

Basic needs and the development of interest and intrinsic motivational orientations

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Abstract

From the perspective of the “person–object–theory of interest” (POI) the development of interest and interest-related motivational orientations can be explained at the level of functional principles by referring to a dual regulation system that consists of both, cognitive–rational and partly subconscious emotional control mechanisms. Within this regulation system, emotional experiences related to the fulfillment of three basic needs (competence, autonomy, and relatedness) are presumed to play a crucial role. In the first part of this paper the basic ideas of this theoretical approach are explicated considering related concepts and models in other fields of educational and psychological research. In the second part exemplary research approaches and empirical results in the area of vocational education are presented referring to the question whether or not need-related experiences have an effect on the development of vocation-related interests and intrinsic motivational orientations. In final section some consequences for the direction of future research are discussed.

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Empirical results clearly show that interest-based learning has many benefits; for example, interest-based learning is related to self-regulated learning and the quality of the learning outcome (Baumert & Köller, 1998; Hidi, 1990, 2001; Krapp, Hidi, & Renninger, 1992; Renninger, 1998, 2000; Schiefele, 2001; Schiefele & Wild, 2000).

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From an educational point of view, the creation and maintenance of an interest-based motivation during learning and instruction is an important tool. This article deals with the assumption that the quality of specific emotional experiences has an impact on both the direction of motivational development, including the emergence and stabilization of an individual's interests in certain topics or objects of learning, and the stabilization of more general motivational orientations based on interest. More specifically the focus is on the role of experiences that are related to so-called basic needs. .

The paper consists of four sections. In the first section I characterize my general theoretical position that has been denoted in earlier papers as “person–object–theory of interest” (POI; Krapp, 1999, 2000, 2002a,b, 2003; Lewalter, 2002). The second section focuses on how the process of interest development can be explained at the level of general functional principles. Specifically, POI has postulated a “dual regulation system” that consists of both cognitive–rational and partly subconscious emotional control mechanisms. Within this regulation system, experiences related to the fulfillment of three basic needs (competence, autonomy, and relatedness) are presumed to play a crucial role. In the third section I will explicate the basic ideas behind this, often misunderstood, theoretical conception in order to make clear why we expect “need-related experiences” to play an important role for the development of content-specific motivational dispositions such as interest or interest-related motivational orientations. In the fourth section I will describe exemplary research approaches and empirical results from our own studies that have attempted to explore the relation between need-related experiences and various indicators of interest development in the area of vocational education.

1. Development of interest and interest-based motivational orientations

Interest is conceptualized as a specific kind or quality of “person–object–relationship”. In contrast to many other motivational concepts, interest is characterized by its content or object specificity. According to Hidi, Renninger, and Krapp (2004) an interest always refers to focused attention and/or engagement with the affordances of a particular content, and it is this content that can be said to provide possibilities for (interest-based) activities. Other fundamental characteristics of interest include specific cognitive and emotional aspects, such as feeling-related and value-related valences (e.g., positive affect and attribution of personal significance; Schiefele, 2001), or the quality of interest-related knowledge structures (Prenzel, 1992; Renninger, 2000). In empirical studies, an interest can be conceptualized at different levels of specification. For example, a vocation-related interest can refer to a rather specific topic or a certain kind of activity. However, the object area of interest can also be defined by the whole spectrum of contents and actions that make up the curriculum of an entire educational program. At this rather general level of describing an individual's interest there is a close connection to the concept of intrinsic motivational orientation, since an intrinsic motivation to learn is

mostly rooted in the fact that a learner is able to realize his or her already existing interests (Schiefele, 1996).

The development of interests depends on the ongoing process of person–object interactions, which – under certain conditions – may result first in a longer-lasting domain-specific situational interest and later in a relatively stable individual interest of high personal relevance (Hidi et al., 2004; Krapp, 1999, 2002b). It is still an open question why some people become more deeply interested in a certain domain of interest than others, or why students develop an interest (or an intrinsic motivational orientation) in one domain but not in a neighboring domain, which might be evaluated as even more important or useful for approaching future life goals.

There are now a growing number of empirical studies that provide data about the average course of interest development with respect to different interest domains (e.g., subject matters, contents of a course) or different age groups (Hoffmann, Krapp, Renninger, & Baumert, 1998). However, only a few research approaches are concerned with the question of how the course of interest development is controlled by conditions and functional principles at the level of actual psychological processes during action and learning.

