SCM
Studies in Communication and Media

FULL PAPER

Toward a standardized group survey. Introducing a new approach to group-level measurements in communication studies

Auf dem Weg zur standardisierten Gruppenbefragung. Ein neuer Ansatz für Messungen auf Gruppenebene in der Kommunikationswissenschaft

Johanna Schindler

Dr. Johanna Schindler, LMU Munich, Department of Media and Communication, Akademiestr. 7, 80799 Munich, Germany. Contact: johanna.schindler@ifkw.lmu.de. ORCID: https://orcid.org/0000-0002-1182-5804

FULL PAPER

Toward a standardized group survey. Introducing a new approach to group-level measurements in communication studies

Auf dem Weg zur standardisierten Gruppenbefragung. Ein neuer Ansatz für Messungen auf Gruppenebene in der Kommunikationswissenschaft

Johanna Schindler

Abstract: Many phenomena relevant to communication studies occur at the group level, yet methodological options for collecting data from groups as analytical units are limited. This contribution proposes the idea of a comprehensive, standardized, online group survey approach designed for dyads and small groups. Unlike conventional methods, the group survey approach can simultaneously account for group constructs' interactivity and heterogeneity, measure unobservable constructs, and be applied efficiently to large samples. It could also facilitate experiments, longitudinal studies, and multilevel analyses with natural groups across diverse communication contexts. This paper lays the groundwork for the group survey approach in three steps. First, it contextualizes the approach theoretically and methodologically. Second, it introduces its core principles, implementation, advantages, and limitations. Third, it tests its practical applicability through a qualitative analysis of the collective response process. The paper concludes by outlining the next steps for validating the group survey approach.

Keywords: Group research, communication research, methodology, survey research, small groups, dyads

Zusammenfassung: Obwohl viele für die Kommunikationswissenschaft relevante Phänomene auf Gruppenebene auftreten, sind die methodischen Möglichkeiten zur Datenerhebung bei Gruppen als Analyseeinheiten begrenzt. Dieser Beitrag stellt die Idee eines umfassenden, standardisierten Online-Gruppenbefragungsansatzes vor, der für Dyaden und Kleingruppen konzipiert ist. Im Gegensatz zu herkömmlichen Methoden kann der Ansatz gleichzeitig die Interaktivität und Heterogenität von Konstrukten auf Gruppenebene berücksichtigen, nicht-beobachtbare Konstrukte messen und effizient für große Stichproben eingesetzt werden. Er könnte Experimente, Längsschnittstudien und Mehrebenenanalysen mit natürlichen Gruppen in diversen kommunikationswissenschaftlichen Kontexten ermöglichen. Der vorliegende Beitrag schafft in drei Schritten die Grundlagen für den Gruppenbefragungsansatz. Erstens wird der Ansatz theoretisch und methodisch kontextualisiert. Zweitens werden seine Grundprinzipien, Umsetzung, Vor- und Nachteile vorgestellt. Drittens wird seine praktische Anwendbarkeit anhand einer qualitativen Analyse des kollektiven Antwortprozesses getestet. Der Beitrag schließt mit einem Ausblick auf die nächsten Schritte zur Validierung des Gruppenbefragungsansatzes.

Schlüsselwörter: Gruppenforschung, Kommunikationswissenschaft, Methodik, Befragung, Kleingruppen, Dyaden

1. Introduction

Communication scholars repeatedly have underscored the importance of social environments and group processes for media effects across subfields, ranging from political, health, and science communication (Southwell & Yzer, 2007), to entertainment (Cohen, 2017; Tal-Or, 2021). Smaller groups from everyday life – such as families, friends, or colleagues – are of particular importance in this context. First, this is due to the prevalence of group interactions related to media. A significant share of media content is consumed (GfK, 2019) and processed collectively through conversations (Gehrau, 2019). Teamwork is also essential for media production (Wang et al., 2022). Second, this arises from the specific properties of group information processing. Experimental comparisons have demonstrated that groups function as meaningful entities that think and act differently compared with each of their members (see Kerr & Tindale, 2004, for an overview). These results highlight that the meso level often serves as the crucial link between the micro and macro levels. Therefore, considering group constructs – such as collective perceptions, attitudes, affects, and behaviors – is essential to gain a deeper understanding of both individual and societal phenomena relevant to communication studies. For example, it can help in better understanding how political polarization evolves within and between social circles (Levendusky & Stecula, 2023) how media literacy develops within families (Riesmeyer et al., 2019), and how decisions emerge in newsrooms (Wilczek, 2019). However, most communication studies focus on the individual level. An individual perspective often even applies to dedicated group research:

> *"Although most group researchers believe that behavior in groups should be explained at the group, rather than the individual level of analysis, their theories and methods often betray subtle forms of reductionism. 'Group' research often focuses on the thoughts, feelings, and actions of individuals embedded in group contexts, rather than the responses of the group as a whole" (Levine & Moreland, 2011, p. 384).*

In addition to challenges in operationalizing group-level constructs (e.g., collective attitudes or group norms), group studies often encounter further methodological issues, including time-intensive data collection and analysis (Brauner & Scholl, 2000). Computational methods have advanced the possibilities of collecting and analyzing group-related digital behavioral data substantially (e.g., Pilny, 2021). However, group phenomena that occur offline remain underexamined, particularly when they are unobservable. While self-report methods for individuals range from qualitative interviews to fully standardized quantitative surveys, to date, only qualitative approaches have been established for group interviews in communication studies (for an overview, see Beck et al., 2021). Limited methodological options, in turn, make it difficult to empirically test group-level theory, further exacerbating the lack of group research both within and outside of communication studies. For example, theories of collective information processing (Hinsz et al., 1997) or collective decision-making (Kerr & Tindale, 2004) could provide

valuable insights into media consumption and production, but require group-level measurements for empirical testing and refinement.

In addressing this methodological gap, the present contribution introduces a novel standardized online survey approach directed at groups, which are minimally defined as "two or more people" (Williams, 2010, p. 269) to account for their many possible manifestations. This paper lays the groundwork for the group survey approach in three steps. First, it contextualizes the approach by outlining the theoretical foundations of groups as units of analysis and reviewing different methodological approaches to measuring group constructs and their associated challenges. Second, it introduces the group survey approach, detailing its core principles, implementation, advantages, and limitations. Third, it tests its practical applicability through a qualitative observation study that examines the group response process. While this contribution does not aim to present a fully validated methodological approach at this early stage of development, it outlines the next steps necessary for validation.

2. Step 1: Contextualizing group-level measurements

2.1 Theoretical foundations of groups as units of analysis

Small-group research has long offered insights into the dynamics of group interactions that build the foundation of all group-level constructs. Hinsz et al. (1997) established a theoretical framework to treat groups as meaningful information-processing systems. According to this framework, groups can process information similarly to individuals, involving objectives, attention, encoding, storage, retrieval, processing, responses, and feedback. This processing relies on social sharedness (Hinsz et al., 1997), which encompasses shared states and processes among group members, such as information, motives, attitudes, norms, identities, cognitive processes (Tindale & Kameda, 2000), and emotions (Hinsz & Bui, 2023). Social identity (Tajfel & Turner, 1986) can be viewed as a comprehensive form of social sharedness. Based on social sharedness, groups can combine contributions by a) identifying relevant contributions (e.g., resources, skills, and knowledge) and b) interactively combining them into a new process at the group level (e.g., through aggregation, linking, or transformation) (Hinsz et al., 1997). Notably, this notion of collective information processing extends beyond mere cognitive tasks, such as problem-solving, and includes collective perception, thinking, feeling, and acting in the broadest sense.

Apart from its structural similarities with individual information processing, collective information processing is inevitably also shaped by group-specific factors, such as group norms, internal majorities, and leaders. Extant research has shown that individuals often conform to group influences due to internalized social identities as group members (Hogg et al., 2004; Tajfel & Turner, 1986). From this perspective, such influences are not confounders but rather inherent and functional components of the collective process. They help groups facilitate identity and unity (Hinsz et al., 1997; Hogg et al., 2004; Tindale & Kameda, 2000) and protect them against flawed perceptions (Caporael, 1997). Accordingly, group lea-

ders can be viewed as central group members who serve the group, rather than vice versa (Hogg et al., 2004). Despite groups' tendency to converge, their members are not automatically homogeneous in every respect. Groups still can display internal heterogeneity due to their members' diverse beliefs, perceptions, affects, or behaviors (Hinsz et al., 1997; Hinsz & Bui, 2023; Hogg et al., 2004).

