THEORY AND METHOD IN HIGHER EDUCATION RESEARCH

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THEORY AND METHOD IN HIGHER EDUCATION
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THEORY AND METHOD IN HIGHER EDUCATION RESEARCH

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EDITORIAL INTRODUCTION

This is the 2017 volume in the annual series *Theory and Method in Higher Education Research*, which we launched in 2013 in the belief that there was a need to provide a forum specifically for higher education researchers to discuss issues of theory and method. So far, we have published more than 60 chapters.

In this volume, there is a somewhat greater focus on theories, but there are four chapters engaging primarily with methods (or a mixture of theory and methods).

Amongst the theories discussed are complex systems theory (Pinheiro & Young), organisational identity (Dumay et al.), and curriculum theory (Lindén et al.). Some of the contributions are more conceptual in nature than strictly theoretical: For example, the chapters on knowledge management framework (Díaz et al.), evaluation-based decision-making (Kleimann & Klawitter) and the market-university (Rikap).

In terms of method and methodology, contributions consider for instance mixed methods (Barnat et al.) and virtual ethnography (Dooney & Kim). We also included a chapter situated between theory and method: the chapter on the network paradigm (Birkholz & Shields).

The international nature of researchers' interest in theory and method is clear with authors being based in Argentina, Belgium, Canada, the Czech Republic, Finland, Germany, Norway, Portugal, the United Kingdom and the United States.

Anyone interested in contributing a chapter to a future volume is invited to get in touch with either, but preferably both, of the editors.

Jeroen Huisman
Malcolm Tight
Series Editors

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THE GUIDING ROLE OF THEORY IN MIXED-METHODS RESEARCH: COMBINING INDIVIDUAL AND INSTITUTIONAL PERSPECTIVES ON THE TRANSITION TO HIGHER EDUCATION

Miriam Barnat, Elke Bosse and Caroline Trautwein

ABSTRACT

The methodological discourse of mixed-methods research offers general procedures to combine quantitative and qualitative methods for investigating complex fields of research such as higher education. However, integrating different methods still poses considerable challenges. To move beyond general recommendations for mixed-methods research, this chapter proposes to discuss methodological issues with respect to a particular research domain. Taking current studies on the transition to higher education as an example, the authors first provide an overview of the potentials and limitations of quantitative and qualitative methods in the research domain. Second, they show the need for a conceptual framework grounded in the theory of the research object to guide the integration of different methods and findings. Finally, an example study that investigates transition with regard to the interplay of the individual student and the institutional context serves to illustrate the guiding role of theory. The framework integrates different theoretical perspectives on transition, informs the selection of the research methods,

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and defines the nexus of the two strands that constitute the mixed-methods design. As the interplay of individual and context is of concern for teaching and learning in general, the example presented may be fruitful for the wider field of higher education research.

Keywords: Mixed-Methods Research; transition; students; higher education; qualitative research; quantitative research

INTRODUCTION

The methodological discussion of mixing different – especially qualitative and quantitative – methods emerged in the 1960s and is rooted in the idea of triangulation, understood as the use of multiple research perspectives (Campbell & Fiske, 1959; Denzin, 1970). To gain a deeper understanding of the subject in question, mixed-methods studies seek to combine the strengths of both qualitative and quantitative research (Johnson, Onwuegbuzie, & Turner, 2007). Hence, the methodological paradigms are no longer treated as incommensurable, with the positivist (quantitative) paradigm at one extreme, and the constructivist (qualitative) paradigm at the other (Denscombe, 2008). Researchers have presented numerous reasons for the combination of methods in various stages of research (Johnson et al., 2007). Collins, Onwuegbuzie, and Sutton (2006) highlight the following rationales for conducting mixed research: participant enrichment, instrument fidelity, treatment integrity, and significance enhancement. For obtaining this added value, the literature offers detailed methodological guidance for the general design of mixed-methods studies (Kelle, 2008; Tashakkori & Teddlie, 2003).

However, integrating qualitative and quantitative perspectives during the course of a particular research project still poses considerable challenges (Bryman, 2007; Venkatesh, Brown, & Bala, 2013). Apart from practical issues, there are methodological concerns due to the different research paradigms and approaches. As the handbooks in the field aim at giving advice across research domains and disciplines, the level of conclusions is rather general and mostly procedural (Creswell & Plano Clark, 2011; Onwuegbuzie, Johnson, & Collins, 2009; Tashakkori & Teddlie, 2010). We follow Kelle and Buchholtz (2015) in their claim to focus on a particular research domain in order to address more specific methodological questions and to clarify the relations between research questions and methods. In particular, we select the field of transition to higher education as an example to discuss the need for a clear theoretical understanding of the research object in order to guide the integration of methods and findings. By demonstrating how a comprehensive theoretical framework informs the combination of quantitative and qualitative approaches to gain insights

into the complex interplay of the individual student and the institutional context, we seek to go beyond epistemological discussions and general recommendations in mixed-methods research (MMR).

