

Chapter 11

Development of Interests and Interest-Based Motivational Orientations: A Longitudinal Study in Vocational School and Work Settings¹

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In modern theories of learning and knowledge acquisition, the problem of domain- or content-specificity plays an important role. For example, research on “the nature of expertise” (Chi *et al.*, 1988) has shown that the exceptional abilities of experts are based on a strongly content- and/or context-specific knowledge base (Hoffmann, 1992). In many empirical studies, it has emerged that the amount of prior knowledge or the quality of topic-related (cognitive) schemata determine, to a high degree, the learning outcomes in almost all educational settings. It is now widely accepted that research on teaching and learning has to take the fact of content- and context-specificity into account in order to be able to reconstruct the process of learning in an adequate way. However, when looking into the field of motivational research, the problem of content- or context-specificity is much less prominent (Renninger *et al.*, in press; see chapters from Järvelä, Hickey and Volet in the first section of this book). Two closely related reasons seem to be responsible for this deficit. On the one hand, there is a lack of theoretical concepts that provide an adequate theoretical background for both conceptualizing and analyzing content-specificity. On the other hand, there are severe methodological problems, because considering contents and situation-specific contextual conditions in analyzing motivational phenomena is complicated and requires more sophisticated methodical tools than the exploration of the development and effects of generalized motivational variables in the sense of motivational dispositions or “traits”.

In this chapter, we will discuss some theoretical ideas and empirical results of an educational–psychological research approach that tries to overcome these problems. The theoretical background is a “person–object–conception” of interest (POI) that will be outlined in the first section. This approach interprets interest as a motivational component of learning and human development that is always related to a specific content or “object” of knowledge and competence acquisition.

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Besides more general aspects of this theory, central characteristics of the interest construct and hypotheses about the conditions and processes of interest development will be described.

The main part of the chapter is concerned with the theoretical framework, the methodology and selected results of a research project on “the conditions and effects of learning motivation in vocational education” (Lewalter *et al.*, in press).² More specifically, we will present results from a longitudinal study analyzing the development of vocation-related interests and motivational orientations in the area of *vocational education*. Beside school and academic education, vocational education (VE) plays an important role in a modern industrial society. In Germany, for example, Schober & Tessaring (1993) have shown that in 1990 about 67 percent of an age group completed a vocational education program while only about 13 percent completed an academic education; about 20 percent started professional life without any formal education.

The ultimate goal of our research approach is to provide empirically founded knowledge on how to foster the development of long-term effective motivational dispositions (e.g., interests and interest-related goal orientations). Since vocational education in Germany takes place in two different educational settings (vocational school and training on the job), research in this field inevitably has to deal with the problem of context-specificity of motivation (and learning). Methodical characteristics of our research approach are the combination of quantitative and qualitative methods of data collection and the explicit consideration of content- and context-specificity of motivation. Furthermore, we try to compare and integrate data from different research perspectives by analyzing developmental processes with respect to inter- and intra-individual changes. Besides questionnaires and tests, ESM-techniques (Experience-Sampling Method) and interviews have been used to gather a broad variety of data on conditions and effects of vocational education on the development of motivational variables including motivational orientations and content-specific interests.

Referring to the central topic of this book, we present results that demonstrate the importance and fruitfulness of considering context-specificity in motivational research.

1. A Person–Object Conception of Interest (POI)

Our theoretical conception, which has recently been outlined in more detail under the label “person–object theory of interest” (POI; c.f., Krapp, 1999a, 2000, in press), can be traced back to considerations of Hans Schiefele on the development of a genuinely educationally oriented theory of motivation (H. Schiefele, 1974). Such a theory was expected to be able to make explicit statements about how an individual develops enduring preferences for specific subjects or contents of

² This project was part of a rather extensive “research focus program” of the Deutsche Forschungsgemeinschaft (DFG) funding 18 projects concerned with teaching and learning processes within the setting of the German “Dual System” of vocational education (for an overview c.f. Beck, 2000).

learning, that is, how the development of content specific motivational dispositions (such as interests) can be explained.

1.1 Metatheoretical Premises

POI is based on explicit *metatheoretical premises*. One essential metatheoretical principle of POI is its readiness to respect educational ideas. From an educational point of view, for example, it is necessary to discuss motivational phenomena not only with respect to academic achievement and the prediction of inter-individual differences in learning, but also with respect to the emergence of content-specific motivational dispositions that are stabilized during the course of human development and may become an enduring or transitional component of a person's self-system. Other metatheoretical issues concern the question of which "model of man" should be used as the starting point for building a theory and which conception of the human personality is appropriate to describe and explain the role of interest-based motivation in learning and development.

In accordance with other theories (e.g., Deci & Ryan, 1985, 1991; Nuttin, 1984; Renninger, 2000), it has been suggested that a purely cognitive-rational model for describing the course of interest development is limited (Krapp, 1999a, in press). As a consequence, POI refers to a *personality-theoretic framework* that takes different levels of action control into account (c.f. below). Furthermore, POI suggests the use of an approach to personality that reconstructs motivational aspects of the developing person not only with respect to individual differences, but also with respect to functional relations and general "laws" of human development. In accordance with Deci and Ryan's "theory of self-determination" (SDT), it is postulated that such a theory has to take into account the fact that the person is aware of himself or herself, and that the "object" of this awareness is some sort of representation of the individual's personal "self". The self can be seen as the central area of an individual's structure of personality. During one's course of life, the psychological system that represents a person's self changes continually. Already existing components become more and more differentiated, others are reduced and finally excluded from the central area of a person's self. Since the person tries to create and maintain a coherent image, a "good Gestalt" of his/her sense of self, he or she cannot identify completely with all the thoughts, actions, tasks, and strivings, even if they are experienced as being important for the individual's wishes and future goals at that particular moment. As a consequence, only a rather limited selection of possible learning goals will become a longer-lasting integral part of a person's self-system.

1.2 Basic Characteristics of the Interest Construct

In accordance with ideas of Lewin (1951), Nuttin (1984), Deci & Ryan (1985, 1991), Renninger (2000) and many others, it is postulated that the individual, as a

potential source of action, and the environment as the object of action, constitute a bipolar unit. Therefore, the interest-construct is conceptualized as a relational concept. An interest represents or describes a specific relationship between a person and an object of his or her “life-space” (Lebensraum; c.f. Lewin, 1951). It can be interpreted as a specific “person–object-relationship”. An object of interest can refer to concrete things, a topic, subject-matter, an abstract idea, or any other content of the cognitively represented life-space.

