

**Addressing Issues of Unit Nonresponse and  
Sample Attrition in a Relationship and Family Panel**

Dissertation zur Erlangung des akademischen Grades des  
Doktors der Sozialwissenschaften (Dr. rer. soc.)

an der Ludwig-Maximilians-Universität München  
Sozialwissenschaftliche Fakultät

vorgelegt von  
Bettina Müller

München 2017



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## Überblick

Die vorliegende Dissertation ist als Kumulation von Aufsätzen konzipiert. Das erste Kapitel ordnet die Aufsätze daher als Rahmenkapitel in das Forschungsfeld ein. Kapitel zwei liefert eine Zusammenfassung der auf Englisch verfassten Dissertation in deutscher Sprache. Die einzelnen Aufsätze sind wie nachfolgend aufgeführt in Fachzeitschriften veröffentlicht:

Müller, Bettina und Laura Castiglioni. 2015. "Stable Relationships, Stable Participation? The Effects of Partnership Dissolution and Changes in Relationship Stability on Attrition in a Relationship and Family Panel." *Survey Research Methods* 9(3):205-19. <http://dx.doi.org/10.18148/srm/2016.v10i1.6207>

Müller, Bettina und Laura Castiglioni. 2017. "Do Temporary Dropouts Improve the Composition of Panel Data? An Analysis of "Gap Interviews" in the German Family Panel pairfam" *Sociological Methods & Research (OnlineFirst)*. <https://doi.org/10.1177/0049124117729710>

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# 1.

## **Addressing Issues of Unit Nonresponse and Sample Attrition in a Relationship and Family Panel**

### **1.1 Introduction**

Empirical couple and family research has achieved considerable progress in recent decades through the availability of large-scale survey data. While quantitative analyses in this area often rely on data originally gathered for other or more general purposes, it is increasingly acknowledged that a better understanding of couple and family life largely depends on whether data sources specifically related to the field are available (Hofferth 2005; Huinink et al. 2011). Efforts are thus being made to develop data bases that meet the specific requirements of research on families and intimate relationships while additionally addressing new challenges that emerge as the field changes (e.g., Huinink et al. 2011; Manning 2015; Seltzer et al. 2005).

One major demand is to allow for describing individual life course transitions and to evaluate what causes change, while accounting for various life domains and their interdependencies as well as for psychological factors (Huinink et al. 2011; Seltzer et al. 2005). As randomized experiments for most topics of couple and family research are infeasible, analyses of causal relationships in this area widely rely on observational data. In the survey context, one approach to enable the assessment of change processes is to implement longitudinal study designs, which collect data from the same individuals or households repeatedly over time. Such designs allow researchers to account for the temporal ordering of events and, to a certain extent, for unobserved differences between individuals, which is both essential for identifying selection and causation processes. For example, when studying associations between partnership trajectories (i.e., moving in together, marriage) and individual well-being, selection processes based on health can be differentiated from causal effects while accounting for the impact of changes in other life domains such as education and employment.

A further challenge in couple and family research to date is capturing individual dynamics from multiple perspectives within relationships, e.g., providing insight into joint decision-making processes in couple relationships. While large-scale surveys often sample households, an important data requirement to study couple and family life is to capture relationships beyond the household as well, including non-coresidential arrangements such as living apart together (LAT) relationships (Huinink et al. 2011; Manning 2015; Seltzer et al. 2005). Apart from their role as a rather short-lived stage in couple development, LAT constellations are becoming an ever more important, long-lasting family form (Levin 2004; Liefbroer, Poortman, and Seltzer 2015). At the same time, due to multiple variations, living apart together relationships cannot easily be delineated, complicating their description by means of survey data (see Mortelmans et al. 2015). In recent years, both factors have contributed to an urge for new data sources to bridge this gap and adequately represent these relationship types.

The German Family Panel pairfam (Panel Analysis of Intimate Relationships and Family Dynamics) has been designed to capture long-term individual dynamics in multiple life domains as well as to extend the household perspective by implementing an individual sample and additionally surveying respondents' partners and family members, irrespective of living arrangements. The degree to which these objectives are realized is thus crucial for evaluating the quality of this state of the art longitudinal study on couple and family life. This thesis addresses issues arising from non-participation of sample members (unit nonresponse) and subsequent sample dropout (attrition) in the pairfam study, which may compromise these goals and pose a potential threat to data quality:

- (1) Selective attrition along negative partnership dynamics (i.e., decreasing subjective partnership stability and partnership dissolution)
- (2) An underrepresentation of couple and family-related life course transitions
- (3) Selectivity of participation in the partner survey across different relationship types (i.e., LAT, cohabiting, or married).

These topics address specific nonresponse and attrition issues related to the substantive scope and the design of the pairfam study. The remainder of this chapter therefore aims to embed these analyses in the wider context of nonresponse research: Section 1.2 first provides an overview of theoretical perspectives on survey participation. This is followed

by an outline of current analytical approaches to investigate the impact of nonresponse and attrition on survey quality, including data requirements to conduct such analyses (Section 1.3). Section 1.4 introduces the pairfam study, focusing on features relevant for nonresponse and attrition. The chapter concludes with a summary of the analyses presented in this thesis as well as an overview of the main results and possible further steps to advance the understanding of these issues (Section 1.5).

## **1.2 Theoretical Perspectives on Survey Participation**

Surveys based on probability sampling are widely used in social science research as they allow for statistical inference about characteristics of a target population from sample observations and enable the quantification of errors related to such estimates. However, survey researchers and scholars using survey data have to deal with the fact that in practice, the participation of members of a specific target group is most often not random, but rather represents a choice of individuals and can itself be understood as a social phenomenon (see Groves and Couper 1998). Knowledge of such unintended selection processes is key to guarantee valid inferences from sample surveys.

Understanding why people do or do not participate in surveys is relevant to a wide range of survey settings. As these vary on key aspects such as the type of sample population, data collection mode, or interviewer involvement, theoretical approaches to evaluate survey participation do not uniformly apply to all survey types. The focus of the following sections is on approaches suitable to explain participation in face-to-face individual sample surveys in general, as well as in a longitudinal setting. Within this context, unit nonresponse (i.e., the failure to obtain an interview from an eligible sample member) and attrition (i.e., the process of initial participants opting out of a panel study) may result from a failure to locate, contact, or persuade potential respondents to participate.<sup>1</sup>

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<sup>1</sup> The inability to participate for reasons of, for example, health or language problems represents an additional cause of non-participation for otherwise eligible sample members, though in most surveys the amount of cases is relatively low (Groves et al. 2009:201). In panel surveys, sample losses also occur from death or movements out of the target population range. The number of such cases is usually also negligible.

These causes of nonresponse describe the main (conditional) steps in data collection. They are thought to underlie each specific processes and are thus treated separately in terms of theoretical approaches in survey literature (e.g., Groves and Couper 1998; Lepkowski and Couper 2002). Issues of locating and contacting sample members are discussed as rather operational endeavors, summarized in frameworks to guide field processes and nonresponse adjustment. An approach to explain these steps in the context of panel surveys is described in Section 1.2.3. When considering theoretical concepts on survey participation, more attention has been paid to the cooperation stage of the response process, which is addressed in Sections 1.2.1 and 1.2.2. Additional aspects inherent to panel survey cooperation are outlined in Section 1.2.3.

### **1.2.1 Conceptual Frameworks and General Theories on Survey Cooperation**

To enhance the understanding of survey cooperation, Groves and Couper (1998) provide a classification of influencing factors, differentiating between those that can (at least in theory) be altered by survey researchers, and those that can't. Survey design features such as mode or survey topic, as well as interviewer attributes and actions are variable. In contrast, influences of the sample person's social environment (e.g., general acceptance of surveys and their extent in a given society) and respondent characteristics represent given constraints of survey participation. Respondent characteristics include both socio-demographic and social psychological attributes, whereas the former are not thought to be directly causally related to survey participation, but rather understood as proxy variables for unmeasured influences (e.g., survey topic relevance). In addition, they may affect respondents' psychological predispositions. Within this framework, decision-making is hypothesized to proceed instantaneously at the survey request based on a combination of such influences rather than on pre-formed opinions on survey participation (Groves and Couper 1998:29-32).

Extending this conceptual view, the leverage-saliency theory (Groves, Singer, and Corning 2000) posits that people consider multiple factors when responding to a survey request, with the set of relevant aspects as well as their importance varying across individuals. At the moment of the interview request, the decision to participate is thought to depend upon the importance of each factor to an individual respondent (leverage),

whether the factor becomes or is made apparent by the interviewer (saliency), and whether it is positively or negatively associated with the likelihood of survey participation. Such factors may include survey topic, incentive payments, the estimated burden of the interview, or privacy intrusions. According to this approach, the influence of one factor may also counteract the effect of others. For example, the negative effect of a lack of interest in the survey topic may be attenuated if incentives are an important, positively correlated, and salient factor of survey participation (Groves et al. 2000).