Thus, group processes and related constructs emerge from individuals' social minds and collaboration and exceed the sum of their parts. Various experimental comparisons have demonstrated that groups think differently from individuals (for overviews, see Kerr et al., 1996; Kerr & Tindale, 2004). For example, groups can solve complex problems more efficiently than individuals (Almaatouq et al., 2021). Depending on their composition, they can exhibit stronger or weaker confirmation bias than individuals (Schulz-Hardt et al., 2000). Groups also have a collective intelligence factor that cannot be explained through their members' individual intelligence (Woolley et al., 2010).

Consequently, group constructs should be conceptualized and measured at the *group level* to capture their interactive nature. More specifically, group researchers have asserted that the theory, measurement, and analysis units of group constructs should refer to the same level or relationship between levels (Levine & Moreland, 2011; Rousseau, 1985). Rather than measuring individual group members' aggregated or nested attitudes, perceptions, affects, or behaviors, an accurate group-level measurement can capture the whole group's collective attitudes, perceptions, affects, or behaviors. Put more simply, a family's favorite meal may be pizza, while its individual members' favorite meals may be risotto, fish, and pasta. Asking individual members for their favorite dish would not help determine what to serve to make the whole family happy. Simultaneously, measurements of group-level constructs ideally also should consider potential internal *heterogeneity*. If no collective group attitude has developed, an accurate group-level measurement would capture how diverse the individual positions within the group are. Returning to the family-meal example, if the family shares no specific favorite meal, understanding individual preferences in relation to each other would help determine that the whole family still would be happy in an Italian restaurant.

2.2 Methodological approaches to group-level measurements

The following sections review existing qualitative and quantitative approaches for collecting group-level data in communication studies. The approaches are categorized broadly into observational and self-report methods. Each approach is assessed based on the two group-specific criteria derived above, i.e., whether it can capture groups' interactive nature (group level) and potential internal diversity (heterogeneity). Furthermore, it is discussed in the context of three criteria generally relevant to data collection methods (see, e.g., McDonald, 2008), namely its ability to grasp unobservable constructs (introspection), its degree of reactivity (nonreactivity), and its applicability to large samples to gain generalizable results (efficiency; see Table 1 for an overview).

Table 1. Core strengths (+) and weaknesses (–) of methodological approaches for measuring group-level constructs

	Observational approaches				Self-report approaches			
	Qualitative observation	Quantitative observation	Computational observation	Qualitative interview	Aggregation methods	Consensus method	Group survey
Group level	+	+	+	+	–	+	+
Heterogeneity	+	+	+	+	+	–	+
Introspection	–	–	–	+	+	+	+
Nonreactivity	+	+	+	–	–	–	–
Efficiency	–	–	+	–	+	–	+

2.2.1 Observational approaches

One option to operationalize group-level constructs is observational approaches. Digital behavioral data from mediated group conversations, such as those on social media (Rothut et al., 2023) or private messaging apps (Knop-Huelss, 2023), can be collected via scraping or data donations. Face-to-face conversations and interactions need to be observed in laboratories (e.g., Sommer, 2013) or in the field (e.g., Lull, 1980) and often are recorded and transcribed for further analysis. Observational data can be analyzed using qualitative (e.g., Lull, 1980), quantitative (e.g., Knop-Huelss, 2023; Sommer, 2013), or computational methods such as automated content and network analyses (e.g., Rothut et al., 2023). Digital group data collected for computational analyses will be categorized under the term computational observations.

Observational approaches in group research are effective for capturing group-level interactions and within-group heterogeneity, fulfilling the requirements for group-level measurements. Observational measures are typically also less reactive than self-report methods. However, they are limited to observable behaviors and cannot directly access implicit group aspects, such as collective knowledge or beliefs. Furthermore, collecting and analyzing observational group data is typically time-consuming, particularly from face-to-face interactions that need to be recorded and transcribed. While automatic transcription software can assist, it still requires human oversight (Wollin-Giering et al., 2023), particularly for distinguishing multiple voices. Manual qualitative or quantitative analyses of group conversations are also labor-intensive. Computational text analysis methods can be used to process large amounts of data efficiently, but they struggle with capturing complex constructs (Baden et al., 2022) that are particularly relevant for group-level analysis.

2.2.2 Self-report approaches

Self-report approaches offer another way to capture group-level constructs. Individual interviews or surveys are not considered here, as they focus on individuals within the group context. The most established group-level self-report method in communication studies is qualitative group interviews (group discussions, focus groups), which are recorded and transcribed for analysis (e.g., Swart et al., 2019). While quantitative surveys of groups are uncommon in communication research, organizational research offers two relevant approaches. First, aggregation methods aggregate individual survey responses to represent the whole group (Huang et al., 2009). Second, the consensus method (also termed consensus rating, consensus technique, or discussion method) involves surveying entire groups in a laboratory setting. With this method, a researcher asks the group to reach a shared response on a standardized scale (e.g., Quigley et al., 2007).

Each self-report approach presents unique strengths and weaknesses for group research. Qualitative interviews and the consensus method can address the whole group and its interactions, while aggregation methods miss the interactive component. Qualitative interviews and aggregation methods can capture group hetero-

geneity, whereas the consensus method compels groups to provide a shared response. All self-report methods can access implicit aspects of group processes, such as collective knowledge or beliefs. However, they are also more reactive than observational approaches in two ways: They require active reflection on the constructs being measured and may elicit social desirability bias (McDonald, 2008). Furthermore, qualitative interviews and the consensus method demand substantial effort. Despite its standardization, the consensus method remains resource-intensive, requiring instruction from a researcher for each participating group.

2.3 Overarching challenges

Researchers can choose from various approaches to measure group-level constructs (see Table 1 for an overview). Qualitative approaches offer in-depth insights into complex group processes, while quantitative approaches provide systematic and generalizable results. However, even most quantitative group approaches are labor-intensive and challenging to implement with large samples. Exceptions are limited to observable constructs (computational observations) or miss the interactional dynamics of group-level constructs (aggregation methods). An efficient self-report approach that includes groups' interactional components is still needed. While the consensus method has made initial progress, the full potential of a standardized group survey for communication studies has yet to be realized.

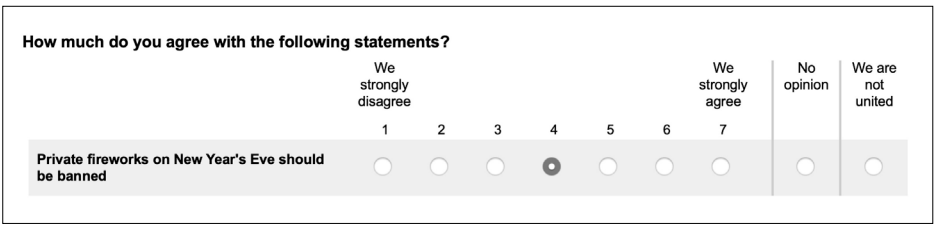
3. Step 2: Introducing the group survey approach

3.1 Core principles and implementation

The group survey approach is a standardized, large-scale online survey approach for measuring group-level constructs (see Schindler, 2023, for a detailed development and test). The questionnaire is designed for groups and can be completed collectively by any group capable of interaction. The groups can complete the questionnaire on a single device while being physically together. Alternatively, they could collaborate through technical means, though this option has yet to be tested (see below for details). Thus, a group survey serves as a group-level counterpart to individual online surveys. In line with the theoretical foundations of group-level measurements presented above, the approach is defined by two core principles.

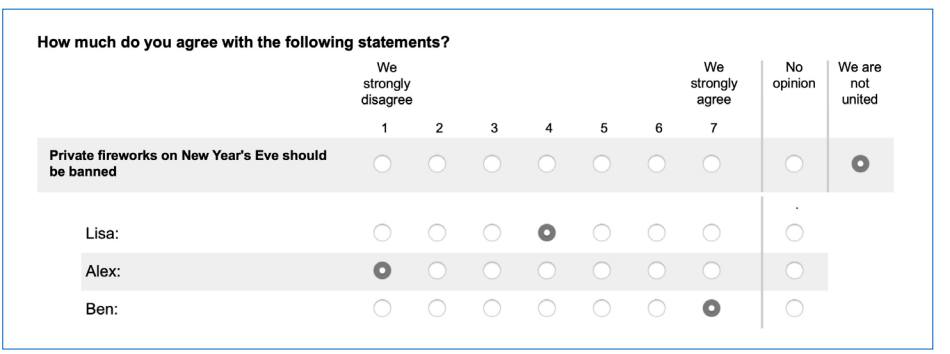
First, the entire online questionnaire addresses the *group level*. Building on the concept of groups as effective information processors, this principle extends the idea of single consensus measures to a whole online survey that groups can answer independently outside the laboratory. The measurement of group-level constructs requires careful theoretical reflection on their level of analysis. Group constructs can then be translated into suitable survey questions and response options that address the group consistently (e.g., "we strongly agree"). Furthermore, scale points can be numbered to help the groups discuss different response options (see Figure 1).