The most important characteristics of an interest-specific relationship refer to one’s values and feelings. From this point of view, an interest is composed of value-related and feeling-related valences (U. Schiefele, 1991; Krapp, 1993, 1999a, in press). *Value-related valences* refer to the assumption that any interest has a certain quality of personal significance. *Feeling-related valences* refer to a person’s positive experiential state while being engaged in an interest-based activity, for example joy, optimal arousal or feelings of competence, autonomy and social relatedness. Thus, interest-based interactions with the environment are characterized by optimal experiential modes that combine positive cognitive qualities (e.g., thoughts on meaningful goals) and positive affective qualities. Under extremely optimal conditions, *flow* may be experienced (Csikszentmihalyi, 1990). A further essential feature of interest is its intrinsic character. Interest-based activities meet the criterion of *self-intentionality* which means that an interest-related goal is compatible with a person’s actually preferred values and ideals. There is no gap between what a person has to do in a specific situation, and what the person wishes (or likes) to do (Dewey, 1913; Rathunde, 1993).

Conceptualizing interest as an interactive relation between an individual and certain aspects of his/her life-space makes it possible to study the conditions for, and effects of, interest from various research perspectives using different levels of analysis. On a first level, interest refers to current engagements. It describes a state or an ongoing process during an actual learning activity. This is the case when we observe the learning behavior of a student and characterize his or her motivational state as “being interested”. On a second level, interest refers to the dispositional (or “habitual”) structure of an individual. Here, interest is interpreted as a relatively stable tendency to occupy oneself with an object of interest. On this level, one usually speaks of *individual interest* (c.f. Krapp *et al.*, 1992; Renninger, 1990, 1992, 2000).

1.3 Development of Interest

From an educational point of view, it is important to know how an educationally desirable interest develops and which conditions are responsible for developmental change. This process is usually a multi-stage process. Therefore, one must consider a developmental continuum between the very beginning of a situational interest on the one hand, and a stabilized interest of a person who has totally identified with the related object of interest on the other hand. This idea has already been pointed out by Dewey (1913). In recent discussions on the role of interest in

teaching and learning (e.g., Hidi, 2000; Hidi & Harackiewicz, 2000; Krapp, 1998, 1999b, Mitchell, 1993) the use of a developmental model that differentiates between three types of interest has been suggested. From an ontogenetic perspective they can be interpreted as three prototypical stages of interest development: (1) a situational interest awakened or triggered by external stimuli for the first time; (2) a situational interest that lasts during a certain learning phase and (3) an individual interest that represents a relatively enduring predisposition to concern oneself in a certain object-area of interest.

A developmental model that starts from such a conceptual differentiation has to describe and explain the occurrence of two qualitatively different "steps" of interest development (Krapp, 1998, 1999b): first, the shift from the transitional state of actual attraction to a more stable motivational state which is a necessary condition for deeper-level learning; and second, the shift from a rather stabilized situational interest to a more or less enduring individual interest.

The Role of Different Subsystems of Action Control. In order to be able to understand conditions and processes of interest development at the level of intra-individual changes, functional concepts and theories about the regulation of human behavior are needed. In accordance with theoretical models discussed in other fields of psychological research referring to developmental aspects in human motivation (e.g., Brunstein *et al.*, 1999; Epstein, 1990; McClelland *et al.*, 1989; Heckhausen, 2000), POI postulates a psychological system that operates at different levels of human experience and action control. A first subsystem is based on emotional states that remain mostly on a subconscious level of experience. It works rather autonomously and does not require reflective awareness in order to function in a proper way. A second subsystem seems to be typical for human beings and, thus, has been the main focus of modern cognitive psychology. Contrary to the control system at the first level, the second system is based mainly on decisions that a person consciously makes with respect to future goals and intentions. This cognitive subsystem requires the use of volitionally-directed strategies of action control.

With respect to conditions of interest development that can explain intra-individual changes on the basis of functional psychological principles, POI assumes that a person will only engage continuously in a certain area of tasks and/or topic-related objects if he or she assesses these engagements on the basis of rational considerations as sufficiently important (value-related valences), and if he or she experiences the course of interactions as positive and emotionally satisfactory on the whole (Krapp, 1999a, 2000; c.f. also Deci, 1992, 1998).

There is quite a number of theories and empirical research approaches that provide concepts and empirically tested models to describe and explain the regulation processes at the cognitive-rational level, for example concepts developed in the tradition of achievement motivation that describe the process of intention-formation (Heckhausen, 1991), theories about self-regulated learning (c.f. Boekaerts *et al.*, 2000) and personal goals (c.f., Brunstein & Maier, 1996; Elliott, & Dweck, 1988; Pervin 1989), or the broad variety of theoretical and empirical approaches

that use the concept of self-efficacy (Schunk, 1991; Bandura, 1997). However, there is considerably less theoretical foundation for describing the processes that control the dynamics of motivated learning at the level of emotional experiences and situation-specific affects. Therefore, we have emphasized the role of affect-related experiences in our theoretical and empirical work.

The Role of Basic Psychological Needs in Interest Development. In the past few years, we have tried to specify those emotional experiences that are important to the course of interest development using the concept of basic psychological needs. Referring to Nuttin's (1984) "relational theory of behavioral dynamics" and Deci and Ryan's "theory of self-determination" (SDT; c.f., Deci & Ryan, 1985, 1991; Ryan, 1995), we assume that living organisms are naturally endowed not only with a system of innate basic *biological* needs (e.g., drives) but also with a system of basic *psychological* needs. During ontogenesis, these needs become more and more integrated into the increasingly complex systems of behavior control. Three qualitatively different basic needs can be distinguished within this system, namely, competence, autonomy, and social relatedness. Just as the fulfillment of basic biological needs is a natural necessity, sufficient fulfillment of the three psychological needs is a necessary requirement for optimal functioning of the psychological system.

It is important to notice that the meaning of "basic need" in these theories is not identical with the need-concept in everyday language or in traditional theories of motivation (c.f., Murray, 1938). They have to be understood as components of a holistically functioning system that provides continual signals about the functional efficiency of the current person-environment interactions on a mostly subconscious level of information processing (c.f., Nuttin, 1984). The conceptual separation into three specific needs is a theoretical construction in order to be able to investigate this phenomenon in a meaningful way in empirical approaches.