Leverage-saliency theory attaches great importance to the interviewer's behavior at the moment of the survey request. Following previous approaches (Groves, Cialdini, and Couper 1992; Groves and Couper 1998), the interviewer is thought to be able to tailor the situation: Based on prior knowledge or assumptions about respondents' leverages for certain attributes of the request, the interviewer may emphasize specific aspects, such as to affirm data confidentiality if there are indications of privacy issues (see Groves et al. 2000).

Along with leverage-saliency theory, approaches following rational choice principles are the most widely discussed in the context of explaining survey cooperation (e.g., Groves and Couper 1998; Schnell 1997; Singer 2011). Within such concepts, the decision to participate in a survey represents the subjective optimum course of competing actions based on a sample person's preferences in a given situation (Schnell 1997:213-4). Decision-making may either follow a considerate evaluation of arguments for and against participation, or proceed instantaneously based on heuristics. When considering that for most people surveys may lack the necessary relevance for a systematic review of factors relevant for participation, heuristic approaches explaining survey cooperation appear more suitable (Groves et al. 1992).

One example of rational choice models is the benefit-cost theory (Singer 2011), which suggests that sample persons base their decision on an evaluation of their perceived benefits and costs of participating and opt for participation if the benefits surpass the costs. Singer (2011) outlines that this concept differs only marginally from decision-making as suggested by leverage-saliency theory. Applied to survey practice, leverage-saliency theory places greater importance on interviewer behavior to counteract perceived costs, whereas benefit-cost theory suggests that in order to elicit response more emphasis should be placed on the benefits of participation. The latter approach further points out

that a given factor relevant for survey cooperation may work in either direction; that is, a given attribute (e.g., survey topic) associated with costs by some respondents may be perceived as beneficial by others.

Finally, social exchange theory (Blau 1964) offers a comprehensive approach to understanding survey participation when the focus is on social interactions involved with participation decisions (see Dillman 1978; Dillman, Smyth, and Christian 2009). This approach explains individual behavior through social obligations and returns expected from previous actions, and thereby also follows a cost-benefit evaluation. The key distinct feature is that the range of economic decision-making factors (e.g., money, time) is extended by social psychological notions: Within social relationships, costs and benefits also include intangibles such as power, appreciation, or social validation, and the time at which returns from previous actions are expected is not explicitly set, which again requires trust on both sides. As Groves and Couper (1998) argue, a precondition for applying this approach to survey cooperation is that sample members link their decision to some sort of relationship with the survey organization. Social exchange theory is therefore considered more suitable for explaining ongoing survey participation decisions (Groves and Couper 1998:126).

### **1.2.2 Individual Theoretical Approaches to Survey Cooperation**

Leverage-saliency theory, rational choice models, as well as social exchange theory all encompass aspects of individual theoretical concepts to explain survey cooperation, yet do not explicitly address their underlying mechanisms. The most relevant in the present context are outlined in the following.

The topic saliency argument is based on the assumption that individuals can benefit from survey participation by ways of sharing their knowledge (see Groves and Couper 1998; Schnell 1997). Benefits may result from social acceptance or from contributing to knowledge as a means of reaching respondents' own goals or the ones of a group they belong to. Sample persons are therefore thought to consider their ability to contribute to a given study content and whether the topic is of any relevance to them or their group when deciding whether to participate (Groves and Couper 1998:145; Schnell 1997:182-3). Following benefit-cost theory, the importance of the survey topic may also be

conceptualized as a potential cost factor, whereby costs arise from giving away information on topics respondents consider sensitive (Singer 2011). Such topics are thought to be perceived by respondents as a threat to their privacy and as promoting an expectation of unpleasant or severe consequences in the case of disclosure (Tourangeau, Rips, and Rasinski 2000:258-9). Aside from these explanations, costs arising from delicate topics are mainly linked to an increased burden.

The concept of respondent burden as outlined by Bradburn (1978) considers survey response as a task. According to this approach, as the task becomes more difficult, the perceived burden tends to increase, thereby decreasing cooperation propensity. Burden is considered a rather subjective phenomenon that may result from multiple attributes of the survey and the answering process. These include interview length and the frequency of being interviewed, meaning all kinds of previous survey requests to respondents as well as follow-up requests in longitudinal surveys. Burden may further arise from respondent stress, i.e. particularly sensitive or embarrassing survey topics or questions rendering the interview unpleasant. Finally, an increased level of cognitive effort required in the answering process, e.g., comprehending questions or retrieving information, may render an interview burdensome. As Schnell (1997) argues, all possible sources of respondent burden can be conceptualized as costs within rational choice approaches, either as missed opportunities to perform other activities or as a threat to individual goals (Schnell 1997:173).

Focusing on influences of social interaction between respondent and interviewer or survey organization, social psychological concepts such as compliance with requests are deemed particularly well-suited to explain survey cooperation decisions (Groves et al. 1992). Groves et al. (1992) built on earlier work on influence theories by Cialdini (1988) to link heuristic principles underlying compliance to the survey context. These include, amongst others, reciprocation, consistency, and liking. Reciprocation describes the tendency that individuals feel obligated to positively respond to favorable behavior received from others. When applied to survey requests, sample persons are thought to be more willing to respond if their participation represents a means of compensating a received positive action (e.g., an incentive payment). The rationale behind the consistency argument is that individuals tend to adhere to their previously taken stand on a given issue. Requests for a behavior in line with these positions should therefore be more likely

complied with. For instance, sample persons who generally value scientific endeavors should be more willing to contribute to advancement in this area by participating in a survey. The application of this approach to survey requests implies that interviewers are able to detect such beliefs and emphasize related survey attributes. The concept of liking describes the tendency to react more positively towards liked others, whereby liking for example may stem from similarity or attractiveness. In the survey context, liking is associated with a greater compliance in cases where respondents and interviewers share certain attributes, e.g. appearance, opinions (provided these are communicated), etc. (see Groves et al. 1992).

### **1.2.3 Explaining Panel Survey Participation**

Following up on the idea to combine various influencing factors of survey participation while additionally integrating aspects relevant for panel surveys, Lepkowski and Couper (2002) developed a theoretical framework to evaluate the nonresponse process in later waves of a panel study. Their approach addresses the main conditional stages in data collection (i.e., location, contact, and request for cooperation) separately as each are hypothesized to underlie specific influences.

The likelihood of successfully tracking sample members in follow-up waves of a panel study is thought to be mainly a function of whether contact information has changed since the previous wave (in most cases as a consequence of relocation), as well as survey design features such as length of time between waves and tracking processes. Extending this approach, Couper and Ofstedal (2009) emphasize the importance of residential moves on panel data quality: The propensity to relocate is hypothesized to be correlated with that of experiencing certain life changes, which in turn varies with individual life stages, family and employment situation, etc. The authors further point out that given a move in the course of life changes, the likelihood of successfully tracking respondents is associated with individual characteristics (e.g., the degree of family involvement) as well as the nature of the change; in particular, unanticipated moves and those related to a name change are thought to be the most difficult to trace.

While a failure to locate respondents in follow-up waves is an important source of attrition in panel studies, contacting respondents once location was successful is

considered a straightforward task. Contact propensity can be explained as a function of respondent characteristics associated with at-home patterns (e.g., employment status and household composition), as well as survey design features such as the number of contact attempts and their timing. In a longitudinal setting, such information can be drawn from previous waves to enhance contact propensity in the current wave (Lepkowski and Couper 2002).

The general and individual theoretical approaches to survey cooperation described in Sections 1.2.1 and 1.2.2 have been developed in the context of cross-sectional surveys. Explaining cooperation in panel surveys is a different and somewhat more complex case, as the decision to re-participate must additionally be focused on. Prior knowledge of interview content and process, as well as the fact that respondents have already decided to take part once is opposed to the assumption that the decision to participate is made at the moment of the interview request. Therefore, the view of heuristic decision-making may not entirely fit in a longitudinal context (Lepkowski and Couper 2002). Accordingly, Lepkowski and Couper (2002) view follow-up cooperation given successful contact as affected by both situational aspects at the moment of the interview request (e.g., health status), as well as prior wave experiences (e.g., perceived burden). Whether and to what extent such experiences from earlier panel waves become relevant in a follow-up request is thought to depend on their salience as well as on survey design aspects such as the time period between two panel waves or whether the same interviewer is assigned.