Figure 1. Example question with a collective response



Second, acknowledging that group members do not always share identical characteristics and perceptions, the group survey approach also includes a novel measure of within-group *heterogeneity*. When lacking consensus, groups can select a residual disagreement option ("We are not united"). If measurements require a consistent assessment across all group members (e.g., on previous group behavior), "not united" can be treated as a missing value. However, when heterogeneous assessments are relevant (e.g., indicating opinion diversity), individual response options can be set to appear dynamically if groups select "not united" (see Figure 2). These individual responses can then be used for further calculations (e.g., the standard deviation of opinions to represent opinion diversity).

Figure 2. Example question with individual responses



Note. Individual response options appear dynamically when groups select "not united."

From a group-level perspective, a group's influence on its members is no confounder, but rather an integral part of the research subject. For example, measuring group norms through a group survey captures the norms as they are negotiated collectively by the group, accounting for social influences. In contrast, an individual survey assesses norms as perceived by individual group members (e.g., Geber et al., 2019). Both approaches are valuable but have a different focus: A group-centered approach is better for understanding group-level dynamics, such as shared group norms' influence on collective behavior, while an individual-centered approach is more effective for examining individual processes within group contexts, such as how perceived group norms influence individual behavior. When

both group-level and individual-level perspectives are relevant, a group survey can be combined with individual surveys of members. This approach allows for excluding group influence from specific measurements while incorporating it in others.

In addition to these two core principles that define a group survey, further considerations are relevant to implementation. Regarding *participation instructions*, a minimal approach would be to inform the groups about general principles at the beginning of the questionnaire. Here is an example: "The following questions address you as a group. If you share one opinion, choose the position closest to your shared answer (see Figure 1). If opinions differ, select "We are not united" (see Figure 2), and additional options will appear." This approach has the advantage that the groups can coordinate in their own way, making responses particularly spontaneous and natural. It was chosen in the exploratory study presented below. However, if a study requires greater control over the response process, more concrete instructions could be provided, similar to those used in the consensus method (e.g., Quigley et al., 2007).

Just as most individual surveys collect data on basic sociodemographic characteristics, group surveys also can capture data on *context characteristics*, such as group type and size. Furthermore, individual members' sociodemographic data can be aggregated at the group level using means, percentages, or standard deviations to describe groups based on attributes such as average age, age diversity, gender ratio, or educational composition (Schindler, 2023).

Another important issue is *data quality*. First, for group data to be valid, all members must feel represented by it. Individual follow-up surveys can help assess whether each member agrees with the group's answers and felt free to express their views during the process. Importantly, this does not aim to eliminate group influence on members – as it is an inherent part of the phenomenon under study – but to ensure that their responses are not shaped by extrinsic pressure. Second, overall data quality may vary, such as if the questionnaire was not taken seriously or if responses were generated by only one person. As in individual surveys, group data quality can be evaluated using techniques such as speed indices, checks for inconsistent response patterns, or analysis of answers in open text fields (Schindler, 2023).

Implementing a group questionnaire that incorporates individual measures involves specific *technical requirements*. SoSci Survey (Leiner, 2019) is a useful tool that enables dynamic integration of user-defined pseudonyms for individual responses within group surveys using placeholders and JavaScript. If individual follow-up surveys are needed, datasets can be linked anonymously using IDs, with group meta-information stored in an internal database. Furthermore, it is recommended that groups complete surveys on devices with larger screens, such as tablets or laptops, rather than smartphones, to ensure all members can participate effectively.

Finally, *recruitment* can be managed by engaging individual members to mobilize the rest of the group. The exact approach should be tailored to the target audience. For example, online panels that provide data on relationship status and household size can be utilized to target members of partnerships, families, or

shared apartments. Importantly, participation demands a high level of effort from the groups, particularly larger ones that need to meet in person, and may require incentives to ensure motivation (see the limitations section below for details).

Importantly, these are initial suggestions that require systematic testing and further refinement through methodological research – for example, investigating the effects of different participation instructions.

3.2 Benefits

The group survey approach offers decisive benefits for communication research. As demonstrated above, most approaches to group measurements are either insufficiently situated at the group level, are limited to homogeneous responses or observable measures, or are resource-intensive. The group survey approach can overcome these problems simultaneously. First, it comprehensively addresses the group level of analysis by incorporating a group's interactional nature. Second, it can operationalize within-group heterogeneity through its disagreement option. Third, it enables access to introspective information, allowing for measurement of unobservable group constructs without being limited to them. This versatility allows for the measurement of a wide range of constructs, from collective perceptions and attitudes to affects and behaviors. Fourth, a group survey is efficient and can be employed to study large group samples, ultimately leading to more generalizable results from group research.

Through this combination of features, the group survey approach opens new possibilities for communication studies in several areas. It simplifies data collection at the group level, allowing for analysis using standard statistical procedures. Media stimuli can easily be embedded into group surveys, enabling experiments with groups such as families, friends, or colleagues as units of analysis. Such experiments could help understand collective media effects and compare group processes with individual processes. Unlike a significant portion of previous group research, these studies can be conducted in a natural setting outside the laboratory to enhance ecological validity. Furthermore, the group survey approach facilitates longitudinal studies with groups. They could offer insights into the long-term dynamics of collective processes in natural groups, such as political polarization. Finally, the approach supports multilevel studies, combining group surveys with individual data to understand the interaction between group and individual processes, such as in the realm of collective opinion formation and decision-making.

3.3 Limitations

Despite its advantages, the group survey approach comes with certain challenges. First, while data collection is efficient, recruiting groups is challenging, as they need to coordinate themselves. Attractive incentives might encourage them, but could also lead to individuals mimicking group responses. Thus, group surveys may require both strong incentives and verification techniques, which could include prospective methods, such as smartphone registration, or retrospective me-

thods, such as data quality checks (see above). Future research could identify the most effective group recruitment and verification strategies.

Second, as a self-report method, the ability to measure unobservable constructs only works at the cost of reactivity (McDonald, 2008). Extant research has demonstrated that a higher salience of group norms can mitigate the influence of general societal norms on collective behavior (Reicher et al., 1995), implying weaker social desirability effects in a group context. However, it remains to be examined empirically whether and under which conditions group surveys are more, less, or equally reactive compared with individual surveys.

Third, the approach requires groups to collaborate through direct interactions, i.e., they must be able to communicate in some form. So far, it has been applied only with group members being physically present. However, a digital solution, such as completing the survey together via video chat, should also be conceivable and would need to be tested empirically. Furthermore, this requirement implies a limitation on the number of group members to ensure effective collaboration. Previous studies using the consensus method in the laboratory have worked with up to six (Gibson et al., 2000; Quigley et al., 2007) or even ten or more members (Kirkman et al., 2001), offering some guidance on appropriate group sizes. For larger groups, one possible solution is to select a representative or theoretically relevant subgroup, similar to how random or stratified samples of individuals are used to represent a population. This approach may offer a more feasible way to approximate group characteristics and dynamics, though it requires empirical validation.

Fourth, while a group survey can capture emergent and contextual aspects of group phenomena, it cannot fully analyze their dynamics and complexity. Like any survey, it relies on active reflection, potentially overlooking unspoken and unconscious elements (McDonald, 2008). Furthermore, as a standardized method, it enhances generalizability at the expense of detail and nuance. Consequently, a group survey can only complement, but not replace, qualitative methods in group research.

Despite these limitations, the group survey approach combines a unique set of strengths that enable more and more diverse quantitative group research within and beyond communication studies (see above). Therefore, pursuing this approach further appears worthwhile. After a conceptual beginning has been made, questions arise regarding its practical applicability and, ultimately, its validity.

4. Step 3: Testing the group survey approach's applicability

4.1 The emergence of group survey responses

To assess the group survey approach's practical applicability, this section examines the collective response process empirically. It aims to determine whether and how a group survey can be completed effectively by both the group as a whole and its individual members. This step is a crucial precondition for the implementation, quantitative validation, and interpretation of group surveys.

Extant research has demonstrated that individuals reach survey responses through different processing routes (for an overview, see Tourangeau, 2018). This plausibly also applies to groups. Research on group decision-making and problem-solving has revealed diverse strategies that groups employ to achieve collective outcomes. Depending on the context, such strategies include discussions based on arguments, combining preferences, or following leaders (for overviews, see De Dreu et al., 2008; Hinsz et al., 1997; Kerr & Tindale, 2004; Levine & Moreland, 2011). However, these studies typically focus on specific tasks, such as jury decisions or mathematical problems, rather than collective self-assessment in survey contexts. Consequently, the emergence of group survey responses remains a black box that needs to be opened. As derived above, group measures must stem from a genuine and independent group process to which all members contribute. It only makes sense to pursue and validate the group survey approach in quantitative studies when this condition is met in practice. Furthermore, comprehending the response process is vital for interpreting standardized group survey data. While the analysis can be conducted easily through standard procedures, the interpretation demands a deeper understanding of how group responses are formed to assess what they convey (or do not convey) about the group and its members.