2. An Empirical Project to Explore the Development of Interests and Motivational Orientations in Dependence of Context

In our recent empirical research, developmental aspects have become a central focus. Besides the question of how interests and interest-based motivational orientations develop in dependence of context variables, we are mostly interested in exploring the functional principles of motivational development.

2.1 Theoretical Framework

In the theoretical framework which gives an overview of the kind of variables we are using in our empirical studies (see Figure 1), two motivational concepts form the main part of the *dependent variables*: vocation-related interests and motivational orientations. Whereas an interest is always directed to a more or less

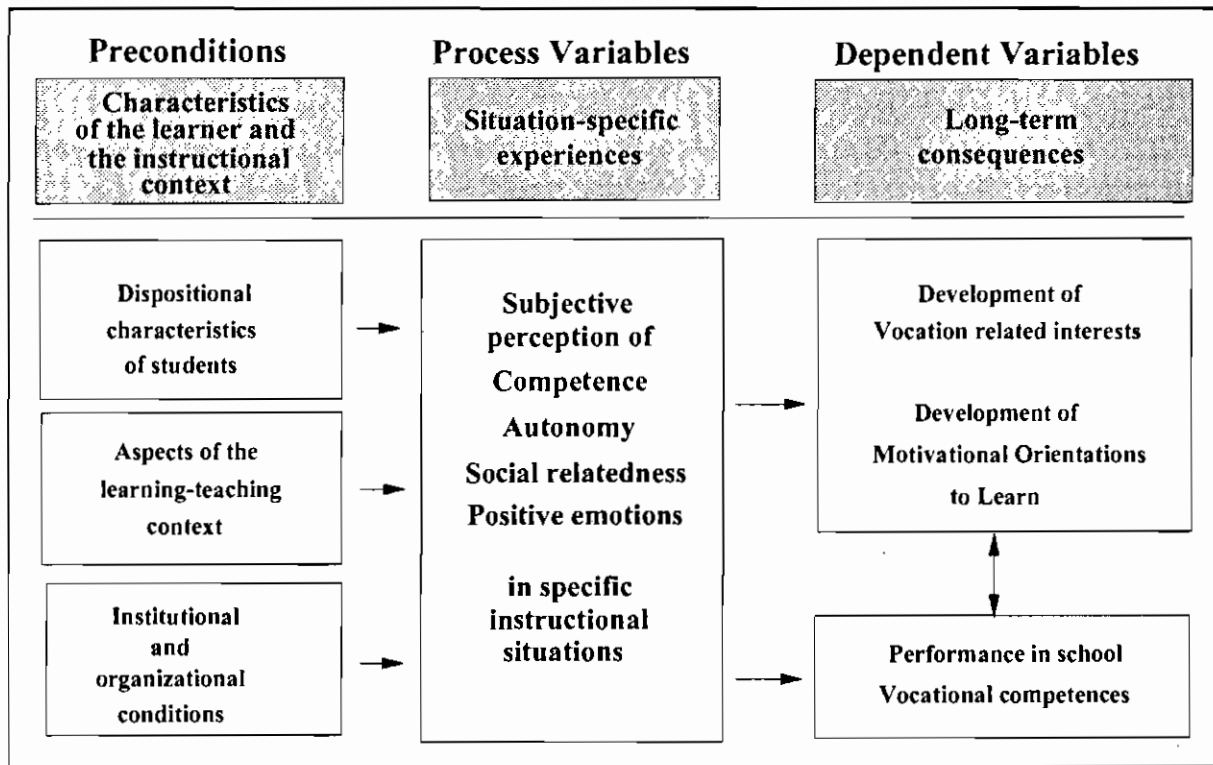


Figure 1: Theoretical framework of the research project.

specified content or object area (c.f. above), a motivational orientation refers to a person's generalized and relatively stable tendency to be motivated to learn by a specific category of incentives (Nolen, 1988; Pintrich, 2000; U. Schiefele, 1996). Recently, the concept of motivational orientation has been mostly discussed under the label *goal orientation* (e.g., Ames & Ames, 1989; Köller, 1998; Dweck, 1992; Pintrich, 2000). With respect to the concern of our study, "intrinsic goal orientations" are of special relevance. They are characterized by a person's motivational tendency to learn because instruction is enjoyable or because the content is experienced as "interesting". In the following presentation of results, we also take the opposite of these interest-related motivational orientations into account, namely "extrinsic goal orientations". They are characterized by the tendency to be motivated by external rewards and incentives (e.g., good marks, parental praise, or the wish to "be better" than others). The consideration of extrinsic orientations provides an opportunity to compare the effects of preconditions and process variables on the dependent variables used in our studies (c.f. Figure 1). In some of these studies, we have also taken cognitive outcome-criteria into account (e.g., performance in school or vocational competences).

Motivational development during vocational education can be analyzed under two different perspectives. First, the perspective of preconditions which can be located either in the person (dispositional characteristics of the students) or in different aspects of the context, including both institutional or organizational variables and specific conditions of the educational setting (e.g., curriculum, teaching strategies). Second, the perspective of process variables, especially situation-specific

experiences and processes (e.g., the kind of emotional or cognitive experiences in specific learning and teaching situations). In accordance with the theoretical conceptualizations described above, we expect that the development of interest and intrinsic motivational orientations is a function of both the contextual and individual preconditions and the current situation-specific experiences (e.g., the opportunity to experience competence, autonomy and social relatedness).

2.2 Design and Methods of the Longitudinal Study

As mentioned above, our research project consists of a series of separate but theoretically interrelated studies in the field of vocational education. VE in Germany is based on the so-called “dual system” and starts after students have accomplished either primary or secondary education. It extends over a period of two or two and a half years, respectively. Students who want to enter VE have to apply for a job in a company that is willing to provide professional training according to state-approved regulations. As a consequence, learning takes place in two rather different institutional contexts, the vocational school (“Berufsschule”) and a “real” workplace in the companies (e.g., insurance companies). In the companies, VE includes periods of instruction at the place of work and formal in-house teaching. Twice a year, the students attend a vocational school for a period of six weeks. For the rest of the year, they work for the company.

Our research project concerns VE in the field of insurance business. In an initial longitudinal study, we wanted to obtain an overview of the kinds of observable motivational changes that might occur during the training period and the beginning of regular employment. Figure 2 provides an overview of the design and measurements of this study (for a detailed description of the procedures of data collection c.f. Wild *et al.*, 1994; Wild *et al.*, 1995).