Moving from this wave-on-wave perspective to considering cooperation across the panel, additional influences come into play. Extending earlier ideas by Laurie, Smith, and Scott (1999), Lemay (2009) outlines several attrition mechanisms, assuming that (non-) cooperation in the first waves of a panel study might follow distinct processes as compared to a mature panel. *Panel fatigue* as a first mechanism describes the process of declining interest with every wave and respondents feeling they already fulfilled their duty (Laurie et al. 1999). Lemay (2009) adds to this the idea of a cumulative burden with each panel wave as an underlying factor of fatigue, assuming that the point at which such costs of a repeated survey surpass the benefits of participation varies across respondents; here, dropout is hypothesized to represent a rather conscious decision (Lemay 2009:96,98). The *absence of commitment* explanation is derived from a contrast to continued participation, which in turn is thought to indicate high commitment and

respondents enjoying participating in the panel (Laurie et al. 1999). From this viewpoint, a lack of commitment from the outset of the study would lead to attrition. Implicit to this approach is the assumption that commitment to a panel study is not made at the first wave, but rather develops thereafter based on information gained from participation (Lemay 2009:98-9). As Lemay (2009) points out, continuous response may also result from participation becoming a habit, i.e. respondents being consistent with their past behavior of positively responding to the survey request. Correspondingly, respondents who do not develop such a habit are more likely to attrite, which describes the *absence of participation habit* mechanism (Lemay 2009:99-100). Finally, the author proposes as a fourth attrition mechanism a *shock* caused by certain life events during the panel timeline. From a psychosocial explanation underlying the effect of a specific life event, respondents are less likely to participate as they are caught up in dealing with this event or adapting to it, for example by relocating (Lemay 2009:51-2).

In summary, comprehensive theoretical approaches to explain survey cooperation suggest heuristic decision-making based on a combination of influences including survey design aspects, interviewer-respondent interaction, and social psychological factors. For panel surveys, cooperation is thought to follow distinct processes as respondents have prior knowledge of the survey. Taking such lagged influences into account, a longitudinal approach to explain panel participation appears crucial, also considering that follow-up participation may generate panel commitment, habit, or fatigue. Alongside these processes, changes in respondents' lives across the panel may affect both tracking success as well as individuals' willingness to consent to follow-up survey requests.

### **1.3 Analytical Approaches to Evaluating Nonresponse and Attrition Issues**

#### **1.3.1 Nonresponse and Nonresponse Bias in Survey Data**

According to sampling theory, unbiased inference from probability sample surveys requires measurement from all sample members, amongst other conditions. Unit nonresponse is thus one major factor that obstructs the framework underlying probability sampling, in addition to other factors such as incomplete population coverage and measurement errors (Särndal, Swensson, and Wretman 1992). In light of overall

decreasing response in probability sample surveys (e.g., Brick and Williams 2013; de Leeuw and de Heer 2002), their advantages and usefulness to provide unbiased population estimates – also compared to more cost-effective non-probability samples – has thus been put up for discussion (see Brick 2011; Groves 2006). Concerns about bias induced by high levels of nonresponse, however, are often not substantiated by adequate approaches to assess the degree to which data quality is actually affected.

Response rates, meaning the percentage of measured eligible sample members, have long been used as the sole indicator of a survey's representativeness and bias in estimates (see Biemer and Lyberg 2003; Peytchev 2013). This notion has engendered a series of methods to maximize response, e.g., using incentives, enhancing contact attempts, or tailoring interviewer behavior (see Singer 2006). However, current nonresponse research increasingly acknowledges that low response rates do not necessarily result in biased estimates and lower data quality, but rather only entail the risk of bias (e.g., Groves 2006; Peytchev 2013).<sup>2</sup> The potential for bias in survey statistics depends on whether nonresponse is selective; that is, whether the group of non-respondents differs from the responding sample with regard to target variables. Nonresponse bias can then be expressed as a function of the extent of both nonresponse and those differences (Groves 2006).

More recently, a stochastic view of survey participation as proposed by Groves and Couper (1998) has been increasingly applied, understanding individual response propensities as a random variable rather than a fixed respondent attribute. This perspective is consistent with theoretical concepts on survey participation (Section 1.2) and acknowledges that in practice, sample response from a given population may vary across different survey design features (Groves 2006). In a stochastic expression, nonresponse bias, for the case of a respondent mean, is represented as the covariance between a specific survey variable and the response propensity among sample units over the mean response propensity in the sample (Bethlehem 2002).

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<sup>2</sup> This is consolidated by empirical evidence from comprehensive meta-analyses, which show only weak correlations between nonresponse rates and bias in survey estimates across surveys (Groves 2006; Groves and Peytcheva 2008). Similarly, findings on the effects of increased response rates on bias in survey estimates within a given survey are mixed, showing minor to no effects (Curtin, Presser, and Singer 2000; Keeter et al. 2000, 2006), a decrease for some estimates (Calderwood et al. 2016; Roberts, Vandenplas, and Stähli 2014), and also increased bias (Merkle and Edelman 2009).

Depending on this correlation, nonresponse bias may vary along different survey variables within a given survey (Groves 2006). In addition, bias is estimate-specific and its magnitude is likely to differ between various statistics of a given survey variable as well as associations of different variables (Peytchev 2013). Further, in line with conceptual views on survey participation (Section 1.2), different steps in the survey response process such as contact and cooperation are thought to each underlie different influencing factors and may thus be associated differently with survey variables (Groves 2006).<sup>3</sup>

### 1.3.2 Implementing Nonresponse Analyses

According to the stochastic understanding of nonresponse bias mentioned above, a first step to detecting bias in survey estimates is to evaluate the correlation between key survey variables and survey response, differentiating between contact and cooperation. As a conceptual guidance for such analyses Groves (2006) proposes various models.<sup>4</sup> The *separate cause model* describes independence between influences on a given survey variable and those on response propensity, resulting in unbiased estimates (i.e., zero correlation). In contrast, common influences on a survey variable and response (e.g., survey topic saliency) would lead to biased estimates (*common cause model*). In this case, given these factors are adequately measured for both respondents and non-respondents, bias can be removed by accounting for such influences in post-hoc adjustments. Finally, a direct causal relationship between the survey variable itself and response propensity (*survey variable cause model*) also entails bias (Groves 2006). However, as response is related to unknown values of the survey variable, adjustments are much more challenging and require strong assumptions (see Little and Rubin 2002).

Correlates of survey participation are usually assessed in a multivariate setting, estimating response propensities in logistic regression models from variables available for both respondents and non-respondents. Once evidence for selective nonresponse is established that way, the extent to which specific survey statistics are biased can be

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<sup>3</sup> In panel surveys, locating and contacting respondents are usually analyzed together as differentiating between these two stages in practice is hardly feasible.

<sup>4</sup> These are closely linked to missing-data mechanisms according to Little and Rubin (2002).

evaluated, possibly followed by an assessment of the effectiveness of response enhancing methods or post-survey adjustment in reducing such bias. In practice, however, implementing this research agenda is primarily complicated by a lack of information to properly conduct such analyses. A further barrier to more informative assessments of nonresponse is the fact that large-scale surveys usually include a large number of key variables and statistics prone to nonresponse bias, which calls for straightforward and efficient routines in order to study data quality.

As regards data prerequisites for nonresponse analyses, all of the above mentioned steps ideally require information from both respondents and non-respondents on the variables under study based on the same measurement. This can be considered a rare data situation, as external validation data that are also available for non-respondents (e.g., frame or administrative data) are usually restricted to field information or baseline socio-demographic characteristics but do not contain survey variables of interest (see Groves and Couper 1998; Peytchev 2013). Data requirements for the evaluation of bias for associations in multivariate settings are even higher. A lack of comprehensive non-respondent information might therefore explain why a large part of nonresponse research on sample selectivity and bias in estimates is rather limited concerning the scope of the focused variables and statistics; in particular, bias is rarely assessed for associations (Peytchev 2013). Accordingly, enriching auxiliary data (i.e., any kind of data external to the survey under study), for example by paradata generated in the course of data collection, is at present perceived as one major challenge in nonresponse research (e.g., Kreuter 2013; Wagner 2012).

In response to the need for appropriate methods to study the risk of nonresponse bias, alternative indicators have been developed, both for the estimate level as well as for overall survey quality, which seek to overcome issues related to response rates (for a classification, see Wagner 2012). These rely on a stochastic expression of bias based on the correlation between survey variables and response propensity. One example, the representativeness (R-) indicator (Schouten, Cobben, and Bethlehem 2009), provides summary information on nonresponse bias in a given survey, measuring the similarity between survey response and a reference sample (e.g., the target population) with regard to a set of auxiliary variables. The usefulness of such alternative indicators of survey

representativeness, again, depends on whether adequate and fully observed auxiliary data are available (Schouten et al. 2009; Wagner 2012).

However, approaches to studying nonresponse in the absence of comprehensive external non-respondent information do exist. One common method is to compare survey estimates from different respondent groups within a given survey, assuming similarity according to recruitment efforts, for example between non-respondents and respondents who participate only after increased efforts (Groves 2006). While this approach has the advantage of a more extensive set of respondent characteristics than those usually available from external data sources that can be investigated, it is based on the strong assumption that such respondent groups are comparable.

When considering data prerequisites for studying nonresponse issues, longitudinal studies make a different case in that they comprise rich information on respondents and non-respondents from previous waves. However, there are additional aspects to evaluating longitudinal data quality, which again entail specific approaches and data requirements. The next chapter will elaborate on these issues.