2. The concept of a dual regulation system

In POI we have suggested considering a cognitive–emotional regulation system that is responsible for both the formation of interest-related intentions or goals and the evaluative feedback during concrete person–object interactions (e.g., learning activities). Such a system, for example, can explain why a person starts an activity in a certain domain and then continues to engage in this specific object area (“selective persistence”; cf. Prenzel, 1992). In line with theoretical models and concepts discussed in other fields of motivation research (e.g., Efklides, Kuhl, & Sorrentino, 2001; Heckhausen, 2000; Sun, 2002), we assume that such a regulation system consists of a variety of components that can be analyzed (and theoretically reconstructed) at different levels of specification. With respect to interest development at the most general level two interrelated subsystems have to be taken into account. The first subsystem has a strong biological component. It is primarily based on emotional experiences that provide an immediate feedback about the organism’s state of functioning with respect to the actual requirements of the situation. The second subsystem is mainly represented by conscious-cognitive factors. In addition to other functions, these factors are responsible for the process of rational–analytic intention formation. The function of this system becomes evident when a person has to control his or her actions in a conscious effortful way in order to overcome obstacles during a goal-oriented activity or to accomplish an uninteresting but important task.

On the basis of the concept of a dual regulation system, POI postulates that interest development will only occur if both kinds of feedback information (cognitive–rational and emotional feedback) are experienced in a positive way.

More specifically, only if a person experiences his or her actual engagements (e.g., a learning task) as ‘meaningful’ or ‘important’ on the basis of cognitive–rational evaluations, and if the emotional feedback during these engagements is experienced in a positive way (Krapp, 1999, 2000, 2002b). The basic principle of this idea is not a new one. In the tradition of Dewey’s conceptualization of the developing person, a ‘cognitive-affective synthesis’ has repeatedly been postulated as a central condition of the emergence of a ‘lasting’ or ‘abiding interest’ (e.g., Dewey, 1913; Rathunde & Csikszentmihalyi, 1993).

The idea of the existence of a dual regulation system plays also an important role in Boekaert’s (2003) *Model of the Adaptive Learning Process*. Here, two parallel processing pathways are postulated having an influence on the direction and the quality of the learning motivation. A “cold cognition pathway” that represents the learner’s striving for reaching the learning goals (mastery path), and a “hot cognition pathway” that originates in situation-specific affect and is closely related to the learners need for happiness and satisfaction (well-being path). Boekaerts (2003) assumes that the cold processing path leads to a learning intention and has no consequences for well-being. Efklides (2001) argues in a similar vein (see also Efklides & Petaki, 2005) when referring to the concept of *Metacognitive Experiences* (ME) as a particular aspect of metacognition. ME are also assumed to function at two levels: a subconscious level that gives rise to feelings and a conscious-cognitive level that is analytic and makes use of the input of metacognitive experiences and of extant declarative knowledge. In Efklides’ theoretical and empirical approach various feelings are differentiated according to the salient aspects of a problem-solving task, e.g., feeling of familiarity, feeling of linking, feeling of difficulty, etc. (see also Wosnitza & Volet, 2005). In our approach we are referring to feelings and experience that are associated to the postulated system of basic psychological needs in order to characterize important components of the emotional subsystem.

3. Basic needs theory

According to Nuttin’s (1984) relational theory of behavioral dynamics and the theory of self-determination (SDT; Deci & Ryan, 1991, 2000, 2002; Ryan, 1995), it is assumed that living organisms are naturally endowed with a system of primary, or innate, basic psychological needs. During ontogenesis, these needs become more and more integrated into increasingly complex systems of behavior and motivation control. Their basic efficacy, however, remains unaffected by this process.

It is important to note that the term “basic need” here has a specific theoretical meaning that cannot be equated with the need-concept used in everyday language or in older theories of motivation, such as Murray’s (1938). A basic need does not describe a motive that is directed to a specific cognitively represented future goal; rather, the term need is used to designate “the fundamental dynamism inherent in the behavioral functioning of living beings” (Nuttin, 1984, p. 14). It depicts a general

functional principle that controls action and development (Ryan, 1995). The system of needs is hypothesized to be universal. Just as the fulfillment of biological needs is a natural necessity, sufficient fulfillment of psychological needs is a necessary requirement for optimal functioning of the entire psychological system and a person's ongoing person–object engagements (Nuttin, 1984; Ryan, 1995). There is, however, an important difference between biological needs and psychological needs, whereas biological drives tend to operate cyclically (in that once satisfied they do not reemerge for some time), basic psychological needs are persistent.