The chapter proceeds as follows: To clarify the need for MMR, we first discuss the potentials and the limitations of qualitative and quantitative studies on the transition to higher education. Second, we argue for a mixed-methods approach in order to respond to the identified shortcomings of single-method studies. To guide the combination of different data and research methods, we suggest a conceptual framework based on theories of transition. To illustrate this procedure, we finally present the comprehensive theoretical framework and the mixed-methods design of a study that involves several types of data representing individual and institutional perspectives on the transition to higher education. Apart from characterizing the strategies used to integrate different methods, we include initial results of our example study. The final section of the chapter summarizes and discusses the benefits of combining qualitative and quantitative approaches with regard to the study presented and to higher education research in general.

POTENTIALS AND LIMITATIONS OF QUALITATIVE AND QUANTITATIVE STUDIES ON THE TRANSITION TO HE

MMR is regarded as particularly suited for complex fields of research such as higher education (Papadimitriou, Ivankova, & Hurtado, 2013). Investigating teaching and learning embedded in their institutional and social structures may involve research problems that exceed the explanatory power of single methods. In the case of studies on the transition to higher education, challenges for the research design result from the need to account for both the "individual qualifications and the manner of studying on the one hand and conditions at the higher education institution and in the social environment on the other" (Heublein, 2014, p. 510). So far, current studies appear to provide valuable but often only partial insights into the multiple factors relevant for transition due to the methods applied. To clarify the potentials and limitations of quantitative and qualitative approaches, we mainly draw on two recent journal issues, which gather a collection of studies employing a variety of research designs. The first one addresses "the enculturation and development of beginning students" (Jenert, Postareff, Brahm, & Lindblom-Ylänne, 2015), including 10 studies that mainly investigated German higher education. The second one assembles research examples from nine different countries examining "students' transition from an international perspective" (Coertjens, Brahm, Trautwein, & Lindblom-Ylänne, 2017). The studies offer a range of insights regarding the question of how transition is influenced by individual factors (e.g., motivation, learning

approaches) as well as the institutional context (e.g., curriculum, study skill courses). The following overview focuses on the benefits and shortcomings of the different research approaches applied.

At a first glance, the selected studies appear to confirm general assumptions regarding the exploratory character of qualitative research on the one hand, and the confirmatory nature of quantitative research on the other hand. However, the methods applied need to be examined in detail to reveal their specific insights into the transition to higher education. With regard to qualitative studies, the selected journal issues show that the strength of semi-structured interviews lies in giving a rich and detailed account of the first-year experience from the students' or lecturers' point of view. For example, Trautwein and Stolz (2015) use interview data to differentiate the theoretical spectrum of volitional strategies that students apply to cope with demotivating experiences (Kuhl, 1994; Wolters, 2003). Furthermore, qualitative research allows eliciting (changes in subconscious) beliefs and conceptions regarding the understanding of *learning* (Wegner & Nückles, 2015) or *science* (Krämer, 2015). By drawing on the detailed accounts of the interviewees, qualitative studies not only serve to explore but also to differentiate particular phenomena. However, interviews are time-consuming and often conducted with a small number of participants, thus the generalizability of their findings is limited.

For representative results, large-scale quantitative research into the student experience appears more suitable. The selected quantitative studies in the field of transition often draw on psychological concepts like self-efficacy, motivation, and achievement goals (Stewart, Stott, & Nuttall, 2016) that have been empirically related to achievement (Bartimote-Aufflick, Bridgeman, Walker, Sharma, & Smith, 2016; Richardson, Abraham, & Bond, 2012). They analyze the relation with other concepts, the distribution of particular concepts among different groups of students, or they reanalyze effects on achievement (Fischer & Bisterfeld, 2015; Förster & Maur, 2015). Yet the insights of these studies are limited to the statistically constructed average student experience of transition.

