomes reflective; adolescents can think about their thinking, evaluate the logical inferences of their thoughts, and form hypotheses about the relationships among observations. Formal operational reasoning is propositional and probabilistic; the person can hypothesize about possible outcomes and evaluate the likelihood of these alternatives. Adolescence brings a broadening of consciousness, including greater introspection and monitoring of one's thoughts, greater integration of information from various sources, and more focused planning and control of behaviors guided by goals and strategies. Theories of self-regulation incorporate these capacities for hypothetical reasoning, reflection, and metacognition as they address the young person's ability to conceive of possible futures, devise strategies to achieve their goals, and evaluate information that will lead to revisions of these strategies or consideration of alternative goals.

What are the basic assumptions and key concepts of self-regulation theory?

Humans have an adaptive advantage of being able to survive and thrive in a variety of environments. One aspect of this adaptation is the ability to respond flexibly to changing features of the environment. Another aspect is the ability to modify or influence the context or to create/invent alterations that will reduce the negative impact of the environment. From this perspective, self-regulation can be understood as capacities that permit people to "alter their behaviors, as well as thoughts, attention, and emotions to react to different contexts and modulate their reactions to their contexts" (Gestsdottir & Lerner, 2008, p. 204).

Gestsdottir and Lerner (2008) distinguish between organismic and intentional self-regulation. Organismic self-regulation refers to biologically based capacities and structures that provide flexible modifications in response to environmental conditions. Examples include pupil dilation in response to levels of illumination, autonomic control of body temperature, or circadian rhythms which can be entrained or reset depending on environmental cues. Gestsdottir and Lerner (2008) include temperament as an example of organismic self-regulation insofar as it is a relatively stable, nonvoluntary feature of the way infants interact with the environment which can set the tone for approaches to exploration, reactions to novel stimuli, and features of social interactions with caregivers.

Intentional self-regulation implies voluntary, goal-directed control in the intentional expression or inhibition of emotions, thoughts, and behaviors, as well as processes of self-monitoring and behavior modification. Intentional regulation develops in concert with neurological maturation.

Short-term intentional self-regulation

Short-term regulation is "in the moment." For toddlers, self-control is observed in the ability to comply with a request, modify behavior according to the situation, initiate, or postpone action and behave in a socially acceptable

way without having to be guided or directed by someone else (Brownell & Kopp, 2007). Two concepts have been used to explore and evaluate how well children can manage their short-term impulses: effortful control and delay of gratification.

Effortful control refers to a child's ability to regulate his or her response to situations, particularly to inhibit or suppress an automatic response like throwing one's food on the floor and instead to perform a nonautomatic response, like saying or gesturing "all done." Temperament appears to be related to the capacity for effortful control. Those infants who are less emotionally intense in their expressions of anger or joy, and who are more cautious in a novel situation, have been found to have greater effortful control in toddlerhood (Kochanska & Knaack, 2003).

Walter Mischel and his colleagues have investigated the process by which children *delay gratification*. To delay gratification, a child must exert willpower in order to resist a strong immediate pull or temptation. This requires shifting attention or distancing oneself from the immediate situation and redirecting attention or action in order to achieve a different goal (Mischel & Ayduk, 2002). At age 4, children who delay gratification longer tend to be more intelligent, more likely to resist temptation, demonstrate greater social responsibility, and have higher achievement strivings.

According to Mischel's research, a 4-year-old's ability to use self-regulatory strategies to delay gratification has enduring effects. You have probably watched some version of the famous Mischel marshmallow experiment. Children are asked to wait in a room by themselves where a single marshmallow is sitting in front of them. They are told that when the experimenter returns, they can eat the marshmallow and have another. Four-year-old children who waited longer in this experimental situation, which requires a self-imposed delay of gratification, were described more than 10 years later as more socially and academically competent than their peers. Their parents rated these children as more verbally fluent and able to express ideas, using and responding to reason, and more competent and skillful. These children were more attentive and able to concentrate, plan, and think ahead, and they were also seen as better able to cope with frustration and resist temptation (Mischel & Ayduk, 2011; Mischel, Shoda, & Rodriguez, 1989; Morf & Mischel, 2002).

Other longitudinal studies have supported the link between self-control in toddlerhood and subsequent social competence. Children who are able to regulate their emotional reactions and resist temptations in toddlerhood are less likely to violate parental rules, more likely to plan as they approach new tasks, and as a result, more likely to be successful in school settings where cooperation and compliance are highly valued (Rothbart, Ahadi, & Evans, 2000; Tangney, Baumeister, & Boone, 2004). Children's self-regulatory competence is associated with many positive outcomes, including better scholastic performance, more successful social functioning, and fewer behavior problems. By adolescence, self-control is a better predictor of academic performance than IQ (Duckworth & Seligman, 2005). Children who are able to resist temptations are demonstrating

that they can outwit their desires, using a variety of strategies to achieve long-term goals that may be in conflict with immediate pleasure.

Long-term intentional self-regulation

Long-term regulation is relative. For a toddler, long-term self-control might be as long as a few minutes or it might be observed when a child waits until Christmas morning to open the gifts under the tree. For an adolescent, long-term self-regulation might involve saving money from a job over several months in order to attend a summer camp or to buy a new cell phone. It might require cognitive, social, emotional, and behavioral management over several years of high school in the hopes of getting into college. In this chapter, we focus on theories that address this longer view of intentional self-regulation as they apply to adolescence, especially how young people identify important goals, devise strategies for achieving these goals, reflect on their progress and modify their strategies in order to improve the possibility for goal attainment.

