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Adolescents' Development of Individual Interests: A Product of Multiple Goal Regulation?

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The unfolding of individual interests is reconstructed as part of a person's everyday experience in dealing with multiple goals. This is exemplified by referring to how adolescents cope with developmental tasks while striving for their ideal selves. Exploratory interaction with objects of potential interest is regarded as a central element that provides information on the criteria for interestingness and enables selective choices. When exploring an object of potential interest, persons have to take into account other goals that may or may not be conflicting. The basic idea is to foster interest development while minimizing goal conflicts and the resulting problems of diminished experience in the interesting activity or diminished performance in noninteresting but important activities.

How does an individual interest develop out of interactions with objects? How do these interests come to form a part of an adolescent's self-concept? Which dynamic transforms an interesting interaction into an individual interest? How does a person integrate the exploration of an interest relative to other activities that are important for the person? During the last 20 years, research on interest has developed into an important topic in educational psychology (Hidi, Renninger, & Krapp, 2004; Krapp, 1999; Renninger, 2003; Renninger, Hidi, & Krapp, 1992; Schiefele, 1991, 1996). Despite the large body of research that has been presented regarding these and similar questions, a theoretical framework that explains the dynamics of the emergence, elimination, and maintenance of subject–object interactions leading to an individual interest and that connects the development of interests to the person's life seems to be missing. In particular, such a theory should take into account the fact that the development of interests is relative to other tasks a person manages and goals he or she strives for.

The purpose of this article is to describe the development of interests as embedded in the lives of persons within a theoretical framework of pursuing multiple goals. The emergence of individual interests is described as part of individuals striving for their identities, and the psychological processes that might be responsible for bringing the change about are interpreted. Such a position proposed by Krapp (see, e.g., Krapp, 2003) is picked up and elaborated here in more detail. Specifically, this article first argues that interest development is part of a person's everyday dealing with age-graded developmental tasks that are integral to striving for one's own identity. In doing so, the article looks at the multiple goals persons strive for. Second, the article proposes a mechanism that describes the emergence, disappearance, and maintenance of interests as multiple cycles of exploratory activities, evaluations of internal feedback, and selective decisions. Finally, the question of how different goals relate to and may restrict interest development is posed. The mechanism described is stated to apply to the development of interests in each age phase during the course of life. Adolescence has been chosen as an exemplary developmental phase because it is a critical period in life for exploring possibilities, including the exploration of a variety of leisure activities, and because of the special relevance of this age group for identity formation. Given that the article argues that exploration, particularly in the context of leisure activities, is a central mechanism of interest development, adolescence appears to be a suitable period to explain the argument. The article concludes by reconstructing existing knowledge, conjecturing speculations, and drawing educational implications from the concept presented. The pedagogical aim is to foster interest development while minimizing goal conflicts and problems of diminished experience in the interesting activity or diminished

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performance in noninteresting but important activities like schoolwork.

TOWARD A THEORY OF INTEREST DEVELOPMENT

Development of Interests

Several themes related to the development of interests have been presented in the literature (see, e.g., Krapp, 2003), of which the following four may be regarded as typical examples. Interests change in their content depending on the age of the individual. For instance, play activities (e.g., playing with dolls, cars) decrease between the ages of 5 and 12 years, whereas subject–object relations with higher cognitive demands (such as constructing, reading, and going to the movie theater) increase (van der Wilk & Oppenheimer, 1991). The development of an interest can be described as an expansion in the level of stored knowledge (Renninger, 1990) and an increase of differentiation and integration in the structure of the person–object relationship (e.g., Fink, 1991; Krapp, 2002a; van der Wilk & Oppenheimer, 1991). New elements are successively being incorporated. For instance, in developing an interest in making music, a person starting with a small repertoire may successively include more categories of music (classical, popular, etc.). Interests may grow with age (e.g., Todt & Schreiber, 1998). They also may decline over the years. Loss of interest in school matters is especially acute when students make the transition to secondary school (Hoffmann, 2002). Last, to describe the development of interests, integrative phase-conceptions have been proposed in the literature. In a first attempt, Krapp (2002b) differentiates between three types of interest that are prototypical for consecutive phases from an ontogenetic perspective. Hidi and Renninger (2006; see also Hidi et al., 2004) conceived a four-phase model that centers on academic learning and knowledge acquisition. According to Krapp (2002b), a first phase, situational interest, manifests itself in curiosity and may take the form of excitement but is merely a temporary and transitory state. Whether a situational interest arises depends on situational as well as on individual factors. The second type of interest, the working interest, arises if the behavior or the task fits the person's actual goals. It is characterized by recurrence and persistence over an extended period. An individual interest develops only if the category of activities is regarded as enjoyable and valued highly, as a means of contributing to those personal goals high in the goal hierarchy. The term "value" in the Krapp model and in the context of this article denotes the basic values a person regards as important because they are close to their self. In the Hidi and Renninger model it indicates the "valence" a person attaches to a specific object. Only a few situational interests persist and gain the status of working interests, and even fewer become individual interests.

Taken together, research so far has engendered important insights into different aspects of change with regard to interests in various topics and phases. Interestingly, the research has been dominated by a perspective that centers on interests in school-related subjects. According to the traditional concerns of motivational psychologists in questions of learning and school achievement, most research has been devoted to academic interests. Previously in the literature, interest has frequently been defined in terms of a domain represented by school subjects such as physics or mathematics (Hidi & Ainley, 2002). The development of interests, however, has to take into account the whole range of goals a person strives for. It is argued here that interests most likely develop as hobbies that take place outside school.

With regard to phases, the bulk of research has been directed toward situational and working interests, less so to individual interests because working interests are the most important for learning (with notable exceptions; e.g., Lipstein & Renninger, 2007). In a few articles, the emergence of individual interests as components of the self-system in adolescents is addressed (e.g., Hannover & Kessels, 2004; Hidi & Ainley, 2002; Krapp, 2000; Renninger, 2009). Krapp (2000, 2003) especially has argued repeatedly that "there are close interrelations between a person's structure of individual interests and the development of his or her self and/or identity" (Krapp, 2003, p. 75). He has called for a developmental theory in which the self is seen as a central constituent in the growing personality in that it represents the result of past development and at the same time is an agent of development. Krapp has also made a plea for an action theoretical model that explains the psychological dynamics of changes in interests (e.g., Krapp, 2003). The purpose of the present article is to take up Krapp's proposal and to elaborate components of a theory that connects ideas of self-regulation to the person's handling of life goals to explain the dynamics of the evolution of individual interests. In the next section, the meta-theoretical position is delineated.

The Metatheoretical Position

In this article, a multiple goal perspective is taken to conceptualize interest development as a by-product of persons tackling life tasks. Human agency is characterized by intentionality and forethought, self-regulation, and self-reflectiveness (Bandura, 2001). A central axiom of the position states that a person's actions are a product of development and at the same time drive and stimulate development. Individuals are seen as attaining the competence and readiness to shape their own development. Development is described by considering those concepts by which the growing person represents and constructs their own past, present, and future (see Brandtstädter, 1999). Action theoretical positions taken up in different fields of psychology will be used to reconstruct the evolution and development of individual interests in context. The starting point is the contention that an individual interest arises

while coping with tasks in daily life. Interest-relevant explorations develop gradually from daily interactions with objects while pursuing goals. Persons observe their behavior, evaluate it, and come to decisions regarding their interests. Making one's development the target of observation, evaluation, and control presupposes competencies that generally should be present in adolescence (see Brandtstädter, 1999). More specifically, it can be expected that adolescents display intentional behavior in that they are capable of recognizing and representing behavior-outcome contingencies. Furthermore, self-observation, self-evaluation, and self-regulatory action are functions that are tied to language development and the emergence of self-referent semantic structures. Adolescents also have more or less elaborated representations of "actual," "desired," and "ought" selves that feed into the ways they control their personal development (see Brandtstädter, 1998).

Three limits to this view have to be addressed. First, the person unfolds individual interests by interacting with the environment. The environment plays a double role. On the one hand, it provides available options which a person can make use of according to his or her own wishes. On the other hand, the environment restricts the range and fields of exploration. Thus, the person is not completely free to choose actions. The opportunity structure in which persons live suggests some fields of potential interest and rules out others. For example, adolescents are more likely to enter into an area of potential interest if their friends or their parents do the same. The range of school subjects offered and chosen is a further limiting factor to interest exploration. Generally speaking, the context in which an adolescent lives makes areas of potential interests more visible, available, or attractive.

Second, the approach emphasizes and assumes that logical and rational thinking takes place at least to some extent. Although the distinction between an emotional and a cognitive subsystem is made and emotional criteria are included as part of the information assessed in the internal feedback process, the conception is rational because adolescents are viewed as deliberately exploring a certain object, monitoring their feelings while performing specific actions with the object, and making decisions that lead to a change in their concepts. As an individual interest is seen as being related to the person's self-concept, in other words as having to do with the person's present and future life, the assumption of rational processing of experiences might be appropriate.

A more critical feature of the position is its individualistic nature. Significant participants in a person's life (i.e., parents, teachers, and peers) and how they affect the person's conceptual changes are not explicitly considered. There are other frameworks for studying interest development that could be chosen as well (cf. Reynolds, Sinatra, & Jetton, 1996). Social constructivism would describe interest development as a result of discussions among adolescents and between them and educators. A social-cultural approach would try to describe and explain interest development as a result of the participation of individuals in communities of practice. For instance, adolescents actively participating in a particular soccer club over a certain period observe and practice the rituals, rules, and beliefs that characterize this club. In the process of communicating with persons who are situated culturally and historically, they appropriate an interest in the corresponding knowledge, skills, and values. At the same time they form identities by persuading others and themselves about who they are and what they value (cf. Penuel & Wertsch, 1995). Research being carried out within each of these paradigms probably has unique strengths as well as limitations. Within a social-cultural approach it would be difficult to explain the development of an interest in reading in an adolescent who rarely interacts with other people. The different approaches can be seen as complementing each other rather than as being in competition.

General View of the Main Argument

Interest development is conceived as taking place within the process whereby a person finds out who they are and who they want to be. It is argued that, in the course of solving life tasks, persons have to aim at personal goals in different life areas. Interests can develop in those fields in which persons are active, including those that serve general needs, for instance, relaxing, body care, or eating, notably fields that are considered to be self-initiated. In different life periods, age-graded tasks have to be tackled. Interests may shift according to changing life tasks.