This limitation brings to the fore another strength of qualitative research: it can offer a case- or person-based perspective, for example, by assessing the specific challenges of transition experienced by individual students (Bosse, 2015; Postareff, Mattsson, Lindblom-Ylänne, & Hailikari, 2017; Trautwein & Stolz, 2015). However, although rather rare in the field, quantitative studies can provide a person-centered perspective, if they focus on cases understood as configurations of variables (Onwuegbuzie & Combs, 2010). Rather than examining predefined independent variables like gender or socio-demographic background, the person-centered studies model profiles, groups, or trajectories based on participants' responses. For example, Coertjens and colleagues (2017) calculate differential growth in learning strategies from the last year in secondary school to the second year in higher education. They show that participants who start on a lower level seem to catch up over time. Similarly, Fryer, Van den Broeck, Ginns, and Nakao (2016) perform a latent transition analysis to

investigate the change in learning approaches at the beginning and the end of the first year in Japanese higher education, and present differentiated results with some profiles increasing and others decreasing in their deep learning approaches. The differences in the individual profiles are difficult to explain through the included (individual) variables; thus the findings indicate the importance of the integration of institutional factors such as approaches of teaching.

Again, qualitative research seems more suitable to investigate both the institutional context itself and the interrelation between the institution and individual. This is confirmed by several qualitative studies in the field. Ulriksen, Holmegaard, and Moeller Madsen (2017) show that forming a disciplinary identity in higher education is situated in a context of scattered content and little control, leaving only little room for diversity. Similarly, Trautwein and Bosse (2017) and McGhie (2017), as well as Trautwein and Stolz (2015) and Tett, Cree, and Christie (2017), explore institutional requirements and their impact on individuals. These qualitative studies provide a detailed insight into the institutional context and inspire theoretical development, but the transferability to other than the researched context needs to be investigated further.

While qualitative studies attempt to capture the institutional context holistically, quantitative research also takes it into account, but in terms of selected variables. One example is the analysis of effects of institutional initiatives like support programs. The respective studies usually focus on the effects of single programs, comparing psychometric measures (Schmied & Hänze, 2015) or calculate time spent on the task (Kärner, Egloffstein, Binöder, Frötschl, & Schley, 2015). However, their insights into how or why these effects occur are limited.

Quantitative studies in the field rarely combine different institutional and individual aspects or investigate individual development. The longitudinal study of Brahm, Jenert, and Wagner (2017) represents an exception, as it analyzes the effects of study atmosphere, enjoyment of learning and anxiety on motivation. The authors conclude that learning enjoyment shows an effect on the development of intrinsic motivation, while study atmosphere does not. Aymans and Kauffeld (2015) attempt to combine similar aspects and develop a structural equation model predicting student dropout, including use of information, self-efficacy, and perceived organizational constraints. As the study restricts the effects of support programs to information, it reveals one common feature of quantitative research that considers the institutional context: at the start, quantitative studies build specific hypotheses on how the dependent and independent variables are interrelated. However, the complexly intertwined layers of different contexts seem to elude rather simple theorizing. Accordingly, Fryer (2017) finds – contrary to previous studies – that students' perception of quality of teaching does not significantly influence the development of their study approach: "The current study's longitudinal profiling, however, signals toward differentiation and increasing divergence in strategy preference within emerging sub-group profiles across an academic year" (Fryer, 2017, p. 21). This observation

suggests that important variables may still have to be identified, and more specific theories are needed as well as further investigation of the complex interplay of individual and institutional factors.

Although our review is not exhaustive, the methodological analysis of two recent special issues on the transition to higher education indicates that qualitative interviews give an account of how the context influences behavior or emotions in particular situations. In contrast, quantitative research can include context as a generalized variable, and thereby test effects of different factors systematically. While qualitative studies may serve to explore the role of contextual factors and generate hypotheses regarding the interplay of students' characteristics in the learning environment, quantitative studies can test hypotheses on the interplay. Still, the reviewed quantitative studies suggest that theory building on the transition to higher education is not yet advanced enough to test the complex interplay of context and individual.

This research problem is related to the situational specificity of behavior or psychometric measures: While generalized measures of behavior or motivation might be suitable to capture effects over time, they fail to account for situational differences. In research on education, this duality has been addressed in the so-called consistency debate (Patry, 2013), following the findings of, for example, Mischel (1968), who challenged trait-oriented research by revealing that behavior is more situation-specific than previous research accounted for. Research on situational specificity has disclosed that, in the cognitive domain, "cross-situational consistency is the rule, provided that in the two situations of interest, the same ability is requested" (Patry, 2013, p. 55). In the social domain, on the contrary, situational specificity is the rule. Hence, when cognitive abilities are at stake, individuals show consistent behavior over different situations, whereas in the social domain, different situations evoke different behavior. As transition to higher education is characterized by learning embedded in social situations, research has to include both, situational specificity as well as consistency of behavior. While the quantitative studies presented appear to be especially suited to measure consistency over different situations, qualitative studies allow the grasping of situational variability.

