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Interdisciplinary Listening: Understanding Strategic Listening in Interdisciplinary Project Work

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Abstract

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Active listening is of utmost importance for interdisciplinary project work to ensure communication across disciplinary boundaries. To listen actively enables fostering a project climate, in which creative and innovative thinking as well as speaking up freely is supported by contributing to a psychologically safe environment. Despite the potential of active listening to enhance interdisciplinary project communication, listening is an often-neglected part of internal communication. From a social constructionist and internal communication perspective, this study explores the hinders of listening in interdisciplinary project work and investigates how strategic listening practices among project staff can contribute to creating psychological safety in interdisciplinary projects. Methodologically, the research problem is explored through qualitative interviews with researchers who are members of interdisciplinary projects. The findings outline six identified themes of hinders to listening in interdisciplinary project work: (1) a lack of interest and reason, (2) a lack of taking other perspectives, (3) a lack of interactive expertise, (4) a lack of prerequisites for social interactions, (5) a lack of functioning leadership as well as (6) a lack of psychological safety within the group. The six themes were discussed to further group into two categories: *reward-driven hinders* and *cost-increasing hinders*. Moreover, active listening contributes to a psychologically safe project climate by (1) appreciating and validating each other, (2) showing acceptance, and respect, as well as (3) building personal connections. Insights into how project members decide to listen and to speak up, as well as why they are hindered could be gained through a social exchange theory perspective. This thesis highlights the importance of active listening in interdisciplinary project work due to its impact on relationships and the team climate. Additionally, qualitative deepened insights into how listening contributes to psychological safety could be generated. A new perspective of strategic interdisciplinary listening could be added to the research field of strategic communication.

Keywords: strategic listening, interdisciplinary listening, interdisciplinarity, interdisciplinary projects, psychological safety, project communication, project climate

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Chapter 1: Introduction

Interdisciplinary communication is a vital skill that researchers need to effectively work together across disciplines when tackling complex problems (Dahm et al., 2019). However, interdisciplinary work alone cannot guarantee the emergence of innovation, though, it can be a base for creative approaches to a new field (Weingart, 2000, as cited in Schmitt et al., 2023). Living in the age of super complexity, where societies face multifaceted problems and require the collaboration of experts from various disciplines, interdisciplinary communication becomes "a core skill for scientists and, when done well, (it) can have a profound impact" (Dahm et al., 2019, p. 1). Thus, effective communication is needed to navigate through societies' interdisciplinary challenges.

Yet, interdisciplinary teamwork and communication are challenging (Marzano et al., 2006). To work interdisciplinary requires cross-functional and interdisciplinary communication to enable making sense of other perspectives and to bridge knowledge from various disciplines despite the tradition-based boundaries of communication within a discipline (Schmitt et al., 2023). Moreover, in teamwork, the team must navigate through high complexity besides the team's existence being temporarily limited, boundaries being fluid, and pre-existing organizational structures being brought into the team's dynamics (Edmondson & Nembhard, 2009). Therefore, communication and conflict management skills, as well as interpersonal and emotional competencies are needed to build productive relationships, learn, resolve conflicts, face decisions, as well as to question oneself, and "inquire into others' thinking with genuine interest" (Edmondson & Nembhard, 2009, p. 132). Hence, interdisciplinarity is also a social practice, which creates communication challenges and requires communication (Marzano et al., 2006; Schmitt et al., 2023). Good listening practices are needed to overcome these challenges and to enable a mutual understanding based on dialogue for productive work (Létourneau, 2021) despite individuals' backgrounds, levels of experience, and academic degrees. Consequently, to overcome challenges, interdisciplinary communication challenges must be counteracted. Therefore, hinders of listening, must be further understood.