To explain how interest development happens during everyday interactions with objects of potential interest while a person is pursuing multiple goals, a goal-regulation mechanism is presented that determines whether a person persists, quits, or resumes a subject–object interaction. Within this model, exploration, internal feedback processes, and selective decisions are described as central constituents. The development of individual interests is viewed as a process of ongoing exploration of objects that have the potential of developing into interests, most probably in leisure areas. During exploration, persons compare feedback perceptions with salient criteria. The results of feedback evaluation lead to selection or to abandonment of the type of interaction with the respective object. The goal-regulation framework is essential for understanding the dynamics of interest development because it depicts how individual interests emerge from exploratory actions in various fields. Internal feedback is necessary to evaluate exploratory actions according to their potential of becoming an interest. Finally, selection is necessary to reduce the vast number of possible interests.

The continuous development of interests is conceived as the result of a person's striving for multiple goals. The concept of regulating multiple goals helps in understanding how interests may evolve dynamically as a person pursues different important goals. To understand why a person persists in pursuing one activity that has the potential to result in an

interest, and gives up more easily on other activities, it is helpful not only to look at the person's interest in the activity in question but also to consider the number, strength, and quality of competing alternatives, such as other interests, studying (e.g., doing homework), leisure activities (e.g., meeting friends), work (e.g., earning money), and other necessary activities (e.g., sleeping). It is argued that interest development can compete with alternative activities, causing a shortage of time and energy for other tasks. The educational goal is to help persons to lead a well-balanced life. Interest development should be promoted, whereas goal conflicts and resulting problems of shallow exploration or impaired performance in other activities should concomitantly be minimized.

INDIVIDUAL DEVELOPMENT AND INTERESTS

Individual Interest, Potential Interest, and Noninterest

The meanings of the terms "individual interest," "potential interest," and "noninterest" are outlined as far as it is necessary to describe the development of interests as a process of exploration, feedback, and selection within a multiple goal perspective. The term individual interest is defined as a relatively enduring, long-term relationship of a person with a certain domain, such as "music." Within a domain, persons can define certain parts as the object of their interest with which they interact on a behavioral level and for which they may use certain reference objects, for instance, musical instruments (Krapp & Fink, 1992). The relationship is characterized by positive feelings, higher values, and deeper knowledge (see, e.g., Hidi & Renninger, 2006; Hidi et al., 2004; Krapp, 2002a, 2002b). A person expresses his or her interest through interactions with the object, represents these activities to the self, makes choices about activities, and sets challenges (Renninger & Leckrone, 1991). Individual interest displays itself in behavior that can be seen as a recurrent interaction between a person and a specified object (e.g., Hidi et al., 2004; Krapp, Hidi, & Renninger, 1992; Renninger, 1992). In contrast, a situational interest is conceptualized as a short-term interaction with an object that may or may not last (Hidi et al., 2004; Krapp et al., 1992).

An individual interest evolves if the person continues or resumes an interaction with an object of potential interest. A potential interest is any interaction between a person and the environment that may or may not turn into an individual interest. Any subject–object interaction that a person displays in their daily life (e.g., in the field of academic learning, bonding with friends, looking for a career) is a potential interest. The question is how a potential interest becomes an individual interest. A noninterest refers to a domain or object in the person's life with which a relationship is not established (cf. Hannover & Kessels, 2004). A person who abandons a specific person–object relationship declares it as a noninterest.

Unlike other theoretical approaches that treat interest within academic contexts, this article assumes that deliberate choice is essential. To distinguish interest-based interactions from repeated interactions based on a different source of motivation—like duties or physiological needs, for instance, eating and sleeping as enduring interactions of the person with a class of objects—self-intentionality (Krapp, 2002a; Krapp & Fink, 1992; Ryan & Deci, 2000) is considered an essential feature of interest. A person initiates the interaction with the object without acting under pressure or demand. An interest can be dropped, but a need or a duty cannot be terminated deliberately. The ways in which activities that initially are externally controlled can eventually evolve into a self-intentional personal interest are discussed in a later section.

In summary, for the purpose of this article individual interest is defined as a person's long-term relationship with a specific domain or object characterized by positive feelings, higher values, and deeper knowledge that displays itself in the tendency to reengage voluntarily in interactions over time.

Criteria of Interestingness

If persons are conceived as exploring areas of potential interest and searching for feedback, assumptions about the criteria they apply for evaluating their interactions with objects of potential interest have to be made. What criteria do persons apply when judging an interaction with a specific object as being of (potential) interest? A literature survey will provide a best guess that demonstrates the role of the criteria within the theoretical framework suggested.

By definition, self-initiation is a criterion that adolescents use when judging an interaction with an object that may have the potential to become an individual interest at any point during interest development. Persons generally prefer being involved in activities when they think they are pursuing them autonomously rather than when they are being controlled. Sheldon and Kasser (1998), for instance, found a positive correlation between self-determination of a personal goal and the commitment to that goal. In addition, experiences of competency seem to be essential for the judgment of interest in subject–object interactions (Krapp, 2005). Competence-related feedback was found to be associated with greater interest, especially for persons who emphasize skill goals (Harackiewicz & Sansone, 1991; Sansone & Smith, 2000). The work of Silvia (2005) clarified the effect of competence on the appraisal of an object as interesting. Persons evaluate complex material as more interesting if they believe they have a superior ability to deal with it. The experience of incompetence can make an activity uninteresting, whereas the experience of competence may enhance interest, especially if gaining competency is the primary goal of the person. Adolescents who were asked why they became interested in an area referred also to experiences of relatedness (Krapp, 1999; Krapp & Lewalter, 2001; Lewalter, Krapp, Schreyer,

& Wild, 1998). Similarly, Sansone and Smith (2000) found that, for persons with a prominent interpersonal orientation, one criterion for engaging in future similar tasks is whether an activity allows them to reach interpersonal goals.

With regard to emotions, different standards seem to become salient at different points during interest development. Researchers following the Berlyne (1960) notion of "specific epistemic curiosity"[1] found that persons appraise objects as interesting if they are novel. In experiments, persons chose stimulus material as most interesting that was more novel and complex compared to the material chosen as most enjoyable (Silvia, 2005; Turner & Silvia, 2006). Research directed toward features of interactions with already-established objects showed that the main characteristic of an interest-driven action is positive affect (e.g., see Schiefele, 1996). Feelings of enjoyment, involvement, and arousal are important emotional aspects of interest-based activities (cf. Ainley, Hidi, & Berndorff, 2002; Hidi & Harackiewicz, 2000; Pekrun, Goetz, Titz, & Perry, 2002). Conversely, if persons feel frustrated, tired, or see no sense in continuing working on a task, they tend to stop the activity (Sansone, Wiebe, & Morgan, 1999). Last, an individual interest is formed if the person–object relation is valued highly and regarded as part of the person's inner self (Krapp, 2002b, 2003).

Summing up, research suggests that experiences of self-initiation, competence, and social relatedness are evaluated when judging an interaction with an object that may have the potential to becoming an individual interest. Novelty leads to judgments of interestingness if an object is initially encountered because it stimulates interactions and leads to further exploration. In time, positive emotions are likely to fuel further development of interest. Eventually, the person–object relation is regarded as personally meaningful because it is related to values representing a part of the self.

Objects of Interest Formation in Adolescents

Connecting the idea of criteria to adolescents' daily behavior allows us to propose a novel classification of activities that differ in the probability of becoming an individual interest. The time that adolescents invest in different activities reflects the importance they have for them. In principle, any object (e.g., material objects, types of engagement, topics; Krapp, 2002a) with which a person interacts is an object of potential interest. Interests should arise especially from those activities that provide opportunities for self-intentional subject–object interactions and that provide experiences of competence and relatedness, novelty, and positive affect. Several studies have investigated the time budgets of adolescents' normal days by employing a daily diary method to examine the extent to which the adolescents spend time on various activities (e.g., Larson & Verma, 1999; Verma & Larson, 2003). Because each day is filled with actions but not all of them can be chosen freely, the distinction between leisure activities and activities that have to be done anyway (Alsaker & Flammer, 1999) is relevant. For the purpose of this article a further distinction seems helpful. Within free-time activities a differentiation between active (e.g., playing an instrument, making jewelry) and passive activities (e.g., hanging around, snoozing) is made. The category of necessary activities, in turn, is divided into two subsets, one belonging to the realm of personal maintenance that meets basic bodily needs (sleeping, grooming, eating), the other referring to duties that serve the individual's education (being in school, doing homework), following advice of the parents (e.g., doing chores, attending a music course), or working for money. Activities within these four categories have varying potentials of becoming individual interests.

An interest will develop most probably in the active leisure category. In out-of-school contexts, where nonacademic interests or hobbies are pursued, feelings of autonomy are experienced most readily. Active leisure pursuits are also the most likely to be developed as interests, because they are most likely to be novel, to contribute to well-being as an experience, to be challenging, and to provide experiences of social relatedness. School-bound activities reflect deliberate choices only to a limited degree. They do not provide for many joyful experiences (see Prenzel, Bauereiss, & Bogner, 1992; Schmid, Hofer, Dietz, Reinders, & Fries, 2005; Stevenson & Lee, 1990). Nevertheless they may offer incentives for forming an interest insofar as the interactions are experienced as challenging and as providing situations of relatedness.

Activities falling into the category of personal maintenance may end up as interests and endure for more or less time depending on the extent to which they are repeatedly experienced as self-intentional, challenging, serving social goals, and pleasurable. For example, interests in cosmetics and styling arise out of everyday necessary behavior. An interest in dressing, for instance, can arise when adolescents deal with their body, with sex roles, and with making and maintaining friendships as a part of coping with developmental tasks and may end up as being seen as important for the self. Last, passive leisure pursuits are self-initiated and contribute to well-being by promoting relaxation. However, given that they are low in novelty and do not contribute substantially to knowledge development, activities belonging to this category have only a limited potential to develop into individual interests.

Activities that are imposed on the person, for instance, studying for certain school subjects or going to the ballet, eventually may turn into a personal interest that is engaged in voluntarily, extensively, and with joy. A person may have hated practicing music scales on the piano as a child but may

[1] Berlyne's (1960) notion of "specific epistemic curiosity" is distinct from interest, because curiosity is directed toward the resolution or diminution of a cognitive conflict. It tends to disappear as soon as the person has resolved the conflict. In contrast, interest is a concept with emotional and evaluative elements and displays itself in long-term activities that are not necessarily directed toward resolution of a cognitive conflict.

be glad the parents made him or her stick with it, because now practicing music is an important part of life. Persons also often carry their interests from one context to another (Barron, 2006). Although students rarely develop an interest in a topic through school learning and continue to pursue this interest outside of school (Pugh & Bergin, 2005), school-prompted interests do occur. Self-determination theory gives a detailed account of the steps that may lie between an activity that is originally controlled and non-self-determined and an identified interest that is autonomous and self-determined (Ryan & Deci, 2000). Originally, a subject–object relationship lacking self-intentionality cannot be regarded as an interest even if it is novel, complex, and performed regularly because of external rewards and low positive emotions. Gradually, ego-involvement increases and the relationship becomes a part of the identity. In the end, all criteria might be fulfilled and a well-developed interest is established.