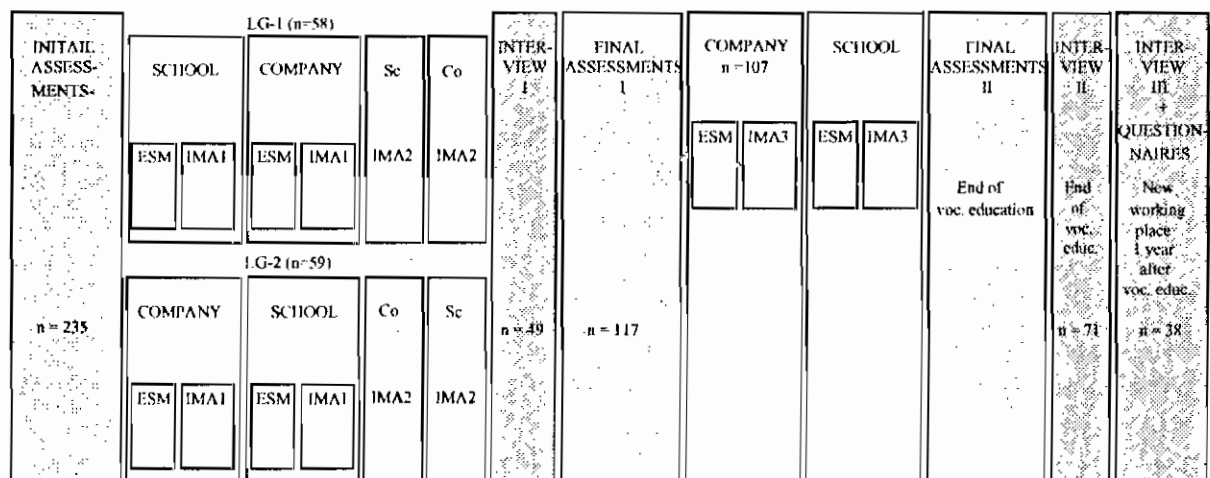


Figure 2: Design and methods of data collection.

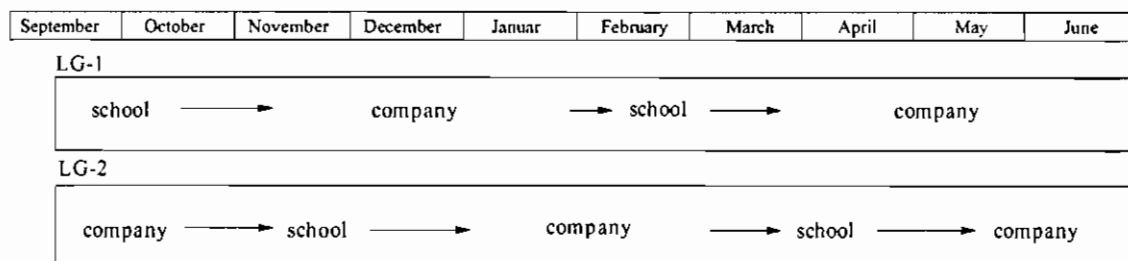


Figure 3: Rotation between instruction in school and in the workplace within the first year of vocational education for longitudinal group LG-1 and LG-2.

Sample. A total of 117 freshmen (apprentices) of insurance business participated in the study. In order to have a broader sample for statistical analyses referring to the measurement criteria of some scales, we gained data from 235 subjects at the first measurement point (initial assessments; see Figure 2). The students were drawn from 13 different companies. About half of the sample started their education in school ($N = 58$), while the other half started their education in the companies ($N = 59$). Thus, we have two longitudinal groups during the first year of training (LG-1 and LG-2; see Figures 2 and 3). At the end of the first year and at the end of the entire vocational training, two sub-samples of apprentices ($n_1 = 49$; $n_2 = 71$) were interviewed; one year after the end of the VE, an additional third interview together with a questionnaire-inquiry was realized with 38 subjects who were employed after having finished their training successfully.

Measures. Data collection was performed according to the following schedule:

Initial assessments: Questionnaires and tests were used to assess cognitive and motivational characteristics of the apprentices at the beginning of VE, including intelligence, prior knowledge; general interest towards the contents of the vocational education ("VE-interest"); intrinsic and extrinsic goal orientations; self-efficacy and the kind of preferred learning strategies. (A more detailed description of some of the scales will be given when we report on the results).

Experience Sampling Method (ESM): In the first and in the second year, ESM was used in each case during a one-week session in vocational school and another one-week session in the companies in which the apprentices were employed. The ESM-procedure requires the students to carry a signaling device with them while they are following their "normal" activities. As signaling and recording device we used a programmable pocket calculator. The calculator was programmed to give signals at random intervals. When being signaled, the respondent has to supply answers to a number of rating scales referring to his or her momentary external and internal situation. These scales are presented on a small sheet of paper attached to the pocket calculator. The answers, however, are directly typed into the calculator. The items of the Experience Sampling Form (ESF) contained questions on the students' perceptions of the actual situation and his or her subjective experiences ("psychological states") in the actual situation (e.g., quality of

need-related emotional experiences, perceived “reasons to learn”). Furthermore, there were a number of items concerning the location, social context and content of thought (c.f. Wild *et al.*, 1994).

Intermediate assessments (IMA): Questionnaires were administered to subjects three times in each context including (a) scales to assess the perception of the learning and/or working context (e.g., the kind of teaching–learning situation; teaching objectives; perceived motivating techniques of teachers/instructors) and (b) scales to assess participants’ motivational orientations and learning strategies.

Interview-study I and II: With two sub-samples, in-depth interviews were conducted to explore subjectively perceived changes of job-related content-specific interests during the past period of vocational training. The first interview with 49 students took place at the end of the first year; the second interview with 71 subjects was scheduled for the end of the entire vocational education.

Final assessments I and II: Questionnaires and tests that had been used at the initial and intermediate assessments were administered to participants once again at the end of the first year and at the end of the entire VE program.

Interview III: 38 subjects from the longitudinal sample who were employed after having finished their vocational training were interviewed one year after the transition from VE to a regular employment in the insurance company. Besides the interview, subjects were asked to fill in once more an “interest” questionnaire. In both inquiries, the same procedure and the same kind of questions were used as in the preceding stages of data collection.

3. Findings Specific to Context Specificity

In the following, we will present exemplary results from the longitudinal study. The first three sections refer to descriptive analyses of the course of the development in the area VE-interest, motivational orientations and content-specific interests. In a fourth section, we will present results from explanatory analyses concerning the role of need-related emotional experiences in the observed courses of motivational development. In both kinds of analyses, we consider inter-individual as well as intra-individual differences and changes.