Active listening is one of the key aspects of good science communication in verbal and written form because active listening ensures understanding others' thoughts without imposing

own assumptions (Dahm et al., 2019). Moreover, through listening, accepting, and recognizing each other by empathically engaging in dialogue, individuals can be vulnerable and take risks in the workplace (Lemon, 2019). So, listening in interdisciplinary teamwork is important on a content level to understand issues from various perspectives, as well as on a functional level to foster a productive team dynamic. Positive effects of focusing on dialogue and listening in dialogue such as feeling heard, respected, and encouraged to open up (Lemon, 2019; Dahm et al., 2019), align with Edmondson's (2019) and Clark's (2020) understanding of the concept of psychological safety.

Following Edmondson's (2019) and Clark's (2020) understanding, an environment is psychologically safe, when people feel free to take risks and express themselves. Then, individuals do not fear judgment or other negative consequences for expressing thoughts, and ideas, and therefore, do not hold back (Kahn, 1990). Feeling psychologically safe in the workplace can be a key to unlocking a person's potential (Edmondson, 2019), and fostering creativity (Rogers, 1953), as well as innovation at work (Clark, 2020). So, active listening is a practice that contributes to a psychologically safe environment (Kluger & Itzchakov, 2021), in which fruitful and innovative interdisciplinary project work can take place. Consequently, it becomes evident that active listening and the concept of psychological safety are connected, and most importantly, that both are needed for encountering additional challenges and ensuring effective communication in interdisciplinary project work.

However, research on psychological safety focuses on enabling individuals to speak up. The role of the listener falls short, even though listening practices are valuable in reducing interpersonal anxiety, as well as supporting a sense of psychological safety (Castro et al., 2016; Castro et al., 2018; Itzchakov et al., 2015; Itzchakov & Kluger, 2017), unlocking organizational productivity, preventing damages to performance, as well as improving relationships (Edmondson, 2019; Lewis, 2022, Heide & Svingstedt, 2024). The assumption that listening is merely a soft skill or a character trait, and not perceived as valuable for one's own career in practice are reason for the frequent neglect of a listening perspective in the workplace (Heide & Svingstedt, 2024). Yet, when listening is neglected, it also holds the power to put relationships and the internal climate at risk (Heide & Svingstedt, 2024). When people do not feel heard, they can be hindered to engage and speak freely. In interdisciplinary work, they can be hindered from discussing beyond the boundaries of their own discipline and thus, the benefits of working interdisciplinary cannot be realized. Therefore, the common neglect of listening in research and practice must change. Given the current underemphasis on the role of listening within psychological safety and considering the vast potential of psychologically safe work environments

regarding engagement and well-being in practice, listening will be further explored in this thesis.

Moreover, research on speaking up and listening, such as through strategic listening, which describes "the relationship-oriented, goal-oriented, and systematized listening of organizations that creates the conditions for successful operations" (Heide & Svingstedt, 2024, xii), predominantly focuses on external relationships and listening to different publics (cf. Place, 2022; Macnamara, 2016; Brandt, 2023; Men et al., 2022), or on dyadic internal relationships between a superior, such as a manager or leader, and a subordinate, such as an employee or a student (Jónsdóttir & Fridriksdottir, 2019; Cardon et al., 2019; Lloyd et al., 2015, Kriz et al., 2021; Sharifirad, 2013), where power dynamics are at play. Whereas the impacts of hierarchies on communication and professional relationships have been largely explored, and solutions for enhanced communication across hierarchies have been found, the hinders of listening between coworkers as well as the connection between co-worker communication and psychological safety remain unexplored. However, the importance of mutual listening within a team for enhanced dialogue, team climate, and relationships is evident (Dahm et al., 2019; Lemon, 2019; Edmondson, 1999). Therefore, gaining deepened insights into listening in groups from a co-worker communication perspective is needed.

A social constructionist perspective on listening between coworkers can reveal how coworkers as communicators produce and reproduce an organization (Heide, 2024). Then, it can be understood how coworker communication can contribute to producing and reproducing a climate that is characterized by active listening and psychological safety, as well as how these concepts interconnect. Thus, project groups, which are characterized by individuals collaborating without being separated by hierarchical levels, are studied.