Internalization

Internalization is a basic process associated with intentional self-regulation. Most theories of socialization have concepts that address the question of how socially valued norms and rules become personally valued and assimilated into an internal moral code. Toddlers typically feel that demands for proper behavior do not come from within themselves, but from parents, older siblings, or other authority figures. Gradually, over the period of early and middle childhood, standards for socially acceptable behavior, rules, and values become part of a child's self-concept. Through the process of internalization, children understand the family and community moral code and become increasingly able to take appropriate actions to either inhibit bad behavior or enact good behavior without external monitoring and constant reminders (Aksan & Kochanska, 2005). Internalization is closely linked to the psychoanalytic concept of superego although theories differ in their explanations of how children gain control over their impulses and what factors contribute to the emergence of moral emotions such as empathy and guilt (Newman & Newman, 2018).

What are some insights from self-regulation theories that address adolescent development and behavior?

Three theories of self-regulation offer insights into adolescent development and behavior: SOC (selection, optimization, and compensation) theory; a sense of purpose; and self-determination theory. All three contribute to our understanding of the processes that support adolescents' capacity to identify and achieve their goals, thereby directing the course of their development.

SOC model

The pursuit of meaningful goals and an accompanying sense of purpose are known to be linked to life satisfaction and well-being. However, at any one period of life, there are more opportunities and possible goals than a person can realistically address. For example, in adolescence, a young person may want to have a job in order to earn spending money, volunteer at the community center, do well in school, hang out with friends, play on the school basketball team, and spend time with a special romantic partner. What is more, people have limited resources including time, money, or energy available to channel toward the achievement of their goals. Over time, these resources may fluctuate resulting in gains or losses in available resources. How will young people manage the challenges of balancing and matching a variety of opportunities with fluctuations in their resources? The SOC theoretical model of self-regulation focuses on strategies that people use to regulate their investment in important goals within certain contexts and in the face of fluctuating internal and external resources (Baltes & Baltes, 1990; Freund & Baltes, 1998). According to the **SOC model**, adaptation requires the integration of three processes:

Selection: Identifying the opportunities or domains of activity that are of the greatest value or importance. The selection of goals will focus attention and organize behaviors, with attention to the demands of less salient goals dropping away, thereby reducing complexity and creating a more efficient use of resources.

Optimization: Allocating and refining resources in order to achieve higher levels of functioning in the selected domains. As one continuously monitors the gap between one's current level of goal attainment and the desired goal achievement, new resources may need to be brought into play. Depending on the goal, a person may think of alternative strategies for goal attainment and implement them in order to evaluate their effectiveness.

Compensation: Under conditions of reduced resources, identifying strategies to counteract the loss and minimize the negative impact on functioning in the selected goal domains. The idea of compensation assumes that there will be situations in every life when the means of achieving a goal are blocked or events occur that drain resources. The person may need to explore alternative means to achieve the goal, seek out new resources, or activate unused resources (Baltes, 1997).

Life satisfaction and a sense of well-being are linked to selecting specific goals as important areas of functioning and then effectively directing both internal resources (e.g., energy, thought, planning) and external resources (e.g., taking classes, hiring a trainer, getting advice from friends or mentors) in order to maximize their level of functioning. Well-being rests on two related coping strategies: (1) An ability to anticipate potential losses and prevent them through proactive coping in order to prolong the availability of resources and maintain

engagement with desired activities and (2) an ability to manage or reduce the impact of stressful life events by redirecting resources in order to continue engaging in valued roles and activities (Hamarat et al., 2001; Salvatore & Sastre, 2001).

The challenges faced during adolescence make the intentional use of SOC strategies increasingly vital for adaptation. Young people face multiple competing goals and fluctuating resources. Shifts from middle school to high school and college, efforts to find employment, experiences of acceptance and rejection in romantic relationships, and attempts to gain status through various peer-based relationships are all examples of contexts in which goals need to be reevaluated and resources need to be managed (Freund & Baltes, 2002). Although it is expected that the knowledge of SOC strategies increases over the course of adulthood, the model is useful for understanding divergent developmental pathways over the course of early and later adolescence (Zimmerman, Phelps, & Lerner, 2007).

A sense of purpose

The sense of purpose refers to the identification of direction toward meaningful, future-oriented goals that persist over time (Damon, 2008; Damon, Menon, & Bronk, 2003). The identification of these goals provides a central, organizing focus that is thought to move people toward personal fulfillment. Purpose connects a person's self-identity and their sense of agency. It requires the maintenance of both internal motivation and external commitments. A sense of purpose incorporates a belief in the value or importance of goals for oneself as well as for others, so that realization of the purpose will result in some greater good or social benefit (Hill, Burrow, O'Dell, & Thornton, 2010; Malin, Tirri, & Liauw, 2015). "Purpose is a stable and generalized intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond-the-self" (Damon et al., 2003, p. 121).

A sense of purpose develops and transforms over time. Erikson (1982) identified purpose as a prime adaptive ego quality of early-school-age (roughly ages 4–6) that supports directed, action-oriented problem solving. The sense of purpose transforms the will of toddlerhood toward goal-oriented activities (e.g., suggesting an activity such as going to the park or playing a board game). As adolescents' cognitive skills, social awareness, and capacity for empathy improve, their sense of purpose expands to account for the impact of goals on others and provides direction for the future (Damon et al., 2003). In later adolescence and early adulthood, the sense of purpose may become a more persistent focus, motivating specific actions, or changing in light of new opportunities or new understandings about the realities and/or barriers associated with achieving one's goals (Malin, Reilly, Quinn, & Moran, 2013). The sense of purpose can serve as a valuable asset which enhances persistence and academic success as well as life satisfaction (Bronk, 2011).

A variety of factors shape the formation of the sense of purpose. Personal identity exerts a particularly powerful influence (Sumner, Burrow, & Hill, 2015). In addition, purpose development is shaped by (a) personality traits such as extraversion and openness to experiences; (b) life transitions such as the shift from high school-to-college and from school-to-work; (c) identity development processes like exploration and changing commitments; (d) social supports and influences including relationships with parents, peers, and mentors; and (e) connection to community (Hill, Edwards, Peterson, Luyckx, & Andrews, 2016; Malin et al., 2013). It can also be inhibited or foreclosed entirely due to environmental circumstances that prevent hopefulness or a belief in one's ability to achieve desired goals (Burrow, O'Dell, & Hill, 2010).