3.1 Developmental Trajectories of General Interest into the Topics and Contents of Vocational Education

VE-interest is supposed to measure the general interest into the topics, activities and learning tasks of VE and training in school and in the company. It was measured by the scale “Interest in Vocational Education” which is an adaptation of the “Study Interest Questionnaire” (SIQ; Schiefele *et al.*, 1993). The scale shows a high reliability at all times of the longitudinal study (scores reached from 0.88 to 0.92). Figure 4 shows two graphs representing the developmental trajectories of average VE-interest scores.

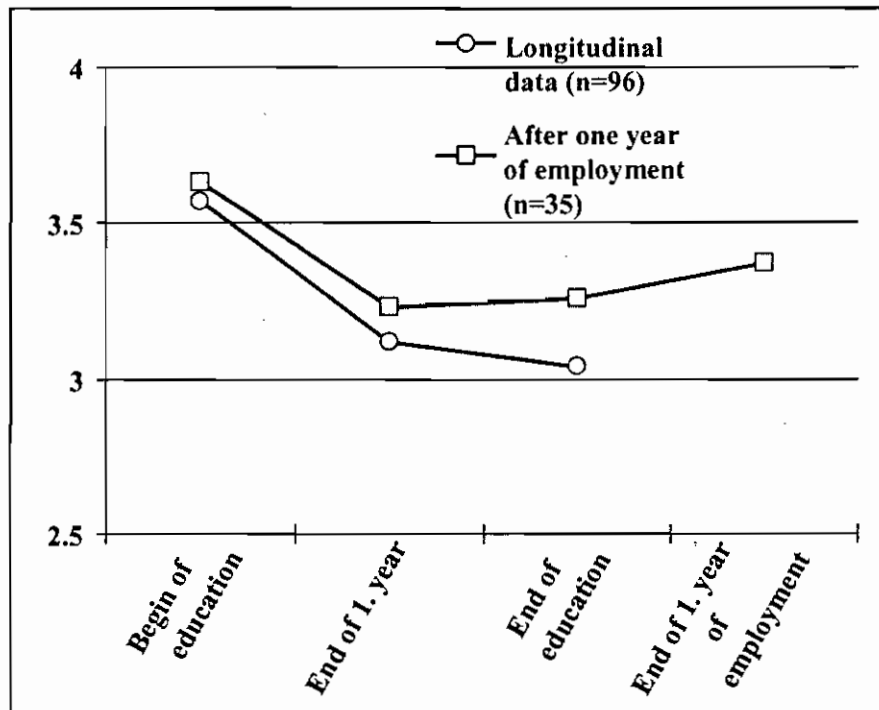


Figure 4: Developmental trajectories of VE-interest scores from the beginning of vocational education until the end of the first year of employment (From Lewalter, Wild & Krapp, 2001).

The lower line relates to data from those subjects of the longitudinal sample of whom we could raise a complete set of data ($n = 96$); the upper line relates to data from those 35 subjects that were employed after finishing their training. We can note a clear decline of general VE-interest during the whole time of training. The decline of the VE-interest scores from the first to the second measuring point is statistically significant ($\eta^2 = 0.40$; $p < 0.01$). The decline from the second to the third time of measuring cannot be statistically ensured ($\eta^2 = 0.03$; $p = 0.10$). The curve of the sub-sample of those subjects that were employed after finishing the VE program is nearly identical. Here, too, a strong decline of the VE-interest scores can be noted from the beginning of the education to the end of the second year that is statistically significant ($\eta^2 = 0.46$; $p < 0.01$). In the second year, VE-interest scores remain stable ($\eta^2 = 0.0$; ns). In the further course, a slight rise can be observed; the upwards trend after employment, however, cannot be ensured statistically ($\eta^2 = 0.03$; ns).

3.2 Developmental Trajectories of Motivational Orientations

In contrast to VE-interest, motivational orientations were not only recorded at the beginning, middle and at the end of the training, but also during the intermediate assessments undertaken in the two training contexts: vocational school and company. In sum, data about motivational orientations are available from six

measurement points (c.f. Figure 2). Furthermore, these motivational variables were measured with respect to the specific characteristics and contents of both teaching and learning contexts. Thus, it is possible to reconstruct the average course of development in dependence of the two different *institutional contexts*. The following data concern the analysis of developmental trajectories of two motivational orientations: intrinsic or interest orientation (IMO) and extrinsic orientation (EMO), which have been first reported in K.-P. Wild (2000). The intrinsic motivation scale (IMO) measures the extent to which students learn because they are interested in a certain topic at school or in the company and how far they assess the contents of instruction to be personally important (c.f., Wild *et al.*, 1995). The extrinsic motivational orientation scale (EMO) is captured by four items measuring “success orientation”. They ask, for example, how far students learn primarily because they want to receive good marks (c.f. Wild *et al.*, 1995). The indices of internal consistency of both scales are at a satisfactory level (between $\alpha = 0.76$ and $\alpha = 0.94$).

Figure 5 shows the development trajectories of IMO- and EMO-scores over the entire period of the VE program. With exception of the first measure, all scores refer to “reasons to learn” during the *training periods in the insurance companies*. From the beginning to the end of the training we can find, in general, a negative trend in both cases. The negative trend is even clearer with EMO.

Developmental Trajectories in Dependence of the Institutional Context. In Figure 6, developmental trajectories of IMO- and EMO-scores are shown with respect to the repeated changes of the two contexts, school and company. Without going into detail, one can see a very strong dependence of both intrinsic and extrinsic learning goals from the institutional context: in the company, i.e., in the practical work

