# A Self-Determination Perspective on Self-Regulation across the Life Span

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**Abstract** As a core component of human functioning, self-regulation has persisted as a focus of psychological inquiry since the field's inception. The study of self-regulation plays a central role in understanding the development of self-determination, particularly within the context of initiating and sustaining agentic action. This chapter examines the role of self-regulation in self-determination, explores uses of the self-regulation construct in psychology, and examines how theories of self-regulation relate to and differ from self-determination and, specifically, Self-Determination Theory. The chapter examines a continuum of regulation 'types' that range from extrinsically motivated to intrinsically and autonomously motivated, then concludes with a discussion of the development of self-regulation across multiple age spans.

As a core component of human functioning, self-regulation has persisted as a focus of psychological inquiry since the field's inception. Aspects of self-regulation can be found in some of psychology's earliest writings (e.g., Freud 1923/1961; James 1890). These issues motivated research during the neo-positivist era (e.g., Skinner 1953), were critical during the cognitive revolution (see also Freund 2001), and lie at the heart of contemporary theories of human development (e.g., Gestsdottir and Lerner 2008; McClelland et al. 2015). So too does the study of self-regulation play a central role in understanding the development of self-determination, particularly within the context of initiating and sustaining agentic action. As noted in previous chapters, when acting agentically, action is self-regulated, self-directed, and enables progress toward freely chosen goals. Goal setting and attainment are discussed in the following chapter.

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## Defining Self-Regulation

Despite its long history in psychological research, the study of self-regulation remains disorganized at best. Scholars from diverse sub-disciplines use the same terms to refer to different processes, use different terms to describe the same processes, and even conceptualize self-regulation as comprising completely different components. Only a few threads unite the field, meaning most theorists would only agree to broad generalizations when describing self-regulated actions. For instance, a majority of psychologists would acknowledge that self-regulation promotes goal attainment (regardless of whether the goals are consciously selected, see Bargh et al. 2001).

Viewing self-regulation through the lens of self-determination therefore requires a broad definition of self-regulated action within which one can frame self-determined action. For instance, Gestsdottir and Lerner (2008) define self-regulation from a developmental systems perspective. They assert that development occurs through bidirectional causal interactions between individuals and their contexts (represented as person ←→ context relations). These interactions form the rules (regulations) of development and are accordingly called developmental regulations (Brandtstädter 1998). Self-regulation is then defined as the individual's impact on developmental regulations (Gestsdottir and Lerner 2008).

Defining self-regulation as the person → context component of person ←→context processes leaves considerable room for both agentic and non-agentic behaviors. Indeed, Gestsdottir and Lerner (2008) further parse self-regulation into organismic and intentional components. Organismic self-regulation includes, "broad, consistent attributes of a person that involve biologically based, physiological structures," (p. 204), whereas intentional self-regulation represents, "contextualized actions that are actively aimed towards harmonizing demands and resources in the context with personal goals" (p. 204). Intentional self-regulation thus comprises a wide swath of an individual's actions, ranging from fully conscious actions to automized behaviors.

Despite the breadth of self-regulation as a concept, Little et al. (2006, p. 67) noted that, "self-determination is a function of self-regulated agentic action." Unsurprisingly, theories of self-determination therefore share many similarities with contemporary theories of self-regulation. The complementarity between the literatures surrounding self-regulation and self-determination indicates that understanding how these concepts promote adaptive development also requires an understanding of their synthesis. In the present chapter we frame a discussion of this synthesis by asking two questions. We first ask, "How do theories of self-regulation relate to self-determination (and, specifically, Self-Determination Theory)?" Using the parallels between self-regulation and SDT as a starting point, we then ask, "What can the development of self-regulation tell us about self-determination?"