Both identity and purpose development become more fully articulated during later adolescence, especially in the college environment, when new educational experiences and new social relationships challenge previously stable self-understandings (Hill, Sumner, & Burrow, 2014). Students differ markedly in their openness to new experiences and information—leading those who study development to distinguish between types of exploration (Luyckx et al., 2008). Exploration in *breadth* involves engaging in different roles and relationships while exploration in *depth* involves reexamining earlier commitments to assess their fit with current goals and values. Both exploration in breadth and in-depth eventually lead to new or revised commitments resulting in alterations in the sense of purpose during and after college.

Adolescents find their sense of purpose as a result of different life experiences and processes. Hill et al. (2014) identified three pathways to purpose: proactive, reactive, and social learning mechanisms (p. 227). Individuals who are characterized as proactive engage the environment, seeking out new experiences in order to discover their passions and establish life goals. In this process, there is likely to be a deliberate period of self-reflection as people consider their core values and the kinds of life goals that will support the enactment of those values. Individuals who are characterized as reactive experience some kind of life changing or transforming event; a turning point that results in new insights and a dedication to new life goals. This type of life experience might be positive, as when young people describe a religious calling, or negative, as when they experience a community tragedy that draws them into political activism or community service. In the third instance, individuals may find their life purpose through the influence of role models who provide inspiration and guidance. Through observation and positive interactions with people they admire, young people can be encouraged to develop meaningful life goals and commit to strategies that will result in the achievement of those goals.

A study of pathways to purpose among college students with disabilities highlighted a process of exploration and goal clarification that takes place during the college years. Five positions or statuses regarding the sense of purpose were identified: (1) no clear sense of purpose; (2) imagining and exploring a sense of purpose; (3) imagining and exploring a sense of purpose beyond the

self; (4) arriving at an instrumental sense of purpose; and (5) arriving at a sense of purpose beyond the self (Newman, Kimball, Vaccaro, Moore, & Troiano, 2019). Students in group one were unsure about their direction. In several cases, their disability presented obstacles for conceptualizing a realistic sense of purpose. Students in the second and third groups were exploring different possible futures. They were investigating alternatives, practical considerations, and using self-insight to sort out directions that might lead to attainable goals. Groups two and three were distinguished by the absence (group 2) or presence (group 3) of other-directed values and hopes. Students in group 4 had a clear sense of direction, often but not always associated with career goals, and linked with a desire for recognition, achievement, or a desire for a certain kind of lifestyle. Students in group 5 expressed their sense of purpose tied to a desire to make a difference for others. Their goals incorporated a vision of the self as contributing to the well-being of specific groups of people, communities, or subject areas where their expertise might improve knowledge.

Self-determination theory

Self-determination theory (SDT) addresses the nature of human tendencies toward growth, curiosity, agency, and the motivation toward proactive action. As the name implies, self-determination theory emphasizes the self-regulation processes that support the person's ability to freely choose life goals and to strive toward their attainment. It is a theory that examines basic psychological needs, the satisfaction of which results in optimal development including a personal sense of integration, positive social development, and well-being (Ryan & Deci, 2000). The theory also considers processes that can thwart development as individuals encounter contexts that prevent the satisfaction of basic needs or impose external demands for compliance that undermine feelings of autonomy. Five basic concepts of the theory that capture the dynamic nature of self-determination are summarized here: (1) Assumptions about human nature; (2) Identification of three universal needs and contexts that support those needs; (3) Regulatory Processes; (4) Causality orientation and the process of internalization; and (5) the Content of life goals.

Assumptions about human nature

SDT assumes that humans are "active, growth-oriented organisms." This assumption, closely aligned with the writings of Robert White, emphasizes a natural tendency to seek out novel experiences, engage in activities that will enhance competence, and self-organize in order to become increasingly integrated, both internally and with the social environment (Deci & Ryan, 2000). This natural tendency toward activity and exploration stands in contrast to theories that emphasize motivations aimed at correcting or satisfying deficits in basic needs or the desire to preserve or return to equilibrium.

Three universal needs and contexts that support those needs

SDT identifies three innate, universal psychological needs that are essential for growth and well-being: competence, relatedness, and autonomy. All three are necessary to support optimal development. The need for competence relates to an inner force directed at having an effect on the environment and striving toward new levels of skill or mastery. The need for relatedness refers to a desire to feel connected to others, to experience a sense of belonging, to love and be loved, to care and be cared for. In SDT, the need for autonomy refers to experiences of "integration and freedom," a motivation to act in ways that are viewed as integrated and coherent with the sense of self (Deci & Ryan, 2000).

Social contexts and relationships including family members, teachers, and friends that support the satisfaction of the three basic needs will result in more positive development and full realization of a person's potential. The feedback that communicates competence information without being controlling or threatening, supports competence motivation. In contrast, contexts that emphasize tangible rewards or the risk of punishment are likely to thwart competence. Social relationships that are perceived as supportive, accepting, and validating will enhance and satisfy relatedness needs, whereas relationships that are overly controlling or pressuring fail to satisfy relatedness needs. When actions are perceived as volitional and with a sense of choice, needs for autonomy are supported (Deci & Ryan, 2008a).

Internalization and regulatory processes

SDT views internalization as an active process through which people assimilate socially valued and sanctioned norms and rules, accepting them as part of their sense of self and allowing these values to guide self-determined behaviors. The theory links the basic needs to the internalization process. When relatedness needs are satisfied, people are naturally inclined to internalize the values of their social group. When competence needs are accepted and validated, the internalization process advances since people perceive that the areas where they desire to be agentic are also in harmony with the social values of the group. And most importantly, when autonomy needs are supported, people feel that they are free to endorse and embrace socially valued regulations and transmit them to others without concern for external pressures (Deci & Ryan, 2000).