In principle, the basic needs system has to be understood as working holistically. Such a system does not allow for clear distinctions between certain needs in the same way that distinctions can be made between different biological drives. Nevertheless, it is possible to identify (or reconstruct) separable components within the basic needs system (e.g., the needs themselves). In accordance to SDT we assume that there are three essential needs that are important not only for well-being and psychological growth, but also for a variety of developmental processes, including interest development. These are the following: competence, autonomy, and relatedness. “*Competence* refers to the desire to feel efficacious, to have an effect on one's environment, and to be able to attain valued outcomes” (Deci, 1998, p. 152). This basic need is closely related to the inherent satisfaction that results from exercising and extending one's own capabilities, and the central corresponding affect is the feeling of efficacy (Bandura, 1997; White, 1959). The accumulated amount of successfully managed interactions with the environment results in an increase of competence which occurs automatically and, in principle, is independent of deliberately developed intentions to learn or to acquire a higher level of ability. This is why the motivational counterpart of this need is often called competence motivation. One has to keep in mind, however, that the mostly subconsciously registered experience of being sufficiently competent to meet the requirements of a given task is theoretically not identical with the intention or the motive to increase one's competence in a certain domain.

The next need, namely *autonomy* (self-determination), refers to the “desire to be self-initiating and to have a sense of acting in accord with one's own sense of self” (Deci, 1998, p. 152). People who are able to fulfill this basic need in a certain situation experience release and have the feeling of being independent from undesired external and internal pressure. One can find many philosophical and psychological theories that agree with the general proposition that there is a strong desire to feel autonomous, and that heteronomy is a state which people try to avoid or resist (for a summary see Ryan, 1993). The need for self-determination must not be confused with the pursuit of total freedom or complete independence from the influences of other people. Especially in teaching–learning situations, this need is related to the learner's actual level of perceived competence. Learners desire freedom of action only where (or when) they believe that they are capable of successfully mastering impending tasks (Assor, Kaplan, & Roth, 2002). The pursuit of an optimal level of autonomy is, at the same time, an important prerequisite for fulfilling the need of competence since the successful mastering of a task can only be experienced when it has

been solved to some degree without the support and detailed instructions of others (Lewalter, 2002).

Finally, *relatedness* refers to the desire to feel connected to and to be accepted by significant others. An important aspect is the feeling of belonging to the real or virtual group of individuals who share the same interest. The fact that human beings have a strong need for social contacts and that the fulfillment of this need is a necessary prerequisite for well-being and for physical and mental health is one of the most commonly-known and generally discussed phenomena about the nature of mankind. Many philosophical, psychological and biological theories are concerned with the role of social relations in human development and the question of how more or less satisfactory experiences have an impact on motivation. Furthermore, there is broad agreement with respect to the fact that human beings cannot live and develop in a healthy way when their desire for satisfactory social contacts and relations is frustrated to a certain degree (e.g., Blatt, 1990). On the other hand, results from many empirical studies clearly show that the quality of social relations is a significant predictor for positively evaluated aspects of motivation and development (Ryan & Deci, 2000).

The list of postulated needs, of course, could easily be extended, and when using a looser definition of psychological need, one could posit almost an infinite number of needs that have an influence on motivated behavior. However, the list of theoretically relevant needs shortens substantially when using a strictly defined theoretical criterion, such as essentialness or necessity for growth and integrity. According to Ryan (1995) there is no other need that fits this criterion in the same way as the above-mentioned three basic needs for competence, autonomy and relatedness.

With respect to interest development we assume that the system of basic needs provides continual signals concerning certain aspects of what in other theories is labeled as well-being, satisfaction or general positive emotional feedback. According to widely accepted neuropsychological concepts about the emotional influence on cognitive processing (e.g., Klinger, 1996; Moffat & Frijda, 2000) one has to take into account that these ongoing emotional signals are partly working on a subconscious level and, therefore, cannot be identified and explored on the basis of research approaches that rely on cognitive evaluations and propositional statements about feeling-related subjective experiences during action. Only when we become aware of these emotional reactions and their evaluative meaning, we are able to identify and to describe related phenomenological experiences at a metacognitive level (ME; see also Efklides & Dina, in press). Our cognitive representations and descriptions of these experiences, however, are not identical with original basic emotional reactions, because they are the result of cognitive “elaborations” and more or less reflective interpretations of the emotional signals on the basis of previous experiences in similar situations.