### **1.3.3 Sample Attrition and Representativeness of Longitudinal Studies**

In addition to aiming for high response rates at baseline, longitudinal surveys seek to elicit continued participation over several waves. It is a given fact for panel surveys, however, that aside from initial nonresponse a substantial proportion of the sample is lost over the panel timeline (for an overview, see Watson and Wooden 2009). Nonresponse and related issues thus accumulate with each panel wave. Attrition reduces sample size and the information available for analyses over time, making estimators less precise and possibly complicating or hindering subgroup analyses. In the panel context, the loss of sample members is aggravated by the fact that all observations from such cases are lost for longitudinal analyses that require continuous measurement. While attrition is usually considered in advance in terms of initial sample size, more concerning is that it may also induce bias in survey estimates if the dropout process is not random, but if respondents who attrite systematically differ from those who continue participation (see Watson and Wooden 2009).

As with unit nonresponse in cross-sectional contexts, selectivity in longitudinal surveys is particularly an issue if it concerns or is related to key survey variables. However, panel studies are not designed to yield cross-sectional estimates but primarily seek to represent dynamics across the panel timeline (Lynn 2009). Hence, it is transitions in these variables rather than individual statuses which are of main interest when studying attrition impacts on longitudinal data quality. The confounding of life course transitions with follow-up participation, especially those addressed by the survey topic, is of particular concern as it may bias substantive analyses and limit the study's potential to assess such transitions with each panel wave. In particular, sample selection on life course transitions that represent the key outcome variables of longitudinal surveys is endogenous and thus likely to result in biased regression estimates (Wooldridge 2013:325). Regarding the mechanisms underlying nonresponse bias (Groves 2006), this case corresponds to the survey variable cause model and nonignorable conditions of nonresponse, which are particularly challenging to deal with.

Detecting such associations between individual dynamics and panel attrition is complicated by the fact that life course transitions between the last participating wave and dropout are only observed for respondents who continue participation, but not for attriters. Therefore, no direct effect of transitions immediately preceding dropout can be estimated. To circumvent this problem, the scarce previous research on effects of life events on attrition has mostly relied on information from the last participating wave, which merely allows for an approximation of immediate effects (e.g., Fitzgerald, Gottschalk, and Moffitt 1998; Voorpostel and Lipps 2011). Very rarely are such selectivity and a related bias in change estimates assessed by matching external data including non-respondent information (Neukirch 2002; Trappmann, Gramlich, and Mosthaf 2015), which would be an adequate data base to study this issue. As such, it allows for identifying the temporal ordering of the occurrence of the event and attrition and thus yields a stronger basis to draw causal conclusions about the impact of life events on attrition. Additionally, the magnitude of bias in change estimates can be assessed.

When considering the impact of life changes on attrition, one approach to overcome the issue of incomplete information on events between waves is to use proxy information known to be predictive of the outcome under study. Changes in those measures can then be assumed indicative of (unobserved) changes in the outcome status. Enriching data

bases for nonresponse analyses by fully observed proxy measures of key survey variables is widely practiced in the context of paradata (see Kreuter and Olsen 2013). In panel surveys, variables from previous waves can provide such proxy measures given they prove to be indicative of survey variables of interest.

#### **1.3.4 Summary and Conclusions**

To summarize, high nonresponse rates entail the risk of nonresponse bias in survey data. The evaluation of the degree to which nonresponse actually compromises the quality of a given survey should seek to understand whether and how variables central to the survey topic are related to the process underlying survey participation. Different reasons for a failure to participate are to be separated, as they may each underlie different mechanisms. From this, evidence for selectivity in survey data and the potential for bias in survey estimates can be derived, which again may guide further investigations on the magnitude of this bias in specific survey statistics.

Generally, these considerations apply to studying attrition in panel surveys as well. However, assessing sample representativeness in longitudinal studies cannot be limited to a static view, but should instead be extended to sample development over the course of the study. One of the most important criteria for the quality of longitudinal data, though rarely addressed in survey research, is the adequate representation of life course transitions and the ability to provide accurate estimates of change. If life course transitions are confounded with survey participation, this may lead to bias in substantive estimates. In particular, it appears crucial for longitudinal data bases with specific substantive purposes to evaluate selectivity and bias in the very transitions these studies are designed to capture.

Opposed to these objectives in nonresponse and attrition research is a lack of comprehensive data on non-respondents to implement adequate analytical approaches. The scale of this issue depends on the availability of administrative data, varying much across countries, on efforts to enhance the development of alternative auxiliary information such as paradata, and finally on the match of any kind of auxiliary data with the substantive scope of a given survey. If no adequate external sources to enrich survey data are available, as is the case for the German Family Panel, nonresponse and attrition

analyses have to be built upon approaches to study nonresponse within a given survey. In a panel context, such analyses can, however, rely on relatively rich information from previous waves.

#### **1.4 Scope and Design of the German Family Panel pairfam**

In the following, the substantive scope and design of the German Family Panel pairfam (Brüderl et al. 2016; Huinink et al. 2011) are described, focusing on key features and their relevance for issues of nonresponse and attrition.<sup>5</sup> A more comprehensive description of the study concerning the specific analyses and samples addressed in this thesis is provided in the three papers, respectively.<sup>6</sup>

The pairfam study is an annual survey of a random sample of German residents, conducted as computer-assisted personal interview. The survey provides an important data base for couple and family research, covering partnership quality and stability, childbearing, parenting and child development, and intergenerational relationships. It gathers information on various trajectories within these areas and thereby allows for analyzing decisive life stages, e.g. leaving the parental home, the formation of intimate relationships, moving in together with a partner, partnership dissolution, and family formation. Covering a very narrow field of research, pairfam differs fundamentally from multi-scope panel studies. In addition, the survey addresses topics that respondents may regard as belonging to the private sphere or consider sensitive, such as family life, romantic relationships, childbearing, etc. One concern arising from this explicit topical focus is that survey participation might follow distinct or more pronounced patterns as compared to panel studies with a broader, more neutral scope.

The pairfam study has been designed as an individual level sample of the birth cohorts 1971-1973, 1981-1983, and 1991-1993, allowing for the analysis of couple and family-related life course transitions from adolescence to early and mid-adulthood. In

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<sup>5</sup> The German Family Panel (pairfam) is coordinated by Josef Brüderl, Karsten Hank, Johannes Huinink, Bernhard Nauck, Franz Neyer, and Sabine Walper. pairfam is funded as long-term project by the German Research Foundation (DFG).

<sup>6</sup> For an overview of sample development and general attrition patterns in the German Family Panel, see Müller and Castiglioni (2015).

contrast to population level samples, pairfam thus collects data from a relatively young respondent group passing through various life stages, most of which are highly correlated with relocation. One potential issue arising from this sample definition is that respondents may exhibit increased rates of residential mobility and greater time restrictions as compared to the overall population. Both factors may complicate continued survey participation.

To get the full picture of a family's life, the pairfam study seeks to capture information from multiple perspectives and to allow for the analysis of couple and family relations at a dyadic level. To overcome the household constraint, the individual level sample is combined with a multi-actor survey. Main respondents' partners, children, and parents – with the consent of the anchor respondent – are included into the survey, irrespective of living arrangements. However, reaching respondents outside the household involves increased efforts, possibly obstructing the goal to equally capture all types of relationships in multi-actor samples.

In sum, the pairfam study targets a young, highly mobile population engaged in multiple life course transitions while covering private and sensitive topics, and aims at capturing couple and family life beyond household boundaries. These factors represent increased challenges for obtaining (continued) participation and representativeness in both the core and the multi-actor study.

## **1.5 Overview of the Thesis**

Nonresponse research is comprised of various subtopics, including the assessment of influencing factors of survey participation, the effectiveness of response enhancing strategies in data collection concerning nonresponse levels and bias reduction, and correction methods for nonresponse bias (see Brick 2013). These topics are not clearly differentiated, but rather nonresponse research is often concerned with several issues in parallel.

The first and second papers of this thesis address the identification of influencing factors of survey participation, seeking to allow for conclusions about selectivity and a potential bias arising from differential dropout. Ultimately, findings from these analyses may inform advancements in data collection and adjustment methods for nonresponse

bias, whereas these are not explicitly addressed. The focus of the third paper is on effects of reissuing wave non-respondents on sample composition and estimates of change. It thereby evaluates the impact of a response enhancement method on a data quality aspect that are both specific to panel surveys.

The analyses follow current methodological approaches in nonresponse research, focusing on the core variables of the pairfam study as well as estimates of change, and thereby seek to address nonresponse and attrition issues from a data user's perspective. The following chapters provide an overview of aims, approaches and insights from each paper (Sections 1.5.1 to 1.5.3) as well as overall conclusions, a discussion of their limitations, and possible further research directions (Section 1.5.4).

### **1.5.1 Effects of Relationship-related Changes on Attrition**

The first paper in this compilation examines whether the specific focus of the pairfam study produces specific selectivity patterns, which is linked to the issue of a possible underrepresentation of life changes in panel studies. More specifically, it evaluates whether reported separation and a decrease in subjective relationship stability are associated with attrition in a relationship and family panel, thereby focusing on events that either represent or are correlated with key dependent variables of the pairfam study.