In looking at adolescents' daily activities, two conclusions can be drawn. First, activities with objects of potential interest are indistinguishable from ordinary behavior that provides self-intentionality and positive affect, such as reading books, watching television, and spending time with friends. Many interests most likely grow out of practices during leisure time, are nonacademic in nature, and develop outside school. Second, interests evolve out of the person's daily life. Persons are involved in a multitude of activities, and some of them may evolve as interests. In understanding how interests develop out of ordinary behavior relative to other types of activities, one has to look at the person's life tasks and multiple goals they pursue to master their life.

Multiple Goals and the Self as a Context for Interest Development

A look at the inner states that lie behind daily activities is necessary to analyze interest as part of the person's "life-space" (e.g., Krapp, 2002b). Interest-related behavior can be conceptualized as a goal-directed action that is targeted toward a class of objects (see, e.g., Harackiewicz & Sansone, 1991; Krapp, 2002b; Lawrence & Volet, 1991). A goal is a representation of a specific desired state of affairs that is cognitively associated with its corresponding means of attainment and to other goals (Kruglanski et al., 2002). For instance, if a person has an interest in skiing, one can say that he or she has the goal of being engaged in skiing instead of investing time in other winter sports. The goal concept seems helpful if we assume that persons have to cope with several tasks and if we frame this in terms of their striving for multiple goals.[2]

The idea that human behavior involves multiple concurrent concerns and that people typically are aiming at pursuing several goals more or less simultaneously is increasingly acknowledged by authors in theories of action control (e.g., Carver, 2004; Carver & Scheier, 2000; Kruglanski et al., 2002), goal regulation (e.g., Bandura, 1991, 2001), and motivation (Boekaerts, de Koning, & Vedder, 2006; Covington, 2000; Dowson & McInerney, 2003) but is rarely treated explicitly in the educational psychological discussion of interest. The concept of developmental tasks is central in defining which tasks persons have to tackle during different age periods (Havighurst, 1972). A developmental task is one that arises at a certain period during the life span, the successful achievement of which leads to happiness and success with later tasks. Similarly, the term "life tasks" (Cantor & Fleeson, 1991) alludes to the organization of life and to concrete actions according to overriding life themes. The joint belief of these authors and others (Heckhausen, 2005) is that persons' actions are bound to multiple goals that become dominant concerns influencing how a person thinks and behaves. The importance of a life task is connected to the task's increased relevance for daily life events with regard to emotional involvement (see Cantor et al., 1991).

The notion of life tasks has two implications for the development of individual interests. First, within an age period a person strives for several goals, some of them associated with tackling age-dependent tasks. Interests evolve as the person deals with daily challenges. Second, longitudinally in the next age period the person has to tackle different tasks. Dependent on these, interests may change more or less rapidly. For instance, many female preadolescents are highly engaged in various activities around horses. They show repeated and persistent engagement, experience positive affect, self-determination, even competence and belongingness. And yet, most teenagers put this interest aside—sometimes abruptly—when they come to early and midadolescence. The interest is replaced by other person–object interactions regarded as more enjoyable or important with regard to developmental tasks or new life goals.

In all life periods persons strive for identity as a main goal (Erikson, 1968). Adolescents especially struggle with different goals and values in an attempt to develop a system of values that constitute their selves (Damon, 1991). Researchers have considered interests to be a part of an adolescent's identity because they relate to the person's self (cf. Hannover, 1998; Hannover & Kessels, 2004; Hidi & Ainley, 2002; Hoffmann, 2002; Krapp, 2000). Overriding goals a person strives for are related to the person's self-concept. Self-concept usually is defined as a sort of enduring theory a person has about himself or herself (Epstein, 1973). The self-concept is seen as being relevant to the person's biographical past and future. Interests can be seen as a part of the person's biography because these subject–object relationships distinguish them from others in a highly valued way. Persons tend to define themselves in terms of their hobbies (see McCrae & Costa, 1988). Persons might define themselves in terms of individual interests even if they are not actively engaged in them at the moment (e.g., "Earlier I was

[2]Note that the notion of multiple goals here differs from the idea of goal orientations (mastery and achievement goals; e.g., Pintrich, 2003).

an accordion player") and even when they are not yet developed, but they are striving acutely for them.

The idea of a discrepancy between people's representations of their actual selves and their ideal selves (see Higgins, 1987, for a review) is helpful because it focuses on the discrepancy-reduction process assumed to occur within the proposed model of interest development. Ideals are characteristics that a person desires to embody and that they pursue. General goals serve the values that constitute the ideal selves of the person. In terms of developmental tasks the representations of the ideal selves can be split into "desired selves" and "ought selves"—representations dependent on whether they are wanted by the individual ("I want to be" goals) or whether they are normatively expected to be strived for ("I ought to be" goals). Self-discrepancy theory postulates that persons are motivated to reach a state in which their actual selves match their ideal selves, the ideal self representation being a self-directive standard or "self-guide" (Higgins, 1987). From a developmental viewpoint, the concept of "possible-selves" is especially relevant because it designates visions of the self in a future state. They are the motivational link between the present and imagined future and can act as self-regulatory forces (Oyserman, 2007).

Interests can be distinguished from noninterests such that in the former the person, having reached a goal, stays with the object, whereas in the latter the person does not invest any time in further interaction with the object. When a developmental task has been tackled successfully and the respective goal reached, one reaction is to stop investing in the task (Wrosch & Heckhausen, 2005). A goal may disappear when it is reached and the person can ease back (see Carver, 2003). If a person loses interest in the area of prior engagement, the goal vanishes after attainment. In contrast, typical of an interest is that, after goal attainment, the goal is retained or even intensified. This points to the existence of a discrepancy-increasing process. Imagine, for instance, an adolescent with a piano interest who strives for a mastery of Schumann's *Kinderszenen*. If he or she achieves this, it does not put an end to playing piano. On the contrary, the person will strive for a Chopin waltz that is more demanding. Likewise, a person achieving a certain mastery in skiing will most probably elevate the goal by looking for steeper descents. It is not the goal that changes but rather the level of aspiration within the goal. From a developmental perspective, it is not paradoxical but rather constitutive that a person tries to reduce a goal discrepancy, then actively enlarges it just to reduce it consequently again (see Bandura, 1991; Brandstädter, 1998; Higgins, 1987).

An interest may evolve also out of activities that do not serve any clear goal (Hidi & Renninger, 2006). As human behavior can happen without specific direction, even events taking place by chance may gain significance. Exploration sometimes is a random wandering around and waiting for something that may happen. Observing an unexpected event while being concerned with something else may attract the attention and only later may become an interest with clear goals.

In summary, the conception of developmental tasks is helpful in dealing with the progression of individual interests, because interests are supposed to develop as a person pursues multiple goals that are related to the enduring self. While being engaged in solving life tasks in different domains, interests may or may not develop. In applying the goal concept to the dynamics of interest development it has to be taken into account that goals can be retained or even extended after being achieved. Only noninterest goals vanish after attainment.

Next, the process of goal regulation is described in more detail. As interests become a part of the person's hierarchy of goals, they have to coordinate the range of activities necessary for coping with their needs and wishes as well as with the demands and requirements of their social environments.

THE REGULATION OF MULTIPLE GOALS

In describing interest development as a process of action control, an understanding of its dynamic can be gained. Self-regulation can be defined as a systematic process of human behavior that involves steering behavior toward the attainment of established goals (e.g., Bandura, 1991, 2001; Zeidner, Boekaerts, & Pintrich, 2000). For instance, in his influential model of self-regulation, Carver posited a series of feedback cycles including goals, monitoring the state of affairs, and performing actions to close the gap between present states and goals (see, e.g., Carver, 2004). Within the motivation literature, self-regulation is frequently described as consisting of two interrelated subsystems. The first subsystem is primarily based on emotional experiences that provide immediate feedback about the functioning of the organism in the situation. The second subsystem is represented by conscious cognitive factors that guide the rational-analytic evaluation of feedback (e.g., Boeakaerts, 1993; Carver & Scheier, 1990; Efklides, Kuhl, & Sorrentino, 2001; Krapp, 2005). The model is based on the assumption that each activity triggers emotions and cognitions related to it and that appraisals are being made continuously. Self-regulation of interest can be modeled as a process in which persons evaluate an activity according to their emotional qualities and in accordance with their goals. When performing the activity, the question of whether the task is interesting is examined. If the answer is positive, the activity will be continued or resumed later. Otherwise it will be stopped unless there are other reasons for performing it.

The relationship between interests and self-regulation is investigated in the literature from several perspectives (e.g., Hidi & Ainley, 2008). In the following, self-regulation is seen as a process that brings interests about (see Sansone & Smith, 2000; Sansone & Thoman, 2006). It is analyzed

systematically by outlining exploration, internal feedback, and selective decision as subprocesses.

Exploration in Interest Development

Flum and Kaplan (2006), in giving a general account of exploratory orientation and proposing to set exploration as an educational goal, argued that the development of situational interest into an individual interest "involves, almost by definition, a process of explicit exploration" (p. 103). They pointed out that, to obtain a well-developed individual interest, an exploration of competencies, strategies, and meaning of content to the self is necessary. It seems, therefore, beyond dispute that exploration is a vital process for transforming a potential interest either into an individual interest or into a noninterest.

Within a framework of self-regulated goal attainment, exploration is goal directed, primarily intrinsically motivated and potentially leading to positive affect (see Flum & Kaplan, 2006). An exploratory activity brings the person's unique characteristics together with the contents the environment offers. In theories on career development exploration is seen as an essential process. Choosing a career is closely linked to the development of interests. Theories depicting the development of vocational interests stress the importance of a "testing" or "exploration" phase. For instance, Super (1990) asserted in his career development theory that exploration of the external and internal environment is essential for making a choice that matches the individual's interests and abilities as well as the occupational environment's demands. Adolescents explore whether their career wishes are compatible with their abilities, their interests, and the opportunities they have. They collect feedback to evaluate their choices against these criteria.