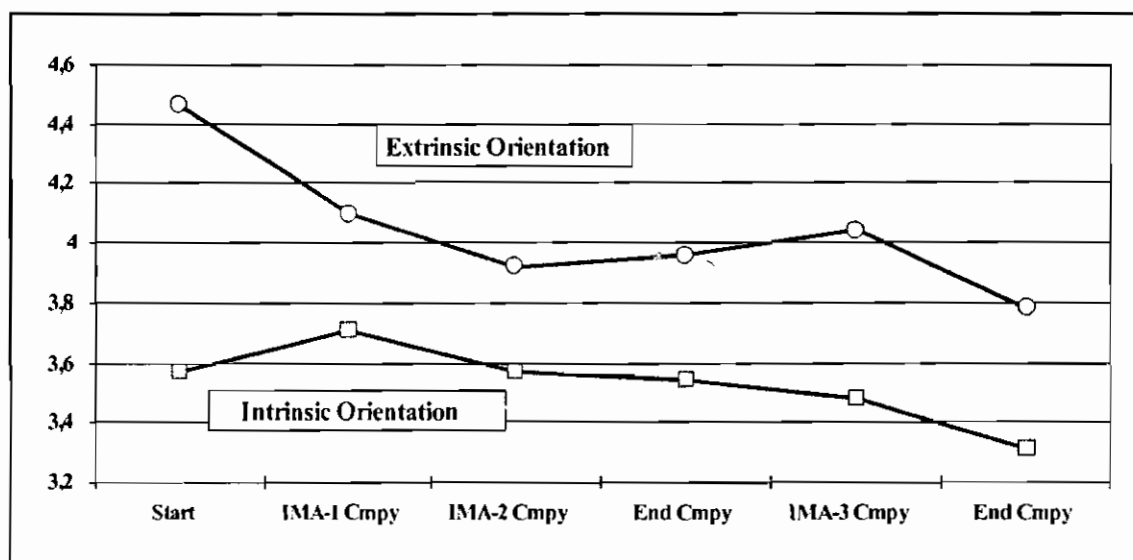


Figure 5: Intrinsic and extrinsic motivational orientations in the institutional context “company” (From K.-P. Wild, 2000, p. 84).

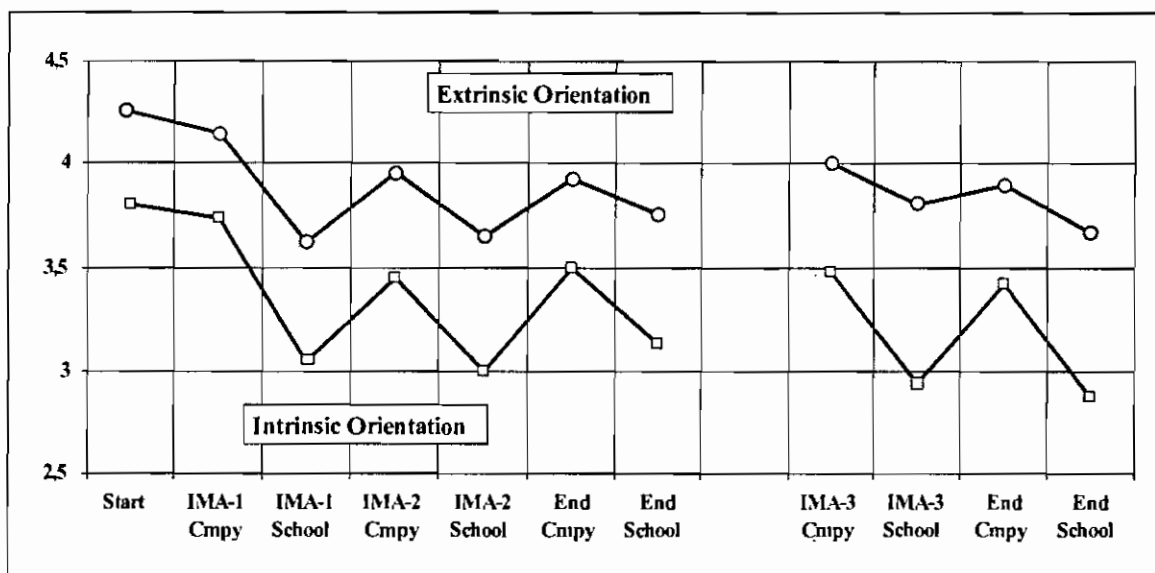


Figure 6: Intrinsic and extrinsic motivational orientations in dependence on the institutional contexts “school” and “company” (From Krapp & Wild, 1998).

area, higher values for IMO and EMO are registered than in school. The differences are more marked for IMO than for EMO. This is especially true for the second phase of the training.

3.3 Intra-Individual Reconstruction of the Development of Profession-Related Interests

The findings reported so far are from analyses of group-related data. They represent descriptions of average developmental trends in populations, and cannot directly be compared with the reconstruction of the developmental processes at the intra-individual level. According to Valsiner (1986) and others it is not justifiable, in principle, to draw conclusions from population data about the conditions and processes that govern an individual’s course-of-development. Thus, the investigation of interest development from the perspective of intra-individual changes must be a research question of its own.

One possible methodical approach is the analysis of intra-individual changes of interests from the subjective perspective of the persons concerned. In order to test the efficiency of this approach, we carried out retrospective interviews at three different measuring points (c.f. Figure 2). In the following, we give a brief outline of the methods we used to achieve intra-individual reconstructions of vocation-related interests considering possible effects of the two different institutional contexts. (A more detailed description can be found in Lewalter *et al.*, 1998; Lewalter & Schreyer, 2000; Lewalter *et al.*, 2001).

The general goal of the interview-studies was to receive retrospective descriptions and explanations of the first occurrence and further development of specific

Table 1: Number of reported interests in interview I and II and subjectively recognized contextual source of interest development.

Sample		Total number of interests	Recognized source of development	
			School %	Company %
Interview I (n = 49)	All interests	111	19	81
	Most prominent interest	49	12	88
Interview II (n = 71)	All interests	181	15	85
	Most prominent interest	71	3	97

interests in the “object” area of VE. The trainees were asked which kind of topic- or action-specific interests they had acquired and maintained during the period of their education in the school and/or in the company as accurately as possible. Furthermore, they were asked to explain why they had developed this specific interest and to describe the subjectively experienced conditioning factors (“reasons” or “causes”). As a rule, this was done by using the most strongly developed interest. The interviewers did not ask for certain “possible” conditioning factors. The interviews were recorded on tape and transcribed completely. The findings for the first interview (end of first year) and the second year (end of entire training) are shown in Table 1.

During the first interview, 49 trainees mentioned 111 objects of interest that meet POI’s criteria according to the definition explained above (Lewalter *et al.*, 1998). The 71 students who were asked in the second interview mentioned 181 interests. With regard to the question of context-specificity of motivational development, the findings about the perceived contextual source of students’ interests are important. As shown in Table 1, there are considerable differences between the two institutional contexts. Only relatively rarely the trainees state that they have developed new interests in the topic- and task-area of the vocational school (19 percent in the first and 15 percent in the second interview). The professional learning environment in the companies is far more important. In both interviews, more than 80 percent of the newly-developed interests have their origin in the context of the company. Looking at the strongest interests, the difference between both learning contexts becomes even more severe (see Table 1). Nearly all main interests (97 percent) at the end of the VE (interview II) were traced back to the learning context in the company.