To learn about listening within project groups, interdisciplinary project groups are of special interest due to the high need for effective, unhindered listening in interdisciplinarity (Létourneau, 2021) as well as high psychological safety in diverse groups (Bresman & Edmondson, 2022). Additionally, there is a strong need for psychologically safer environments for individuals working in academia. Hanitzsch et al. (2024) point towards mental health issues being especially a widespread issue among academics, with a significantly higher prevalence than in other professions. Due to academia reproducing professional stigma that prevents academics from following their needs and from taking breaks from work (Mantler et al., 2021), it is of utmost importance to find strategies which contribute to fostering psychologically safer work environments for academics. Following the pandemic, researchers and experts agree that there is a general need for enhancing employees' psychological well- being by changing the

organizational environment (Walden, 2021; Pounsford et al., 2024; Wong & Greenwood, 2023; Bhatti & Roulet, 2023; Wong et al., 2023; Fleming, 2024; Simunjak & Menke, 2023).

The project groups studied consist of various researchers from different disciplinary backgrounds who collaborate on finding novel research approaches to complex research problems, which are of an interdisciplinary nature. The concept of the studied project groups does not require working toward a tangible goal but rather stipulates a process of interdisciplinary knowledge exchange to find new research approaches to the research problem. Therein, listening is needed to ensure meeting the projects' goals by fostering exchange. To gain insights into listening as well as into listening in connection to psychological safety within the project groups, individual project members were interviewed and asked about their individual experiences in interdisciplinary project work.

This thesis aims to understand listening to enhance coworker experiences in project work. Therefore, the focus lies on the understanding the hinders of listening as well as the connection between listening practices in the group and individuals' psychological safety for further engagement in group communication. Thus, the topic is approached from the internal coworker perspective of the group members, exploring their personal experiences with listening in interdisciplinary group work. New knowledge on the hinders of listening and the connection between listening practices and psychological safety in interdisciplinary group work settings shall be generated and added to research on listening within the field of strategic communication. Moreover, by exploring the research problem and further understanding the vast potential of active listening to contribute to an environment that fosters creativity and innovation, connects people, and positively contributes to well-being, theoretical and practical implications to strategically reshape internal project communication can be found.

To explore the research problem, first, an overview of existing relevant research is given. Second, applicable components of social exchange theory, which help to understand communication behavior between individuals are outlined. After defining how the study is approached and motivating as well as reflecting on the methods used to collect the empirical material, the analysis is presented in the fifth chapter. Lastly, the results are discussed, theoretical and practical implications are outlined, and thoughts on further research are given.

Within this thesis, the following research questions will be explored:

RQ1: What hinders listening in interdisciplinary project work?

RQ2: How can strategic listening practices among project members contribute to creating psychological safety in interdisciplinary projects?

Chapter 2: Literature Review

In the following chapter, an overview of relevant research regarding strategic listening, psychological safety, and interdisciplinary teamwork is given. First, recent research on strategic listening including dominant orientations and perspectives is presented. In the second section, an understanding of how listening and psychological safety relate to each other and how psychological safety emerges is given. Lastly, listening, and psychological safety are being explored in research on interdisciplinary group work.

Strategic listening

Strategic listening often relates to public relations practices, aiming at exploring listening to understand different publics and establishing organizational channels to do so (Place, 2022; Macnamara, 2016; Brandt, 2023; Men et al., 2022). However, strategic listening also aims to use listening "to improve the organization, create dialogue, and develop mutually beneficial relationships internally and externally" (Heide & Svingstedt, 2024, p. 67). Organizational listening uses attributes of quality interpersonal listening, meaning that dialogue beyond merely information exchange emerges and relationships can be built (Macnamara, 2020, as cited in Worthington & Bodie, 2023). Yet, "organizational listening appears to center around learning and information acquisition" (Worthington & Bodie, 2023, p. 15), preventing mistakes and learning from stakeholders (Lewis, 2022; Macnamara, 2016), to successfully maneuver periods of change (Sahay, 2023; Lewis, 2011), and to enhancing organizational culture (Heide & Svingstedt, 2024) including the practice of listening from managers and leaders (Jónsdóttir & Fridriksdottir,, 2019; Cardon et al., 2019; Lloyd et al., 2015, Kriz et al., 2021). Even though strategic listening holds great potential to improve and prevent damage to organizations (Lewis, 2022) and is highly relevant to research from a leadership perspective, the perspective of listening to build and improve internal relationships among coworkers is missing. This study focuses solely on listening in coworker relationships to understand listening and psychological safety in teams.