Exploration of an interest is defined as a repeated interaction between the person and objects of potential interest, in which the person seeks out new experiences and examines whether they fit his or her criteria of interestingness. With regard to the question of what kinds of interactions can be regarded as exploratory, one can refer to the mechanisms of active and internal coping adolescents use when tackling developmental tasks (Seiffge-Krenke, 1995). Exploratory activities have behavioral components belonging to different classes, such as investigating, manipulating, observing, experimenting, and exercising, that require the person's sustained attention (see Jordaan, 1963). They also have cognitive components (e.g., reading, reflecting, discussing). Exploratory activities can differ in the degree to which persons shape their own environment. They can simply react to external suggestions or stimuli, they can purposefully select certain environments and act within them, or they can self-initiate learning processes. The process of exploring an interest displays itself with regard to any object of potential interest, whether it emerges from a leisure activity or stems from a topic encountered within an academic field. However, the activities constituting exploration, their intensity, and their duration will vary considerably depending on the nature of the specific object. For example, the types of strategies most often used by adolescents in the realm of computer interest are to look for text-based instruction, to create interactive activities, to explore media, to seek out structured learning, and to build knowledge networks (Barron, 2006).

Exploration as a prerequisite for the unfolding of interests consists of a repeated flow of behaviors and thoughts that occupy a significant amount of the person's resources. It should be considered in terms of costs, opportunities the environment offers, and barriers that might appear before or during exploratory activities. Exploration with regard to one object of potential interest has to be coordinated with other tasks the person undertakes. Consider a young person who, after having attended a concert as a mere leisure activity, wants to play an instrument. He chooses to play the drums and gets instruction for a certain time instead of investing in other activities, then switches to playing the guitar. However, this person ultimately realizes that his heart lies with playing soccer. By the time he realizes this, a lot of time, energy, and money has been spent, and other tasks may have been disregarded. By its very nature, exploration will result in some new experiences not leading to sustained interest, even if the intent is to develop only an initial, rough understanding of a topic of potential interest. Exploration may lead to investigation in many different directions before an interest is selected temporarily or endures for a long time. In summary, exploration is seen as an obligatory process if interest is to emerge more or less smoothly. It is a preliminary step leading to selection, whether it results in sustaining the interest, differentiating it, or dropping the object of potential interest.

Internal Feedback in Interest Development

Exploration by itself does not start dynamic processes in interest development unless the person appraises and interprets the exploratory interactions according to his or her interestingness and unless feedback is evaluated and decisions are made. Feedback is central to interest development within a model of self-regulated goal pursuit because a person can only make use of exploratory activities if they are evaluated, that is, if information about their qualities is available. Exploratory activities are strategies used to get the desired feedback referring to those goals or criteria the person strives for. Most research on feedback in learning and motivation research treats external feedback (Kluger & DeNisi, 1996). Feedback is considered to be information provided by an agent (e.g., teacher, peer, book, parent) regarding one's performance and understanding. In interest development as a self-regulation process, internal feedback is most relevant. The person checks whether an interaction with a certain class of objects is rewarding in the sense that it fits the person's criteria of interestingness. In judging interactions with objects of potential interest the reference values are self-initiation,

challenge, relatedness, novelty, positive feelings, and values. This information arises when people "monitor" their own goal-directed action (see Carver & Scheier, 1990) by continuously examining whether the experiences encountered in the exploratory interactions fit the salient criteria. The feedback conducive to interest development is mainly self-generated; however, dependent on the criteria, external agents may also provide feedback about goal attainment. For instance, enjoyment feedback can be enhanced externally, for example, if peers also show enthusiastic reactions watching a soccer game. Evaluation of an interaction with an object will continue until the person decides to quit, continue, or resume the interaction.

The development of interest can be conceptualized in terms of goal hierarchies. The concept of goal hierarchy is a common one in research on semantic memory (see, e.g., Carver & Scheier, 1990; Wegner & Vallacher, 1986). People's goals vary in their level of abstraction. A general goal can be broken down into a hierarchy of ever more specific and concrete subgoals, the attainment of each of which constitutes a necessary but not sufficient condition for the general goal that is to be attained. In interest development, people start at a lower level when engaging in exploratory actions. During exploration they are only scarcely controlled by what may constitute representations of their ideal self. Information provided by feedback stems mostly from the behavioral experiences encountered during exploration. For example, watching a soccer match for the first time may be experienced as self-determined, novel, and pleasant. The more the evolution of an interest moves forward, the higher are the goal levels that come into play and provide for respective feedback information to be compared with a criterion stemming from a goal higher in the hierarchy. The person might assess during the exploration whether the interaction with the object of potential interest is a challenge to him or her. Still later, interest-related actions are judged according to general principles that are implied by the ideal self (e.g., soccer fits who I am).

Selection in Interest Development

Selection of interest is a further necessary step in coming to a commitment. A certain person–object interaction is chosen or not chosen. Committing to a particular object means having selected the respective object while refuting alternatives. The process that is complementary to selection is inhibition. The selection of one interest has the consequence that motivation toward other goals is inhibited. Other activities might be suppressed to the extent an interest consumes time and other resources. Two distinct forms of selection are discussed—preselection and continuance selection.

Preselection. Selection is seen as a process that follows exploration. Exploration, however, does not include all potential interests but usually deals with a limited number of topics. Preselection is the decision a person makes about entering a specific subject–object interaction or not. This mechanism directs attention to specific objects ("This activity looks fun!") and restricts areas of exploration ("I don't want to try this!"). A form of preselection is self-to-prototype matching. Adolescents judge in advance whether they may develop interest in a theme. The phenomenon of self-to-prototype matching has been studied especially with regard to school subjects (Hannover & Kessels, 2004; Kessels, 2005). Adolescents declare their noninterest to certain topics because they compare the image of those who prefer this class of objects to the image they have of themselves and diagnose a mismatch. For instance, many adolescent girls think those who prefer physics have masculine characteristics. If they prefer being seen as feminine, they come to the conclusion they should not be interested in physics. Students preferred physics or music to the extent that they conceived themselves as similar to the physics or music prototype. Male adolescents appeared even to dislike girls with physics as their most favorite subject and boys with the favorite subject of music (see Kessels, 2005). Generally, the probability of being interested in an object increases with both the extent to which the object is close to the self and the extent to which the person has a positive self-concept toward the object. Having stereotypes about areas of potential interest or noninterest is a helpful mechanism to narrow down the range of areas possible to be explored. Not wasting time and energy in exploring topics of low initial priority makes sense even if it includes the risk of skipping topics that could have turned out to be closer to the core of the adolescent's self than previously assumed.

Continuance selection. If exploration is taking place, the person decides whether to stop or to continue the exploration process. Persons are seen as devoting time to interactions with the objects of their interest. Interests active at a certain age may be dropped as a result of selection, whereas others may become central, thus occupying more space within the person. In any phase, a number of interests might be generated and explored without being developed further. Even individual interests may disappear suddenly or regress (see Bergin, 1999). If the opportunity structure is not favorable at the moment, an interest also may be resumed sometime in the future.

Selection can be regarded as most relevant at transition points. Because the selection criteria vary according to earlier or later phases of interest development, the selection process is treated exemplarily for the emergence of situational interests, for the transition to a working interest, and the transition to an individual interest.

The emergence of situational interests. In principle, interests at any point during development are dependent on environmental and personal factors (Krapp, 2003; Todt & Schreiber, 1998). If the situation is somehow interesting and the person is ready to direct attention to the object at

hand, a psychological state of curiosity arises. Interestedness is caused by the occurrence of unexpected events (e.g., Frick, 1992). The most important environmental factor is complexity, displaying itself in such variables as discrepancy, novelty, social interaction, modeling, and humor (e.g., Mitchell, 1993; Silvia, 2005). The major individual factors seem to be competence, coping potential, and background knowledge (see Bergin, 1999; Silvia, 2005). If curiosity arises, the persons direct their attention to the stimulus, but this is a temporary state that may or may not be a precursor to reengagement. Persons mainly react to the situation without actively exploring the various aspects of the object. Therefore, selection and decision do not explicitly take place at this starting point.

Transition to a working interest. Working interests are characterized by recurrence and persistence of interaction with an object over an extended period. This is because exploring an object means to invest some amount of time. If a person anticipates that it might be rewarding to cope with this novel and puzzling situation in terms of self-initiation and enjoyment, he or she enters into interaction with the object. If initial exploratory activities provide experiences of self-initiation, competence, social relatedness, and joy, they might be continued and the person–object relationship involves varied episodes of engagement over time. The exploratory process taking place is highlighted by two components shown to cause the person to perceive the situation as interesting: participation and meaningfulness (see Mitchell, 1993). First, an activity elicited by novel stimuli will probably be maintained only if the person can collect experiences relevant to attracting the person even when the novelty has worn off. This is possible if the educator lets the students participate actively, thus providing opportunities for direct interactions. Second, during interactions the persons can examine whether the topic is meaningful for them. Meaningfulness can be interpreted as providing emotions of social relatedness, competence, and pleasantness. If these conditions are met, the person can test whether the interaction with a potential object of interest possesses properties that match the person's predispositions, developmental tasks, and actual goals. The result will be a decision to stop the interactions or to develop the interest further.

Transition to an individual interest. An individual interest develops if all criteria are fulfilled, that is, if the interactions with an object are felt to be self-intentional, enjoyable, challenging, and valued highly as a means of contributing to those personal goals that contribute to the ideal self. In this case, a sustained person–object relationship will arise. The person then has identified with the goals, actions, and topics related to the interest and therefore will not drop them easily (Krapp, 2002b).

It is an open question at which point exploration terminates. In terms of the present approach, one would expect that when a person has defined a certain subject–object relationship as an individual interest, exploration is not necessary anymore. However, a person–object interaction that serves the exploration of a potential interest can hardly be distinguished from those interactions that are a manifestation of an individual interest itself. In addition, the idea that an individual interest maybe dropped later makes it probable that interest-related activities are continuously checked as to whether they still fit the criteria of interestingness. Exploration also helps the individual to decide in which direction an established interest can be developed further. This leads to the assumption that exploration is a permanent phenomenon that is useful for interest development as well as characterizing any interest-related activity.