Based on these ideas, SDT identifies a typology of motivation from optimal, intrinsic, or autonomous motivation, to extrinsic or controlled motivation, to amotivation. Fig. 8.1 describes the relationship of self-determination to motivation, regulation, and causality.

Goal-directed activities are viewed as intrinsically or autonomously motivated when the behavior is enacted fully voluntarily, guided by interests and personally valued goals that are well-integrated with a sense of self.

Goal-directed activities are viewed as extrinsically motivated or controlled when the behavior is motivated either directly by external considerations of

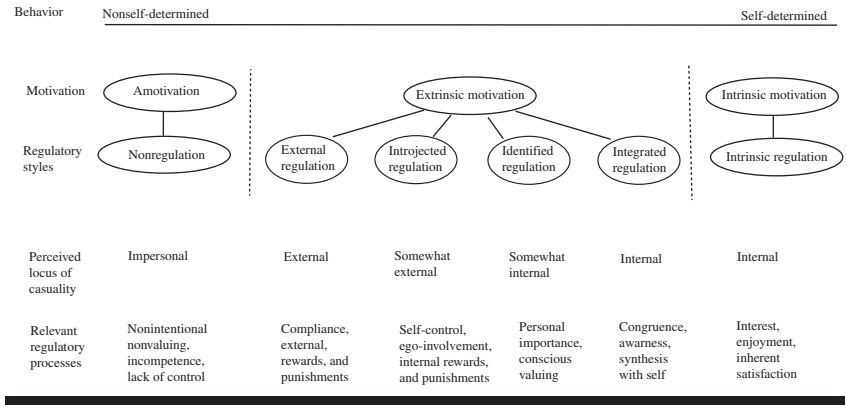

FIG. 8.1 The self-determination continuum showing types of motivation with their regulatory styles, loci of causality, and corresponding processes. *(From Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being.* American Psychologist, 55, *72.)*

rewards or punishments, or by processes of introjection or identification. Introjection is a process through which a person recognizes the source of the control as originating outside the self, but administers the control to himself/herself. The resulting behavior is not considered self-determined since the person does not fully embrace or personally value the regulations. The metaphor of "swallowing the rules without digesting them" is used to characterize introjection. Identification is a more ambiguous state than introjection. The person fully accepts the regulation but continues to view it as external to the self rather than as an expression of personal fulfillment. The example given is that people identify with the requirement for daily exercise because it is thought to contribute to their health, not because they really enjoy it or seek it out for its own sake (Deci & Ryan, 2000).

Both autonomous and controlled motivation can guide intentional, voluntary behavior. The term amotivation refers to a complete lack of motivation. Individuals may not believe that they have the competence to engage in goal-directed behavior, they may feel helpless to control or guide behavior toward a desired outcome, or they may believe that their behavior really does not make a difference one way or another (Ryan, Deci, & Grolnick, 1995).

Causality orientation

Depending on their life experiences, people approach life with a general causality orientation or worldview. Their orientation refers to "a) the way people orient to the environment concerning information related to the initiation and regulation of behavior; and b) the extent to which they are self-determined in general across situations and domains" (Deci & Ryan, 2008b, p. 183). The three orientations are autonomous, controlled, and impersonal. An autonomous

orientation arises when all three basic needs are consistently met; the controlled orientation emerges when some competence and relatedness needs are met but autonomy needs are not met, and an impersonal orientation arises when none of the three basic needs is met. When people lack social or environmental support for their three basic needs, they experience a sense of alienation; their behavior becomes passive, detached, and inauthentic. The impersonal orientation is associated with the poorest functioning and a lack of life energy (Ryan & Deci, 2000).

The content of life goals

SDT hypothesizes a link between the satisfaction of the three basic needs and the nature of personal goals. Some goals, such as affiliation, personal growth, or a sense of belongingness to a community are viewed as intrinsic goals that directly satisfy the three basic needs. Other goals, such as the desire for wealth, fame, or popularity are viewed as extrinsic goals which may serve as a substitute when basic needs are thwarted. Attainment of the intrinsic goals is associated with self-esteem, self-actualization, and lower levels of depression and anxiety whereas attainment of extrinsic goals is negatively related to these indications of well-being (Ryan & Deci, 2000, p. 75). Research exploring the factors that predict the emphasis on intrinsic or extrinsic goal finds that developmental life experiences that fail to satisfy basic needs are more likely to result in a young person's striving for extrinsic goals. For example, teens who had been raised by cold, controlling mothers were more likely to espouse materialistic goals than those whose early child-rearing experiences were nurturant and autonomy supportive (Kasser, Ryan, Zax, & Sameroff, 1995).

Approaches to measurement in self-regulation theories

Given the illusiveness and abstractness of ideas such as well-being and self-directed goal attainment, one might think that measurement is extremely challenging. However, numerous instruments do exist. Given the different key concepts in the theories explored above, it is not surprising that there are a variety of approaches to measurement focusing on the assessment of various constructs. Examples related to constructs reviewed in the preceding sections which have been used with adolescent samples are presented as illustrations of measurement strategies.

The structure of psychological well-being

Building on the theoretical literature that focus on positive psychological functioning, Ryff (1989) identified six dimensions of well-being: self-acceptance; positive relations with others; autonomy; environmental mastery; purpose in life; and personal growth. The measure is intended to capture the link between well-being and self-actualization, reflecting the view of humans as "striving, meaning making, proactive organisms who are actively navigating the

challenges of life" (Ryff, 2014). Using traditional scale construction methods, she devised self-rating measures for each of the dimensions, ultimately identifying 20 items for each dimension with half-written to reflect the positive and half to the negative pole of the dimension. "Respondents rated themselves on each item along a 6-point scale from strongly agree to strongly disagree" (Ryff, 1989, p. 1072). To assess construct validity, each of the scales was correlated with existing measures that had been used to assess psychological adjustment. Age and sex differences in the six dimensions were also assessed, illustrating age trends for some of the dimensions including autonomy, environmental mastery, and purpose in life. A shortened version of the measure was used in a nationally representative sample, confirming the integrity of the six dimensions as well as their relationship to an overall construct of well-being (Ryff & Keyes, 1995). Versions of this measure have been used internationally to assess well-being in adolescents, adults, and the elderly, illustrating the contributions of well-being to health, longevity, and resilience across cultural, socioeconomic, and family contexts (Ryff, 2014).