3.4 The Role of Need-Related Emotional Experiences in Interest Development

Besides the description of developmental trajectories, our project aims to explain the observed inter- and intra-individual changes with respect to vocation-related

interests and interest-related motivational orientations. One specific research question was directed to the exploration of *need-related emotional experiences* (n-Exp) in teaching and learning situations and their influence on the development of these motivational characteristics.

As with the analysis of the course of development, the question about the role of n-Exp can be answered from two different research perspectives: From a first perspective, data analysis aims to detect conditions or causes that are responsible for the occurrence of *inter-individual* differences during the process or at the end of a certain period of development. From a second perspective, the main aim of research is to identify the conditions or causes that can explain *intra-individual* changes during a certain period of development. Our data allow analyses from both perspectives.

a) HLM Analyses Concerning the Role of Need-Related Emotional Experiences for the Development of Intrinsic and Extrinsic Motivational Orientations

K.-P. Wild (2000) has reported results based on HLM analyses (Bryk & Raudenbusch, 1992) using individual growth curves of IMO and EMO as dependent variables and indicators of need-related experiences as independent variables. The following results only refer to data from the workplace context. Empirical indicators of the quality of need-related experiences were drawn from scales of the MIZEBA-questionnaire (Zimmermann *et al.*, 1999) that was used in the three "Intermediate Assessments" (see Figure 2: IMA 1 to 3). The individual values in these scales which were compiled over the course of three measuring points serve as predictors in the HLM analyses (see Table 2).

All indicators of need-related experiences prove to be significant predictors of the individuals' growth curves of IMO. The results indicate concurrence with the theoretical assumption described above, i.e., that the subjectively-perceived degree of autonomy as well as the probability of experiencing positive achievement

Table 2: The influence of need-related experiences on the development of interest orientation and extrinsic orientation (HLM analyses based on questionnaire data; From K.-P. Wild, 2000. p. 87).

Indicators of need-related experiences	IMO			EMO		
	β	t	p(t)	β	t	p(t)
Autonomy	0.10	2.39	*	0.03	0.89	ns
Competence	0.15	3.62	**	0.09	2.40	*
Social relatedness						
Social climate	0.15	2.64	**	0.12	2.47	*
Integration in the culture of experts	0.12	3.11	**	0.04	1.19	ns

feedback as an indicator of the experience of competence goes along with a positive development of a motivational orientation based on interest. A positive social-emotional climate and the feeling of belonging to the “expert culture” at work — which can be interpreted as indicators of social relatedness — also appear to have a favorable influence on the development of IMO.

In our theoretical conception of interest, no explicit statements are made about the importance of the n-Exp for the development of *extrinsic* motivational orientations. At most it is assumed that they are on the whole of little importance and have an unspecific effect. K.-P. Wild’s (2000) data agree with these general expectations: only two of the indicators included in the measurement of the n-Exp proved to be significant predictors of the EMO development (competence and social climate). For both values, the regression coefficients for EMO had lower values than for IMO.

The role of n-Exp was not only explored on the basis of questionnaire data but also on the basis of ESM data (Krapp & Wild, 1998). All of a person’s individual ratings in the “Experience-Sampling-Forms” (see above) were aggregated over time separately for both institutional contexts. In a series of HLM-analyses, individual growth-curves of IMO and EMO were used as dependent variables and the aggregated ESM-measures of need-related experiences as independent variables. Students with a more positive development of interest orientation (IMO) reported a significantly higher level of feeling competent and self-determined (autonomous) in both contexts. However, we did not find a significant relation to social relatedness in these analyses. In HLM-analyses using the growth curves of EMO-scores as dependent variables, we found much lower coefficients in both contexts. And another result is remarkable: comparing the data for the two different time periods (first year vs. the rest of vocational education), there is a remarkable decline of predictive power after the first year of training.

b) Analyses of the Role of Need-Related Experiences for Development of Interests on the Basis of Intra-Individual Reconstructions

The results previously reported refer to the explanations of the genesis of motivational orientations. Contrary to the concept of interest, it deals with relatively general motivational dispositions not directed towards certain contents. The results about the importance of n-Exp for the development of motivational orientations thus can not be directly transferred to the question concerning the conditions necessary for developing specific topic-related interests in an individual’s course of development. Indications about the importance of n-Exp in intra-individual development processes supply the results of our interview studies. With respect to the most prominent interest, the subjects were asked why they became involved in this specific topic and how they could explain the fact that they developed an interest in this specific area. Among other reasons, subjects spontaneously mentioned events and experiences that relate to the theoretically postulated basic needs. For a quantitative analysis for these need-related statements, we developed a system of categories that was based on both theoretical assumptions and empirical

Table 3: Percentage of subjects who refer to experiences of competence, autonomy or social relatedness in their explanations of the origins of their most prominent interest (From Lewalter *et al.*, 1998).

Need-related Experience	Interview I (n = 49) %	Interview II (n = 71) %
Competence	75	73
Autonomy	34	41
Relatedness	65	67

data. The system of categories takes the different facets of the particular need-related experience into account. For example, the statement “I became more and more interested because I could help the client, I had the experience of success” would have been interpreted as an indicator of the experience of competence (for a detailed description see Lewalter *et al.*, 1998).

The data show that subjects often mention need-related experiences when trying to explain the origins of their job-related interests (see Table 3). In the first year, 75 percent of the 49 subjects refer to competence and 65 percent refer to social relatedness as an important reason for interest development. However, only 34 percent mention the experience of autonomy. If we look at the results at the end of the second year (n = 71), we get almost the same picture. Only, the influence of autonomy seems to be a bit higher.

4. Discussion

At the outset of this chapter we have identified two closely related reasons why educational research in the field of motivation takes the fact of content- and/or context-specificity much less into consideration than cognitive-oriented research approaches, namely a lack of adequate theoretical concepts and methodical shortcomings, such as the unbalanced usage of methods that are mainly suitable for exploring inter-individual differences and the generalized tendencies concerning the role of motivational dispositions in learning and development. The research approach we have outlined here is partly based on an educational-psychological theory of interest that explicitly refers to the fact that human motivation is, in principle, characterized by specific personal goals and more or less stable individual preferences. In accordance with other theoretical concepts developed in the area of recent interest research (c.f., Renninger *et al.*, 1992) the “person-object theory of interest” (POI) interprets interest as motivational category that is characterized to a great extent by its content or domain of “objects”. Even though the aim of this chapter was not primarily directed to the problem of content specificity, we were able to demonstrate the fruitfulness of such a theoretical

conceptualization. For example, it could be shown that the question of how interests and interest-related motivational characteristics develop during the period of vocation education lead to rather different answers when the related research approaches are more or less consequently based on the theoretical assumptions of the interest construct we have discussed in POI.