Psychological safety and listening practices

Even though Rogers already mentioned empathic understanding as a necessity for achieving psychological safety in 1953 and good listening practices are referred to as a needed skill for leaders to foster psychological safety in organizations (Pounsford et al., 2024; Edmondson, 2019; Heide & Svingstedt, 2024), research explicitly connecting psychological safety and listening practices remains sparse (Castro et al., 2018). Research on psychological safety is frequently situated in the healthcare sector (Nembhard & Edmondson, 2006; Nembhard et al., 2015; Edmondson et al., 2001; Tucker, 2007; Jain et al., 2016), where mistakes can be crucial and psychological safety is of utmost importance. Furthermore, psychological safety is being discussed in connection to learning behavior (Edmondson, 1999; Edmondson et al., 2001, Tucker et al., 2007), performance in organizations (Bresman & Edmondson, 2022; Edmondson, 2019; Cappelli & Eldor, 2024), and organizational culture including leadership (Carucci, 2023; Agarwal & Anantatmula, 2023), inclusion and diversity (Bresman & Edmondson, 2022; Gube & Sabatini Hennely, 2022) and team well-being (Dusenberry & Robinson, 2020). Perspectives from research in psychology and management are pre-dominant among researchers. In the following, an understanding of existing research on the relationship between listening practices and psychological safety will be given.

Listening and psychological safety in interpersonal relationships

Listening is also a vital part of building and maintaining relationships. Brunner (2008) points out that listening is a key element in trust, satisfaction, commitment, and control mutuality. Organizational listening entails interpersonal characteristics such as “awareness and attention, recognition, understanding, supportiveness, and responding” (Worthington & Bodie, 2023, p. 16). Cooper (1997) points towards a model of listening which consists of (1) listening behaviors that confirm the message (accuracy) and (2) listening behaviors that affirm the speaker (support) (p. 79). General listening competency entails both accuracy and support. Then, the listener can tell apart facts from opinions, analyze, remember information, give attention to the speaker, show involvement, and make the speaker comfortable and undistracted (Cooper, 1997).

Leadership plays an important role in internal communication and listening because leadership is intertwined with employee voice. So, employees are more likely to contribute their knowledge, and experience, as well as the need for listening to employees speaking up, when being listened to by superiors (Pounsford et al., 2024). Pounsford et al. summarize various

organizational benefits from listening to employees such as higher performance, improved customer service as customer needs are better understood, new ideas, and innovation, better insight and understanding of current processes, and more flexibility and adaptability making the organization flexible to change. Moreover, job insecurity can be reduced due to feeling a higher sense of situational control (Kriz et al., 2021). Neill and Bowen (2021) point out the importance of an intact feedback loop in building personal relationships and trust with coworkers, so that coworkers are willing to speak up about concerns. However, when coworkers do not receive feedback on their shared thoughts, coworkers' trust and commitment may diminish (Andersson et al., 2023).

Pounsford et al. (2024) point towards positive employee experiences as results of listening such as: feeling like the organization and leaders care, more engagement, trust, and motivation to engage, being more aligned with the company, having one's needs understood in terms of career development as well as wellness, and more effective communication which is more empathetic in messaging and addresses employees' concerns (p. 31). Likewise, active listening by managers can enhance their own well-being (Jónsdóttir & Fridriksdottir, 2019), making active listening in the workplace a mutually beneficial experience for the speaker, the listener, and the organization. Thus, active listening can become strategic listening, entailing a participatory character with benefits for all sides (Macnamara, 2016).