## Self-Regulation and Self-Determination Theory

The organismic roots of Self-Determination Theory (SDT; Deci and Ryan 1991) strongly reflect the importance of person ←→ context interactions. Rather than viewing self-determined action as a direct and additive function of associative bonds (e.g., operant conditioning, strictly additive gene x environment interactions), self-determined actions must be truly agentic. They reflect the "inherent tendency of organisms to originate behavior, to relate to and assimilate events, and to gain a sense of effectance," (Deci and Ryan 1991, p. 251). Agency therefore develops through repeated person ←→ context interactions and mirrors the definition of intentional self-regulation presented above. Agentic actions require, "conscious or preconscious formulation[s] about some future behavior or outcome the person will attempt to perform or achieve," (Deci and Ryan 1991, p. 247).

The literature on intentional self-regulation typically focuses on processes that facilitate goal attainment (e.g., goal selection, goal pursuit strategies, strategies for accommodating unexpected events or failures) (see Chap. 18), whereas SDT describes the role of internal vs. external factors in motivating regulation. This elaboration, called Organismic Integration Theory (Deci and Ryan 1985), results in the continuum of regulation 'types' presented in Fig. 17.1. At the far left of this continuum we see non-regulated actions—actions that the self has little or no role in. Non-regulated actions are not motivated by internal or external factors and therefore represent actions done without a specific purpose (e.g., learned helplessness) or an event that has happened *to* an individual. For instance, Deci and Ryan (1991) use the example of a person being pushed from behind. Non-regulated actions thus fall outside the definition of self-regulation presented above. These actions are neither intentional, nor are they driven by organismic, biological factors. By definition, such actions are also not self-determined.

The next type of regulation in Fig. 17.1, external regulation, represents actions driven by factors entirely outside the self. Externally regulated actions are extrinsically motivated (i.e., are directly contingent on rewards or punishments offered by others) and have a strictly external perceived locus of causality. That is, individuals
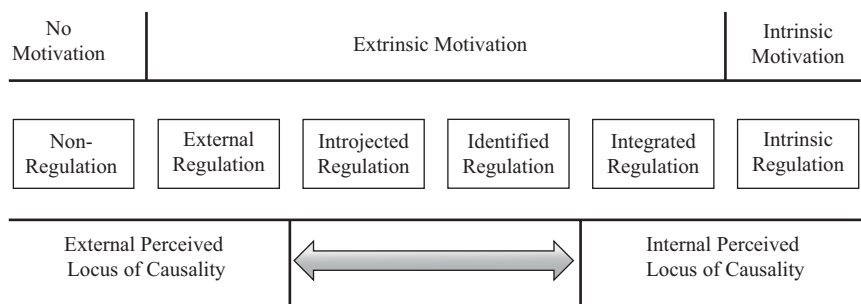


**Fig. 17.1** Levels of self-regulation arranged according to their degrees of self-determination (Adapted from Figure 1 in Ryan and Deci 2000)

see the direct cause of externally regulated actions as being outside of themselves. External regulation qualifies as a form of intentional self-regulation, although the externally regulated actions are decidedly non-agentic.

The next level of self-regulation is introjected regulation. Introjected regulation represents actions that individuals perform strictly due to self-administered rewards or punishments (e.g., allowing oneself to go fishing after writing a certain number of pages, feelings of pride or shame). Although still extrinsically motivated, individuals perceive a slightly internal locus of causality when performing introjectedly regulated actions. Introjected regulation requires that the individual has at least partially internalized relevant motivations (e.g., individuals who follow a norm, but only because they are 'supposed to'). Introjected regulation therefore also qualifies as a kind of intentional self-regulation, as do all forms of regulation discussed in the remainder of this section.

Introjected regulation only requires an individual to internalize an action or motivation. Identified regulation, the next level of self-regulation presented in Fig. 17.1, instead requires that an action aligns with personally-valued goals. As indicated by the arrow in Fig. 17.1, identified regulation encompasses a more internal perceived locus of causality than introjected regulation, although both types of behavior are motivated by reward or punishment.

The next form of regulation, integrated regulation, occurs when an individual integrates the importance of an action with other valued aspects of his or her self. Integrated regulation remains motivated by goals, but such actions reflect and are wholly consistent with one's core beliefs. As such, individuals perceive integrated regulation as arising from a fully internal locus of causality. Individuals believe that integrated regulation is motivated by their own wishes and desires. Integrated regulation therefore closely resembles stereotypical definitions of self-regulation (e.g., selecting a goal and seeing it through to completion).