As each of the possible criteria is a probabilistic one, the pursuit of an interest or its termination will not be an all-or-none decision. Interests can be prioritized, some of them gaining only a provisional status without being discarded completely, depending on the fluctuating representations of the future life and the ideal self. One can speculate about the modeling of this process. First, the duration of a specific exploration period as well as the result of the selection process should be predictable by knowing the amount of the respective feature of the stimulus or the criterion-relevant experience. Second, as it is very unlikely for any subject–object interaction to always fit the criteria, the evaluation of the feedback will take a certain time. Persons will balance in retrospect whether the class of activities as a whole is regarded as rewarding. Third, in the case of multiple criteria, their contribution to the overall evaluation probably will be balanced over time, with each criterion having to exceed a certain threshold value. There is considerable evidence that the weighting of the criteria varies between individuals as well as with the incentives provided by the situation (Harackiewicz & Sansone, 1991; Sansone & Smith, 2000).

The multiple goal perspective requires discussion of a further point. A person exploring a certain topic of potential interest also has other tasks to fulfill and other interests that already may have reached a more advanced level. This forces the person to a more comprehensive judgment, namely, to weigh the respective emerging interest against other goals within the person's life space. Rivalry between different goals may be present at any point within the development of interests. The more time a person spends exploring and interacting with the object of interest, the more time will be diverted from other necessary and self-initiated activities. As a consequence, the person has to weigh the importance of a specific subject–object interaction not only according to the criteria of interestingness but also against the importance of alternative goals.

The concept of interest selection based on the evaluation of internal feedback is a rational approach in which the question of awareness needs to be discussed. Many adolescents seem not always to be aware of their interests and to be less aware of the processes leading to them. Generally, when persons react to information, they often do it without intent. Drawing on

extensive research with the priming paradigm, Fitzsimmons and Bargh (2004) concluded that "non-consciously operating goals enable people to control thoughts, feelings, and behavior, without the need to invoke conscious choice or control processes" (p. 152; see also Chartrand, Dalton, & Cheng, 2007). Adolescents do not need to plan to try out something, get involved in a new subject, and focus on the experiences made therein. Such actions often occur rather without awareness. Awareness might be desirable but not necessary to develop interests. Interest research makes it highly probable that, even if adolescents are not conscious of the components of feedback evaluation and their results, in the case of self-reflection, whether it is internally or externally initiated, they can state how much they feel interested when performing a certain activity.

Although awareness is not a necessary precondition to develop interests at an early phase, it seems important when it comes to individual interests because of their relation to the person's self-representations. Provided that the adolescent has options and perceives opportunities for development, conscious exploration is needed to answer the question whether the subject–object interaction fits components of the ideal self. Self-regulated intentional action is dependent on processes of self-perception and self-awareness. Individual development can be controlled if self-referential information is processed and compared with stored knowledge of the ideal self. This requires the person to conceptually categorize perceptions and feedback and to match patterns of the actual self with information about the ideal self (see Brandtstädter, 1999).

HOW GOALS RELATE

Given the concept of multiple goals as an adequate description of a person's life space, not a single goal but the goal configuration triggers behavior. The continuous loops of exploration, feedback, and selection have been described as a process helping individuals to find out whether a potential interest fits them. The idea was expressed that persons select an interest not only with regard to the available criteria of interestingness but also against rival goals such as a duty, another interest already established, or activities that serve other life tasks. In the following, the question of how pursuing one goal may affect the attainment of other goals is treated systematically.

The Interactivity of Multiple Goals

Generally, four possibilities of interrelationship between goals can be distinguished (see also Dowson & McInerney, 2003; Kruglanski et al., 2002). Different goals converge if they can be reached simultaneously. Sometimes a person has more than one reason to engage in an activity. For instance, learning for school can serve the attainment of good grades, cultivating friendships, and the development of interests. In this case, one action leads to several goals. Many scientists seem to succeed in integrating interests with their profession such that the time they spend on the job is also beneficial to their interests. Conversely, goals may be in competition with each other if one means can be used to attain only one particular goal. When two equally preferred activities A and B are competing, resources are drawn away from A when B is chosen, and vice versa. Goals may also enter into a compensatory relationship in that a high preference for one goal might compensate for not pursuing another goal. Finally, goals might be completely unrelated. Going shopping on Saturday may not enter into any beneficial or detrimental relationship with going to the chess club on Tuesday.

Because exploration consumes resources, the case of conflicting goals is most relevant. Exploration may be reduced as a consequence of motivational dilemmas when goals are not congruent with each other. To judge the occurrence of motivational conflicts relevant to interest development, it is helpful to look at how persons spend their time. In Western European countries, the total time adolescents spend on leisure activities is almost 5 hr a day, compared to $1\frac{1}{2}$ hr a day spent on homework (Alsaker & Flammer, 1999). Within this time frame, activities are performed that can be condensed in the categories watching television, hanging out with friends, participating in sports, leisure reading, dating, playing music, and working for money (Flammer, Alsaker, & Noack, 1999). Because time is limited, different classes of activities can compete with each other. In fact, studies suggest a trade-off, for instance, between playing music and watching television, between leisure and learning time, between eating meals and staying with friends (Flammer et al., 1999), between family obligations and social life with peers (Fuligni, Yip, & Tseng, 2002). Naturally occurring changes in time spent watching television were associated with an increase in frequency of leisure-time physical activity (Motl, McAuley, Birnbaum, & Leslie, 2006).

On the subjective level, time restrictions may or may not be experienced as goal conflicts. Some students may prioritize their plans, scaling back one class of actions in favor of others without seeing a conflict. On the whole, however, it seems safe to say that the more goals a person strives for and the less resources are available, the more likely a motivational conflict is perceived. Research points to the existence of school–leisure conflicts in adolescents (see, e.g., Fishbach, Friedman, & Kruglanski, 2003; Fries, Schmid, Dietz, & Hofer, 2005). Intraleisure conflicts seem to be even more frequent than school–leisure conflicts (Fries et al., 2005). One type of conflict occurs when an emerging interest interferes with an existing interest. A second type includes cases in which interest exploration competes with necessary activities. Here, the competition between goals in the near future (e.g., to visit a pop concert that night) and goals in the far future (e.g., to prepare for an upcoming test) is important because interest-based goals at early points of

their development are goals in the near future, whereas many academic activities are performed for their positive future consequences rather than for their immediate positive appeal. The attractiveness of an interest activity may outweigh the attractiveness of a learning activity because enjoyment is considered certain whereas the attainment of good grades is uncertain. A situation with an internal conflict between the pursuit of different behavioral plans, one of which is of greater long-term importance than the other, is denoted a Self-Control Dilemma (cf. Rachlin, 1997). A long-term goal is prone to falling prey to momentarily attractive temptations (see Schmeichel & Baumeister, 2004). Interest-related activities might be involved in such conflicts, for instance, when a young person invests much time in playing computer games instead of studying for school. The preference for immediate rewards over more distant ones contributes to the delay of tasks that have more distal rewards (procrastination; see Steel, 2007). On the other hand, adolescents should not always resist temptations. They should not avoid playing computer games or pursuing interests. In many cases, the task is to reduce or to postpone impulses in competition with other tasks, rather than suppressing them.

In conclusion, the concept of multiple goals and pertinent activities in a person's life opens an avenue to look at the possible interrelations between goals and their effect on exploration in interest development. The more fields of interest the person explores, the longer exploration will take. From time limitations and obligations to pursue other goals, one can infer that only a restricted range of interests can be explored in a given period, that for each interest time-consuming exploratory activities can only be carried out to a limited extent, and that persons need to coordinate their activities methodically to maximize outcome. Otherwise motivations attached to other goals become stronger. For example, it seems impossible for an adolescent to play a musical instrument, to be a valuable member of a soccer team, to go to the cinema, to spend time with friends, and to do homework thoroughly. Some goals cannot be realized even when they form a part of a person's self.

Experience of Motivational Interference

Some theorists describe internal conflict as a beneficial force in human life, for instance, for moral development (Turiel, 2002) or gaining self-efficacy after the successful resolution of a conflict. This might be the case also in interest development. It is conceivable that persons, when being forced to weigh different goals according to the preferences they attach to them, learn what is more and what is less important for them right now or for their future and which interests fit better with their values. Evidence also shows that under certain circumstances the presence of a temptation may strengthen the primary motivation rather than weakening it because it brings its importance into focus (Fishbach et al., 2003).

On the other hand, conflicting goals may lead to reduced quality of performance of an activity. The performance of the focus activity may be impaired by the valences the person attaches to the performance of the activity that has not been chosen. Research on goal conflicts has shown that the accessibility of alternative goals can undermine the commitment to the focal goal (e.g., Kruglanski et al., 2002; Shah & Kruglanksi, 2002). The term "motivational interference" denotes the negative impact of attractive alternatives on the ease of self-regulation within the current task (Fries, Dietz, & Schmid, 2008). Imagine an adolescent playing soccer with his friends knowing that homework has to be done urgently. To the degree that this student considers good grades as important, he or she should be less able to concentrate on the training or game. Results from studies on the potential conflict of different goals carried out by the author and colleagues support the notion that when two or more options compete, the performance of the focus activity may be less than optimal (see, e.g., Schmid et al., 2007). These studies deal with the consequences of competition for attention between schoolwork and leisure. In self-report studies with early and midadolescents using scenarios depicting situations of school–leisure conflicts, it turned out that the stronger the students' tendency to pursue the leisure activity, the greater the motivational interference they experienced during studying (Hofer et al., 2007) and vice versa (Hofer, Schmid, & Zivkovic, 2008). In an experimental investigation, the primary activity was a learning task and the distracting alternative was the rating of music videos. The presence of an attractive alternative activity during students' learning increased the experience of motivational interference and had a detrimental effect on learning results (Fries & Dietz, 2007). As motivational interference during studying was related negatively to the time spent on studying, two costs of goal conflicts may occur: decreased quality of performance in the chosen option and less time spent in alternative areas.

Although these studies do not directly address the formation of interests, they are relevant because leisure behavior and exploratory interactions in a field of potential interest may be indistinguishable. Persons at early points of interest development probably do not experience flowlike states during exploratory activities that help to shield against distractions. The conclusion that the development of an individual interest occurs within the person's life space that sets limits on exploratory activities might seem self-evident because it appeals to common sense. On the other hand, the novel notion of possible costs of exploration may lead to new research questions.