Emergence of psychological safety through listening practices

From a practical point of view, Bhutti and Roulet (2023) emphasize that listening and responding empathically as a relationship-building and culture-shaping communication skill must be added to the toolbox of managers and leaders. Active listening behavior, and psychological safety both serve as mediators on the effect of transformational leadership on employees' well-being (Sharifirad, 2013). When leaders are listening, a climate of psychological safety can emerge, and employees feel free to speak up (Pounsford et al., 2024).

Lewis (2022) highlights that "you can create psychological safety by choosing to listen actively to what people say and by responding with interest, building on their ideas, or giving feedback" (p. 199). Rogers (1953) and Sharifirad (2013) state that understanding empathically can contribute to the feeling of psychological safety. Fenniman (2010) also finds a connection between employees being listened to by their supervisors and higher self-psychological safety. Relating to psychological safety, Kluger and Itzchakov (2021) explored the state of togetherness, which can be achieved through listening and result in increased well-being and attachment

to the conversational partner. They point out that listening benefits both, the listener, and the speaker (Kluger & Itzchakov, 2021). Moreover, inner conflicts can be prevented from arising within the speaker when being listened to actively (DeMarree et al., 2023). The speaker is more likely to engage in self-reflection. When the listener is listening poorly, however, subjective ambivalence is met with the need to be resolved (DeMarree et al., 2023). Tangirala and Ramanujam (2012) discover correlations between manager consultation including listening practices with upward employee voice, as the desired outcome of psychological safety. Likewise, Castro et al. (2016) as well as Itzchakov and Kluger (2017), succeeded in observing an impact on psychological safety through a change in listening practices. Fenniman (2010) points out that a supervisor's intention to listen openly leads to the supervisor "being perceived by the subordinate as having a higher level of psychological safety" (p. 125). Furthermore, supervisors can contribute to a subordinate's psychological safety by being and acting sensitive to face threats, that evoke negative emotions and result in appearing less desirable to others (Tynan, 2005). On the contrary, when leaders engage in abusive behaviors and psychological safety declines, coworkers' motivation to share knowledge will decline (Agarwal & Anantatmula, 2023). The reviewed literature on listening and psychological safety in an organizational context focuses on relationships between a manager/leader/supervisor and a subordinate/employee/customer. Thus, the power dynamics and hierarchical relationships must be considered when discussing the concept.

Listening practices and psychological safety in interdisciplinary groups

The concept and potential of psychological safety in organizational settings are well explored, however, the focus is predominantly on hierarchical relationships, for instance between managers/leaders and employees. However, the concept is important for shaping group dynamics and enhancing the functioning of individuals working together such as in project work as well. The phenomenon of team psychological safety describes a team climate that fosters mutual respect and trust between team members so that individuals are free to express and be themselves (Edmondson, 1999). Therefore, it is a socially constructed group phenomenon describing the "shared belief held by members of a team that the team is safe for interpersonal risk taking" (Edmondson, 1999, p. 354). Dusenberry and Robinson (2020) state that open conversations in teams to establish team goals and norms are essential and that increasing psychological safety demands not only communicating about psychological safety but also having

psychological safety-building activities in alignment with team tasks. Moreover, the researchers point out that team duration and team context heavily impact the team's well-being (Dusenberry & Robinson, 2020). Hence, relationships and climate within the team are of importance. Regarding project work this means, that the project work culture must allow and encourage psychological safety to emerge, to profit from the benefits of psychologically safe work environments. Due to the focus on organizational relationships across hierarchies, how listening in team communication and psychological safety are connected is an understudied subject.