Intrinsic regulation is the last form of regulation specified by Deci and Ryan's (1985) Organismic Integration Theory. Intrinsically regulated behaviors are both intrinsically motivated (i.e., self-rewarding) and have an internal locus of causality. Thus, intrinsic regulation presents something of a conundrum for theories of self-regulation. Although intrinsic regulation fits nicely under the umbrella of intentional self-regulation, it does not require the degree of effort often associated with self-regulated actions. For instance, Baumeister and colleagues (e.g., Baumeister and Heatherton 1996) describe self-regulation as a limited resource. Self-regulation requires effort, and engaging in self-regulation therefore depletes one's energy. Intrinsic regulation may actually increase vitality, however (see Deci and Ryan 2008 for a discussion).

Intrinsic regulation has been associated with adaptive outcomes (Ng et al. 2012; Van Petegem et al. 2012). By providing additional elaboration to the concept of intentional self-regulation, the self-determination perspective may therefore be especially useful for understanding the associations between self-regulation and adaptive functioning across the life span—a unifying thread across many self-regulation theories. Optimally leveraging the links between self-determination and

self-regulation requires an understanding of their joint development, however, and we turn to this topic next.

## Development of Self-Regulation

Previous chapters provided an overview of developmental aspects of self-determination more globally from childhood through late adulthood. This chapter looks more closely at the developmental perspectives of self-regulation in each of these periods. From a developmental perspective, aspects of organismic regulation are especially relevant during infancy and early childhood. Intentional self-regulation becomes increasingly important from middle childhood through adolescence and maintains its importance throughout adulthood. For example, studies of children's self-regulation often emphasize emotion regulation (Eisenberg et al. 1996) or executive functioning (McClelland et al. 2007). By adolescence, self-regulation researchers focus instead on the increasing relevance of distal goals (Moilanen 2007; Nurmi 1991; Salmela-Aro et al. 2007) and begin to describe intentional self-regulation in the terms used to discuss adult-like functioning (e.g., Baltes and colleagues' Selection, Optimization, and Compensation model; see Baltes et al. 1999; Gestsdottir and Lerner 2008).

A similar transition during adolescence is reflected in the self-determination literature. Heller et al. (2011) note that "children are not seen as 'self-determined'—they are not yet developmentally or emotionally capable of acting autonomously and regulating behavior." (p. 32). Simultaneously, intrinsic motivations may be less common as children mature and become increasingly swayed by their peers during adolescence. Thus, the development of both self-regulation and self-determination are related but not fully yoked. The remainder of this chapter describes the development of self-regulation across the life course and explicates congruencies between self-regulation and self-determination during key developmental periods.

### *Childhood: Emergence of Self-Related Processes*

From birth onward, human beings are active, inquisitive, curious, and playful. They even exhibit these characteristics in the absence of specific rewards (e.g., Harter 1978). Despite these seemingly in-born tendencies, however, decades of research suggests that the environment must support such behaviors in order for individuals to thrive. Infants and young children are not equipped to exhibit truly self-determined behaviors (Heller et al. 2011), meaning the context plays an especially important role in determining self-regulation during these periods. In particular, one can consider the conditions that elicit and sustain self-regulation in early childhood, and how early experiences act as precursors to goal-directed actions in middle childhood. In this section we therefore describe processes of organismic self-regulation

in infancy, the progression from extrinsic to intrinsic motivation during early child-hood, and how self-regulated behaviors become internalized throughout middle childhood. This progression allows older children to exhibit increasing autonomy and, eventually, supports the emergence of self-determined actions.

Infancy researchers often examine self-regulation in terms of temperament, which represents a unification of the cognitive and emotional aspects of develop-ment (Wolfe and Bell 2007). Individual differences in temperament are understood as differences in biologically based tendencies, such as emotional reactivity (e.g. arousal), as well as the regulation of this reactivity through behavioral strategies (e.g. executive attention; Posner and Rothbart 2000). As newborns transition from simple arousal to greater attentional control during the first few years of life, they develop an increased capacity for emotion regulation (Sheese et al. 2008), or the ability to appropriately regulate emotions and behaviors influenced by emotional reactions (Bridges et al. 2004).