THEORETICAL IMPLICATIONS

In this section, the chosen approach is discussed with regard to its theoretical implications. The article proposes to enlarge our theoretical thinking about the formation of individual

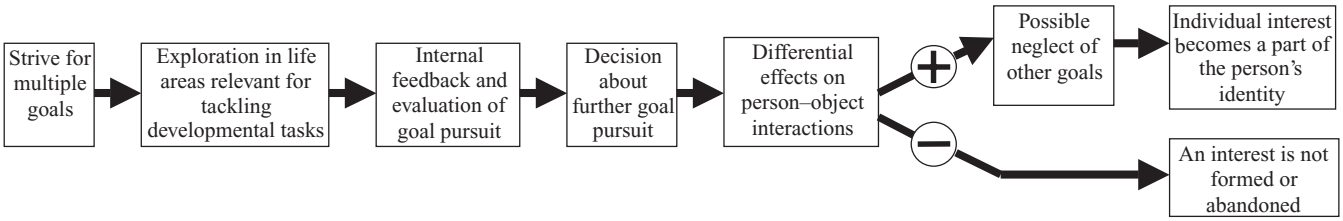

FIGURE 1 Diagram illustrating the framework of adolescent interest development.

interests by considering a perspective of multiple goal pursuit during individual development. Figure 1 illustrates the framework of the process described in this article. The deliberations add to the literature on interest development in that known results can be framed in a novel way and new research questions are generated.

The article addresses primarily the evolution of individual interests that have been given less attention compared to earlier phases in the progression of interests. It elaborates on how interests develop from everyday activities and ultimately become a part of the person's self-concept. It is argued that interests can develop in all areas in which persons have experiences that meet certain criteria, leisure areas matching most likely with the criteria applied in the judgment of interestingness because they are more often regarded as self-intended and of positive affect. Educational researchers should intensify the study of interests and how they develop from life outside school.

The notion of self-regulation during goal pursuit allows us to analyze the continuous waxing and waning of interests and noninterests out of potential interests. Exploration, feedback, and selective decision as intertwined subprocesses extend our understanding of the dynamics of interest development and allow a new look at it. The changing of interests means that a goal in a specific class of objects (e.g., playing with dolls or interest in horses) is dropped and goals in a new class of objects (e.g., reading adventure books) are set that lead to establishing a new subject–object interaction fitting with the developmental tasks in the respective age period. Interest differentiation can be rephrased by striving for new goals within a given category of objects. The growth of an existing interest can be interpreted as the person raising his or her aspiration level of a goal in interacting with a defined object. Effort is invested to strive for higher and broader competencies (see Lipstein & Renninger, 2007). Declining interest in school subjects from age 11 to 12 onward can be explained by the idea that, out of the entire school curriculum, which has great breadth, a student is able to pursue, develop, and maintain only a few topics that become integral parts of the self. For example, despite the general decline in physics interest in 5th to 10th graders, students show a very strong interest in those subtopics that are related to their own world of experience (Hoffmann, 2002; Krapp, 2003). If adolescents' interactions develop a few specific interests further, other topics in the same field have to be disregarded as objects of interest. Research should investigate the questions why certain interests come about and others disappear and how changes in interests are connected to changing developmental tasks within a multiple goal framework including exploration, feedback, and selection. Does the emergence of new themes when life conditions change result in dropping old interests and exploring new areas of potential interests?

The notion of multiple goals allows a more comprehensive look at interest development as a part of a person's life. In particular, possible goal conflict and motivational interference may aid understanding the broader context in which interest development takes place. Detailed studies should be conducted into how persons develop multiple interests of varying priorities, proximity to the self, and investment needed. How do persons reorganize their lives when a new interest emerges to the status of an individual interest? How do they perceive themselves as having a pattern of interests that are more or less connected to characterizing them as distinct individuals?

The potential of goal relationships either to be beneficial to interest development or to bear risks have not been investigated thus far. The notion of multiple goal pursuit brings up the role of costs, opportunities, and barriers as necessary conditions for exploring interests. In the framework on expectancy-value theory of achievement motivation, perceived costs are included in the category of "subjective task value" (Eccles, 2005). The value of a task is seen as dependent on beliefs about the costs of participating in the activity, for example, in terms of the loss of time and energy for other activities. The notion of motivational interference expands the meaning of cost value by pointing to the loss in performance quality due to the incentives of nonchosen options. It seems worthwhile studying in order not to overlook the fact that a person's life is abundant in motivations and constraints. The motivation for an exploratory activity within a field of potential interest may lose strength during performance, and the person may switch to another goal waiting to be strived for (see Atkinson & Birch, 1970). Research questions such as these arise: How long do persons plan to invest and actually invest in exploring an area of potential interest while other motivations are present? How does the person monitor the speed at which a given goal is being approached (see Carver, 2004)? At which point does the person give up if progress

is not happening rapidly enough, turning to another pressing goal? Research also should be devoted to the question of how much energy and material costs persons are ready to invest to explore certain objects of potential interest in the early and later phases in order to balance their life in a satisfactory way relative to the tasks they have to cope with. It is probable that interest exploration is short and superficial if other activities are equally highly preferred. If many activities compete for time and working memory, the quality of the engagement in interesting actions may be diminished and the acquisition of knowledge and the development of a differentiated cognitive structure in the field of interest are endangered.

Generally, the notions of exploration, feedback, and selection within a multiple goal perspective allow us to expand proposed phase conceptions (Hidi & Renninger, 2006; Krapp, 2002b) in several ways. They could be expanded by including the notion of self-initiated interests taking place in leisure areas, by differentiating the psychological processes that play a role in the transformation of one phase to the next, by including the issue of interest development relative to other tasks, and by reflecting on the role of the proximity of interests to the values the persons have as a part of their self. The self-regulatory processes of exploration, feedback, and selection described in this article are regarded as essential for the transition from each phase to the next. In essence, the approach presented does lead to the conclusion that development does not take place as a succession of phases but is a continuous process in which interests at different points of development emerge, grow, change, differentiate, or are discarded.

EDUCATIONAL IMPLICATIONS

The purpose of the present article is to provide a novel perspective in explaining the development of individual interest. The position taken might also have implications that provide parents, teachers, and society with suggestions on how they can support both interest development and academic achievement, especially in adolescents. First, it is to be acknowledged that the educational realm is not the major arena for exploration in interest development, but the goals and tasks a person strives for have to be considered as a whole. Thus, the suggestions transcend the instructional context that has been at the center of most approaches to support interest development. As exploration, feedback, and selective decision making are central features in interest development, the role educators may play in fostering self-reflection and self-regulation has to be considered. Because the development of interests is seen as taking place within the person's life space, the central line of thinking is how persons can be empowered to lead a life according to their ideal selves and to develop multifaceted goal attainment. Persons should be assisted to reach a considerable number of their goals without causing detriment to other goals, leading to enhanced well-being in different life areas and to feelings of balance in their time investment (Boniwell & Zimbardo, 2004; Gröpel & Kuhl, 2006). This can be done either by fostering components of the self-regulation process or by dealing with goal competition that impedes the attainment of possible selves.

Fostering Exploration, Feedback, and Selection

Flum and Kaplan's (2006) notion of considering exploration as an overall educational goal seems well founded. The authors point to a number of contextual characteristics facilitating exploratory orientation, for example, providing physical and emotional security, helping adolescents making connections between interests and their identity, or constructing activities within their zone of proximal development of the respective interest. As persons explore more when they enter a subject–object relationship of their own free will (see Ryan & Deci, 2000), it seems important for educators to design environments that offer adolescents a manageable number of options from which to choose in a self-determined way (see Hidi & Ainley, 2008).

Adolescent exploration of various fields without searching for feedback is useless and vain. Development occurs only if people direct their attention to the internal and external features of the activities carried out (see Flum & Kaplan, 2006; Hidi et al., 2004). Reflective thinking helps uncover relationships between one's own behavior, concomitant experiences, and the internal and external consequences. According to models of the experiential learning process proposed by Dewey (1938) and Lewin (1951), change and growth are facilitated best by an integrated process that begins with here-and-now experience followed by observations about that experience. Observations are then analyzed, and the judgments are fed back for use in the modification of behavior and choice of new experiences. Reflection can facilitate meta-cognitive competencies that are useful and necessary for monitoring. It seems necessary to first direct adolescents' perceptions to what they experience during their own behavior. Then, on the basis of observations, reflections have to be carried out. This might be helpful in considering whether to proceed with an interest. Finally, the person should work on the reflections to come to an elaborated theory that leads to conceptual knowledge. Learning, development, and ultimately personal growth can profit if there is a continuous cycle of concrete experience, reflective observation, and abstract conceptualizing that runs into active experimentation (e.g., Kolb, 1984). Reflection may take on several forms. Among the informal ones are writing diaries or composing letters. More formal ones include discussions with others and expressing the experiences in an artistic way. Parents and teachers should systematically encourage students to think about the experiences they have and to report them.

Selection as the process that leads to commitment or discharge of an interest also can be assisted, especially when selection between competing interests is required. Although

goal negotiation is a ubiquitous aspect of life, there have been only few studies on the question of how people try to decide between competing goals. Prioritizing is one of the strategies for overcoming the obstacles inherent in multiple demands, the ranking of goals according to their momentary priority as a result of reflection (Cantor & Blanton, 1996). Adolescents can be helped in identifying goals that are most urgent and "queueing" them, that is, attending to several goals sequentially (Simon, 1967). Alternating between different tasks is a second strategy in which the pursuit of one goal is temporarily postponed in favor of another. Simultaneously striving for more than one goal is an effective strategy if a means can be chosen that aims at more than one goal. Training programs that foster reflecting about actual goals, their importance for the person, and thinking about the means that can be used to deal with them may promote the well-being of students (Sheldon, Kasser, Smith, & Share, 2002).

Dealing With Goal Competition

If goal conflicts cause inadequate self-regulation that ultimately leads to failure in goal attainment, the question is how to deal with the inevitable competition between interests and noninteresting but important activities like work or school. A temporal structuring of daily activities seems a useful strategy to coordinate striving for goals in different life areas. In most families, there are more or less fixed times for daily routines such as sleeping, having breakfast, and relaxing. It seems helpful to structure the daily course of time also with regard to interest- and school-related activities. The core of goal conflict is the feeling of uncertainty as to whether one should be doing something else rather than the activity that is currently being pursued. This uncertainty can be reduced when there are fixed time slots for different activities. Research on habits in everyday life (Wood, Quinn, & Kashy, 2002) investigated behavior that had been performed almost daily in stable contexts. In these cases, subjects obtained self-regulatory benefits in that they experienced fewer feelings of stress. The interpretation of these results is that habitual behavior does not have to be guided by thoughts, whereas, to guide nonhabitual behavior, thoughts are necessary. Hence, especially in countries with half-day schooling systems (e.g., Germany and Italy), it should be good advice to students to structure their free time so that necessary and leisure activities are done regularly at certain places and times. If such conditions exist, positive effects can emerge from multiple interests ("positive spillover" in terms of Cantor & Blanton, 1996). The relationship between engagement in organized activities and personal development in adolescents has been studied extensively (see Mahoney, Harris, & Eccles, 2006). Despite possible trade-offs in terms of time, the bulk of research shows positive consequences of participation in organized extracurricular activities for academic, educational, social, civic, and physical development (see Feldman & Matjasko, 2005).