As pointed out earlier, studies on the effects of life events on attrition mostly lack between-wave information and therefore rely on events reported prior to dropout. In pairfam, effects of separation on attrition can also only be analyzed for respondents who participate once more after experiencing this event, as external information on separation for the time of dropout is not available. In an attempt to overcome this problem, a decrease in subjective relationship stability is used as proxy information for unobserved partnership dissolution. However, irrespective of whether these changes are followed by a separation, evaluating their effect on attrition contributes to knowledge on selectivity in one of pairfam's focal content domains: Higher attrition probability in the case of partnership instability would reduce variation in partnership dynamics, which represent key outcome variables.

While previous research based on multi-scope or income-related household panel studies repeatedly found that partnership dissolution and divorce are associated with an

increased risk of attrition (Fitzgerald et al. 1998; Lillard and Panis, 1998; Neukirch 2002; Voorpostel and Lipps 2011), this effect has not yet been evaluated for a panel study explicitly covering relationship and family topics. Generally, higher attrition rates in the course of life events are mostly attributed to an increased rate of residential mobility, which is thought to complicate locating and contacting respondents at follow-up waves (in the following referred to as (non-)contact). In the pairfam study, in addition to non-contact, separation is also hypothesized to negatively affect the next wave's cooperation probability for reasons mainly related to the explicit topical focus of the study: The survey topic as a whole and answering partnership-related questions in particular may become disturbing and be perceived as burdensome in the course of a separation. Further, questions regarding the separation might increase the saliency of privacy concerns. Considering the participation process throughout the panel timeline, separation can also be thought of as a "shock", decreasing follow-up participation probability as respondents are focused on dealing with this event.

Usually, identifying effects of life events on respondents' cooperation is difficult due to selectivity at the contact stage as a consequence of relocation. In the present case, effects of partnership dissolution on attrition are also likely to be confounded with moving residence. The pairfam data allows to address this issue in more detail by differentiating between LAT and cohabiting relationships. For LAT respondents, there is no direct link to moving residence after a separation. Effects on cooperation among this group can thus be evaluated with less selection at the contact stage of the response process.

In line with previous findings for longitudinal surveys, the analysis shows that separation is negatively associated with follow-up participation in the pairfam study as well. However, there is no evidence supporting the assumption that pairfam would show especially pronounced selectivity patterns concerning negative partnership dynamics. Differentiating between the contact and cooperation stage of the response process reveals a negative effect of separation on contact probability, both for respondents who were cohabiting prior to separation and those who were not. An effect on cooperation probability, however, can only be found for LAT respondents. The lack of an effect for cohabiting respondents is likely due to selection at the contact stage as a consequence of moving residence. Results further indicate that a decrease in subjective relationship stability is not strongly associated with follow-up participation. Analyzing the response

process in detail reveals a marginally significant negative effect on cooperation propensity for cohabiting respondents.

### **1.5.2 Temporary Dropouts and the Composition of Panel Data**

The second paper follows up on the issue of missing information for non-respondents regarding events that are not captured elsewhere (e.g., in administrative data bases) when evaluating a panel study's representativeness in terms of life course transitions. In the case of the pairfam study, no external sources exist for events such as partnership dissolution, moving in together, marriage, or childbirth to match survey data for assessing their immediate effects on panel participation and a potential bias in change estimates. At the same time, it is crucial to gain knowledge on whether these very transitions are adequately captured in a relationship and family panel.

The paper proposes an indirect approach to assessing a potential bias in estimates of the prevalence of such transitions, differentiating between respondent groups according to their response patterns across the panel timeline. In panel studies, in addition to continuous response and monotone attrition, further response patterns result from designs reissuing respondents who drop out at one or several waves. The pairfam study also uses such a non-monotonic panel design: Respondents who did not participate in one wave due to non-contact or soft refusal (i.e., who are not reachable, have no time, etc.) are re-contacted in the next wave.

The analytical approach here lies on the assumption that such temporary dropout cases more closely resemble permanent dropouts in characteristics relevant to survey participation as compared to respondents who continuously participate. In combination with the Event History Calendar, which collects information on various life domains over the complete time span since the last interview, the non-monotonic design provides a unique data base for nonresponse analyses. This allows for a retrospective assessment of temporary dropouts in terms of life course transitions and an approximation of the effect of "lost" reports of life changes due to attrition from such cases. Analyses include a description of the amount of change reported by these cases as compared to continuous respondents. From a data user's perspective, the way in which the omission of additional reports on life changes from temporary dropouts would affect substantive regression

estimates of these changes is additionally evaluated. Finally, a representativeness indicator is used to summarize the impact of re-issuing temporary dropouts on sample composition, comparing representativeness in the non-monotone design to a hypothesized monotone setting for the pairfam study.

The analyses show that temporary dropout cases report significantly more transitions in certain life domains than do respondents who continuously participate in the corresponding time span. These differences are limited to transitions related to relocation, namely moving in together and separation, whereas the number of reports of beginning a relationship, the birth of a child, and marriage does not significantly differ between the two groups. Under the assumption that life course transitions are generally underrepresented in panel data, allowing for temporary dropouts thus increases sample variability to a certain extent. The observed differences in the relative number of life course transitions, however, do not seem to translate into differences in results from multivariate modeling of these transitions: Substantive conclusions remain largely unaltered if temporary dropout cases are excluded from the analysis sample. Similarly, overall sample representativeness does not significantly change when simulating a monotonic design. Obtaining stable results in substantive estimates and aggregate measures of sample representativeness when including and excluding temporary dropouts is likely to result from the fact that the amount of information from these cases is small when compared to the rest of the panel.

### **1.5.3 Participation of Respondents' Partners in a Multi-actor Survey**

Large-scale surveys are often household based, but while LAT constellations increasingly move into focus of couple and family research, this design appears inadequate. The pairfam study seeks to include LAT relationships by way of combining an individual level sample with a multi-actor design. Provided the anchor respondent gives his/her consent, anchor's partners are included into the survey, independent of the couples' living arrangements. Information on relationships can thereby be gathered from their initiation onward, covering all stages of partnership formation and institutionalization. However, despite this explicit design to capture LAT relationships, their inclusion still seems to be challenging: In pairfam's partner survey, response has previously been found to be

significantly lower among LAT constellations as compared to cohabiting and married relationships (Schröder et al. 2013).

The third paper of this thesis focuses on this finding of selectivity in partner response and aims to discern which factors hinder the equal representation of all relationship types.<sup>7</sup> More specifically, it evaluates whether higher participation rates among cohabiting and married partners are due to unobserved aspects of relationship quality associated with relationship status (e.g., levels of commitment), which may differentially affect the likelihood of partner response, or rather to field procedures that favor the participation of co-residential partnerships (e.g., increased opportunities of partner exposure to the survey). Assessing whether partner response suffers from selectivity on core variables or whether lower participation among LAT respondents has more practical reasons concerning data collection is crucial, as these two causes would each imply different measures. Indications of selectivity along relationship quality aspects can provide information for nonresponse adjustment after data collection, while issues arising from field procedures could be addressed at the data collection stage of future multi-actor designs.

A major advantage of a panel framework with multi-actor data is that primary respondents' characteristics, information on the current relationship, and proxy information on partner characteristics are available from the anchor interview. Thus, unlike common data conditions in nonresponse research, a rich set of predictors of and information on partner participation are available for the same wave, both for participating and non-participating partners. Based on this data structure, partner response can be analyzed longitudinally, accounting for selection on time-constant unobserved influences. To evaluate the importance of relationship quality and field procedure aspects, the effect of moving in together on partner response is estimated for the same anchor-partner dyads, comparing individual changes in response propensities before and after the move. Additionally, partner response is assessed at both stages of the data collection

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<sup>7</sup> This is an issue of unit nonresponse. The multi-actor design of pairfam foresees the inclusion of anchor respondents' current partners in each wave, resulting in wave-specific samples of partners: New partners enter the study either because anchors have a partner for the first time within the observation period who are then eligible for the partner survey, or because they report having a new partner. Ex-partners are no longer surveyed.

process separately: anchor consent to the partner interview, and partner participation (provided anchor consent).

Results show that the likelihood of overall partner response increases as the couple moves in together, which yields some indication that higher participation among cohabiting and married respondents might be explained by living arrangements. Analyzing both data collection stages separately shows that the effect of moving in together goes back to anchor consent, whereas no significant effect can be found on partner participation (conditional on anchor consent). However, neither the inclusion of the available relationship quality indicators nor field variables – in particular partner presence during the interview – explains the effect of moving in together. Although partner presence does not seem to be the driving factor behind a higher response in the case of co-residence, it is shown to have a strong positive effect on both anchor consent and partner participation probability in a within-person estimation.