Organismic self-regulation

Self-regulation reflects the ability to control or regulate emotions, attention, or behavior depending on the context. As discussed earlier in the chapter, organismic self-regulation refers to biologically based capacities and structures that provide flexible modifications in response to environmental conditions. Difficulties in self-regulation have been linked to problem behaviors including substance use, poor school performance, and risky sexual behaviors (Miller & Byrnes, 1997). Raffaelli and Crockett (2003) created the self-regulation measure using 13 items from a Behavior Problems Index (Zill, 1990). Mothers of 12 and 13-year-olds rated how well each item described their adolescent children. The items form a coherent measure that captures difficulties with emotional (e.g., he/she has sudden changes in mood or feeling), attentional (e.g., he/she has difficulty concentrating, cannot pay attention for long), and behavioral (e.g., He/she is impulsive, or acts without thinking) regulation.

The SOC questionnaire

The SOC questionnaire involves 48 items, 12 each for each of four components of the SOC model: Elective selection, Loss-based selection, Optimization, and Compensation. Table 8.1 is a summary of the key features of each of these components (Freund & Baltes, 2002, p. 643).

Each item is framed as a forced choice with two statements, one describing the targeted behavior and one describing an alternative "distractor." Respondents are asked to indicate which statement describes them better. Freund and Baltes (2002) describe what high scores on each of these four components might convey.

TABLE 8.1 Components of the SOC model.

Selection (goals/ preferences)	Optimization (goal-relevant means)	Compensation (means for counteracting loss in/blockage of goal-relevant means)
Elective selection	Attentional focus	Substitution of means
Specification of goals	Seizing the right moment	Use of external aids/help of others
Goal system (hierarchy)	Persistence	Use of therapeutic intervention
Contextualization of goals	Acquiring new skills/resources	Acquiring new skills/resources
Goal commitment	Practice of skills	Activation of unused skills/resources
Loss-based selection	Resource allocation (effort, time)	Changes in resource allocation (effort, time)
Focusing on most important goals		
Reconstruction of goal hierarchy	Modeling successful others	Modeling successful others who compensate
Adaptation of standards		
Search for new goals		Neglect of optimizing other means

From Freund, A. M., & Baltes, P. B. (2002). Life-management strategies of selection, optimization, and compensation: Measurement by self-report and construct validity. *Journal of Personality and Social Psychology, 82,* 643.

Elective selection: The person develops a limited number of clear goals on which to focus resources and has a view of a goal hierarchy.
Loss-based selection: In the context of losses, the person focuses on the most important goals, refining or refocusing their goal hierarchy, or revising their goal aspirations in the context of the loss.
Optimization: The person identifies a large number of behaviors that will allow the allocation of resources toward goal pursuit.
Compensation: The person identifies a number of alternative or substitute behaviors in order to achieve goals in the face of losses.
Using a shortened version of the SOC measure, Gestsdottir and Lerner (2007) found that an overall score predicted key features of positive youth development including competence, confidence, character, connection, and caring among young adolescents in fifth and sixth grades. Building on the domain-general version of the SOC measure, Geldhof, Little, and Hawley (2012)

devised domain-specific measures for academic and social self-regulation which they administered to college students. Evidence for internal and external validity of the academic measure was especially robust. The authors suggest that the domain-specific measure should be used in conjunction with the general SOC measure when focusing on adolescent self-regulation since each measure is somewhat more predictive of aspects of positive youth development than the other.

Conceptions of purpose in life

Work by Ryff (1989) and others has supported the importance of a sense of purpose in life as a predictor of well-being and positive youth development (Burrow et al., 2010; Damon et al., 2003). Although a sense of purpose is recognized as a feature of thriving and a predictor of academic persistence, there is some ambiguity about its definition, thus making the operationalization of the term and its inclusion in objective measurement challenging. Hill et al. (2010) used an open-ended approach to evaluate how adolescents think about and define the sense of purpose and then coded their definitions based on content found in the research literature. Participants in the study were 229 students from a suburban Catholic high school and a suburban public high school in two Midwestern cities. As part of a larger questionnaire, participants were asked, "In your own words, define what it means to have a purpose in your life." These open-ended answers were then coded for the extent to which the answers addressed each of the following themes: foundation and direction; happiness; prosocial; religion; and occupational and financial. For each theme, answers were scored on a scale from 0 (no mention), 1 (some mention), 2 (a primary point), and 3 (the sole point). The most common theme was "foundation and direction" (mentioned by 83% of the sample); and "happiness" (mentioned by 52% of the sample). Most respondents mentioned more than one aspect of their definition.

Just as young people differ in the way they understand and make meaning of the sense of purpose, they also differ in the ways they discover or create their sense of purpose. Hill et al. (2014) devised the Pathways to Purpose scale in order to assess differences in the ways that college students arrive at their sense of meaning. Using this scale, they were able to examine the correlates of these pathways, especially differences in personality characteristics, life satisfaction, and life goals. The Pathways to Purpose scale involves 14 items that capture the three theoretically derived pathways: proactive engagement; reaction to significant life events; and social learning.

Self-determination measures

Self-determination theory has stimulated an extensive body of research including the development of numerous measures. A list of instruments designed to measure many of the theoretical constructs can be found at this website: http://selfdeterminationtheory.org/questionnaires/

Two examples are the Aspiration Index (AI) and the Basic Psychological Need Satisfaction and Frustration Scale.