MIXED-METHODS RESEARCH

According to the literature on mixed methodology, combining methods is supposed to be more adept to capture the complexity of behavior in social contexts (Tashakkori & Teddlie, 2003) by capitalizing "the complementary nature of qualitative and quantitative methods" (Lieber & Weisner, 2010, p. 560). However, there seems to be a lack of established routines for combining different kinds of data and results, as well as limited expertise regarding concrete research problems. Rather than conducting two (or more) independent studies

after or beside one other, MMR aims at relating not only research results but also the research process. Integration or the creation of meta-inferences is defined by Tashakkori and Teddlie as the "overall conclusion[s], explanation[s] or understanding developed through and integration of the inferences obtained from the qualitative and quantitative strands of a mixed method study" (2008, p. 101). This involves "both the process of interpreting the findings AND the outcome of the interpretation (i.e., the process of interpreting, as well as the emerging conclusions) to provide answers to the original research questions" (Tashakkori & Teddlie, 2008, p. 103). The respective procedures are called "mixed methods data analysis techniques" (Teddlie & Tashakkori, 2009, p. 264) or "integration strategies" (de Lisle, 2013, p. 39), which describe ways of bringing together different data or results, for example, through data transformation, comparison, or reduction. In addition, more specific techniques include quantifying narrative data or typology development. By describing and evaluating the application of these procedures in empirical studies, researchers contribute to the methodological discourse. For example, Papadimitriou et al. (2013) describe the validation procedures for sequential quantitative-qualitative studies in higher education with regard to the respective process and results. To draw meta-inferences, they discuss how the quantitative results were confirmed, enhanced, or disconfirmed by follow-up qualitative findings.

However, while the literature presents procedural recommendations concerning meta-inferences or integration, meta-analyses show that many studies are not integrated in a coherent way (Bryman, 2007; Venkatesh et al., 2013). This might be partly due to the state of the methodological debate, as the suggested procedures of integrating qualitative and quantitative methods do not address the object of comparison. Thus, the question of what to link and why appears under-determined. For example, comparing the results of the same participants in quantitative and qualitative studies is obviously only possible for a very limited number of participants and thus can only be a part of the solution. The suggestion to focus on the same research questions is also misleading, as qualitative and quantitative studies rarely answer exactly the same research question (e.g., it is difficult to answer "how" questions with confirmatory quantitative measures). Following Kelle and Buchholtz (2015) as well as Papadimitriou et al. (2013), we therefore suggest complementing the procedures of integration by defining the nexus of different research perspectives in terms of a theoretical framework. So far, the methodological literature lacks precise information regarding the use of a theoretical framework in mixed-methods studies, as it may concern only specific research projects or questions. However, by transferring the methodological debate to a domain of research, generalizability can still be obtained. Kelle and Buchholtz state that "crucial questions regarding the relation between research domains, research questions, and research methods have been still not addressed sufficiently in methodological discussions" (2015, p. 324). By taking up the claim for more research domain-related methodological

knowledge, we demonstrate the importance of a theoretical framework with regard to the transition to higher education.

Following Evans, Coon, and Ume, we propose that a theoretical that theoretical frameworks offer a "scheme for bringing together observations from separate investigations; assist in summarizing and linking findings into an accessible, coherent, useful structure; guide understanding of phenomena … and provide a basis for prediction" (2011, p. 3). Accordingly, a sound theoretical understanding of the research object is needed to systemize and explain empirical data (Pawson, 2008), not only for each single study, but even more so for the integration.

This, in turn, changes the requirements for the theoretical framework due to the different functions and forms of theory in quantitative and qualitative research. Kelle (2008) points out that empirical research is a process where theory is constructed following theoretical assumptions, but with varying degrees of specificity. Theoretical assumptions regarding the phenomenon under investigation that ground qualitative research designs are usually more abstract and under-determined than the theoretical models tested in quantitative designs. While there are exploratory quantitative techniques, confirmative quantitative research requires specific theoretical models with explicated conjectures about the assumed effects. Allowing for the differences between quantitative and qualitative studies, a theoretical framework in MMR has to be able to account for all included approaches.