#### **1.5.4 Conclusions and Discussion**

One central lesson from the extensive literature on nonresponse and attrition issues is that the magnitude of the problem depends on whether a survey's core statistics are affected. Following the aim to contribute to a better assessment of data quality, this work addresses issues of nonresponse and attrition that are most pertinent for the case of the pairfam study in terms of its key outcome variables: Selective attrition along negative partnership dynamics, the sample representation of couple and family-related life course transitions, and selectivity in partner participation along relationship type. In doing so, analyses attempt to overcome data restrictions that nonresponse and attrition research for data bases without external validation data is usually faced with.

The first conclusion of this thesis (Chapter 1.5.1) is that concerns about particularly pronounced selectivity patterns due to the explicit topical focus of the pairfam study cannot be confirmed. Patterns found in other panel studies are prevalent in the pairfam data as well, but do not appear to be worsened by the survey topic. In particular, pairfam's potential to capture negative partnership dynamics does not seem to be severely compromised by selective attrition. However, it should be considered that selectivity along separation and to a lesser extent along decreased relationship stability is present

and may cumulate over waves. Concerns about an underrepresentation of individual dynamics in panel studies are also confirmed by the second analysis (Chapter 1.5.2), revealing a significantly higher number of life course transitions related to moving residence from temporary dropout cases as compared to continuous respondents. However, substantive results do not appear to be significantly affected when artificially decreasing the sample representation of life course transitions by way of excluding temporary dropout cases. Thus, while findings from both papers indicate an underrepresentation of individual dynamics, they also point to the conclusion that effects are not large in magnitude and hardly affect substantive analyses. This might, at least for the pairfam study, contribute to putting concerns about damage to data quality induced by selective attrition into context.

Turning to more practical conclusions concerning data collection, from both analyzing effects of events on attrition as well as life course transitions reported by temporary dropouts, it has become apparent that tracking non-respondents is crucial to capturing individual dynamics and to thereby secure the quality of longitudinal data. Concerning effects of negative partnership dynamics on panel participation, this is only half of the story as partnership dissolution and – though only marginally – a decrease in relationship stability also appear to trigger lower cooperation rates. Selectivity arising at this stage can only be addressed after data collection by implementing statistical adjustment methods.

The limitation of the analysis on partnership-related changes on attrition (Chapter 1.5.1) is that it does not have access to fully observed external data for the events under study and therefore only captures lagged effects. Although investigating influencing factors of attrition in the current wave can be based on a rich set of previous wave information, this data structure does not allow for the longitudinal analysis necessary to establish any causal link between effects of life events and sample attrition. What would be desirable – if comprehensive external data were available – is to substantiate the argument of a causal effect of partnership dissolution on attrition by a longitudinal analysis, followed by an assessment of the amount of bias in estimates of change. As a final step, the effectiveness of post-survey adjustments in reducing a potential bias in wave-on-wave transitions could be assessed (see Trappmann et al. 2015 for an example application). A further shortcoming of this analysis is that selectivity in the first two

waves of the study is not accounted for. However, selectivity along negative relationship dynamics is likely to be present and possibly more pronounced at baseline, attenuating effects in later panel waves.

Using information from temporary dropout cases (Chapter 1.5.2) is an attempt to overcome the above mentioned data restrictions. One limitation of this approach, however, is that it only provides an approximation of the impact of attrition-related life changes on sample composition. Although drawing on a rich data source of retrospective information for non-monotone cases, this study remains descriptive and rests on the assumptions that temporary dropouts resemble non-respondents in characteristics relevant for panel participation and that life changes have a causal impact on temporary dropout. The latter point could be addressed specifically in further research, as between-wave information from temporary dropouts available from the Event History Calendar allows for a longitudinal analysis of effects of life course transitions on the likelihood of temporary dropout.

A more general note concerning both analyses on a potential underrepresentation of individual dynamics in pairfam is the lack of generalizability to population level samples. The findings are specific to the pairfam sample, targeting a young and highly mobile population. Translating results directly to population level samples would most likely overestimate the issue of an underrepresentation of life course transition related to moving residence.

The final study (Chapter 1.5.3) is able to overcome limitations in analytical approaches assessing influences on survey participation: Based on a panel framework with multi-actor data, the effect of moving in together on partner response can be evaluated longitudinally. This analysis confirms previous indications by Schröder et al. (2013) that including LAT relationships even by ways of implementing a multi-actor design is challenging. While moving beyond the household constraint is the very objective of this design, partner inclusion still appears to depend on living arrangements.

Of particular note among findings from this analysis are the strong positive effects of partner presence on both the likelihood of anchor consent and partner response. Leaving aside any possible undesired impacts of partner presence on measurement quality, these results point to the conclusion that increased efforts to inform anchors and partners about the partner survey might pay off in terms of response rates. When

considering anchor consent, which is a precondition for the inclusion of secondary respondents, anchors might deny consent simply because of uncertainty about their partner's attitudes towards his or her inclusion to the survey. Notable in this regard is the multi-actor design of the Netherlands Kinship Panel Study, which explicitly foresees the option that primary respondents contact their significant others before giving consent (Kalmijn and Liefbroer 2011).

There are some points to note concerning shortcomings of the analysis presented in the third paper (Chapter 1.5.3): First, although the longitudinal approach allows for a more precise test of the effect of co-residence on partner response, evaluating the underlying mechanisms concerning both relationship and field aspects would benefit from a more comprehensive set of explanatory variables. In particular, longitudinal information on relationship institutionalization as perceived by respondents for all relationship types might provide a better understanding of the transition from a LAT relationship to cohabiting and further to marriage. When considering field aspects, information on whether the couple discussed study participation in general, or whether the anchor consulted the partner before giving consent to the partner interview could help identifying hurdles of secondary response.

Second, evaluating secondary participation would benefit greatly from a sounder theoretical basis. Adapting concepts of "standard" survey participation to multi-actor sampling appears insufficient. So far, the scarce empirical research on secondary participation, including the study presented here, is motivated by a range of ad-hoc hypotheses based on such general approaches, which hardly accounts for the complex interdependencies of primary consent and secondary participation decisions. In particular, approaches based on social psychological theories that account for the interaction between primary and secondary respondents might advance the understanding of secondary response.

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## 2.

### **Zusammenfassung**

Das Beziehungs- und Familienpanel pairfam (Panel Analysis of Intimate Relationships and Family Dynamics) wurde konzipiert, um den spezifischen Anforderungen an Datenquellen für empirische Analysen zu Paarbeziehungen und Familien gerecht zu werden. Zwei Aspekte sind hierbei zentral: die Erfassung individueller Dynamiken und die Einbeziehung von nicht im Haushalt lebenden Partnern und Familienmitgliedern in die Studie. Die Qualität dieser Datenbasis für die Beziehungs- und Familienforschung bemisst sich daher vor allem daran, inwieweit diese Ziele erreicht werden.

Die vorliegende Arbeit untersucht, inwiefern die Nichtteilnahme von Befragungspersonen (Unit Nonresponse) und sukzessive Ausfälle über die Erhebungswellen hinweg (Attrition) diese Ziele gefährden. Im Einzelnen wird dies näher beleuchtet anhand von drei Aufsätzen zu je spezifischen Problemen, die sich aus dem inhaltlichen Fokus und dem Design der pairfam-Studie ergeben können: Selektive Panelausfälle entlang negativer Beziehungsdynamiken (Trennungen und Verschlechterungen der Beziehungsstabilität), eine mögliche Untererfassung von partnerschafts- und familienbezogenen Lebensereignissen und schließlich eine Selektivität in der Teilnahme an der Partnerbefragung nach Beziehungsstatus, genauer nach zusammenlebend oder living apart together (LAT).

Ein Rahmenkapitel (Kapitel 1) ordnet die in dieser Arbeit vorgestellten empirischen Analysen zunächst in den weiteren Kontext der Forschung zu Unit Nonresponse und Attrition ein. Hierzu werden theoretische Ansätze zur Erklärung der Teilnahme an Umfragen sowie Analysemethoden zur empirischen Untersuchung von Nonresponse und Attrition beschrieben. Grundlegend für theoretische Erklärungen der Teilnahme ist die Unterscheidung verschiedener Stufen des Teilnahmeprozesses, darunter vor allem die Lokalisierung und Kontaktierung von Befragungspersonen und deren Kooperation. Die Nichterreichbarkeit von potentiellen Respondenten als Folge eines Umzugs zwischen zwei Erhebungswellen ist insbesondere in Panelstudien ein bedeutender Ausfallgrund. Umzüge treten wiederum häufig im Zusammenhang mit bestimmten Lebensereignissen

auf. Zur Erklärung des Teilnahmeverhaltens bei erfolgreicher Kontaktierung werden als allgemeine Theorien vor allem die „Leverage-Saliency Theory“, „Rational-Choice“-Ansätze sowie die „Social Exchange Theory“ herangezogen. Alle Ansätze erklären die Teilnahmeentscheidung der Befragungsperson letztlich mit einer Abwägung mehrerer Faktoren, wobei sich die Zusammensetzung und Bedeutung dieser Einflussfaktoren zwischen Befragungspersonen unterscheidet. Einflüsse der Teilnahme umfassen Aspekte der Umfrage (z.B. das Thema der Studie), die Interaktion mit der Interviewerin/dem Interviewer, Einflüsse der sozialen Umwelt, sowie soziodemografische und sozialpsychologische Faktoren. In Panelstudien werden darüber hinaus auch Interviewerfahrungen aus vergangenen Erhebungswellen als relevant für die weitere Teilnahme erachtet.