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REFERENCES

Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. *Journal of Educational Psychology, 94,* 545–561.

Alsaker, F. D., & Flammer, A. (1999). Time use by adolescents in an international perspective. II: The case of necessary activities. In F. D. Alsaker & A. Flammer (Eds.), *The adolescent experience* (pp. 61–85). Mahwah, NJ: Erlbaum.

Atkinson, J. W., & Birch, D. A. (1970). *The dynamics of action.* New York: Wiley.

Bandura, A. (1991). Self-regulation of motivation through anticipatory and self-regulatory mechanisms. In R. A. Dienstbier (Ed.), *Perspectives on motivation: Nebraska Symposium on Motivation* (Vol. 38, pp. 69–164). Lincoln: University of Nebraska Press.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52,* 1–16.

Barron, B. (2006). Interest and self-sustained learning as catalysts of development: A learning ecology perspective. *Human Development, 49,* 193–224.

Bergin, D. A. (1999). Influences on classroom interest. *Educational Psychologist, 34,* 87–98.

Berlyne, D. E. (1960). *Conflict, arousal, and curiosity*. New York, NY: McGraw-Hill.

Boekaerts, M. (1993). Being concerned with well-being and with learning. *Educational Psychologist, 28,* 149–167.

Boekaerts, M., de Koning, E., & Vedder, P. (2006). Goal-directed behavior and contextual factors in the classroom: An innovative approach to the study of multiple goals. *Educational Psychologist, 41,* 33–51.

Boniwell, I., & Zimbardo, P. G. (2004). Balancing one's time perspective in pursuit of optimal functioning. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 165–178). Hoboken, NJ: Wiley.

Brandtstädter, J. (1998). Action perspectives on human development. In W. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), *Handbook of child psychology: Vol. 1. Theoretical models of human development* (5th ed., pp. 807–863). New York, NY: Wiley.

Brandtstädter, J. (1999). The self in action and development. Cultural, biosocial, and ontogenetic bases of intentional self-development. In J. Brandtstädter & R. M. Lerner (Eds.), *Action and self-development: Theory and research through the life span* (pp. 37–65). Thousand Oaks, CA: Sage.

Cantor, N., & Blanton, H. (1996). Effortful pursuit of personal goals in daily life. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 338–359). New York, NY: Guilford Press.

Cantor, N., & Fleeson, W. (1991). Life tasks and self-regulatory processes. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 327–369). Greenwich, CT: JAI Press.

Cantor, N., Norem, J., Langston, C., Zirkel, S., Fleeson, W., & Cook-Flanagan C. (1991). Life tasks and daily life experience. *Journal of Personality, 59*, 425–451.

Carver, C. S. (2003). Pleasure as a sign you can attend to something else: Placing positive feelings within a general model of affect. *Cognition and Emotion, 17,* 241–261.

Carver, C. S. (2004). Self-regulation of action and affect. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 13–39). New York, NY: Guilford Press

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97,* 19–35.

Carver, C. S., & Scheier, M. F. (2000). Scaling back goals and recalibration of the affect system are processes in normal adaptive self-regulation: Understanding "response-shift" phenomena. *Social Science & Medicine, 50,* 1715–1722.

Chartrand, T. L., Dalton, A. N., & Cheng, C. M. (2007). The antecedents and consequences of nonconscious goal pursuit. In J. Y. Shah & W. L. Gardner (Eds.), *Handbook of motivation science* (pp. 342–355). New York, NY: Guilford Press.

Covington, M. V. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review of Psychology, 51,* 171–200.

Damon, W. (1991). Self-concept, adolescent. In R. M. Lerner, A. C. Petersen, & J. Brooks-Gunn (Eds.), *Encyclopedia of adolescence* (Vol. II, pp. 987–991). New York, NY: Garland.

Dewey, J. (1938). *Experience and education*. New York, NY: Collier Books.

Dowson, M., & McInerney, D. M. (2003). What do students say about their motivational goals? Towards a more complex and dynamic perspective on student motivation. *Contemporary Educational Psychology, 28,* 91–113.

Eccles, J. (2005). Subjective task value and the Eccles et al. model of achievement-related choices. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 105–121). New York, NY: Guilford Press.

Efklides, A., Kuhl, J., & Sorrentino, R. M. (2001). *Trends and prospects in motivation research*. Dordrecht, The Netherlands: Kluwer.

Epstein, S. (1973). The self-concept revisited or a theory of a theory. *American Psychologist, 28,* 405–416.

Erikson, E. (1968). *Identity: Youth and crisis*. New York, NY: Norton.

Feldman, A. F., & Matjasko, J. L. (2005). The role of school-based extracurricular activities in adolescent development: A comprehensive review and future directions. *Review of Educational Research, 75,* 159–210.

Fink, B. (1991). Interest development as structural change in person-object relationships. In L. Oppenheimer & J. Valsiner (Eds.), *The origins of action: Interdisciplinary and international perspectives* (pp. 175–204). New York, NY: Springer.

Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not unto temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology, 84,* 296–309.

Fitzsimmons, G. M., & Bargh, J. A. (2004). Automatic self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 151–170). New York, NY: Guilford Press.

Flammer, A., Alsaker, F. D., & Noack, P. (1999). Time use by adolescents in an international perspective. I: The case of leisure activities. In F. D. Alsaker & A. Flammer (Eds.), *The adolescent experience* (pp. 33–59). Mahwah, NJ: Erlbaum.

Flum, H., & Kaplan, A. (2006). Exploratory orientation as an educational goal. *Educational Psychologist, 41,* 99–110.

Frick, R. W. (1992). Interestingness. *British Journal of Psychology, 83,* 113–129.

Fries, S., & Dietz, F. (2007). Learning with temptations present: The case of motivational interference. *Journal of Experimental Education, 76,* 93−112.

Fries, S., Dietz, F., & Schmid, S. (2008). Motivational interference in learning: The impact of leisure alternatives on subsequent self-regulation. *Contemporary Educational Psychology, 33,* 119–133.

Fries, S., Schmid, S., Dietz, F., & Hofer, M. (2005). Conflicting values and their impact on learning. *European Journal of Psychology of Education, 20,* 259–273.

Fuligni, A. J., Yip, T., & Tseng, V. (2002). The impact of family obligation on the daily activities and psychological well-being of Chinese American adolescents. *Child Development, 73,* 302–314.

Gröpel, P., & Kuhl, J. (2006). Having time for life activities. Life-balance and self-regulation. *Zeitschrift für Gesundheitspsychologie, 14,* 54–63.

Hannover, B. (1998). The development of self-concept and interests. In L. Hoffmann, A. Krapp, K. A. Renninger, & J. Baumert (Eds.), *Interest and learning* (pp. 105–125). Kiel, Germany: Institute for Science Education.

Hannover, B., & Kessels, U. (2004). Self-to-prototype matching as a strategy for making academic choices: Why German high school students do no like math and science. *Learning and Instruction, 14,* 51–67.

Harackiewicz, J. M., & Sansone, C. (1991). Goals and intrinsic motivation: You can get there from here. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and Achievement* (Vol. 7, pp. 21–49). Greenwich, CT: JAI Press.

Havighurst, R. (1972). *Developmental tasks and education* (3rd ed.). New York, NY: Random House.

Heckhausen, J. (2005). Competence and motivation in adulthood and old age: Making the most of changing capacities and resources. In A. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 240–256). New York, NY: Guilford Press.

Hidi, S., & Ainley, M. (2002). Interest and adolescence. In F. Pajares & T. Urdan (Eds.), *Academic motivation of adolescents* (pp. 247–275). Greenwich, CT: IAP.

Hidi, S., & Ainley, M. (2008). Interest and self-regulation: Relationships between two variables that influence learning. In D. H. Schunk & B. J. Zimmerman (Eds.), *Motivation and self-regulated learning: Theory, research, and application* (pp. 78–109). Mahwah, NJ: Erlbaum.

Hidi, S., & Harackiewicz, J. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research, 70,* 151–179.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist, 41,* 111–127.

Hidi, S., Renninger, K. A., & Krapp, A. (2004). Interest, a motivational variable that combines affective and cognitive functioning. In D. Y. Dai & R. J. Sternberg (Eds.), *Motivation, emotion, and cognition: Integrative perspectives on intellectual functioning and development* (pp. 89–115). Mahwah, NJ: Erlbaum.

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94,* 319–340.

Hofer, M., Schmid, S., Fries, S., Dietz, F., Clausen, M., & Reinders, H. (2007). Individual values, motivational conflicts, and learning for school. *Learning and Instruction, 17,* 17–28.

Hofer, M., Schmid, S., & Zivkovic, I. (2008). Schule-Freizeit-Konflikte, Wertorientierungen und motivationale Interferenz in der Freizeit. Eine kulturübergreifende Studie. [School-leisure conflict, value orientations and motivational interference during leisure. A cross-cultural study]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 40,* 55–68.

Hoffmann, L. (2002). Promoting girls' interest and achievement in physics classes for beginners. *Learning and Instruction, 12,* 447–465.

Jordaan, J. P. (1963). Exploratory behavior: The formation of self and occupational concept. In D. E. Super (Ed.), *Career development: Self-concept theory* (pp. 42–78). New York, NY: College Entrance Administration Board.

Kessels, U. (2005). Fitting into the stereotype: How gender-stereotyped perceptions of prototypic peers relate to liking for school subjects. *European Journal of Psychology of Education, 20,* 309–323.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin, 119,* 254–284.

Kolb, D. A. (1984) *Experiential Learning*. Englewood Cliffs, NJ: Prentice Hall.

Krapp, A. (1999). Interest, motivation, and learning: An educational-psychological perspective. *European Journal of Psychology of Education, 14,* 23–40.

Krapp, A. (2000). Interest and human development during adolescence: An educational-psychological approach. In J. Heckhausen (Ed.), *Motivational psychology of human development* (pp. 109–128). Amsterdam, The Netherlands: Elsevier.

Krapp, A. (2002a). An educational-psychological theory of interest and its relation to SDT. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 405–427). Rochester, NY: University of Rochester Press.