Challenges in interdisciplinary (interprofessional) teamwork are the complex nature of the project, communicating across functions, the temporality of team membership, fluid team boundaries, organizational structures which shine through in teamwork (Edmondson & Nembhard, 2009), the need to continuously question the self-image of disciplines as well as their interoperability (Schmitt et al., 2023). Edmondson and Nembhard (2009) highlight that communication and conflict management skills are important to overcome challenges since they are needed to build productive relationships, learn about others' goals and interests, resolve conflicts, and face difficult decisions. Dahm et al. (2019) highlight that interdisciplinary communication is a vital skill that scientists need to effectively work together across disciplines when tackling complex problems. Living in the age of super complexity, where societies face multifaceted problems that need the collaboration of experts from various disciplines, interdisciplinary communication becomes "a core skill for scientists and, when done well, can have a profound impact" (Dahm et al., 2019, p. 40). They moreover point towards active listening as one of the key aspects of good science communication in verbal and written form. With active listening, it can be made sure, that what was heard aligns with what was said (Dahm et al., 2019). Active listening thus involves also asking questions, asking for clarification, summarizing, and keeping an open mind to avoid imposing own theories and ideas on what others are saying (Dahm et al., 2019; Heide & Svingstedt, 2024).

Another practice Dahm et al. (2019) mention is focusing on dialogue, not debate. Then, an open "space for creative exploration of issues" (p. 41), where individuals feel heard, respected, and encouraged to open up, can emerge. To create a dialogical communication culture dialogical communication must be continuously practiced. Then, a base on which collegial and collaborative communication can take place is given (O'Rourke et al., 2023). From a neuroscientific perspective the researchers point out that to make sense of different mental conceptualizations of a situation, neuronal interconnections must be strengthened through effective communication to explore differences and derive a shared understanding (O'Rourke et al., 2023). Moreno-Cély et al. (2021) point out that "dialogue discourse constitutes a form of governance

in which knowledge, power, and subjectivities end up reducing the possibilities of an inclusive dialogue where all kinds of being and knowledge are recognized and equally valuable" (p. 920). Moreover, Moreno-Cély et al. (2021) highlight that dialogue is needed to tackle underlying power-structures in discourse. Thus, the researchers propose the circle of dialogue of wisdom as a framework resulting from collective reflexivity, focusing on a listening-based dialogue and the coexistence of multiple knowledge systems (Moreno-Cély et al., 2021). Therefore, the framework is highly relevant to any interdisciplinary work, "where power relations affect collaboration and in co-creation spaces that involve different knowledge systems" (p. 929).

Studying employee engagement, Lemon (2019) points out the importance of active listening within dialogue, as active listening creates openness, and transparency, where people feel heard and ideas are valued, which responds to speaking up and taking part in meaning-making. Moreover, she points out, that active listening is a necessary element of dialogue and hence, of employee engagement. Active listening and face-to-face communication in dialogue create a context, on which meaningful engagement can be built (Lemon, 2019). By accepting and recognizing each other by empathically engaging in dialogue, individuals can be vulnerable and take risks in the workplace (Lemon, 2019). What Lemon (2019) and Dahm et al. (2019) describe as the effects of focusing on dialogue and listening in dialogue, feeling heard, respected, and encouraged to open up, is precisely what Edmondson's (2019) and Clark's (2020) understanding of the concept of psychological safety aims at: creating a psychologically safe space so that people feel free to express themselves, instead of staying silent, and where one can be creative.

Summing up, the literature review demonstrates that listening practices and the emergence of psychological safety are interwoven. It becomes evident that active listening creates a base for enhanced relationships and a dialogical communication climate, on which effective understanding of different perspectives as well as a feeling of psychological safety to speak up freely can emerge. Even though listening is a key element of creating a communication climate in which psychological safety can emerge, only a few researchers have explicitly explored the interconnections of listening practices and psychological safety. In addition, the relevance of psychological safety and active listening practices in interdisciplinary project work could be emphasized through the importance of effective dialogue. Yet, no research could be found that explicitly researches the concept of psychological safety through listening in interdisciplinary project work.

Considering the neglect of the listening perspective in psychological safety as well as the vast potential of psychologically safe work environments to enhance engagement and well-

being, this thesis will further investigate the hinders of listening behavior as well as how listening behavior and psychological safety are intertwined. Therefore, insights into how listening is performed and perceived, as well as how listening impacts individuals' motivation for further engagement are needed.