Gemäß aktuellen Forschungsprogrammen sind folgende Aspekte grundlegend für aussagekräftige empirische Analysen zur Beurteilung des Ausmaßes, in dem die Datenqualität einer Studie durch Unit Nonresponse und Attrition beeinträchtigt wird: Analysen sollten auf Mechanismen des Zusammenhangs der für die jeweilige Datenquelle zentralen Variablen mit der Teilnahme fokussieren und dabei zwischen Kontakt und Kooperation unterscheiden. Der Schwerpunkt von Untersuchungen zu Attrition in Längsschnittstudien sollte zusätzlich auf der Erfassung von individuellen Dynamiken liegen, insbesondere jenen, die mit der Panelstudie abgebildet werden sollen.

Die Anwendung geeigneter Methoden zur Untersuchung von Nonresponse und Attrition wird vor allem durch die Datenlage behindert. Informationen über Nichtteilnehmer sind oftmals nicht in geeigneter Form verfügbar. Externe Validierungsdaten (z.B. Administrativdaten), die mit Umfragedaten verknüpft werden können, enthalten häufig nicht die inhaltlich interessierenden Merkmale einer Umfrage. Für die pairfam-Studie sind keinerlei externe Informationen zur Untersuchung von Nonresponse und Attrition verfügbar. Damit müssen Methoden herangezogen werden, die geeignet sind, diese Probleme auf Grundlage der bestehenden Datenbasis zu untersuchen.

Der *erste Aufsatz* behandelt Effekte einer berichteten Trennung sowie einer Verschlechterung der subjektiv wahrgenommenen Beziehungsstabilität auf die Panelteilnahme in den Erhebungswellen 3 bis 7 der pairfam-Studie. Im weiteren Forschungskontext geht es hierbei um die Frage, inwieweit selektive Panelausfälle infolge von Lebensereignissen

das Ziel einer adäquaten Erfassung von individuellen Dynamiken in Panelstudien gefährden. Dabei soll insbesondere untersucht werden, ob der explizite inhaltliche Fokus des Beziehungs- und Familienpanels besonders deutliche Ausfallmuster zur Folge hat.

Bei der Mehrzahl der Untersuchungen des Einflusses von Lebensereignissen auf die Panelteilnahme fehlen Informationen zu Ereignissen, die unmittelbar vor dem Ausstieg auftreten und somit für Panelausfälle nicht mehr erfasst werden. Um dieses Problem zu umgehen, wird meist ein „verzögerter“ Effekt von Lebensereignissen untersucht, d.h. der Effekt von Veränderungen, die in der Welle vor dem Ausstieg erfasst wurden. Da keine externen Datenquellen verfügbar sind, basiert die vorliegende Analyse ebenfalls auf dem Effekt einer berichteten Trennung. Zusätzlich wird jedoch die Verschlechterung der Beziehungsstabilität als Indikator für nicht beobachtete Trennungen herangezogen. Auch unabhängig davon, ob diesen Veränderungen eine Trennung folgt, würde ihre Untererfassung das Analysepotential des Beziehungs- und Familienpanels einschränken.

Eine erhöhte Wahrscheinlichkeit eines Panelausfalls im Zusammenhang einer Trennung oder Scheidung ist mehrfach belegt (Fitzgerald et al. 1998; Lillard und Panis, 1998; Neukirch 2002; Voorpostel und Lipps 2011). Dieser Effekt wurde jedoch bisher nicht für Panelstudien untersucht, die auch inhaltlich auf Beziehungsthemen ausgerichtet sind. Negative Effekte von Lebensereignissen auf die weitere Panelteilnahme werden üblicherweise mit einer höheren Mobilität und damit einer erschwerten Lokalisierung und Kontaktierung der Befragungspersonen im Zuge dieser Ereignisse in Verbindung gebracht.

Der explizite Fokus auf Beziehungs- und Familienthemen könnte für die pairfam-Studie neben Effekten auf die Erreichbarkeit jedoch auch eine geringere Kooperationsbereitschaft der Befragten zur Folge haben. Anzunehmen ist, dass das Thema der Studie sowie die Beantwortung von beziehungsrelevanten Fragen infolge einer Trennung als unangenehm und belastend empfunden werden. Fragen zur Trennung könnten darüber hinaus auch die wahrgenommene Sensitivität der Befragungsinhalte erhöhen und Zweifel an der Vertraulichkeit der Angaben zur Folge haben. Schließlich kann der „Schock“ einer Trennung die Teilnahmebereitschaft reduzieren, indem Befragungspersonen mit der Bewältigung dieses Ereignisses beschäftigt sind.

Die Identifizierung des Einflusses von Lebensereignissen auf die Kooperationsbereitschaft wird dadurch erschwert, dass viele Ereignisse stark mit Umzügen konfundiert sind. Effekte auf die Wahrscheinlichkeit einer Kooperation können nur für diejenigen

Befragungspersonen untersucht werden, die auch kontaktiert werden konnten. Die pairfam-Daten erlauben hier eine genauere Untersuchung, da zwischen Zusammenlebenden und Personen in LAT-Beziehungen unterschieden werden kann. Eine Trennung ist bei letzteren nicht unmittelbar mit einem Umzug verbunden. Dadurch kann der Effekt auf die Kooperation (weitgehend) ohne Selektivität auf der Kontaktierungsstufe durch Umzüge identifiziert werden.

Die Ergebnisse zeigen, dass sich die weitere Teilnahmewahrscheinlichkeit nach einer berichteten Trennung signifikant verringert. Negative Effekte auf die Kontaktierung finden sich bei vormalig Zusammenlebenden und – entgegen den Erwartungen – auch bei Personen in LAT-Beziehungen. Diese weisen darüber hinaus auch einen negativen Effekt auf die Kooperationswahrscheinlichkeit in der Folgewelle auf. Eine Verschlechterung der wahrgenommenen Beziehungsstabilität scheint dagegen die Teilnahmewahrscheinlichkeit insgesamt betrachtet nicht zu reduzieren. Nach Kontakt und Kooperation differenziert zeigt sich ein schwach signifikant negativer Effekt auf die Kooperation bei vormalig zusammenlebenden Befragungspersonen.

Die bisherigen Befunde über negative Effekte einer Trennung auf die weitere Teilnahme in Panelstudien können somit auch für das Beziehungs- und Familienpanel bestätigt werden. Insgesamt zeigen sich jedoch keine besonders ausgeprägten Ausfallmuster nach negativen Beziehungsdynamiken. Allgemein machen Ergebnisse zum Zusammenhang zwischen Lebensereignissen und Attrition deutlich, dass die Lokalisierung von Befragungspersonen, die zwischen zwei Erhebungswellen umziehen, zentral für eine adäquate Erfassung individueller Dynamiken in Panelstudien ist. Für die pairfam-Studie ist dies jedoch nur ein Teil der Lösung, da sich Trennungen auch negativ auf die Teilnahmebereitschaft bei erfolgreicher Kontaktierung auszuwirken scheinen.

Ein wesentlicher Schwachpunkt der Analyse ist, dass keine externen Datenquellen herangezogen werden können, um den angenommenen kausalen Einfluss von negativen Beziehungsdynamiken auf Attrition mit geeigneten Methoden zu fundieren und das gesamte Ausmaß an Selektivität zu beurteilen. Entsprechend muss bei der Interpretation der Ergebnisse berücksichtigt werden, dass es sich hier nur um den Effekt von berichteten Ereignissen handelt. Weiterhin ist unklar, inwieweit selektive Teilnahme entlang negativer Beziehungsdynamiken bereits von Beginn der Panelstudie an wirkt.

Der *zweite Aufsatz* knüpft an das Problem an, dass Untersuchungen einer möglichen Untererfassung von Lebensereignissen in Panelstudien überwiegend nicht auf Informationen über die Zeit unmittelbar vor dem Ausstieg aufbauen können. Für das Beziehungs- und Familienpanel fehlen externe Validierungsdaten, insbesondere zu Trennung, Zusammenziehen, Heirat und der Geburt eines Kindes. Gleichzeitig stellen genau diese Ereignisse den Kern des Analysepotentials der pairfam-Studie dar.