Given the limited understanding of the collective response process to a group survey so far, an exploratory research question is posed: *How do groups reach responses to group survey questions?* This open-ended question accounts for the potential diversity and complexity of the response process. It encompasses all interactions leading to group survey responses, such as how groups handle consistent and divergent assessments, what decision strategies they employ, and when they choose the disagreement option. Ultimately, answering this question helps determine whether they reflect genuine group processes. Furthermore, it enhances their interpretability by illuminating how exactly group responses can emerge.

4.2 Method

The research question on the collective response process has been answered through an exploratory, qualitative observational study, with eight natural groups participating in an online group survey (see Schindler, 2023, for a detailed analysis). While it initially may seem counterintuitive to investigate a standardized survey approach through qualitative observation, employing a non-standardized approach was essential at this early stage to examine the response process comprehensively. An observational approach was an appropriate choice of method, as groups unavoidably think aloud when negotiating group-level responses and simultaneously may not be consciously aware of their response practices.

4.2.1 Example group survey

The online questionnaire was part of a broader project on group processing of media messages, focusing on two randomly assigned controversial topics: Car-free cities and same-sex parenting (Schindler, 2023). During the survey, groups watched a five-minute video stimulus on their topic from a German knowledge

show and discussed it collectively. Before and after the stimulus, standardized group-level measures were employed regarding attitude, perceived public opinion, issue involvement, knowledge, affects during stimulus consumption, stimulus evaluation, systematicity and openness of information processing, and affects and collaboration patterns during information processing. The measures used nominal or seven-point scales, all including the "not united" option. Most measures allowed for individual responses if no consensus was reached. Furthermore, open-text-box measures were used for arguments and stimulus recall. Thus, the example group questionnaire encompassed a wide variety of constructs and measurement types, including open-text fields and metric scales, to examine response patterns as comprehensively as possible. The full questionnaire is available in the appendix (see Schindler, 2023, for the development of each measure).

4.2.2 Sample

The sample comprised eight natural groups from Germany (two to four members each, 23 individuals in total; see Table 2). The groups were recruited through personal contacts, with each participant receiving ten euros. Following theoretical sampling principles (Bryman, 1988; Silverman, 2015), groups were selected to cover diverse group features. The sample included couples, families, and friends sharing an apartment, reflecting a wide range of relationships, sociodemographic characteristics, and compositions.

Table 2. Sample characteristics

ID	Group type	Gender	Age	Education
1	Friends	All female	20s	Academics
2	Family	Mixed	Teens–40s	Academics
3	Friends	Mixed	30s	Non-academics
4	Family	Mixed	Teens–50s	Mixed
5	Couple	Mixed	20s	Academics
6	Couple	Mixed	60s	Non-academics
7	Family	Mixed	20s–60s	Mixed
8	Friends	All male	20s	Academics

4.2.3 Data collection

The observations took place between January and May 2020 in the groups' private homes.[1] Following written informed consent from each member, the groups collectively completed the group questionnaire on one device. No researcher was

1 Due to the COVID-19 pandemic, data collection in four groups was conducted digitally and only with groups who lived in one household. The groups filmed themselves and securely sent the video to the researcher.

present during the survey to ensure a realistic response. The participation process was videotaped and transcribed anonymously for subsequent analysis.
After the observation, the groups were asked for general feedback on the group questionnaire. Group 2 overlooked the "not united" option. Consequently, from Group 3 onward, this option was explained explicitly in the questionnaire (see chapter 2.1 on participation instructions). Aside from this, no general issues with the questionnaire format were identified, and the feedback was limited to specific measurements.

4.2.4 Data analysis

The data were analyzed through inductive category development in MAXQDA 2022 (VERBI Software, 2021). Categories were developed at the level of collective response decisions for each item or question and revised iteratively until new passages elicited minimal change (Mayring, 2021). After just two groups, no news categories emerged, indicating theoretical saturation in the sense of theoretical stability and consistency across different cases (Breckenridge & Jones, 2009). The main categories followed the decision-making process (see Figure 3 for an overview of the process and Table 3 for all categories). Response decisions either started from initial agreement or disagreement. In cases of initial agreement, group members expressed their consent in various ways and selected a shared response. Initial disagreement was subdivided further based on its extent and could be solved in two ways: First, groups could engage in an agreement process and use various strategies to reach a shared response. Second, they could select "not united." To improve categorization, contextual information about the group was considered. For example, prior response behavior helped clarify whether a leader generally was guiding a group. While the qualitative approach was essential for a detailed and comprehensive picture of the response process, a quantitative examination of the final codings elicited additional value. With 326 response decisions analyzed, response pattern frequencies provided an approximate idea of their consistency across groups.

4.3 Results

The results are structured along the main categories. Observations are contextualized regarding group characteristics or measurement types wherever relevant. Category descriptions are illustrated with translated and pseudonymized sections from the observation transcripts, annotated with group identification numbers and explanatory notes on the measure (see the supplemental material in the appendix for all measures). Figure 3 provides an overview of possible response process pathways, while Table 3 summarizes all categories and their frequencies per group.

Figure 3. Possible pathways of group responses

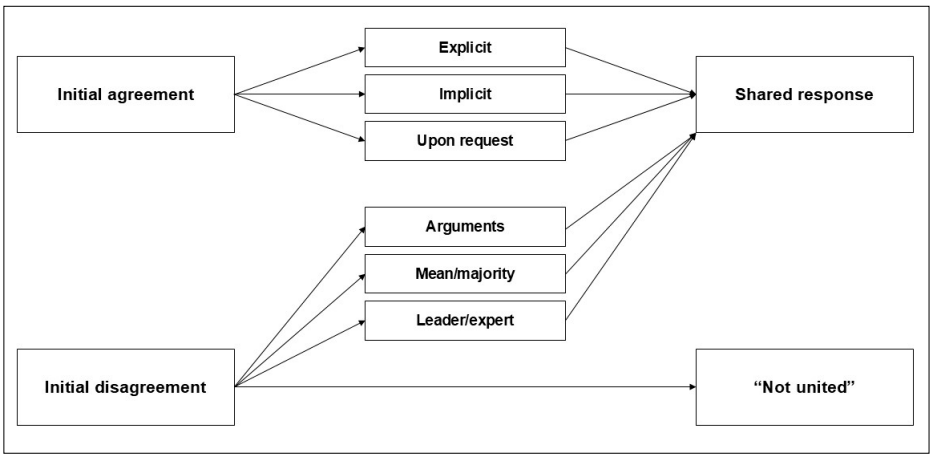


Table 3. Response process categories by group

	Group								
	1	2	3	4	5	6	7	8	∑
Initial agreement	(29)	(17)	(28)	(30)	(31)	(43)	(35)	(33)	(247)
Explicit	23	7	27	17	31	25	23	25	178
Implicit	5	9	0	12	0	17	6	5	54
Upon request	1	1	1	1	0	2	6	3	15
Initial disagreement	(10)	(19)	(5)	(14)	(9)	(0)	(13)	(9)	(79)
Small (1–2 scale points)	7	6	1	3	5	0	9	4	35
Large (3–6 scale points)	0	1	0	3	1	0	0	0	5
Not quantifiable	3	12	4	6	3	0	4	5	37
No opinion	0	0	0	2	0	0	0	0	2
Agreement strategies	(11)	(20)	(3)	(17)	(6)	(0)	(15)	(8)	(80)
Arguments	5	5	2	9	5	0	7	5	38
Mean/majority	4	13	0	5	0	0	6	3	31
Leader/expert	2	2	1	3	1	0	2	0	11
Not united	0	1	0	1	3	0	1	2	8

Note. $N = 326$ response decisions. The sums of subcodes are presented in parentheses. Groups could use several agreement strategies simultaneously.

4.3.1 Initial agreement

In most response decisions, all group members indicated initial agreement and quickly chose a shared response. They expressed their consent to the group response in different ways. Most of the time, each group member expressed *explicit* agreement with the group's answer. They did so verbally or nonverbally, such as by nodding:

> [Group 1: measurement: knowledge through a single-choice question, p. 8 of the questionnaire]
> Sophia: ... (reading) "What does the term 'mobility transition' mean? (...)"
> Lisa: I would say d)...
> Melissa: ...d)...
> Sophia: ...d), Yes....