Aspiration Index (AI)

Self-determination theory distinguishes between extrinsic and intrinsic goals. The former are focused on gaining rewards and praise, often in the form of financial success, popularity, and fame. The latter are focused on goals that satisfy the basic psychological needs, especially personal growth, affiliation, and community feelings of connection and belonging. The current version of the scale assesses 11 goal domains: self-acceptance, affiliation, community feeling, financial success, image, popularity, physical health, conformity, safety/security, spirituality, and hedonism (Kasser & Ryan, 1996). The Aspiration Index maps goals along two dimensions: Self-transcendence vs Physical self, and Extrinsic vs Intrinsic goals. The measure can be used to assess a number of important questions including the importance of various goals, the person's likelihood of achieving various goals, and the strength of motivation for striving to attain these goals (Grouzet et al., 2005).

Basic Psychological Need Satisfaction and Frustration Scale

SDT identifies three universal needs that must be satisfied for a person in order to achieve well-being and optimal development. The Basic Psychological Need Satisfaction and Frustration Scale has 24 items to address satisfaction and frustration for each of these needs: competence, relatedness, and autonomy. The scale is available in Dutch, English, Spanish, and Chinese. Separate versions of the scale have been developed to focus on two specific domains: Physical Education and Work (Chen et al., 2015). There is also a daily diary version to monitor ongoing fluctuations in the support or thwarting of needs (Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017).

Applications of self-regulation theories

Concepts from self-regulation theories have been applied to a variety of areas in order to improve or optimize behavior and foster self-actualization. Five examples are described here: the relationship of self-regulation skills and homework; self-regulation interventions to enhance physical activity; an intervention to stimulate thinking about purpose in life; the application of self-regulation theory to parenting; and the role of self-regulation theory for therapy with adolescents.

Self-regulation and homework

Ramdass and Zimmerman (2011) explored the bidirectional relationship between homework and self-regulation skills. They argue that the benefit of doing homework cannot be measured simply by knowing how much time

students spend doing it, but by the quality of emotion, attention, and behavior that is brought to the task. A variety of self-regulation skills are enlisted as students engage in homework completion: "managing distractions, self-efficacy and perceived responsibility for learning, setting goals, self-reflection and metacognitive review, managing time, and setting a place for homework completion." (Ramdass & Zimmerman, 2011, p. 195). They suggest that over time, from elementary school age to college, self-regulatory behaviors directed toward the completion of homework assignments improve. Many of the self-regulatory skills that contribute to academic gains from doing homework can be taught and supported through the use of homework logs and teacher feedback. When assignments are challenging and meaningful, and students' self-regulation skills are enhanced, new levels of academic success are observed.

Self-regulation and leisure time physical activity

Regular physical activity is known to have a variety of health and mental health benefits. However, the amount of time young people engage in daily, vigorous physical activity has been found to decrease over the teenage years (Hallal et al., 2012). The use of a self-regulation model was applied to an intervention with tenth graders to determine if a combination of self-regulatory strategies would result in an increase in voluntary, goal-directed leisure physical activity (Matthews, Moran, & Hall, 2018). The intervention was carried out during school hours in 30 min weekly sessions over 6 weeks. Students were encouraged to identify their own preferred leisure activity and to apply the lessons about self-regulation to their life outside of school. The self-regulation model incorporates three phases: forethought, performance, and self-reflection (Cleary & Zimmerman, 2004; Zimmerman, 2000). In forethought, students identified a physical activity, set a goal, and identified strategies for achieving the goal. In performance, students used mental imagery and the preparation of a mental imagery paragraph to help increase their engagement in leisure physical activity. They also recorded weekly progress on achieving their goal. In self-reflection, students reflected on the reasons for making progress or failing to make progress on their goal, focusing on controllable factors including effort and strategy. Compared to a control group, students in the experimental training group reported significant use of goal setting, mental imagery, and the use of causal attributions to evaluate progress toward their goal. Their actual increase in leisure time physical activity was assessed 8 weeks after the training was completed. Results were significant but modest, amounting to an increase of about one additional session of vigorous activity per week, as compared to the control group. However, the students did use the self-regulation techniques, which may have long-term benefit across domains. The idea that a brief, weekly intervention can result in improvements in self-regulation outside of school is

promising from the point of view of incorporating school-based self-regulation skill training to address important areas of behavior change.

Reflecting on and discussing purpose in life

It is well accepted that having a sense of purpose in life, that is a sense of direction toward a meaningful goal, is associated with well-being and life satisfaction. There is also consensus that the sense of purpose typically begins to crystallize during the early and later adolescent years as a central feature of identity exploration (Damon, 2008; Luyckx, Goossens, & Soenens, 2006; Yeager & Bundick, 2009). As a result, interventions are being designed to provide young people with support and encouragement to reflect upon and talk about the bigger picture of their life goals and aspirations (Bronk, 2011; MacLeod, Coates, & Hetherton, 2008). Bundick (2012) specifically tested the hypothesis that being involved in an in-depth discussion of core values, goals, and purpose in life would have subsequent benefits for life satisfaction and goal directedness among college students. A subset of students who had completed the pretest of a larger study were invited to participate in a face-to-face interview to encourage "reflection and deep thought about one's purpose in life, core values, and most important life goals." (Bundick, 2012, p. 93). These interviews were carried out in casual settings and lasted for about 45 min. After 9 months, follow-up posttest scores were compared for the students who were involved in the one-on-one interviews about the purpose and those who were not. Although purpose identification did not differ for the two groups, the students who participated in the in-depth interviews had greater goal directedness and greater life satisfaction. Bundick hypothesized that the opportunity to engage in open, wholehearted discussion of one's life goals and their meaning may have helped to integrate these goals into one's identity, resulting in a strengthening of commitment and an accompanying increase in life satisfaction.