Im vorliegenden Beitrag wird ein indirekter Ansatz verwendet, um Untererfassungen dieser Veränderungen zu untersuchen, indem verschiedene Gruppen von Befragten nach ihren Teilnahmemustern über den Panelverlauf hinweg unterschieden werden. Die pairfam-Studie verwendet ein nicht-monotones Design. Befragungspersonen, die in einer Welle nicht kontaktiert werden können oder aufgrund von „weichen“ Verweigerungsgründen (z.B. Zeitgründe) nicht teilnehmen, werden in der Folgewelle erneut kontaktiert. Neben kontinuierlicher Teilnahme und dem endgültigen Ausstieg nach einer oder mehreren Erhebungswellen können Befragte damit auch unregelmäßige Teilnahmemuster aufweisen. Die zentrale Annahme der Untersuchung ist, dass diese temporären Aussetzer jenen Befragungspersonen ähnlicher sind, die dauerhaft aussteigen, als jenen, die kontinuierlich teilnehmen.

Aus dem Event-History-Calendar, der Veränderungen in zentralen Lebensbereichen seit dem letzten Interview erfasst, sind für temporäre Ausfälle lückenlos Informationen über die Zeit zwischen der letzten berichteten Welle und dem temporären Ausstieg verfügbar. Diese Angaben werden verwendet, um die mittlere Anzahl der berichteten Veränderungen zwischen temporären Aussetzern und Befragungspersonen, die durchgehend teilnehmen, zu vergleichen. Zudem wird untersucht, inwieweit sich Schlussfolgerungen aus inhaltlichen Analysen dieser Übergänge ändern, wenn Informationen der temporären Aussetzer nicht verwendet werden. Der Beitrag dieser Fälle zur Stichprobenzusammensetzung wird darüber hinaus auch anhand eines zusammenfassenden Repräsentativitätsmaßes (R-Indikator) abgebildet.

Die Ergebnisse zeigen, dass Befragte mit unregelmäßigen Teilnahmemustern im Vergleich zu jenen, die kontinuierlich teilnehmen, in einem äquivalenten Zeitraum signifikant häufiger Trennungen und Übergänge zur Kohabitation berichten und somit Ereignisse, die üblicherweise mit einem Umzug verbunden sind. Wird die Analysegrundlage

um Informationen von temporären Aussetzern reduziert, so zeigen sich jedoch keine gravierenden Unterschiede in den Ergebnissen der inhaltlichen Analyse dieser Übergänge. Darüber hinaus scheint sich auch die Repräsentativität des Samples, gemessen am R-Indikator, nicht signifikant zu verschlechtern.

Hauptergebnis der Analyse ist somit, dass temporäre Aussetzer die Zusammensetzung der pairfam-Daten hinsichtlich der Erfassung spezifischer, beziehungsrelevanter Übergänge verbessern. Die erhöhte Variabilität in diesen Übergängen scheint jedoch kaum Auswirkungen auf inhaltliche Ergebnisse und die gesamte Repräsentativität des Samples zu haben. Dies wiederum kann damit erklärt werden, dass temporäre Aussetzer nur einen kleinen Teil der in den Daten insgesamt verfügbaren Information liefern.

Übereinstimmend mit den Ergebnissen des *ersten Aufsatzes* deutet auch die Analyse temporärer Ausfälle darauf hin, dass Veränderungen in der pairfam-Studie untererfasst werden. Jedoch sind mit dem hier verwendeten indirekten Analyseansatz verschiedene Probleme verbunden. Zum einen wird die Untererfassung aus deskriptiven Analysen abgeleitet, denen die Annahme zugrunde liegt, dass temporäre Ausfälle mit endgültigen Panelausfällen hinsichtlich der Prävalenz von Lebensereignissen vergleichbar sind. Weiterhin wird ein Kausalzusammenhang zwischen dem Auftreten bestimmter Lebensereignisse und einem temporären Ausstieg angenommen. Schließlich kann die Gruppe der temporären Aussetzer darüber hinaus nur eine Approximation der Auswirkungen von endgültigen Panelausfällen auf inhaltliche Ergebnisse und die Stichprobenszusammensetzung liefern. Verallgemeinerungen auf Basis dieser, im Vergleich zum restlichen Sample, kleinen Gruppe sind nur eingeschränkt möglich.

Gegenstand des *dritten Aufsatzes* ist eine nach Beziehungsstatus selektive Teilnahme an der Partnerbefragung des Beziehungs- und Familienpanels. In der Multi-Actor-Studie werden Partner und Familienmitglieder der Ankerpersonen befragt. Dies erfolgt unabhängig davon, ob diese mit der Ankerperson im gleichen Haushalt leben. Eine frühere Studie (Schröder et al. 2013) fand höhere Teilnahmewahrscheinlichkeiten in der Partnerbefragung für verheiratete und zusammenlebende Partner im Vergleich zu Partnern in LAT-Beziehungen. Dabei ist jedoch nicht klar, ob dieser Effekt eine Selektivität nach

Aspekten der Beziehungsqualität (z.B. einen höheren Institutionalierungsgrad) widerspiegelt, oder erhöhte Schwierigkeiten, nicht im Haushalt lebende Partner für die Befragung zu gewinnen, die den Datenerhebungsprozess betreffen.

Die vorliegende Untersuchung fokussiert auf diesen Effekt des Beziehungsstatus und versucht zu klären, welche Faktoren eine adäquate Erfassung aller Beziehungsformen erschweren. Auch hier wird eine Besonderheit der pairfam-Daten genutzt: Aus der Ankerbefragung liegen eine Reihe von Informationen über Partnerinnen und Partner der Ankerpersonen vor – insbesondere auch für jene Partner, die nicht an der Befragung teilnehmen. Mit dieser Datenstruktur kann die Partnerteilnahme im Längsschnitt untersucht werden.

Um die Bedeutung von Beziehungsqualitätsaspekten und Einflüssen des Datenerhebungsprozesses zu klären, wird der Effekt des Zusammenziehens für die gleichen Anker-Partner-Dyaden ermittelt. Auf diese Weise kann zusätzlich zu den beobachteten und im Modell kontrollierten Beziehungsmerkmalen eine Selektion nach unbeobachteten zeitkonstanten Einflussfaktoren ausgeschlossen werden. Weiterhin wird der Effekt des Zusammenziehens für beide Stufen der Partnerteilnahme getrennt untersucht: die Zustimmung der Ankerperson und die Kooperation der Partnerin/des Partners bei Zustimmung der Ankerperson.

Die Ergebnisse zeigen, dass sich die Wahrscheinlichkeit der Partnerteilnahme mit dem Zusammenziehen signifikant erhöht. Dies deutet darauf hin, dass eine höhere Teilnahme von verheirateten und zusammenlebenden Partnern im Vergleich zu jenen in LAT-Beziehungen auf das Zusammenwohnen zurückgeht. Eine detaillierte Analyse des Teilnahmeprozesses zeigt einen positiven Effekt des Zusammenziehens auf die Zustimmungswahrscheinlichkeit der Ankerpersonen. Die Wahrscheinlichkeit einer Kooperation der Partner bei Zustimmung der Anker verändert sich dagegen nicht signifikant. Der Effekt des Zusammenziehens kann jedoch weder mit Beziehungsmerkmalen noch mit Informationen zum Datenerhebungsprozess wie etwa der Partneranwesenheit beim Ankerinterview erklärt werden. Obgleich die Partneranwesenheit nicht der Grund für eine höhere Teilnahmewahrscheinlichkeit nach dem Zusammenziehen zu sein scheint, zeigt sich ein signifikant positiver Effekt sowohl auf die Zustimmung der Ankerpersonen als auch auf die Kooperation der Partner.

Insgesamt deuten die Ergebnisse darauf hin, dass die Einbeziehung von Partnern auch in Multi-Actor-Studien entgegen ihrer Konzeption vor allem über den Haushaltskontext verläuft. Für eine weitergehende Untersuchung von Faktoren, die die Teilnahme von nicht im Haushalt lebenden Partnern behindern, wären allerdings umfassendere Informationen nötig. Diese betreffen einerseits zeitveränderliche Beziehungsaspekte wie etwa Veränderungen der subjektiv wahrgenommenen Institutionalisierung der Partnerschaft beim Übergang von LAT-Beziehungen in Kohabitation und Ehe. Andererseits wären Informationen darüber wünschenswert, ob die Partnerbefragung zwischen Ankerpersonen und Partnern diskutiert wurde und insbesondere, ob die Zustimmung oder Ablehnung der Ankeranfrage zum Partnerinterview vorab mit der Partnerin/dem Partner besprochen wurde. Weiterhin würden Analysen zur selektiven Teilnahme von sekundären Respondenten von einer geeigneten theoretischen Grundlage profitieren. Es ist davon auszugehen, dass die Teilnahme in Multi-Actor-Studien anderen Prozessen folgt als die Teilnahme an Umfragen auf Grundlage von Bevölkerungsstichproben. Insbesondere sollten Abhängigkeiten zwischen den Zustimmungs- bzw. Teilnahmeentscheidungen von Ankern und Partnern in theoretischen Überlegungen stärker berücksichtigt werden.