Group members sometimes provided only *implicit* consent, particularly in larger groups and groups with very strong relationships (e.g., families or a long-married couple). Instead of actively confirming each response, they vetoed when they disagreed with an answer:

> [Group 2: measurement: affect on a seven-point scale, p. 15 of the questionnaire]
> Claudia: ... (reading) "Annoyed by the video" – not really...
> Thomas: ...No, no...
> Amelie: ...No...
> Claudia: ...So, more like four...
> Amelie: ...FOUR?...
> Thomas: ...NO!...
> Amelie: ...Why four? No!...
> Thomas: ...We do NOT agree! "We were annoyed by the video" – you have to say a "one" because we were NOT annoyed; otherwise, we were a little annoyed...
> Claudia: ...Not at all, we were not annoyed, right....

Sometimes, individual group members agreed *upon request*. In these cases, other group members actively checked their consent to ensure their response represented the whole group:

> [Group 8: measurement: open text boxes for arguments, p. 11 of the questionnaire]
> Philipp: ...Yes (clicks) and "professional obligations"...
> Julian: ...Actually speaks against it too... (Julian and Philipp look at Pascal)
> Pascal: ...Yes, yes....

4.3.2 Initial disagreement: Agreement strategies

In other cases, initial disagreement was expressed. However, as far as this could be quantified, it was usually rather small (one or two points on a seven-point scale). In most of these instances, groups then engaged in an agreement process and quickly agreed on a shared response. All groups relied on different and often mul-

tiple agreement strategies. A prevalent decision strategy was the exchange of *arguments*:

> [Group 5: measurement: attitude toward same-sex parenting on a seven-point scale, p. 5 of the questionnaire]
> Luise: ...Yes, I would also say "strongly agree"...
> Jakob: ... (nods, looks at Luise) Yeah?...
> Luise: ...Yes, don't you? Wouldn't you say so?...
> Jakob: ... (thoughtfully) Well, actually, yes, but – I mean, doesn't sometimes the other sex get missing as a role model?
> Luise: ...Yes, but I think it always depends on how specifically the gender fulfills that role (...) and how it's compensated. I don't think it can be generalized. (...) ...
> Jakob: ...So, not all, but yeah (…) but it only says "can"...
> Luise: ..."Can," yes, I would agree with that; yes, that's true. I would definitely agree....

Another frequent way to agree on a group response was to rely on the (intuitively built) *mean* or *majority*. It often was not clear which one applied, as both led to the same result, and they did not make their strategy explicit:

> [Group 7: measurement: issue involvement on a seven-point scale, p. 7 of the questionnaire]
> Christian: ...So, I'm at four (looks around) ...
> Karin: ... I'm also at four...
> Roland: ...I'm at five, six, at five...
> Jenara: ...Mmh, maybe five...
> Christian: ...So then I would suggest we go for...
> Karin: ...Five...
> Christian: ...Five...
> Roland: ...Five, all right....

Occasionally, groups relied on a *leader* or *expert* to find a shared answer. They used these strategies particularly in more difficult cases, such as when their discussion about different response options became repetitive. However, in most cases, they relied on single group members as experts when they had to answer knowledge questions with a time limit:

> [Group 3: measurement: knowledge through a single-choice question, p. 8 of the questionnaire]
> Alessio: 2015, right? That was 17, getting married, I'd say 17, you know? (pause) I'm almost sure. For three years now. You don't know, do you?
> Dana: I think rather, I don't know, but...
> Alessio: ...But I'm sure, 2017...
> Dana: ...OK....

Apart from this, no individual members appeared to assume any particular leadership role regarding response decisions' content. All eight group surveys were navigated predominantly or entirely by one group member, but these members consistently functioned as representatives and moderators for their groups, guiding them through the questionnaire while maintaining a cautious stance. For

example, they read out questions or asked other group members for their opinions.

4.3.3 Initial disagreement: 'Not united'

In only a few cases did groups arrive at final disagreement and choose "not united" if more substantial disagreement was expressed between group members and if group members were particularly passionate about their responses:

> [Group 8: measurement: attitude toward car-free cities on a seven-point scale, p. 18 of the questionnaire]
> Philipp: ... "Cities can function well even without cars"...
> Pascal: ...Yes, that's true...
> Philipp: ...Six – or seven. Julian, what do you think?...
> Julian: ...I'm actually leaning toward seven...
> Philipp: ...Yeah, I'm at six because it doesn't work entirely without them...
> Pascal: ...True, that's where we want to evaluate differently (...)
> Philipp: ...So, I'll go with seven (to Pascal). What about you?...
> Pascal: ...I'll go with six. It doesn't work entirely....

4.4 Discussion

This observational study examined how groups reach collective survey responses. Through qualitative analysis of 326 response decisions across eight different groups, it addressed two fundamental questions crucial for the future application and development of the group survey approach.

Regarding whether groups can respond to the survey as a whole and by themselves, the answer so far is a simple yes. Regardless of group characteristics or measurement type, collective responses consistently emerged from genuine, interactive group processes involving all members. Dominant voices did not determine the response process. Instead, group members navigating the survey acted as representatives and moderators on behalf of their groups. This observation aligns with the conceptualization of central group members serving the group – and not vice versa (Hogg et al., 2004). The groups answered the survey intuitively and independently of further guidance, reflecting that humans are inclined toward collaboration (Stevens & Fiske, 1995). These results underscore the group survey approach's practical applicability in future studies without the need to guide or control the response process.

In response to the question of how group responses emerged, the study identified three main pathways (see Figure 3 for an overview). First, members can agree unanimously from the beginning, provide consent, and select a shared response. Second, members initially might disagree but employ various strategies to reach a consensus and arrive at a shared response. Third, they can agree to disagree and choose "not united." Despite the sample's diversity, these pathways occurred consistently across groups (see Table 3).

Two aspects of the response process are particularly important for interpreting group surveys. First, group survey responses can emerge through various paths.

This also applies to individual survey responses (Tourangeau, 2018) and reflects the multifaceted and adaptable nature of human information processing. The groups used strategies familiar to other areas of group research, such as discussing based on arguments, combining preferences, and following leaders. Consistent with extant research, they also adapted their strategies to fit each question and situation (for overviews, see De Dreu et al., 2008; Hinsz et al., 1997; Kerr & Tindale, 2004; Levine & Moreland, 2011). For example, they relied more often on leaders or experts when they needed quick responses to knowledge questions. However, researchers should consider that different paths toward shared answers exist and may be influenced by the characteristics of the questions and group. If studies need to differentiate between preliminary and negotiated consensus, and between different agreement strategies underlying group survey responses, they could add corresponding questions or response options to group survey measures.

Second, groups have a strong tendency toward consensus in their responses. In about three-quarters of response decisions, the groups immediately agreed on one response. In cases in which immediate consensus was not reached, groups typically engaged in active discussions to reach an agreement. Instances of disagreement leading to selecting "not united" were rare across the groups. These observations mirror social reality, in which groups often gravitate toward homogeneous perceptions and attitudes (Hinsz et al., 1997; Hogg et al., 2004; Tindale & Kameda, 2000), particularly within close relationships (Davis & Rusbult, 2001). Thus, shared group responses can represent both pre-existing and reached agreements, reflecting the continuous dynamics of coordination and adaptation inherent in group perception, thinking, feeling, and action. Sharing information is a precondition of shared information, and vice versa (Hinsz et al., 1997). Simultaneously, groups occasionally opted for "not united" responses in cases of significant disagreement or when a response was important to individual members, indicating deliberate decisions for or against shared answers at the individual level. Therefore, researchers should be aware that the group survey approach intentionally captures groups' tendencies and dynamics toward homogeneity. While this feature is a key advantage of the approach, studies exclusively interested in pre-existing agreements may opt for individual surveys of group members instead.

4.5 Limitations

This study also contains several limitations. First, the results relied on observations of the groups' conversations and behavior. The collective response process to a group survey is relatively easy to observe, as it depends mostly on verbal communication. Still, self-report approaches could help avoid observational biases and identify implicit aspects of the response process known only by the groups. Second, even though a discreet camera conducted the observations, and the groups seemed to behave naturally, it may have caused reactivity. Future studies should test whether observed patterns also apply in contexts without observation. Ethnographic methods could also provide a more nuanced understanding of the response process.

Moreover, this study's results are qualitative, and they are limited to a small sample of closely related natural groups with up to four members in Germany. More exploratory studies should examine whether the paths toward a group response identified in this study are exhaustive. For example, they may vary depending on thematic contexts, group types, and cultural or institutional influences. Furthermore, quantitative studies are needed to shed light on response patterns' generalizability and prevalence, depending on measurement and group characteristics. For example, tendencies toward homogeneity may vary depending on group type, and agreement strategies may vary depending on group size.