Chapter 3: Social Exchange Theory

Some of the latest research regarding inter-organizational relationships use social exchange theory to gain further insights into notions of leader-member relationships regarding (job) satisfaction (March et al., 2023) and engagement (Simbula et al., 2023; Imam et al., 2022), performance achievement (Anwar et al., 2023), information sharing behavior and innovation (Huo et al., 2023), as well as for understanding mentoring activities (Bordogna, 2023). Even though social exchange theory is often used quantitatively to evaluate the importance and effects of various factors in relationships, the theory can also be applied to qualitative research to explore individual experiences with interactions in relationships as well as to identify relevant costs and rewards in certain settings to understand individuals' motivations for interaction. Consequently, social exchange theory helps to understand individuals' experiences with hinders of listening in project work as well as their experiences with speaking up and being listened to. Thus, an overview of social exchange theory is presented in this section.

Social Exchange Theory mainly emerged in sociology during the 1950s from different perspectives by Homans, Thibaut, Kelley, and Blau (Emerson, 1976) as well as Emerson (cf. Cook, 2015) as key figures. Explaining the emergence of the theory, Ekeh (1974) distinguishes between social exchange through two traditions in sociology, the British-American individualistic tradition, shaped by Homans (1958), and the French collectivistic tradition, in which anthropologist Lévi-Strauss (1949) is a key figure. From the French collectivistic perspective individuals engage in social action by contributing to a greater societal context or a group, whereas the British-American tradition sees the "individual self-interests, wishes, and desires as a motive force in social action" (Ekeh, 1974, p. 13). Whereas the French collectivistic view separates social processes from psychological and economic processes, the British-American perspectives approach social processes and human behavior through economic and psychological lenses. The two approaches to social exchange theory did not evolve isolated from one another but rather grew during a constant enriching interplay (Ekeh, 1974) to advance research on human behavior by combining sociological, economic, and psychological perspectives (Davlembayeva & Alamanos, 2023).

In the following an overview of how social exchange theory explains interactions is given. The overview takes notice of the main components of social behavior which the theory explains according to Davlembayeva and Alamanos (2023). The presented understanding of social exchange

aligns with the British-American tradition as most scholars referenced primarily built their understanding on the basis of Homan's early work.

Reinforcement tools of social exchange

Social Exchange Theory aims to explain the social behavior of humans alongside four main components of social interactions: reinforcement tools of social exchange, mechanisms of exchange, social exchange relations, and reciprocity of social exchange (Davlembayeva & Alamanos, 2023). Imam et al. summarize that social exchange is "a joint activity between two or more actors in which each actor finds value" (p. 491). Social exchange requires interaction between at least two parties, who "emit behaviour in each other's presence, (…) create products for each other, or (…) communicate with each other" (Thibaut & Kelley, 1959, p. 10). An individual's desire to engage in social interaction is based on expected rewards or benefits of the exchange enabled by resources, which the exchange demands from an individual. Social exchange theory assumes "that dyad formation is facilitated by the members being able, at low cost to themselves, to provide their partners with high rewards" (Thibaut & Kelley, 1959) implying that one person needs a resource, which another person can provide. Social exchange theory views the relations between individuals "in terms of the primacy of the costs and benefits exchanged in interaction" (Cook, 2015, p. 482).

In social exchange theory, social exchanges are often approached like an "economic analysis of noneconomic social situations" (Emerson, 1976). However, exchange in social contexts is embedded in person-environment relations and thus, differs greatly from the exchange in an economic context, which always happens in the context of a market (Emerson, 1987). The theory "is limited to actions that are dependent on rewarding reactions from others" (Blau, 1964 as cited in Emerson, 1976). Thibaut and Kelley (1959) stress that "most socially significant behavior will not be repeated unless it is reinforced, rewarded in some way" (p. 5) as a premise. Thus, the outcome of an interaction plays a vital role in understanding social behavior through the lens of social exchange. In the following subchapters resources and outcomes including rewards and costs will be explained.