We become especially aware of the cognitive and emotional aspects of these need-specific experiences when we try to reflect on our actual level of well-being or on the possible reasons for a remarkable change of our mood during a period of learning. When subjects are asked about their feelings during the past sequence of learning

activities, they normally refer spontaneously to experiences that are obviously related to the system of basic needs, for example, the feeling to be able to meet the requirements of a learning task, to do something that meets the own goals and personal wishes or to be socially accepted in a learning group (Lewalter, Krapp, Schreyer, & Wild, 1998). This kind of statements can be used to measure situation-specific need-related experiences in empirical studies (see below). POI postulates that the ongoing experiential feedback with respect to the three basic needs has an influence on both the short-term approach or avoidance tendencies that are relevant for establishing a situational interest, and the adaptation of the content-structure of an individual's pattern of relatively stable preferences (e.g., individual interests; Krapp, 1999, 2002b; Renninger, 2000).

Taken together, one can conclude that the system of basic needs and their experiential counterparts during concrete person–object interactions represents a rather complicated pattern of psychological functions and processes. This complexity does not allow for an easy answer to the question of how basic needs are linked to the manifold processes of interest development. In a first step of empirical analysis it seems necessary to prove the general hypothesis that need-related experiences have an impact on the development of interest and/or other motivational characteristics that are theoretically connected to the interest concept.

4. Empirical approaches and selected results

A number of empirical studies have been carried out with students and young adults in different educational settings and with respect to different aspects of interest-based learning motivation. Unfortunately, need-related experiences cannot be measured directly, and a main problem of the empirical studies conducted to-date is the operationalization of this construct. The following methods have been used to obtain empirical indicators of need-related experiences: questionnaires, experience sampling methods (ESM), and retrospective interviews. In our research group we are currently studying the conditions and processes of interest development in the context of vocational education on the basis of longitudinal and cross-sectional studies (see Krapp & Lewalter, 2001 for an overview). Using these studies, I would like to illustrate how we have tried to find empirical evidence for our theoretical assumptions using different methodological approaches for measuring need-related experiences.

4.1. Analyses using data from questionnaires as indicators of need-related experiences and developmental trajectories of interest-related motivational orientations as the dependent variable

One methodological approach has been to use developmental trajectories of intrinsic versus extrinsic motivational orientations as indicators of interest-related

developmental changes. Our longitudinal study comprised the entire vocational education program of 2.5 years and was conducted with 117 trainees of insurance business (mean age of 18.5 years, about 50% female). Twice a year the students attended the vocational school for a period of six weeks. For the rest of the year, they worked in the company. Among other motivational aspects, developmental changes of intrinsic and extrinsic motivational orientations were assessed by using a self-report questionnaire at six measurement points during the 2.5 years. For our purposes, two measures are of special importance. The scale "interest orientation" as an indicator of an intrinsic motivational orientation (IMO) refers to the perceived possibilities (or expectations) to realize vocation-related interest as a reason for learning. It includes statements such as, "I learn because I am interested in the topic." The scale "achievement orientation" as an indicator of an extrinsic motivational orientation (EMO) refers to external incentives for learning (e.g., "I learn because I want to get good grades.") The indices of internal consistency for both scales range from $\alpha = 0.76$ to $\alpha = 0.94$.

Empirical indicators of need-related experiences were drawn from scales that were administered at three measurement points during the longitudinal study in both educational settings. The competence scale refers to the students' perceptions of being able to fulfill the given tasks in the actual learning environment ($\alpha = 0.83$). Autonomy was measured by asking the students how much they agreed with statements about the opportunities to make self-determined decisions regarding the organization of their work in the companies ($\alpha = 0.93$). The quality of social relatedness was estimated by two sub-scales: "social climate" and "integration in the culture of experts". The items of the social climate scale refer to the nature of the social relations in the working group and the feeling of being supported in an appropriate manner ($\alpha = 0.83$). The integration in the culture of experts scale deals with the possibility of participating in authentic tasks at the work place and the degree of being accepted as a full member of the working group ($\alpha = 0.86$).