5. Outlook

This contribution has contextualized, introduced, and tested the practical applicability of a novel standardized online group survey approach tailored for groups. In the first step, it was demonstrated that the group survey approach can meaningfully complement existing methodological approaches to group-level measurements. The second step specified how a group survey addresses groups while also accounting for potentially divergent responses between individual members. The approach's key benefits are that it simultaneously accounts for the group level of analysis, captures within-group heterogeneity and unobservable group constructs, and can be applied to many groups efficiently. Its central limitations include recruitment challenges and reactivity. In the third step, it was demonstrated empirically that the group survey is also practically applicable, as it can be completed independently and represents the whole group.

After the conceptual and exploratory groundwork for the group survey approach has been laid out in this contribution, the next necessary step is to validate the approach. In the consensus method's context (as introduced above), the principle of standardized group responses has already been validated. Gibson et al. (2000) demonstrated the discriminant and convergent validity of different measures of group efficacy via the consensus method. Furthermore, several studies have tested the predictive validity of different constructs measured by the consensus method (group efficacy: Gibson et al., 2000; team effectiveness: Kirkman et al., 2001; team cohesion: Quigley et al., 2007). They consistently demonstrated that group responses outperform methods aggregating individual survey responses in predicting associated outcomes, such as group performance (Gibson et al., 2000; Kirkman et al., 2001; Quigley et al., 2007). In line with the conceptual argument made throughout this paper, these empirical results emphasize the necessity and utility of a standardized self-report approach that genuinely addresses the group level.

However, two notable distinctions exist between the consensus method and the group survey approach. First, the consensus method typically involves single questions in the laboratory, while the group survey approach builds on an entire online questionnaire for groups. Second, the consensus method obligates groups to reach agreement on shared responses, while the group survey method offers a disagreement option. Thus, future studies need to validate the group survey approach in particular. Comparing measures of the same constructs' measures with

different methodological approaches would shed light on their convergent validity. For example, group survey measures could be compared with standardized observations of specific collective behaviors, such as media selection and use. Another approach would be to triangulate standardized group responses with qualitative data on the same group phenomena to gain a deeper understanding of the group survey's capabilities and blind spots (see Schindler, 2023, for initial attempts). Observational approaches, including ethnographic methods and individual and group interviews, can be used in this context. Furthermore, testing the relationships of different constructs measured through a group survey would help assess their discriminant and nomological validity (see Schindler, 2023, for related analyses). For example, to assess their nomological validity, it could be tested whether group surveys can replicate relationships between constructs known from previous group research. Such relationships could be the ones between attitude diversity or group norms and group polarization (Strandberg et al., 2019). These efforts also automatically would involve development of group-level scales, facilitating further group research.

Further methodological studies could examine the relationship between individual and group responses, particularly concerning individual members' satisfaction with group outcomes. Furthermore, future studies could investigate the potential of group surveys conducted via video chat, with various group sizes, and with subgroups representing larger groups. So far, the group survey approach cannot meet individual-level surveys and scales' standards, which countless researchers have refined for decades. Nevertheless, it should have been demonstrated that establishing group surveys further would be a worthwhile endeavor. The group survey approach facilitates experiments, longitudinal studies, and multilevel analyses with natural groups. By enabling more rigorous, generalizable, and diverse group research, it holds potential for all research fields involving collective perception, thinking, feeling, and action. It could also be particularly valuable for testing and developing group-level theories, which in turn would advance empirical research further. Thus, continuing the journey toward a standardized group survey approach would open important new possibilities for studying group dynamics across various communication contexts.

Acknowledgments

I would like to thank Anne Bartsch, Carsten Reinemann, Dominik Leiner, Jessica Kühn, Valerie Hase, Mario Haim, and the anonymous reviewers for their valuable suggestions at several stages of this project. Furthermore, I would like to thank the Academic Scholarship Foundation for supporting this research. During the preparation of this work, I used ChatGPT (OpenAI, versions 3.5 and 4) for language refinement to enhance the clarity of the paper. I thoroughly reviewed and edited the content and take full responsibility for the published article.

Funding

This work was supported by the German Academic Scholarship Foundation.

Declaration of interest

There is no conflict of interest to disclose.

Data availability statement

The data underlying this article cannot be shared publicly for the privacy of individuals who participated in the qualitative interview study. The data will be shared on reasonable request to the author.

References

Almaatouq, A., Alsobay, M., Yin, M., & Watts, D. J. (2021). Task complexity moderates group synergy. *Proceedings of the National Academy of Sciences*, *118*(36), e2101062118. https://doi.org/10.1073/pnas.2101062118

Baden, C., Pipal, C., Schoonvelde, M., & Van Der Velden, M. A. C. G. (2022). Three gaps in computational text analysis methods for social sciences: A research agenda. *Communication Methods and Measures*, *16*(1), 1–18. https://doi.org/10.1080/19312458.2021.2015574

Beck, S. J., Keyton, J., & Poole, M. S. (Eds.). (2021). *The Emerald Handbook of group and team communication research*. Emerald. https://doi.org/10.1108/9781800435001

Brauner, E., & Scholl, W. (2000). Editorial: The information processing approach as a perspective for groups research. *Group Processes & Intergroup Relations*, *3*(2), 115–122. https://doi.org/10.1177/1368430200003002001

Breckenridge, J., & Jones, D. (2009). Demystifying theoretical sampling in grounded theory research. *Grounded Theory Review*, *8*(2), 113–126.

Bryman, A. (1988). *Quantity and quality in social research*. Routledge. https://doi.org/10.4324/9780203410028

Caporael, L. R. (1997). The evolution of truly social cognition: The core configurations model. *Personality and Social Psychology Review*, *1*(4), 276–298. https://doi.org/10.1207/s15327957pspr0104_1

Cohen, E. L. (2017). Social context of media use. In P. Rössler, C. A. Hoffner, & L. Zoonen (Eds.), *The international encyclopedia of media effects* (1st ed., pp. 1–12). Wiley. https://doi.org/10.1002/9781118783764.wbieme0203

Davis, J. L., & Rusbult, C. E. (2001). Attitude alignment in close relationships. *Journal of Personality and Social Psychology*, *81*(1), 65–84. https://doi.org/10.1037/0022-3514.81.1.65

De Dreu, C. K. W., Nijstad, B. A., & van Knippenberg, D. (2008). Motivated information processing in group judgment and decision making. *Personality and Social Psychology Review*, *12*(1), 22–49. https://doi.org/10.1177/1088868307304092

Geber, S., Baumann, E., & Klimmt, C. (2019). Where do norms come from? Peer communication as a factor in normative social influences on risk behavior. *Communication Research*, *46*(5), 708–730. https://doi.org/10.1177/0093650217718656

Gehrau, V. (2019). Conversations about mass-mediated information in times of mobile communication and social network sites. An analysis of survey data from 2015, 2016, and 2017 in comparison to 1996/97 and 2007. *Publizistik*, *64*(1), 37–58. https://doi.org/10.1007/s11616-018-00465-z

GfK. (2019, January 15). *Half of all video viewing time is spent with others – MRI* [Press release]. https://www.gfk.com/en-us/press/half-of-all-video-viewing-time-is-spent-with-others-mri

Gibson, C. B., Randel, A. E., & Earley, P. C. (2000). Understanding group efficacy: An empirical test of multiple assessment methods. *Group & Organization Management*, *25*(1), 67–97. https://doi.org/10.1177/1059601100251005

Hinsz, V. B., & Bui, L. (2023). Socially shared affect: Shared affect, affect sharing, and affective processing in groups. *Group Dynamics: Theory, Research, and Practice*, *27*(4), 229–256. https://doi.org/10.1037/gdn0000207

Hinsz, V. B., Tindale, R. S., & Vollrath, D. A. (1997). The emerging conceptualization of groups as information processors. *Psychological Bulletin*, *121*(1), 43–64. https://doi.org/10.1037/0033-2909.121.1.43

Hogg, M. A., Abrams, D., Otten, S., & Hinkle, S. (2004). The social identity perspective: Intergroup relations, self-conception, and small groups. *Small Group Research*, *35*(3), 246–276. https://doi.org/10.1177/1046496404263424

Huang, Y., Liao, J., & Lin, Z. (2009). A study on aggregation of group decisions. *Systems Research and Behavioral Science*, *26*(4), 445–454. https://doi.org/10.1002/sres.941

Kerr, N. L., MacCoun, R. J., & Kramer, G. P. (1996). Bias in judgment: Comparing individuals and groups. *Psychological Review*, *103*(4), 687–719. https://doi.org/10.1037//0033-295X.103.4.687

Kerr, N. L., & Tindale, R. S. (2004). Group performance and decision making. *Annual Review of Psychology*, *55*(1), 623–655. https://doi.org/10.1146/annurev.psych.55.090902.142009