The challenge for the field of transition to higher education is to capture the interplay between the individual and the context. Situation-specific as well as consistent behavior have to be taken into account, which calls for the use of qualitative and quantitative methods. A theoretical framework must then guide the integration of the different studies. To develop such a comprehensive framework, we follow Patry who argues for theoretical "multiplism," meaning that different theories can complement each other by explaining different aspects of a phenomenon "accounting for different parts of the variance" (2013, p. 53).

MIXED-METHODS EXAMPLE STUDY

To illustrate the potential of MMR for studies in higher education and the particular merit of theory to guide the linking of quantitative and qualitative methods, we draw on a research project that investigates the transition to higher education at four German universities. The overall study seeks to gain insights into the impact of first-year support programs on students' academic competence. This research goal reflects the need to expand the knowledge regarding the interplay of individual and institutional factors. Furthermore, it responds to current developments in German higher education, where increased government funding to improve the quality of teaching and learning allowed the introduction of a range of activities to support transition (e.g., first-year seminars,

mentoring, remedial courses) (Heublein, 2014). To study the effects of the institutional support with regard to individual student development, the overall research project follows a comprehensive theoretical framework that serves as a guideline for the mixed-methods design. First, the theoretical framework informed the selection of the research methods. Second, it guided the integration of our methods and findings in the process of creating meta-inferences.

THEORETICAL FRAMEWORK AND RESEARCH DESIGN

The present study aims at investigating the complex interrelation of the individual and the context in the transition to higher education. It adopts the notion that transition depends on students' academic competence, defined as the twofold ability to realize individual study goals and to handle institutional requirements (Bosse, Schultes, & Trautwein, 2016). Following this notion, the theoretical framework combines the psychological perspective on individual student characteristics with a sociocultural perspective that allows taking into account how students experience the higher education environment.

In line with studies on individual factors relevant for successful transition and study success, our conceptual framework draws on psychological theories regarding self-regulated learning (Zimmerman & Schunk, 2001), social cognition theory (Bandura, 1997), theory of interest (Hoffmann, Krapp, Renninger, & Baumert, 1998; Renninger, Hidi, & Krapp, 1992) self-determination theory (Deci & Ryan, 1985), and volition theory (Kuhl, 1994). These theories provide insights into non-cognitive individual factors that predict academic performance and have been empirically confirmed (Bartimote-Aufflick et al., 2016; Richardson et al., 2012). In our framework, individual factors are conceptualized as students' motivation and skills, which are interrelated with their personal background as well as their study goals. Respectively, our research design includes a quantitative strand drawing on established psychometric measures to investigate the individual profiles and the development of first-year students (i.e., their personal background, motivation, skills, and study goals) by means of a longitudinal survey.

The psychological perspective on the individual student is integrated into the wider framework of our study that also accounts for the institutional context. To complement the individual factors, the framework includes a sociocultural perspective that conceives of transition as a process of socialization (Huber, 1991), academic and social integration (Tinto, 1987), identity transformation, and belonging (Holmegaard, Madsen, & Ulriksen, 2014). Following this stance, transition has to be analyzed with "a focus on agency and identity together with an account of how they are shaped, constrained and sometimes determined by the material conditions and normative expectations of different structural factors" (Ecclestone, Biesta, & Hughes, 2010, p. 12). This perspective implicates two important assumptions. First, there is a complex interplay of

different layers of context. Second, context is not an objective but a social fact, as it has to be perceived and interpreted by individuals, who act according to their interpretation of situations depending on the options and challenges perceived at certain points in time. Our theoretical framework represents this perspective by including the higher education institution, the study program, and the first-year support activities as different layers of context. The research design incorporates the first two layers into the quantitative survey as context variables, based on established measures such as type of institution and fields of study. However, there is still too little knowledge about the recently introduced first-year support activities in German higher education to operationalize them in terms of quantitative items. Hence, to capture their characteristics and to study their impact on first-year students' development "there is need for more coherent conceptualizations to identify and describe programs" (Hatch & Bohlig, 2016, p. 72). Our research design therefore includes a qualitative strand to explore the design of first-year support in German higher education by means of document analysis and expert interviews. Furthermore, it entails semi-structured interviews to examine how students experience the effects of particular types of support.