On the basis of these data, Wild (2000) has undertaken Hierarchical Linear Modeling (HLM) analyses using indicators of individual growth curves of IMO and EMO as dependent variables. The individual values of the indicators for need-related experiences were compiled over the three measuring points and served as predictors in the statistical analyses. All indicators of need-related experiences were found to be significant predictors of the individuals' growth curves of IMO, $p < 0.01$ (Wild, 2000, p. 87). This is in line with our theoretical expectations. Since the measures of individual growth curves for IMO and EMO are correlated significantly, $r = 0.34$, $p < 0.05$ (Wild, 2000, p. 85), it is not surprising that there are also significant (but in sum lower) relations between the indicators of basic needs and changes of EMO during the course of vocational education. In this study competence and social climate turned out to be significantly related to EMO, $p < 0.05$. Including control variables (gender, intelligence, level of school qualification) into the statistical models of the HLM analyses did not result in any marked differences in these findings.

4.2. HLM analyses from need-related experiences data using the experience-sampling method as the independent variables and developmental trajectories of interest-related motivational orientations as the dependent variable

The role of need-related experiences was explored using both questionnaires and the Experience Sampling Method (ESM). ESM allows for an immediate assessment of need-related experiences during the course of teaching and learning. In our study we used a programmable pocket calculator as a signaling and recording device. It was programmed to give each student signals at random intervals. When being signaled, the respondent had to supply answers to a number of rating scales referring to his or her momentary external and internal situation, including evaluations of the three need-related experiential states. During the longitudinal study, ESM was used in the first and in the second year of vocational education during a 1-week session in vocational school and another 1-week session in the companies.

In a series of HLM analyses we used the aggregated ESM-rating of competence, autonomy and relatedness as independent variables and the above-mentioned individual growth curves of IMO and EMO as dependent variables (Krapp & Wild, 1998). The results partially support our theoretical expectations: Whereas the indicators of competence and autonomy turned out to be significant predictors, $p < 0.01$, of the individual developmental changes of IMO in school as well as in the working place, no significant relationship was found for social relatedness. When using the EMO growth curves in the HLM analyses, only the indicator of the experience of autonomy in school reached a significant level, $p < 0.05$.

Our analyses revealed another very interesting finding in terms of developmental change: comparing the data for the two different time periods (the first year versus the rest of the vocational education), we find a remarkable decline of predictive power for all need-related experiences in later periods of vocational training. Our data, however, do not allow for an answer to the question of whether or not this observed decline is a result of our measurement procedure or a theoretically relevant indication of the diminishing importance of need-related experiences during a longer period of teaching and learning in a certain educational setting.

Within our research project we also conducted a so-called intensive study in the companies, in which we tried to examine motivational conditions and processes within this setting of vocational education more precisely (Lewalter, 2002). Over a period of two weeks we collected a variety of data, including motivational orientations at the beginning and at the end of this assessment period and ESM measures during 16 lessons on a specific topic of vocational training. The sample of this study consisted of 113 trainees in the insurance business (52% male; average age 19.7 years). The lessons took place in small groups ranging from 3 to 14 trainees, each of which lasted about 45 min. Lewalter (2002) calculated structural equation models (EQS) using interest orientation at the end of the investigated time period as a dependent variable. Aggregated ESM-data concerning the three basic needs together with scores of interest orientation at the beginning served as independent variables. Thus it was possible to show whether or not ESM measures of

need-related experiences lead to a significant increase of explained variance when they are included into the statistical model in a stepwise fashion. In EQS-analyses with only one need-related experience as an additional predictor, competence and autonomy led to significant path-coefficients; no significant relation could be found for relatedness. In a model, which included all predictor variables, only autonomy showed a significant path coefficient (besides the initial measure for interest orientation).

4.3. Analyses of the role of need-related experiences for the development of interest on the basis of retrospective interviews

Empirical results pertaining to the interrelation between need-related experiences and developmental changes at the level of motivational orientations cannot be interpreted as bearing directly on the question of the conditions necessary for developing specific topic-related interests in an individual's course of development. Furthermore, there are serious methodological concerns about the legitimacy of the application of group-related data to understanding how the processes of interest development occur on an intraindividual level (Valsiner, 1986).

To explore the process of interest development at the intraindividual level, one must use other methodological approaches, such as longitudinal observational studies or retrospective interviews with individuals that have recently developed new topic-related interests. There are several studies that have attempted to explore the conditions of interest development by using interview data (e.g., Gisbert, 1998; Prenzel, Kramer, & Drechsel, 1998). In our project on the development of interests in the area of vocational education, Lewalter et al. (1998) interviewed two subsamples of participants from the longitudinal study in the middle ($n = 49$) and at the end ($n = 71$) of the entire vocational-education program. The aim of the retrospective interviews was to find out whether or not the subjects had developed new job-related interests during the past period of vocational education, and which external and internal factors were subjectively identified as significant conditions or 'causes' for the emergence and maintenance of these new interests.