Kirkman, B. L., Tesluk, P. E., & Rosen, B. (2001). Assessing the incremental validity of team consensus ratings over aggregation of individual-level data in predicting team effectiveness. *Personnel Psychology*, *54*(3), 645–667. https://doi.org/10.1111/j.1744-6570.2001.tb00226.x

Knop-Huelss, K. (2023). *The permanently connected group (PeCoG): An investigation of non-professional secondary groups' communication via mobile instant messaging chats*. Springer VS. https://doi.org/10.1007/978-3-658-43238-6

Leiner, D. J. (2019). *SoSci Survey* (Version 3.1.06) [Computer software]. https://www.soscisurvey.de

Levendusky, M. S., & Stecula, D. A. (2023). *We need to talk: How cross-party dialogue reduces affective polarization* (1st ed.). Cambridge University Press. https://doi.org/10.1017/9781009042192

Levine, J. M., & Moreland, R. L. (2011). A history of small group research. In A. W. Kruglanski & W. Stroebe (Eds.), *Handbook of the history of social psychology* (pp. 383–405). Routledge. https://doi.org/10.4324/9780203808498.ch18

Lull, J. (1980). The social uses of television. *Human Communication Research*, *6*(3), 197–209. https://doi.org/10.1111/j.1468-2958.1980.tb00140.x

Mayring, P. (2021). *Qualitative content analysis: A step-by-step guide*. Sage.

McDonald, J. D. (2008). Measuring personality constructs: The advantages and disadvantages of self-reports, informant reports and behavioural assessments. *Enquire*, *1*(1), 75–94.

Pilny, A. (2021). Computational methods for studying group communication. In S. J. Beck, J. Keyton, & M. S. Poole (Eds.), *The Emerald Handbook of group and team communication research* (pp. 109–133). Emerald. https://doi.org/10.1108/978-1-80043-500-120211009

Quigley, N. R., Tekleab, A. G., & Tesluk, P. E. (2007). Comparing consensus- and aggregation-based methods of measuring team-level variables: The role of relationship conflict

and conflict management processes. *Organizational Research Methods*, *10*(4), 589–608. https://doi.org/10.1177/1094428106286853

Reicher, S. D., Spears, R., & Postmes, T. (1995). A social identity model of deindividuation phenomena. *European Review of Social Psychology*, *6*(1), 161–198. https://doi.org/10.1080/14792779443000049

Riesmeyer, C., Abel, B., & Großmann, A. (2019). The family rules. The influence of parenting styles on adolescents' media literacy. *MedienPädagogik: Zeitschrift Für Theorie Und Praxis Der Medienbildung*, *35*, 74–96. https://doi.org/10.21240/mpaed/35/2019.10.20.X

Rothut, S., Schulze, H., Hohner, J., & Rieger, D. (2023). Ambassadors of ideology: A conceptualization and computational investigation of far-right influencers, their networking structures, and communication practices. *New Media & Society*, 146144482311644. https://doi.org/10.1177/14614448231164409

Rousseau, D. M. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. *Research in Organizational Behavior*, *7*, 1–37.

Schindler, J. (2023). *Kollektive Informationsverarbeitung von Medieninhalten: Theoriebildung, Methodeninnovation und empirische Befunde auf Gruppenebene* [Collective information processing of media content. Theory development, methodological innovation, and empirical results at the group level]. Springer. https://doi.org/10.1007/978-3-658-42534-0

Schulz-Hardt, S., Frey, D., Lüthgens, C., & Moscovici, S. (2000). Biased information search in group decision making. *Journal of Personality and Social Psychology*, *78*(4), 655–669. https://doi.org/10.1037//0022-3514.78.4.655

Silverman, D. (2015). *Interpreting qualitative data* (Fifth edition). Sage.

Sommer, D. (2013). Media effects, interpersonal communication and beyond: An experimental approach to study conversations about the media and their role in news reception. *Journal for Communication Studies*, *6*(1), 269–293.

Southwell, B. G., & Yzer, M. C. (2007). The roles of interpersonal communication in mass media campaigns. *Annals of the International Communication Association*, *31*(1), 420–462. https://doi.org/10.1080/23808985.2007.11679072

Stevens, L. E., & Fiske, S. T. (1995). Motivation and cognition in social life: A social survival perspective. *Social Cognition*, *13*(3), 189–214. https://doi.org/10.1521/soco.1995.13.3.189

Strandberg, K., Himmelroos, S., & Grönlund, K. (2019). Do discussions in like-minded groups necessarily lead to more extreme opinions? Deliberative democracy and group polarization. *International Political Science Review*, *40*(1), 41–57. https://doi.org/10.1177/0192512117692136

Swart, J., Peters, C., & Broersma, M. (2019). Sharing and discussing news in private social media groups: The social function of news and current affairs in location-based, work-oriented and leisure-focused communities. *Digital Journalism*, *7*(2), 187–205. https://doi.org/10.1080/21670811.2018.1465351

Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relations* (pp. 7–24). Nelson-Hall.

Tal-Or, N. (2021). The effects of co-viewers on the viewing experience. *Communication Theory*, *31*(3), 316–335. https://doi.org/10.1093/ct/qtz012

Tindale, R. S., & Kameda, T. (2000). 'Social sharedness' as a unifying theme for information processing in groups. *Group Processes & Intergroup Relations*, *3*(2), 123–140. https://doi.org/10.1177/1368430200003002002

Tourangeau, R. (2018). The survey response process from a cognitive viewpoint. *Quality Assurance in Education*, *26*(2), 169–181. https://doi.org/10.1108/QAE-06-2017-0034

VERBI Software. (2021). *MAXQDA 2022* [Computer software]. VERBI Software. https://www.maxqda.de

Wang, C.-H., Liu, G. H.-W., & Yen, C.-D. (2022). Teamwork competence in journalism education: Evidence from TV organizations' news team in Taiwan. *Frontiers in Psychology*, *13*, 864243. https://doi.org/10.3389/fpsyg.2022.864243

Wilczek, B. (2019). Complexity, uncertainty and change in news organizations. *International Journal on Media Management*, *21*(2), 88–129. https://doi.org/10.1080/14241277.2019.1590839

Williams, K. D. (2010). Dyads can be groups (and often are). *Small Group Research*, *41*(2), 268–274. https://doi.org/10.1177/1046496409358619

Wollin-Giering, S., Hoffmann, M., Höfting, J., & Ventzke, C. (2023). Automatic transcription of qualitative interviews. *Sociology of Science Discussion Papers*, *1/2023*. https://www.researchgate.net/profile/Susanne-Wollin-Giering/publication/372401846_Automatic_transcription_of_qualitative_interviews/links/64b45e4d8de7ed28baa281f4/Automatic-transcription-of-qualitative-interviews.pdf

Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., & Malone, T. W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science*, *330*, 686–688. https://doi.org/10.1126/science.1193147

Appendix

Appendix 1. Group questionnaire (translated from German)

Supplemental Material

Toward a Standardized Group Survey
Introducing a New Approach to Group-Level Measurements in Communication Studies

---

Group Questionnaire

(Translated from German)

[page: 2]

At the beginning, please set a separate name for each of you that you can remember easily and not get mixed up.
This information is stored together with your other answers. If you do not want to use your first name, you can use nicknames or numbers, for example.
[Open text box for each group member]

[page: 3]

As mentioned at the beginning, we would like to invite each of you to a short individual follow-up survey. For this purpose, we ask you for your e-mail addresses and your consent that these will be stored until the completion of the follow-up survey.

You can withdraw this consent at any time. Your e-mail address will be stored separately, won't be given to third parties, and will be deleted after the invitation to the follow-up survey. The information you provide in this survey will remain anonymous.

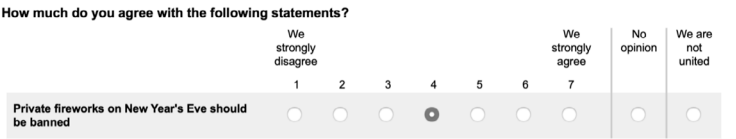
More information on data protection
[Info box to open]

[For each group member]
E-mail address of **[name]**: *[Open text box]*
[Opt-In] I agree that my e-mail address will be used for the purpose stated above only.

[page: 4]

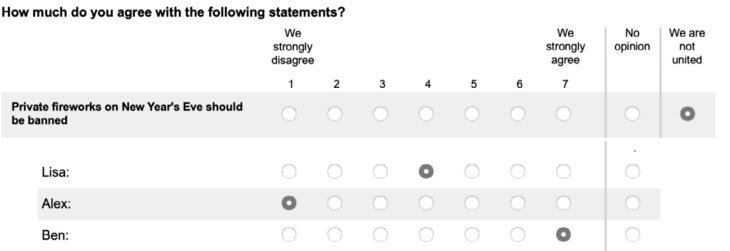
The following questions address you as a group. If you share one opinion, please always select the position that most closely matches your shared answer, as in example 1.