The necessary link between the two theoretical perspectives and the respective empirical studies is established by the assumption that transition relies on how students perceive and handle the formal and informal study requirements resulting from the institutional context. In order to model transition holistically, our framework incorporates the results of an interview study on the requirements that students experience as critical for a successful transition to higher education in Germany (Trautwein & Bosse, 2017). While the empirical findings provided a systematic overview of first-year challenges from the student perspective, they led to the theoretical distinction of personal, organizational, content-related, and social requirements. Personal requirements are related to the students' self-management and adjustment to student life (e.g., to manage the workload), whereas organizational requirements result from rules and regulations as well as the teaching conditions (e.g., to manage the course selection). Furthermore, content-related requirements concern the subject matter of the study program (e.g., to meet curricular demands). Finally, social requirements regard relationships, communication, and cooperation with peers and staff (e.g., to collaborate in teams). As the outlined requirements result from the characteristics of the institutional context and how the individual student perceives the demands (Bosse & Trautwein, 2014), they form the nexus of the two perspectives on transition combined in our theoretical framework. Fig. 1 illustrates the respective interplay of the individual student and the institutional context.

With the perception and handling of study requirements at the core of our framework, the research design gains a common point of reference to link the quantitative and qualitative strands of our study. The longitudinal survey contains quantitative items representing the requirements, which were identified in a qualitative study. It can shed light on the students' perception of the

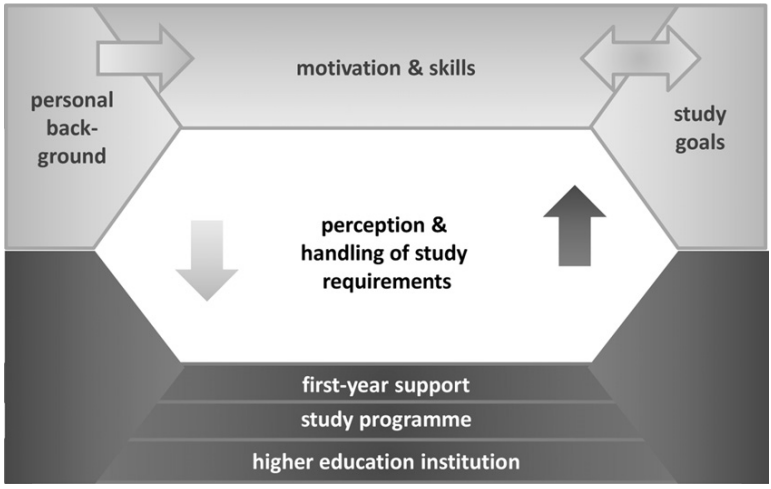

Fig. 1. Interplay of the Individual Student and the Institutional Context.

institutional context at different points during their studies and in relation to their personal background, motivation, skills, and study goals. To complement this individual perspective, the qualitative document analysis and expert interviews allow the identification of different types of first-year support programs according to how they address the range of requirements. Finally, the interviews with students who participated in first-year support investigate the influence of the respective programs on the handling of critical requirements.

The combination of survey, document analysis, and interviews requires a step-by-step procedure in order to guarantee that the quantitative and qualitative findings inform and complement one another. Before illustrating this procedure in detail, the overall research design, best characterized as a "fully integrated mixed model design" according to the classification of Tashakkori and Teddlie (2003), has to be delineated. Fig. 2 depicts the two strands with the methods employed and outlines the intended outcomes of the different phases.

Each strand and phase of our study sheds light on study requirements from distinct perspectives. In the first phase, the quantitative study aims to reveal the requirements that students entering university expect to be more or less challenging. In contrast to these *anticipated* requirements from the student perspective, the qualitative study explores the institutional perspective and identifies the scope of requirements *addressed* in particular types of first-year support. In the second and third phase, the quantitative study retrospectively examines the requirements students have *perceived* as challenging. At the same time, the qualitative study seeks deeper insights into the *experienced* requirements by exploring how students perceived and handled their first-year challenges. The collection of multiple

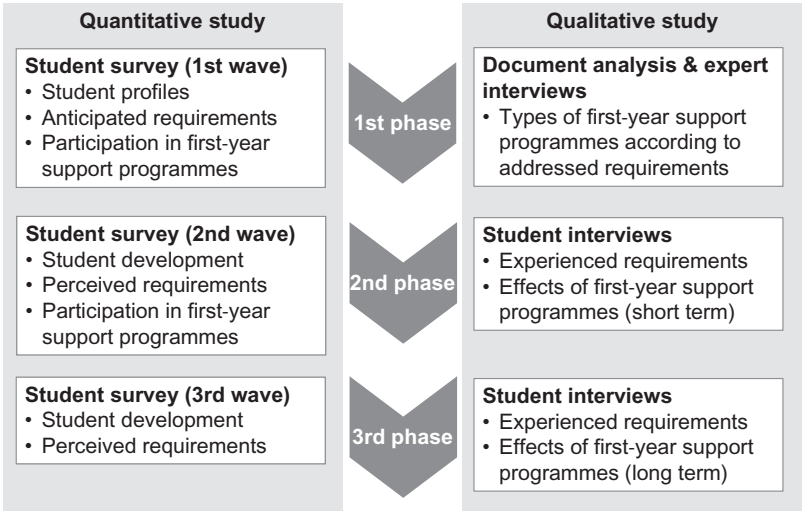

Fig. 2. Selected Research Methods.

perspectives on study requirements is based on their central role in our theoretical framework and serves as a starting point for creating meta-inferences.