All participants reported that they had developed new content-specific interests during the period under consideration. With respect to the most prominent interest, the participants were asked why they became involved in this specific topic and how they would explain the fact that they developed a rather stable interest in this specific subject area. Among other causes, participants spontaneously mentioned events and experiences that related to the theoretically postulated basic needs. The results derived from content analyses of the statements in the two interview studies provide a similar picture. More than 70% of the participants (75% in the first and 73% in the second interview) referred to competence, 65%/67% referred to social relatedness and 34%/41% mentioned autonomy as a subjectively recognized cause for the development of their new job-related interest.

From my point of view, these results can only demonstrate, at a rather general level, that our basic theoretical propositions about the role of need-related feelings

and experiences during the process of interest development are in accordance with subjective reconstruction of the conditions for initiating and maintaining a new interest during a concrete training period and with respect to a specific domain or object of interest. I do not think that the differences in the percentage of participants that mentioned certain needs in this particular study can really inform us as to the relative importance of the three components of the postulated basic needs system in general.

5. Summary and conclusions

The central aim of this paper was to present theoretical considerations and selected empirical results concerning the impact of need-related feelings and experiences on the development of interest and intrinsic motivational orientations. Within our theoretical approach, basic psychological needs are interpreted as important (although not the only relevant) psychological ‘background conditions’ for the emergence and the ongoing changes of emotional signals within the dual cognitive–emotional regulation system that is responsible for the manifold actual and ontogenetic processes during motivated learning. This is not the place to discuss the central idea of a dual regulation system in more detail. Nevertheless, it seems to be remarkable that there is a growing number of educational researchers who try to integrate findings from neuropsychology and other areas of basic psychological inquiry approaches into their own concepts and models of learning motivation (e.g., Boekaerts, 2003; Efklides et al., 2001; Efklides & Petkaki, 2005) and to explore the interrelations between emotions, feeling-related experiences, motivation, learning and other aspects of cognitive functioning.

The studies that I have mentioned here as typical examples of the attempt to explore the effects of need-related experiences and feelings on the development of interest do not, of course, represent the entire field of associated research (see other contributions to this issue, e.g., Wosnitza & Volet, 2005). The reported results, therefore, cannot give a comprehensive picture of the whole body of available empirical evidence. However, together with results from other empirical studies (e.g., Aufschnaiter, Schoster, & Aufschnaiter, 1999; Prenzel et al., 1998; Schuhmacher, 2002; Wild & Hofer, 2000) they seem to support the overall hypothesis that the amount and quality of need-related experiences have an influence on the emergence and stabilization of interests and interest-related motivational orientations.

In order to draw valid conclusions about specific aspects of the interrelations between the system of basic needs and the development of interest, however, further empirical research is needed. For example, the currently available results do not give a clear picture about the relative importance of basic needs. It is only clear that this question cannot be answered at a general level. Instead the findings support the hypothesis that the importance or effectiveness of certain need-related experiences depend on a variety of moderating factors, such as the object-domain of interest, the age of the students, the ability of the learners to organize their learning in a self-regulated way, and previous experiences concerning the likelihood of satisfying the

basic needs in a certain environment. There are still many other unanswered questions that require clarification. I am sure that basic research in different fields of modern psychology can be a rich source for the development of new hypotheses. For example, Kuhl (2000, 2001) recently developed a “theory of personality systems interactions” (PSI theory), in which he formulated very precise hypotheses which may be particularly relevant when explaining interest development. This theory provides a rather differentiated model of the complex interrelations among action control, affect (emotional experiences during action) and long-term personality development. It includes – among other things – the assumption that the processes of activating or repressing the four basic macro-structures of personality are continuously controlled by emotional experiences (affects), and that both positive and negative affects are involved. To make substantial progress at this level of theoretical and empirical inquiry, we must consider the adequacy of the methods and theories that are most prevalent in contemporary educational–psychological motivation research. In accordance with Efklides et al. (2001) and others, I think it is necessary to broaden the view of this field towards understanding the concepts and models, which aim at a functional explanation of developmental changes.

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