Children's actions tend to become more internalized, or self-regulated, over time (e.g., Chandler and Connell 1987). Although still exogenously driven, the actions of infants between 12 and 18 months reflect increasing awareness of social demands, and the ability to initiate, maintain, and cease behavior to comply with caregivers' requests. By 24 months, children acquire endogenous (i.e., intrinsically motivated) self-control, even in the absence of external monitors (Kochanska et al. 2001). In other words, the development of executive attention supports the transition from primarily extrinsic toward primarily intrinsic sources of control, where the locus of causality becomes increasingly internal.

Attention and emotion regulation continue to develop throughout infancy and are highly related to the emergence of the executive functions in early childhood (Cuevas and Bell 2014), allowing self-regulation to emerge by around 36 months. Specifically, executive functions such as inhibitory control (the ability to stop an automatic response in favor of a more adaptive behavior), working memory (hold-ing multiple rules in mind), and attentional/cognitive flexibility (focusing on a task while simultaneously ignoring distractions), likely underlie self-regulated behaviors during this period. These cognitive processes enable rudimentary forms of the future oriented, goal directed behaviors that allow children to become active producers of their own development (e.g., planning, organization, and regulation). Together, top-down (executive functions) and bottom-up (temperamental and socioemotional) processes become integral aspects children's self-regulated functioning (Ursache et al. 2012).

The integration of top-down and bottom-up processes lays the foundation for autonomy and adaptive development. For instance, Mischel and colleagues (e.g., Mischel et al. 1989) have shown that children capable of distracting their attention away from visually salient rewards, and therefore capable of delaying gratification longer than their peers, displayed greater academic achievement 10 years later. In a more recent study, researchers found that children rated as having strong attention and persistence at age 4 had nearly 50% greater odds of completing college by age 25 (McClelland et al. 2013). Thus, evidence from a variety of perspectives, including

SDT, converges on the conclusion that intrinsic motivation and self-regulation are associated with adaptive outcomes.

The development of self-regulation during childhood equips children to better differentiate self from other, thus facilitating the ability to differentiate between internal versus external loci of causality (see also Geldhof and Little 2011). In terms of self-determination, the developmental processes that support autonomous functioning facilitate self-determined, rather than extrinsically controlled, actions. Children who fail to develop self-regulation skills may remain controlled by external contingencies, which can in turn foster the development of an external perceived locus of causality. When individuals perceive that their actions are controlled by extrinsic processes, regulatory process becomes more aligned with compliance (Deci and Ryan 1991) than with self-regulation.

Furthermore, children's motivation, performance, and development can be maximized by contexts that provide opportunities to satisfy their innate needs for competence, relatedness, and autonomy. In particular, opportunities to satisfy the need for autonomy serve a fundamental role in ensuring that individuals develop endogenous, rather than exogenous, control (Deci et al. 1991), which they can then carry forward into later stages of development. For example, children will have difficulty developing greater levels of self-determination during adolescence unless their early socialization and educational experiences lay a solid foundation upon which to build more sophisticated skills and capacities. An emphasis on intrinsic goals during childhood may therefore serve an important role in supporting adaptive development across the life span.

## Adolescence and Early Adulthood: Establishing Autonomy

The self-regulatory skills forged during childhood must be honed and refined during the second decade. Adolescents face novel contexts that both challenge the skills they developed as children and also prepare them for autonomous functioning during adulthood. Thus, the development of self-regulation during adolescence requires a diverse array of internal skills as well as myriad contextual supports that facilitate the autonomous application of those skills.