Self-determination theory and parenting

According to SDT, the satisfaction of the three basic needs, competence, relatedness, and autonomy, supports the internalization process, resulting in more internalized or autonomous motivation. In the socialization process, parents and other authority figures strive to enact practices that will result in the internalization of values and foster motivation that will result in the self-regulation of behaviors. An assumption of SDT is that when parents support their child's basic needs, the children will experience more autonomous motivation and a greater sense of well-being than when parents thwart or undermine these needs. Two applications of this theory to parenting illustrate these ideas.

The motivation to parent

Why do people want to become parents in the first place? To what extent are their motives guided by their belief that parenting will be meaningful, personally satisfying, and stimulating (e.g., intrinsic motivations) or by their sense that other people expect them to be parents and will be judging them based on how they enact this role (e.g., extrinsic motivations)? Jungert et al. (2015) explored this question. Adapting the Self-regulation Questionnaire (Ryan & Connel, 1989), the authors devised questions that focused on why adults believe they were investing their time and energy in the parent role. The 12-item scale measured 4 types of motivation: intrinsic, identified, introjected, and extrinsic. They hypothesized that adults who were more intrinsically motivated to engage in parenting would be more likely to engage in autonomy-supportive interactions with their children, and their children, in turn, would have more positive effect and satisfaction with life. Data were gathered from three different samples including first-time mothers of infants, mothers of middle-school-age children, and mothers and fathers of high-school-age adolescents. These latter two groups allowed the authors to relate parents' motivations for parenting to children's perceptions of the extent to which their parents supported their autonomy needs as well as children's responses to measures of well-being. As predicted, the more autonomous the parents' motivation for parenting, the more the children reported perceived support for their autonomy and higher levels of well-being. Among first-time mothers, parenting guided by extrinsic or controlled motivation was associated with lower parental role satisfaction, lower life satisfaction, and less positive mood. The study did not evaluate the factors that predict whether adults have relatively greater intrinsic or extrinsic motivation for parenting, or whether this motivation for parenting can be modified through interventions.

Parenting support for basic needs

One of the challenges of parenting is to guide the socialization process so that societal norms and values that adults believe are important for their child's successful adaptation will become internalized. SDT suggests that although compliance motivated behaviors such as feeling pressured by others' expectations can guide self-regulation, they are less likely to be linked to a sense of well-being and life satisfaction than behaviors motivated by fully internalized values. Niemiec et al. (2006) explored the relationship between adolescents' perceived support for autonomy and relatedness from their parents and the adolescents' own autonomous self-regulation for planning to attend college as well as their sense of well-being. As expected, perceived parental support for autonomy and relatedness were associated with the adolescents' own relative autonomous motivation for their plan to attend college which mediated the relationship of parents' support of needs and overall indications of well-being. The results support a clear link between parents' ability to support adolescents' needs for autonomy and relatedness, and the adolescents' internalization of

specific educational goals as well as a general level of emotional well-being and life satisfaction.

Self-determination theory and therapy

A basic assumption of SDT is that humans have an active tendency toward integration, synthesis, organization, and self-actualization. The goal of therapeutic intervention is to energize and foster these tendencies by supporting the three basic needs of competence, relatedness, and autonomy. The SDT approach to therapy is to invite and encourage self-endorsed or autonomously motivated change. The greater their internalized motivation, the more likely adolescents will persist in therapy and be willing to face the challenges or barriers to change (Ryan & Deci, 2008). By creating an autonomously supportive environment, adolescents will be able to explore the pros and cons of change and decide for themselves their goals for change. The assumption is that in this type of nonjudgmental, noncontrolling environment, adolescents will reflect on their experiences, explore possibilities, and make choices that will take them in the direction of greater integration and self-actualization (Patterson & Joseph, 2007).

The following are features of the therapeutic environment that support autonomy:

The therapist strives to understand and respect the adolescent's internal perspective. This does not mean endorsing the young person's views, but taking a deep interest in the client's point of view, striving to support the client's ability to express and organize their thoughts and feelings so they can be explored together.

The therapist provides a climate of unconditional positive regard so that the young person can eventually feel comfortable expressing thoughts, feelings, and behaviors that they may have previously kept hidden. Most adolescents have experiences of adult efforts to control, manage, and evaluate their behavior, resulting in the formation of an extrinsic or introjected control and little sense of voluntary choice. The climate of unconditional positive regard, which is likely to be new and initially somewhat disconcerting for an adolescent, is thought to eventually provide the context in which the adolescent can come into contact with authentic emotions and thoughts, find ways to reflect on them, and then to integrate or revise them.

The autonomous therapeutic environment creates a context in which adolescents can be aware and mindful of their emotions. Through this process, they begin to see ways that controlling contexts may have resulted in the thwarting of their basic needs or the introjection of beliefs that produce defensive behaviors or externalized goals. Awareness is a precursor to examination and eventually to an integrated choice to change.

The autonomous therapeutic environment supports choice. Again, a cornerstone of the relationship of autonomy and internalization is the idea that the young person is able to consider alternatives, explore possibilities, and

freely choose their therapeutic goals. This process involves opportunities for self-reflection in order to assess one's competence including strengths and limitations. The goals of therapy are not established in advance but emerge dynamically as the young person grows in confidence about the ownership and authenticity of his or her values and goals (Hui & Tsang, 2012).

Strengths and limitations of self-regulation theories

Strengths

In the context of rapid biological, cognitive, and social changes which seem to be *happening to* adolescents, the self-regulation theories highlight the importance of focusing on ways that adolescents shape the course of their own development through the choices they make and the goals they set for themselves.

Self-regulation theories emphasize the positive, growth-oriented nature of human development as young people strive toward agency, integration, and self-actualization. These theories recognize the diversity of goals that can become meaningful for young people, and goal-oriented striving that characterizes much of adolescent behavior. In the context of literature that tends to emphasize the problematic nature of adolescent development and tendencies toward risky behaviors, the self-regulation theories remind us of the organic desire to experience a sense of autonomy, authenticity, meaningful relationships, competence, fulfillment, and meaning in life. The self-regulation theories have become integrated into the field of positive psychology, the scientific study of the strengths and virtues that enable individuals to thrive (Seligman, 2011).