When analyzing developmental trends using either a totally content-unspecific concept like “motivational orientation” or a rather general interest concept like “VE-interest” that is supposed to represent the generalized interest of an individual into the totality of topics and activities offered in the vocational training program, we find definite *negative* developmental trajectories. In both cases our data show a marked decline, especially in the first months of the training. These results correspond with empirical findings in many other educational settings that have also found a negatively accelerated decline of subject interests over time (e.g., Anderman & Maehr, 1994; Baumert & Köller, 1998; Eccles & Wigfield, 1992; Fend, 2000; Gardner, 1985). We get, however, a qualitatively totally different picture when we use a research approach that reconstructs the process of interest development from a strictly intra-individual perspective. In our interview studies all students report that they developed new interests that relate to “objects” (contents, tasks, activities, knowledge areas) they studied during their vocational education. That is true for the first year as well as for the second year of vocational education. Not only in the sum of all individual cases but also for each single student, without exception, a *positive* developmental trend was found.

At first glance, these results seem to represent theoretically contradicting findings. But if we have a closer look at the theoretical meaning of the concepts used to operationalize “interest orientation” (IMO), “VE-interest” and “topic-related individual interest” this contradiction can easily be dissolved. Even though in all three cases the term interest is used to characterize the “content” of the theoretical concept, the meaning is not identical. On the contrary, the three concepts differ noticeably with respect to the degree of considering content-specificity of an individual’s interests. Properly speaking, only the third research approach really takes care of the theoretically postulated fact that the contents of interests related to the same subject area vary remarkably between and within individuals when they are explored from a developmental research perspective. A related aspect is the kind of measures used to operationalize these concepts. IMO and VE-interest were measured by using questionnaires constructed according to common criteria of test construction that provide powerful instruments for measuring inter-individual differences. But these measures do not represent inter- or intra-individual differences with respect to specific contents or objects of vocation-related interests: IMO-measures do not ask for contents or topics at all, and the VE-interest-questionnaire only refers to contents of the vocational training program at a rather general level. A thorough reconstruction of the changing contents of an individual’s pattern of interest was only achieved in the quantitative and qualitative reconstructions in the interview studies. Here we tried to gain data about the subjects’ vocation-related interests, asking specifically about new individually shaped interest-topics the apprentices had learned to know in one of the contexts

of their vocational training. Taken together, these findings show that it seems worthwhile to use different theoretical concepts and methodical approaches to explore interest-related phenomena.

The main concern of this chapter was to present empirical evidence for the importance of recognizing context-specificity in studies concerned with the development of motivational dispositions (motivational orientations; interests) and the functional conditions of motivational development. Our data did not allow context-specific analyses with respect to VE-interest. But we were able to analyze the developmental trends at the level of motivational orientations (IMO and EMO) and self-reported topic-related interests depending on the two institutional contexts that characterize the German "dual system", namely the vocational school and the work settings of the insurance companies, the trainees belonged to. In both cases the findings indicate a substantial influence of the context. The scores of both motivational orientations are much higher in the context of the company. This is especially true for the intrinsic orientation (IMO). In addition, the results show that there is no systematic connection between the kind of institutional context and the average degree of a particular motivational orientation. Combining these results with related findings of the interview studies we have a very good fit. Here, too, the results indicate a clear difference concerning the influence of the institutional context in favor of the educational setting in the company: According to the students' point of view the majority part of the interests were developed in the context of the work settings. This context seems to be more encouraging regarding the development of interest-related motivational dispositions by supporting the genesis of topic-specific individual interests respectively maintaining a somewhat higher intensity of intrinsic (and extrinsic) motivational orientations. In this connection we have to recognize that many of the topics of teaching and learning are quite similar in both contexts. Thus, the observed differential effects must be a matter of the quality of teaching and instruction in these contexts. In vocational school the topics are presented under a more theoretical perspective in a quite conservative fashion dominated by the "teacher talk". In the company the students are confronted with the same topics but the instructional situation is totally different. Here, a much broader variety of teaching methods is used, including discussions and hands-on activities. Furthermore, the contents are taught more often on the basis of authentic practical problems.

Thus, our results demonstrate very clearly that the (institutional) context plays an important role in vocational education when we try to describe and explain developmental conditions that are responsible for the development of content-specific motivational dispositions. Besides other aspects, the instructional design seems to be of special importance for fostering the development of enduring vocation-related interests.

According to POI, cognitive as well as affective experiential states in different learning situations (and learning contexts) can provide a functional explanation for the occurrence and maintenance of intrinsic motivational orientations and topic-specific interests. Referring to the concept of basic psychological needs, we have tried to explore the role of need-related experiences again using different

measures and techniques of data analysis. In a first approach we used HLM-analyses in order to find out whether or not situation-specific ESM-measures of need-related experiences (n-Exp) can predict individuals' different growth-curves with respect to intrinsic and extrinsic motivational orientation. The results provide evidence that all three need-related experiential qualities are significant predictors of the individual growth curves of IMO. Concerning the EMO this is only true for the experience of competence and the aspect of social climate. Thus, these results seem to confirm our theoretical assumptions when using data from an inter-individual research perspective. The findings on the intra-individual access by interviews show that most of the students mention experiences related to basic needs when they describe spontaneously important conditions for the occurrence or maintenance of new topic-related interest in the area vocational education. However, we have noticed that not all students interviewed refer to all three need-related experiences; usually they only mention one or two. Thus, the findings do not completely confirm our theoretical assumptions.

Taken together, we can conclude from these data that in VE the need-related experiences play a substantial role for the development of both interests and interest-related motivational orientations. In many respects the results correspond with findings in other areas of research which also have shown, that situation-specific experiences related to the basic need (especially the need for experiencing competence) seem to have an important influence on the development of interest (Prenzel *et al.*, 1998; Kleinmann *et al.*, 1998; E. Wild, 2000) and intrinsic motivation (Ryan, 1995). In our study we also found some evidence that the opportunity to fulfill basic psychological needs depends on a variety of content- and context-specific variables. A detailed exploration of these dependencies will be one of the next steps in the further analyses of our rather comprehensive database.

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