Through increasingly complex person ←→ context interactions, adolescents develop a nuanced repertoire of self-regulation skills that facilitate their own self-development. For instance, Gestsdottir and colleagues (e.g., Gestsdottir and Lerner 2008) note that adolescents develop the processes of adult-like self-regulation specified by the Selection, Optimization, Compensation (SOC) model (Freund and Baltes 2000). According to this model, self-regulated actions can be parsimoniously clustered into three categories. *Selection* occurs when an individual chooses an attainable goal to pursue, either as a result of increased capacity (elective selection) or in reaction to the loss of a previously held capacity (loss-based selection). *Optimization* occurs when individuals perform actions that move them iteratively closer to a selected goal (e.g., practice, actual goal-directed actions). *Compensation*

occurs when one approach to goal attainment is blocked and an alternative means must be implemented.

The processes of selection, optimization, and compensation align closely with the concept of Intentional Self-Regulation (Gestsdottir and Lerner 2008), and therefore share many features associated with self-determination. For instance, implementation of the SOC processes assumes a degree of agency and allows for an increased ability to direct one's own developmental trajectory. Often called developmental regulation (Hekhausen et al. 2010), the ability to be an active and intentional producer of one's own development lies at the heart of Intentional Self-Regulation. In this respect, successful self-regulation during adolescence requires increasing awareness of one's long-term self and an explicit orientation toward distal goals. Future orientation (Moilanen 2007; Nurmi 1991; Salmela-Aro et al. 2007) and hope for one's future (Schmid et al. 2011) play especially important roles during adolescence and also likely motivate self-determined actions during this period.

Although adolescents as a whole are capable of substantially more complex self-regulation than children, this complexity does not translate directly into capabilities for self-determination. The development of self-determination during adolescence requires appropriate scaffolding from important parental and non-parental adults. For instance, adolescents with positive adult role models and supportive parental attachments exhibit more positive developmental trajectories (Bowers et al. 2011, 2014). Furthermore, we cannot expect adolescents to display uniformly self-determined actions, nor would it be adaptive for them to do so. In one study, youth who were allowed to exercise autonomy at too early an age showed setbacks in later adolescence and early adulthood (Haase et al. 2008). Too much autonomy at too young an age can stunt the development of self-determination and prevent a successful transition into adult life.

Society instead allots certain freedoms that help young people solidify their identities as independent and autonomous agents. External controls, such as the structure provided by families and schools, are slowly removed and individuals must increasingly rely on intrinsically motivated self-regulation in order to thrive. As such, individuals are given greater leverage to control their behaviors and emotions during the transition into adulthood.

From the perspective of self-regulation, the transition into adulthood therefore necessitates further refinement and application of self-regulatory processes established during adolescence. For instance, the skills learned during adolescence, in conjunction with the autonomy allotted by adult independence, allow individuals to begin planning for long-term accomplishments. Young adults often select and pursue goals related to obtaining a higher education, establishing themselves in a career, and starting a family. Selecting and pursuing these goals over extended periods requires the continued refinement and application of advanced self-regulatory skills, such as those described by the SOC model, and also has implications for the types of behaviors that become self-determined during the transition to adulthood.

## *Adulthood and Aging: Skill Refinement and Performance Maintenance*

Adaptive functioning during adulthood, especially during the third and fourth decades, provides a benchmark for research on self-regulation and its development across the life span. The development of self-regulation from birth through early adulthood unfolds as a nearly teleological journey beginning with a purely reactive biological system and culminating in the complex biopsychosocial processes we call 'adult-like functioning.' The adult-like system is not only self-aware and self-regulating, but it is also capable of selecting and striving for distal goals that can extend even beyond the individual's own lifetime (e.g., generativity). The development of self-regulation from midlife through old age is then typically treated in one of two respects. Research on self-regulation in later life often examines why older adults regulate their behavior toward different goals than their younger counterparts (e.g., Carstensen et al. 1999) or emphasizes the processes that older adults use to maintain their 'adult-like' functioning. For instance, Baltes and colleagues (e.g., Baltes et al. 2006) discuss how the development of crystallized, pragmatic skills support adaptive functioning despite declines in fluid, mechanic abilities.

The importance of self-regulation throughout the life span, coupled with the perception that its development apexes during adulthood, has resulted in myriad theoretical perspectives of adult-like self-regulation. For instance, action theories comprise just one segment of the self-regulation literature, and the diversity of action-theoretical perspectives alone has justified models meant to assist their organization (Brandtstädter 2006; see also Geldhof et al. 2010).