Krapp, A. (2002b). Structural and dynamic aspects of interest development: Theoretical considerations from an ontogenetic perspective. *Learning and Instruction, 12,* 383–409.

Krapp, A. (2003). Interest and human development: An educational-psychological perspective. *British Journal of Educational Psychology. Monograph Series II* (Pt. 2, Development and Motivation), 57–84.

Krapp, A. (2005). Basic needs and the development of interest and intrinsic motivational orientations. *Learning and Instruction, 15,* 381–395.

Krapp, A., & Fink, B. (1992). The development and function of interests during the critical transition from home to preschool. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 397–429). Hillsdale, NJ: Erlbaum.

Krapp, A., Hidi, S., & Renninger, K. A. (1992). Interest, learning, and development. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 3–25). Hillsdale, NJ: Erlbaum.

Krapp, A., & Lewalter, D. (2001). Development of interests and interest-based motivational orientations: A longitudinal study in vocational school and work settings. In S. Volet & S. Järvelä (Eds.), *Motivation in learning contexts: Theoretical advances and methodological implications* (pp. 209–232). London, England: Elsevier.

Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., & Sleeth-Keppler, D. (2002). A theory of goal systems. *Advances in Experimental Social Psychology, 34,* 331–378.

Larson, R. W., & Verma, S. (1999). How children and adolescents spend time across the world: Work, play, and developmental opportunities. *Psychological Bulletin, 125,* 701–736.

Lawrence, J. A., & Volet, S. E. (1991). The significance and function of students' goals. In L. Oppenheimer & J. Valsiner (Eds.), *The origins of action: Interdisciplinary and international perspectives* (pp. 133–157). New York, NY: Springer.

Lewalter, D., Krapp, A., Schreyer, I., & Wild, K.-P. (1998). Die Bedeutsamkeit des Erlebens von Kompetenz, Autonomie und sozialer Eingebundenheit für die Entwicklung berufsspezifischer Interessen [The role of experiencing competence, autonomy and social relatedness for the development of job-related interests]. In K. Beck & R. Dubs (Eds.), *Kompetenzentwicklung in der Berufserziehung*. *Zeitschrift für Berufs- und Wirtschaftspädagogik*, *Beiheft Nr. 14* (pp. 143–168). Stuttgart, Germany: Steiner.

Lewin, K. (1951). *Field theory in social sciences*. New York, NY: Harper & Row.

Lipstein, R. L., & Renninger, K. A. (2007). "Putting things into words":12-15-year-old students' interest for writing. In P. Boscolo & S. Hidi (Eds.), *Writing and motivation* (pp. 113–140). Oxford, England: Elsevier.

Mahoney, J. L., Harris, A. L., & Eccles, J. S. (2006). Organized activity participation, positive youth development, and the over-scheduling hypothesis. *Social Policy Report: Giving Child and Youth Development Knowledge Away, 20*(4), 1–30.

McCrae, R. R., & Costa, P. P. (1988). Age, personality, and the spontaneous self-concept. *Journal of Gerontology: Social Sciences, 43,* 177–185.

Mitchell, M. (1993). Situational interest: Its multifaceted structure in the secondary school mathematics classroom. *Journal of Educational Psychology, 85,* 424–436.

Motl, R. W., McAuley, E., Birnbaum, A. S., & Leslie, A. L. (2006). Naturally occurring changes in time spent watching television are inversely related to frequency of physical activity during early adolescence. *Journal of Adolescence, 29,* 19–32.

Oyserman, D. (2007). Social identity and self-regulation. In W. Kruglanski & E. T. Higgins (Eds.), *Social Psychology. Handbook of basic principles*. (2nd ed., pp. 432–453). New York, NY: Guilford Press.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist, 37,* 91–105.

Penuel, W. R., & Wertsch, J. V. (1995). Vygotsky and identity formation: A sociocultural approach. *Educational Psychologist, 30,* 83–92.

Pintrich, P. R. (2003). Multiple goals and multiple pathways in the development of motivation and self-regulated learning. *British Journal of Educational Psychology. Monograph Series II* (Pt. 2, Development and Motivation), 137–153.

Prenzel, M., Bauereiss, R., & Bogner, C. (1992). Explorative Studien zur Wirkungsweise von Interesse [Explorative studies on the effect of interest]. In A. Krapp & M. Prenzel (Eds.), *Interesse, Lernen, Leistung* (pp. 239–259). Münster, Germany: Aschendorff.

Pugh, K. J., & Bergin, D. A. (2005). The effect of schooling on students' out-of-school experience. *Educational Researcher, 34,* 15–23.

Rachlin, H. (1997). Self and self-control. In J. G. Snodgrass & R. L. Thompson (Eds.), *The self across psychology: Self-recognition, self-awareness, and the self concept* (Vol. 818, pp. 85–91). New York, NY: New York Academy of Sciences.

Renninger, K. A. (1990). Children's play interests, representation, and activity. In R. Fivush & J. A. Hudson (Eds.), *Knowing and remembering in young children* (pp. 127–165). New York, NY: Cambridge University Press.

Renninger, K. A. (1992). Individual interest and development: Implications for theory and practice. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 361–376). Hillsdale, NJ: Erlbaum.

Renninger, K. A. (2003). Effort and interest. In J. Guthrie (Ed.), *The encyclopedia of education* (2nd ed., pp. 704–707). New York, NY: Macmillan.

Renninger, K. A. (2009). Interest and identity development in instruction: An inductive model. *Educational Psychologist, 44,* 1–14.

Renninger, K. A., Hidi, S., & Krapp, A. (Eds.). (1992). *The role of interest in learning and development*. Hillsdale, NJ: Erlbaum.

Renninger, K. A., & Leckrone, T. G. (1991). Continuity in young children's actions: A consideration of interest and temperament. In L. Oppenheimer & J. Valsiner (Eds.), *The origins of action: Interdisciplinary and international perspectives* (pp. 205–238). New York, NY: Springer.

Reynolds, R. E., Sinatra, G. M., & Jetton, T. L. (1996). Views of knowledge acquisition and representation: A continuum from experience centered to mind centered. *Educational Psychologist, 31,* 93–104.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68–78.

Sansone, C., & Smith, J. L. (2000). Interest and self-regulation: The relation between having to and wanting to. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 341–372). New York, NY: Academic.

Sansone, C., & Thoman, D. B. (2006). Maintaining activity engagement: Individual differences in the process of self-regulating motivation. *Journal of Personality, 74,* 1697–1720.

Sansone, C., Wiebe, D. J., & Morgan, C. (1999). Self-regulating interest: The moderating role of hardiness and conscientiousness. *Journal of Personality, 67,* 701–733.

Schiefele, U. (1991). Interest, learning, and motivation. *Educational Psychologist, 26,* 299–323.

Schiefele, U. (1996). Topic interest, text representation, and quality of experience. *Contemporary Educational Psychology, 21,* 3–18.

Schmeichel, B. J., & Baumeister, R. F. (2004). Self-regulatory strength. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation. Research, theory, and applications* (pp. 84–98). New York, NY: Guilford Press.

Schmid, S., Fries, S., Hofer, M., Dietz, F., Reinders, H., & Clausen, M. (2007). The theory of motivational action conflicts—Empirical studies

and practical consequences. In Prenzel, M. (Ed.), *Studies on the educational quality of schools. The final report on the DFG Priority Programme* (pp. 317–331). Münster, Germany: Waxmann.

Schmid, S., Hofer, M., Dietz, F., Reinders, H., & Fries, S. (2005). Value orientations and everyday action conflicts: An interview study. *European Journal of Psychology of Education, 20,* 243–258.

Seiffge-Krenke, I. (1995). *Stress, coping, and relationships in adolescence*. Mahwah, NJ: Erlbaum.

Shah, J. Y., & Kruglanski, A. W. (2002). Priming against your will: How accessible alternatives affect goal pursuit. *Journal of Experimental Social Psychology, 38,* 368–383.

Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin, 24,* 1319–1331.

Sheldon, K., Kasser, T., Smith, K., & Share, T. (2002). Personal goals and psychological growth: Testing an intervention to enhance goal attainment and personality integration. *Journal of Personality, 70*(1), 5–31.

Silvia, P. (2005). What is interesting? Exploring the appraisal structure of interest. *Emotion, 5,* 89–102.

Simon, H. A. (1967). Motivational and emotional controls of cognition. *Psychological Review, 74,* 29–39.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin, 133,* 65–94.

Stevenson, H. W., & Lee, S. (1990). Contexts of achievement. *Monographs of the Society for Research in Child Development, 55,* 1–119.

Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown & L. Brooks (Eds.), *Career choice and development: Applying contemporary theories to practice* (2nd ed., pp. 197–261). San Francisco, CA: Jossey Bass.

Todt, E., & Schreiber, S. (1998): Development of interests. In L. Hoffmann, A. Krapp, K. A. Renninger, & J. Baumert (Eds.), *Interest and learning* (pp. 25–40). Kiel, Germany: Institute for Science Education.

Turiel, E. (2002). *The culture of morality: Social development, context, and conflict.* Cambridge, England: Cambridge University Press.

Turner, S. A. Jr., & Silvia, P. J. (2006). Must interesting things be pleasant? A test of competing appraisal structures. *Emotion, 6,* 670–674.

van der Wilk, R., & Oppenheimer, L. (1991). Interests and their structural development: A qualitative content analysis. In L. Oppenheimer & J. Valsiner (Eds.), *The origins of action: Interdisciplinary and international perspectives* (pp. 239–260). New York, NY: Springer.

Verma, S., & Larson, R. (Eds.). (2003). *Examining adolescent leisure time across cultures. New Directions for Child and Adolescent Development, 99.* San Francisco, CA: Jossey-Bass.

Wegner, D. M., & Vallacher, R. R. (1986). Action identification. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 550–582). New York, NY: Guilford Press.

Wood, W., Quinn, J. M., & Kashy, D. A. (2002). Habits in everyday life: Thought, emotion, and action. *Journal of Personality and Social Psychology, 82,* 1281–1297.

Wrosch, C., & Heckhausen, J. (2005). Being on-time or off-time: Developmental deadlines for regulating one's own development. In A.-N. Perret-Clermont (Ed.), *Thinking time: A multidisciplinary perspective on time* (pp. 110–123). Cambridge, MA: Hogrefe.

Zeidner, M., Boekaerts, M., & Pintrich, P. R. (2000). Self-regulation: Directions and challenges for future research. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 749–768). Orlando, FL: Academic Press.