CREATING META-INFERENCES

To illustrate the process of linking the quantitative and qualitative study depicted in Fig. 2 in order to create meta-inferences, we draw on the implementation of our research design within the context of recent reform activities in German higher education. Currently, the first phase and the data collection of the second phase of our study have been completed. Thus, we are not only able to illustrate the integration of our first quantitative and qualitative findings, but can also demonstrate the strategies used to link the first two phases of our study. Furthermore, we provide an example of the meta-inferences created by reporting on the findings of the first integration process.

Data Collection

For the quantitative strand of our study, data collection involves the cohort of beginning students at four institutions, which were selected out of a larger group of universities that have received government funding for developing their first-year support in order to better accommodate student diversity. The first wave of the longitudinal survey was initiated four weeks into the first

semester (October 2015), the second wave was completed after the students' first year (October 2016), and the third wave will take place after their second year (October 2017). Parallel to the first wave of the survey, the qualitative study started with the document analysis regarding the design of first-year support programs including all institutions in the larger sample. It was complemented by the expert interviews conducted at the four universities participating in the quantitative survey. The interviews of the second phase involved students of the cohort of the quantitative survey who had participated in first-year support programs. In the third phase, the same students will be interviewed again to gain a long-term perspective on their first-year experience.

Integration Strategies

To characterize the process of creating meta-inferences based on our fully integrated mixed-methods design, we follow Bazeley and Kemp (2012). For the integration process of MMR, they identify three complementary and two generative strategies, with respect to their different aims. The complementary strategies combine different methods for completion, for enhancement or to detail a more significant whole. While *combining for completion* refers to presenting results side by side without a particular sequence or a change in the structure of any piece, *combining for enhancement* describes integration extending the results from a primary component. *Combining to detail a more significant whole* includes integration processes directed at understanding an entity that cannot be described with one component only, as they gain a new quality through integration. *Generative strategies* include transformation or the iterative exchange of data or results in the process of creating meta-inferences.

Adopting this classification, the process of creating meta-inferences based on the first phase of our quantitative and qualitative study (Fig. 2) can be characterized as *combining to detail a more significant whole*. To analyze the interplay of individual and context, we take into account the requirements anticipated by the students on the one hand, and the requirements addressed in first-year support programs on the other hand. Thus, we compare the individual perspective with the institutional perspective reflected in support programs to learn about the interplay of individual and institutional factors that constitute an entity "that is not contained within the separate parts" (Bazeley & Kemp, 2012, p. 61).

Furthermore, the process of integration includes the strategy of *combining for enhancement* in order to relate the first two waves of the quantitative survey with the second phase of our qualitative study. The results from the first quantitative survey give an overview of the relative importance of the examined study requirements condensed in terms of different factors. As the survey was conducted at the beginning of their study programs, students were requested to assess the anticipated requirements. The results are compared with the

interview findings regarding the requirements students experienced during their first year. Offering a retrospective view, the interviews reveal developments after the first wave of the survey and, thus, extend the quantitative results in terms of time. Hence, the qualitative study provides information for generating hypotheses on the development of students with regard to the study requirements and on the effects of support programs. Furthermore, the combination of the results from the first and second wave of the survey and the qualitative results from the interviews enhance the picture of the perceived study requirements in the first year.

To combine the qualitative study of the first and second phase, the process of creating meta-inferences also involved a *generative strategy*. The typology of first-year support programs that resulted from the first qualitative study is used to further develop the questionnaire of the survey in order to examine the support quantitatively. Furthermore, as the typology differentiates support programs with regard to the addressed study requirements, it serves as a base to analyze their quantitative effects. This qualifies as a *generative strategy*, as it allows further exploration through transformation from qualitative coding to quantitative items.