Perhaps as a result of their diversity, theories of adult-like self-regulation are not uniformly aligned with theories of self-determination. As noted above, for instance, self-determined actions may increase vitality, whereas limited resource models of self-regulation hypothesize that self-regulated actions should instead deplete one's energy stores (see Deci and Ryan 2008). One can only rectify these opposing hypotheses (and the empirical support for each) by emphasizing the non-equivalence of self-regulation and self-determination at any stage of the life span.

Despite these differences, models of self-determination and self-regulation during adulthood converge to acknowledge the importance of autonomous action across all periods of the life span. For instance, now-classic research highlights the importance of aligning older adults' level of self-determination motivation with their opportunities for self-determined action (O'Connor and Vallerand 1994). It is therefore not surprising that developmental theories of self-regulation that focus most explicitly on autonomous self-development also tend to align with the self-determination literature. We have already described one such model of adult-like self-regulation (Baltes and colleagues' SOC model), and briefly summarize two additional models below. These models explicitly highlight the two general approaches to self-regulation and its development during late life described earlier in this section.

Carstensen and colleagues' Socioemotional Selectivity Theory (e.g., 1999) describes how an individual's time perspective can moderate the target of self-regulated actions. In short, Socioemotional Selectivity Theory emphasizes that individuals focused on their own distal futures will select social goals that emphasize knowledge acquisition. Individuals with a truncated time orientation will instead select social goals that emphasize emotion regulation. For instance, an individual who expects to live long into the future may be motivated to meet a diverse set of acquaintances who introduce the individual to novel experiences. An older individual (who accordingly has a shorter life expectancy) is more likely to focus his or her efforts on nurturing relationships with close friends and relatives. In this way, we can anticipate that self-determined actions will typically favor skill attainment and knowledge acquisition during early adulthood and midlife (see also Morgan and Robinson 2013). Such goals will facilitate the individual's long-term self-development. Toward the end of the life span, however, we can anticipate that self-determined actions will emphasize emotion-related goals, such as deepening close social ties.

Aside from suggesting how self-determination may manifest across adulthood, it is worth noting that the theoretical foundations of Socioemotional Selectivity Theory parallel many assumptions of SDT. For instance, Carstensen et al. (1999) note three assumptions that underlie their theory. The first two of these assumptions center on the fact that humans are intrinsically driven to establish social relationships and to establish agency. These assumptions reflect the relatedness and autonomy needs described in the self-determination literature and the importance of agency as discussed above. Carstensen et al. (1999) also assume that goal selection is a precursor to action. This assumption parallels the above discussion of how goal preferences can influence which actions are most likely to be self-determined during which age period while also mirroring the fact that goal selection serves an important function in models of intentional self-development (e.g., SOC).

The second model of adult-like self-regulation we will discuss in this section, the Motivational Theory of Life-Span Development (Heckhausen et al. 2010), provides an exemplary model that simultaneously emphasizes intentional self-development and the maintenance of functioning during the decline in self-regulatory skills that occurs during late life. Although space limitations prohibit a complete description of this model, the concepts of primary and secondary control (see also Brandtstädter and Renner 1990) form key components of this model and are especially relevant for self-determination. Primary control represents an individual's ability to actively shape the context in ways that promote goal attainment. Secondary control represents an individual's thoughts or actions that change internal perceptions and/or motivations.

Each type of control can be further decomposed into selective and compensatory components. Selective primary control involves persistent goal pursuit, whereas compensatory primary control requires that an individual finds alternative means to reach a selected goal (e.g., eliciting help from a friend). Selective secondary control involves cognitive and motivational processes that facilitate goal pursuit (e.g.,

enhancing one's motivation), whereas compensatory secondary control may manifest as the disengagement of difficult-to-attain goals (see also Wrosch et al. 2003).

According to this model, individuals intrinsically strive for primary control throughout the life span. One's actual capacity for primary control waxes from childhood until adulthood and wanes into late life, however. Secondary control may therefore become especially important for supporting primary control and for maintaining a sense of autonomous efficacy in old age. From a self-determination perspective, the emphasis on primary control aligns with the need for autonomy while also reflecting the importance of agency for self-determination.