Example 1:



If you have different opinions, you can select "We are not united" as in example 2. For some of the questions, then, extra answer options will be displayed for each of you.

Example 2:



[page: 5]

[measure: attitude before the stimulus]

How much do you agree with the following statements?
Cities should be car-free.
Cities can function well without cars.
// Same-sex couples should be allowed to have children.
// Same-sex parents can give children everything they need.
[Scale] (1) We strongly disagree - (7) We strongly agree
No opinion
We are not united
[If not united: Display of answer options for each group member individually]

[page: 6]

[measure: perceived opinion deviation]

And how much do you think *most people in Germany* agree with these statements?
Cities should be car-free
Cities can function well without cars.
// Same-sex couples should be allowed to have children.
// Same-sex parents can give children everything they need.
[Scale] (1) Strongly disagree - (7) Strongly agree
We don't know
We are not united
[If not united: Display of answer options for each group member individually]

[page: 7]

[measure: issue involvement before the stimulus]

How important is your position on "car-free city" // "same-sex parenting" to you?
This is about how *important* your position is to you, not what position it is. For example, if it is very important to you that cities are car-free // same-sex couples are allowed to have children, please select 7. If it is very important to you that cities are not car-free // same-sex couples are not allowed to have children, please also select 7.
To us, our position is…
[Skala] (1) Not important at all - (7) Very important
We are not united
[If not united: Display of answer options for each group member individually]

[page: 8]

[measure: knowledge]

In the following, we would like to ask you to participate in a small quiz on "car-free cities" // "same-sex parenting". Please collectively select the answer option that seems correct to you. There is always only **one correct answer.**

It is perfectly normal if you cannot answer one or more questions. Please do not try to look up the answers on the Internet. At the end of the questionnaire, you will see the solutions.

You have 30 seconds for each question and will then be automatically redirected. Please do not use your browser's back button, as this will end the survey.

What does the term "mobility transition" mean? • The banning of all diesel vehicles • A complete shift to computer-controlled, "intelligent" means of transport. • The changes in traffic in eastern Germany after German reunification. • A fundamental shift towards environmentally friendly transportation. *[correct]* • We do not know. • We are not united.	• **What option do same-sex couples in Germany <u>not</u> have to become parents?** • Adopting a child. • Fostering a child. • Using a sperm donation. • Commissioning a surrogate mother. *[correct]* • We do not know. • We are not united.
Which transportation means requires the most energy per person and per km? • Train • Bus • Car *[correct]* • Metro • We do not know. • We are not united.	• **Since when can gays and lesbians marry in Germany ("marriage for all")?** • Since 2001 • Since 2015 • Since 2017 *[correct]* • Not at all, they are only allowed to enter into a registered civil partnership until today. • We do not know. • We are not united.
Which is <u>not</u> among the suggestions for environmentally friendly transport? • Moving all road traffic into tunnels. *[correct]* • Linking different forms of mobility such as public transport, car, and bicycle traffic. • Transporting goods by train or ship. • Sharing mobility. • We do not know. • We are not united.	• **Which of the following rights have been newly granted to same-sex couples by "marriage for all" in Germany?** • They can adopt children as a married couple *[correct]* • They can adopt a common surname. • They can register a different gender when they marry. • None of these rights. • We do not know. • We are not united.

Who is the current federal minister of transport in Germany?
- Heiko Maas (SPD)
- Andreas Scheuer (CSU) *[richtig]*
- Jens Spahn (CDU)
- Peter Altmaier (CDU)
- We do not know.
- We are not united.

- **Which party is particularly critical of marriage for same-sex couples?**
- CSU *[correct]*
- Die Linke
- FDP
- All three parties oppose same-sex marriage.
- We do not know.
- We are not united.

[page: 9]

Next, we would like to show you a five-minute video clip on "car-free cities"// same-sex parenting". Please turn on your speakers for this.
Just watch the video together as you would in your everyday life, for example, when you watch TV together. Feel free to use the full-screen mode of the video, which you can exit by pressing the ESC key.

[video stimulus on* "car-free cities"// same-sex parenting"*]

[page: 10]

Now we would like to ask you to talk a little bit more about the video and the topic "car-free cities"// same-sex parenting".
There is no "right" or "wrong" here. Just talk spontaneously about what interests you as you would in your everyday life. After two minutes, the "continue" button will reappear, but feel free to take more time as needed.

[page: 11]

[measure: arguments / systematicness and openness (open)]

Now please list concisely and understandably each point you have just talked about. Use a new text window for each point.
It doesn't matter whether these points were related to the topic "car-free cities" // "same-sex parenting" or not. It's about what you were really talking about. After two minutes, the "continue" button will reappear, but feel free to take more time as needed.
[Open text box for up to 12 points]

[page: 12]

You can see all the points you have just listed from your conversation here. Now, for each of these points, indicate whether you think it speaks more against or more in favor of car-free cities // same-sex parenting. If the point is not relevant to this topic from your perspective, you can also indicate that.
[Selection for each of the points entered]
Rather against
Undecided
Rather in favor
Not relevant
Not united

Do all of you agree with these points and your classification?
[Selection]
Yes
No

[page: 13]

[measures:
systematicness (standardized, 1-4, 11)
openness (standardized, 5-10, 11)
affects (during processing, 12-14)
collaboration patterns (15-18)]

The next questions are also about your conversation after the video.

How much do the following statements apply to your conversation?
Again, there is no "right" or "wrong", but we are interested in your natural conversation.
1. We have discussed extensively.
2. We discussed some aspects in particular depth.
3. Certain points were particularly important to us in the conversation.
4. We had little need to talk. (reversed)
5. We almost always agreed in our conversation. (reversed)
6. We repeatedly had different opinions and discussed them.
7. We mainly talked about points that support our opinion. (reversed)
8. We exchanged arguments for one side as well as for the other.
9. Each of us already knew most of the things we talked about. (reversed)

[Scale] (1) We strongly disagree - (7) We strongly agree
No opinion
We are not united

[page: 14]

And how much do the following statements apply to your conversation after the video?
10. We learned many new things through the conversation.
11. We developed new ideas together in the conversation.
12. Each of us contributed equally to the conversation.
13. In the conversation, we oriented ourselves to a person who knows the subject well.
14. In the conversation, good arguments were brought up that convinced us.
15. *[>2 group members]* In the conversation, we oriented ourselves to the position that most of us had.
16. We lightened up the conversation with a lot of humor.
17. Our discussion was passionate.
18. Because of disagreements, the atmosphere in our conversation was sometimes tense.

[Scale] (1) We strongly disagree - (7) We strongly agree
No opinion
We are not united

[page: 15]

[measure: affects (before processing)]

The next questions are about how you watched the video together.

How much do the following statements apply to you when you watched the video?
If you perceived the video differently, you can select "We disagree" and answer individually.
1. We watched the video carefully.
2. We felt moved by the video.
3. We were annoyed by the video.
4. We made jokes about the video.

[Scale] (1) Strongly disagree - (7) Strongly agree
No opinion
We are not united
[If not united: Display of answer options for each group member individually]

[page: 16]

[measure: evaluation of the stimulus]

Now please tell us what you thought of the video.
The video was...
[Skala] (1) Poorly done - (7) Well done
We are not united
[If not united: Display of answer options for each group member individually]

[page: 17]

[measure: stimulus recall]

Before we get to the final questions, we would like you to share a brief summary of the video (about 250 characters).
Imagine telling someone else about the video in two sentences. After one minute, the "continue" button will reappear, but feel free to take more time as needed.
[Open text box showing the current number of characters with a limit of 300]

Do all of you agree with this summary?
[Selection]
Yes
No

[page: 18]

[measure: attitude after the stimulus]

Now we are interested in your opinion again.

How much do you agree with the following statements?
Cities should be car-free
Cities can function well without cars.
// Same-sex couples should be allowed to have children.
// Same-sex parents can give children everything they need.
[Scale] (1) We strongly disagree - (7) We strongly agree
No opinion
We are not united
[If not united: Display of answer options for each group member individually]

[page: 19]

[measure: issue involvement after the stimulus]

How important is your position on "car-free city" // "same-sex parenting" to you?
This is about how *important* your position is to you, not what position it is. For example, if it is very important to you that cities are car-free // same-sex couples are allowed to have children, please select 7. If it is very important to you that cities are not car-free // same-sex couples are not allowed to have children, please also select 7.
To us, our position is…
[Skala] (1) Not important at all - (7) Very important
We are not united
[If not united: Display of answer options for each group member individually]