First Findings

Despite the early stage of the data analysis, we can already report the meta-inferences that resulted from the first integration process: the combination of the first qualitative with the first quantitative study. In this case, the integration of the data was guided by the research question concerning how institutional support initiatives match individual students' needs. Hence, we intended to combine the qualitative insights into first-year support programs with the quantitative findings depicting the student perspective on the examined study requirements. Based on the document analysis and expert interviews, the qualitative study identified nine types of support according to the scope of requirements they aimed to address. For example, the typology includes the *induction to university* as a type of support addressing organizational, content-related, and social requirements, while *enhancing subject knowledge* is directed only at content-related requirements. Overall, the findings indicate that the universities included in our sample ($n = 80$) tended to mainly address content-related requirements.

Comparing the institutional perspective with the results of the quantitative survey showed that the students ($n = 2{,}248$) perceived the examined requirements differently. Data analysis first confirmed the four factors representing the requirements (personal, organizational, content-related, and social) with a satisfactory internal consistency (i.e., Cronbach's alpha above 0.8). Second, it showed that the students appeared very optimistic at the beginning of their studies, as they rated the requirements as not particularly challenging: the mean

of the factors ranged between 3.75 and 3.39 on a five-point scale (1 = *most challenging* to 5 = *least challenging*). From the individual student perspective, the need for support therefore seemed to be limited and less focused than the institutional emphasis on content-related requirements. This first result corresponds with the observation reported in the expert interviews of the qualitative study ($n = 8$), indicating that the support programs often failed to reach beginning students as they were mostly offered as an optional, extracurricular activity. Thus, the meta-inference created suggests a certain mismatch between the institutional support provided and the individual students' needs. While the second wave of the quantitative survey is intended to complement this finding by a retrospective view on first-year challenges, the qualitative interviews will shed light on how students experience the fit between their individual needs and the institutional support.

CONCLUSIONS

MMR seeks to combine the strengths of both quantitative and qualitative methods and is regarded as particularly suited for the complex research problems in the field of higher education. As teaching and learning not only involve psychological processes but are also embedded in institutional and social structures, higher education research has to develop adequate designs for empirical insights into the complex interplay of individual and context. In this chapter, we showed that this is particularly true for investigating the transition to higher education. Our conclusions refer to the methodological discourse of MMR, and start with the claim for a domain-related discussion of research methods, because their potentials and limitations are related to the nature of the research object and the development of the respective research. Furthermore, we showed that the general procedures to create meta-inferences need to be grounded within a theoretical framework. The theoretical framework for a mixed-methods study on the transition to higher education has to:

1. integrate the theoretical perspectives on the individual student and the institutional context,
2. inform the selection of methods, and
3. define the nexus of the theoretical perspectives to guide the process of creating meta-inferences.

We demonstrated the benefit of a theoretical framework based on a study that employed a "fully integrated mixed model design" in order to investigate the interplay of the individual student and the institutional context. The framework reflects the research interest and integrates theoretical perspectives and previous research on transition. It grounds the research design and the construction of the quantitative and qualitative instruments. Furthermore, it provides a common point of reference for both studies, as it serves to define the

perception and handling of study requirements as the nexus for the two strands of the mixed-methods design.

Applied within the context of current reform activities in German higher education, the mixed-methods design guides the combination of data representing the individual and institutional perspectives on transition collected by means of survey, document analysis, and interviews. Presenting the first steps and findings of creating meta-inferences, we showed how complementary and generative strategies allow combining individual and institutional perspectives to examine, for example, the fit between students' needs expressed in anticipated study requirements and first-year support programs.

While the mixed-methods design proved useful for detailed insights into the interplay of the individual student and the institutional context, there are still some limitations of our study. Aiming for analytical generalization, our sample to examine the institutional perspective includes 80 higher education institutions purposefully selected out of a total number of 426 universities in Germany. Thus, our conjecture with regard to the mismatch between institutional support and individual has to be confirmed by further research. Moreover, the study requirements identified for German higher education need to be discussed in the light of international research.

Notwithstanding these limitations and that we reported on an ongoing research project, the chapter offers valuable insights for higher education research, as the interplay of individual and context is of concern not only for studies on transition but also for teaching and learning in general. So far, many studies in the field only focus on single aspects of context, as the related theory often appears too complex to be operationalized in empirical research. In our example, the study requirements as dimensions of the institutional context allow for a differentiated consideration of contextual factors in quantitative studies. While the identified requirements might not be transferable to teaching and learning in higher education in general, the idea of analyzing and grouping context according to the perception by individuals can be fruitful for other studies in the field. Furthermore, this lays the ground for the development of measures that include situational specificity. Thus, future research may reveal what contextual factors are relevant for teaching and learning in higher education on a larger scale, and to what degree or under what circumstances individual factors contribute to academic development and study success.

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