Combined, theories such as Socioemotional Selectivity Theory and the Motivational Theory of Life-Span Development highlight the possible degree of correspondence between theories of self-regulation during adulthood and concepts central to self-determination perspectives. This alignment is especially strong for self-regulation models that emphasize intentional self-development, which has been a running theme throughout this chapter. Although self-regulation has established a substantially firmer foothold in the child development literature when compared to the adult development literature, this alignment suggests that further attempts to align self-determination perspectives with theories of intentional self-development during adulthood may prove especially useful.

## Self-Regulation, Causal Capability, and Causal Action

Figure 5.2 (Chap. 5) highlighted the causal action sequence involving the implementation of causal and agentic capabilities. Agentic individuals possess various capabilities that enable them to respond to challenges and opportunities in the environment. Two types of capabilities are important to causal action: causal capability and agentic capability. These capabilities differentiate between two aspects of goal-focused actions: (a) initiating goal pursuit (causal capability) and (b) directing actions toward a preferred end (agentic capability). Causal capability includes the knowledge, skills, self-perceptions, and beliefs about one's environment that enable the expression of causal action. Agentic capabilities involve the mental or physical capacities to direct behavior toward an end. Such capacities include the skills and knowledge associated with self-management, goal attainment, problem solving, and self-advocacy; the skills and behaviors that enable self-regulation, self-direction, pathways thinking and, as such, agentic action. Agentic capability enables one to identify pathways and manage the steps toward goal attainment. As discussed in Chap. 5 (and depicted in Fig. 5.2), the outcome of the capacity-challenge discrepancy analysis in which causal capacity to solve the goal discrepancy problem is evaluated, and appropriate agentic actions utilizing agentic capabilities that maximize the relationship between capacities and challenges by creating a "just-right match" between capacity and challenge to optimize the probability of solving the goal discrepancy problem, is a discrepancy reduction plan, in which self-regulation plays a significant role.

As the person implements this discrepancy reduction plan and after time has passed, uses information derived from self-monitoring to self-evaluate progress toward reducing the discrepancy between current and goal status. If progress is satisfactory, the person will continue implementing the discrepancy reduction plan. If not, the person either reconsiders the discrepancy reduction plan and modifies that or returns to the goal generation process to re-examine the goal and its priority and, possibly, cycle through the process with a revised or new goal.

## Conclusions

Contemporary research suggests that thriving during any period of the life span is associated with both self-regulation and self-determination. The self-regulation and self-determination literatures emphasize slightly different aspects of human functioning, however. These literatures are therefore well-poised to provide complementary insights into successful human development. To this end, the present chapter attempted to address two broad questions.

First, we asked "How do theories of self-regulation relate to self-determination?" In response, we highlighted the meta-theoretical similarities between contemporary theories related to each concept and paid especially close attention to Gestsdottir and Lerner's (2008) definition of self-regulation. According to this definition, self-regulation represents the person → context component of mutually influential person ← → context relations. We then emphasized the parallels between agency and the process that Gestsdottir and Lerner (2008) called Intentional Self-Regulation. This discussion highlighted differences between definitions of self-determination and self-regulation. We described how theories of self-regulation typically focus on goal-directed actions, whereas theories of self-determination are more strongly concerned with (perceived) internal vs. external loci of causality.

We next asked "What can the development of self-regulation tell us about self-determination?" In response, we presented a bird's eye summary of self-regulation and its development, highlighting areas where the development of self-regulation is especially relevant to understanding self-determination. We described the transition from extrinsic to intrinsic control during childhood, the resulting importance of executive functioning for children's self-regulation, and the increasing reliance on diverse, future-oriented self-regulation skills during adolescence and adulthood. We then noted a particular alignment between theories of self-determination and theories self-regulation that center on intentional self-development. Finally, we described how self-regulation plays a critical role in agentic capacity and goal attainment, contributing to experiences of causal action and, ultimately, self-determination.