The theories also identify barriers to self-regulation. The SOC model introduces the challenges that accompany the loss of goal-related resources, and the need for adolescents to learn how to revise or replace goals when these losses and disappointments occur. This is especially relevant to the idea of resilience in adolescence when aspirations are stymied possibly due to lack of ability or changes in family or community resources. SDT addresses problems associated with the thwarting of basic needs for competence, relatedness, and autonomy. When these needs are inadequately supported, extrinsic goals are likely to surface which, in turn, are associated with lower levels of fulfillment and life satisfaction.

Hypotheses from self-regulation theory are testable and constructs from the self-regulation theories have been extensively explored. The theories have led to the development of a variety of measures which have been used to study concepts from self-regulation in domains such as health and risky behaviors, academic achievement, civic engagement, and career aspirations. These measures have also been incorporated into studies of the relationship of self-regulation to overall health, well-being, and life satisfaction (Gestsdottir & Lerner, 2008).

Principles from self-regulation theory have been incorporated into interventions in diverse fields including sports and physical education, educational settings, parenting practices, positive youth development programming, and psychotherapy. At the college level, principles from self-regulation theory have been applied to support identity exploration, career exploration, and exploration of a sense of purpose (Chickering & Reisser, 1993).

Limitations

The distinction between organismic and intentional self-regulation is often lost in the theories we have reviewed. Genetic factors, as well as exposure to prenatal and neonatal toxins and stressors, can result in the dysregulation of self-control systems (Repetti, Robles, & Reynolds, 2011). As a result, some children arrive at adolescence with impaired capacities for self-control of attention, emotion, and/or behavior. These vulnerabilities may be especially sensitive to inadequate or harsh parenting environments, resulting in an inability to overcome obstacles in goal-attainment. The theories do not suggest strategies for intervening when self-regulation capacities are impaired.

In contrast to the idea of an impaired capacity for self-control, some adolescents may have an overestimation of their competence or an unrealistic notion of their autonomy. Just as toddlers will assert their autonomy by refusing help or insisting on getting their way, adolescents may insist that they can decide about goals without consulting others or considering the impact of their decisions on others. Since the executive functions are not fully developed during adolescence, young people may tend to leap toward conclusions about their goals or strategies to achieve their goals without taking time for adequate reflection. The self-regulation theories emphasize the importance of fostering voluntary self-regulation, but they do not provide much guidance for parents, teachers, counselors, or therapists about how to balance autonomy support with techniques to enhance reflection and evaluation when interacting with adolescents.

The self-regulation theories do not adequately address developmental stages or patterns of progression over the transition from childhood to adolescence and adulthood. Unlike psychoanalytic, psychosocial, and cognitive developmental theories, these theories do not suggest qualitatively distinct phases in the emergence of self-regulation capacities. Future research is needed to trace the longitudinal paths from the emergence, crystallization, and clarification of self-determined goals to their eventual attainment or revision.

Although self-regulation theories recognize the importance of contexts, they do not give adequate attention to the particular role of the peer group as a context that guides investment in specific goals or influences strategies for goal attainment. The need for relatedness or belonging within the peer group is an especially strong need in adolescence, and the capacity for autonomy support within the peer group has not been adequately examined. Peer groups can inspire adolescents toward prosocial goals; but they can also undermine self-regulation by encouraging impulsiveness or aggressive behavior in order

to achieve antisocial goals. Adolescents may perceive their own behavior as autonomous because they are freely associating with a particular group of peers without realizing how the peer group is controlling their choices.

Adolescents are emerging into a wider environment where societal influences can shape aspirations through music, movies, online media, and social networks. Cultural factors including the media, political or religious figures, and social policies and practices are not adequately incorporated into the self-regulation theories. These factors can inspire prosocial goals that lead to a commitment to intrinsic goals and a sense of purpose that reaches beyond the self. They can also celebrate and inspire extrinsic goals for power, wealth, or fame.

The self-regulation theories do not make predictions about the content of self-determined goals. The theories tend to be content free with respect to the selection of goals. In comparison to psychosocial theory, for example, which provides a framework of ego strengths and core pathologies, these theories do not have an embedded link between goal selection and the advancement of social or community well-being. One can imagine an internalized value system viewed from the adolescent's point of view that is a product of closely held beliefs and cherished relationships, which advances goals tied to the destruction of groups of people or social institutions. Although the theories assume an organismic positive, growth-oriented view of human nature, they cannot preclude the voluntary expression of patriotism, nationalism, or in-group bias that can result in the use of violence to achieve desired goals. The strengths and limitations of self-regulation theory are summarized in Table 8.2.

TABLE 8.2 Strengths and limitations of self-regulation theories.

Strengths	Limitations
Highlights the ways adolescents shape the course of their development.	The relationship of organismic and intentional self-regulation is not well integrated in the theory.
Emphasizes the positive, growth-oriented nature of development.	Organic challenges to self-regulation are not adequately addressed.
Diversity of goals that can become meaningful for adolescents.	The need for guidance to help adolescents modulate their desire for autonomous decision-making is not fully addressed.
Identifies barriers to self-regulation and self-actualization.	The theories do not provide a developmental framework for tracing the path from early emergence of goals to their eventual attainment.
Hypotheses are testable.	The theory needs to more fully address the role of the peer group as a context for shaping the sense of purpose and goal selection in adolescence.

TABLE 8.2 Strengths and limitations of self-regulation theories—cont'd

Strengths	Limitations
A variety of measures have been created to assess basic constructs.	Cultural factors that influence the commitment to goals need to be integrated into the theory.
Principles from the theory have been incorporated into interventions and applications across many fields.	The theory does not offer predictions about the content of goals and the moral/societal implications of these goals.

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