Resources

Foa and Foa (2012) define a resource "as anything that can be transmitted from one person to another" (p. 16). Resources can be of various character. They can be divided into six classes: "love, status, information, money, goods, and service" (Foa & Foa, 2012, p. 16). In the context of this study, information, as well as love, which includes all expressions of affectionate regard including warmth or comfort, are of special interest. Time and space are not considered as resources but rather as prerequisites for the exchange of resources (Foa & Foa, 2012). Resources vary in worth

to an individual based on particularism, and the value to an individual based on concreteness. So, the worth is associated with the resource provider, while the value depends on the degree of a resource's tangibility (Foa & Foa, 2012; Cropanzano & Mitchell, 2005 as cited in Davlembayeva & Alamanos, 2023). The highest satisfaction of needs is assumed to happen, when individuals have complementary needs and therefore possess the resources to satisfy each others' needs (Thibaut & Kelley, 1959). In interdisciplinary project work, information is the predominant resource that is exchanged through communication. By applying social exchange theory to interdisciplinary project work, listening can further be understood as a necessity for enabling the exchange of information as resources.

Rewards and costs

One of the key assumptions in social exchange is that behavior results from the motivation to increase rewards while avoiding costs (Molm, 1997 as cited by Cook, 2015). Thibaut and Kelly (1959) point out that rewards and costs can be measured on a psychological scale, defining how high or low, and thus, how rewarding or costly an interaction is. The outcome can thus be described as rewards received and costs incurred throughout the interaction (Thibaut & Kelley, 1959).

A reward is understood as an outcome that the individual perceives as positive and can be a benefit of either socioemotional or economic kind (Davlembayeva & Alamanos, 2023). So, positive components as consequences from the interaction are identified as rewards. Rewards are "pleasures, satisfactions, and gratification the person enjoys" (Thibaut & Kelley, 1959, p. 12), which provide means to reduce a drive or fulfill a need. On the contrary, negative components are referred to as costs. How many costs an action incurs depends on the skills and the availability of needed tools or instruments to an individual. Additionally, the degree of discomfort or anxiety emerging from the situation impacts the costs. Thus, other parties within the interaction can heighten an individual's costs by heightening their anxiety through their behavior (Thibaut & Kelley, 1959). High costs require great physical or mental effort, come along with negative emotions to action, and/or bring conflicting or competing responses to the interaction. Therefore, costs bring a degree of deterrence to performing an action (Thibaut & Kelley, 1959). How high or low costs and rewards are perceived to be is evaluated individually and depends on various factors, as the next subchapters demonstrate.

Mechanisms of social exchange: evaluating outcomes

Social exchange is based on individuals subjectively weighing costs and rewards to decide for or against engaging in exchange (Blau, 2017, as cited in Davlembayeva & Alamanos, 2023). Within this exchange, meaning is attached to the in- and output, and based on the interpretation of the meaning, whether the outcome is perceived to be positive or negative, the interaction is more costly or more rewarding for the individual. For this evaluation the needed skills and their availability as well as the degree of discomfort that an action is causing the actor must be taken into account. In addition, the receiving person's perception of the behavior directed at him, whether it causes a positive or negative experience, is a vital part of the interaction (Thibaut & Kelley, 1959). Various factors affect the assignment of meaning, some of which are "the social and cultural context, the interpersonal relationship, the content of the interaction, the actors' values and attitudes, their emotional state, intentions and goals, the valence of the transacted resource, etc." (Törnblom & Kazemi, 2012).

Social interaction is only continued when "the experienced consequences are found to meet the standards of acceptability that both individuals develop by virtue of their experience with other relationships" (Thibaut & Kelley, 1959, p. 10). Such standards are further related to attraction, dependence, and status (Thibaut & Kelley, 1959). In addition, "the degree to which the result of the exchange is valuable to a person" (Davlembayeva & Alamanos, 2023) influences their decision on interaction. Thus, the individual's moral perception of fair exchange, and therefore how costly they perceive specific resources and how beneficial they perceive specific outcomes to be plays a key role in social exchange.

Furthermore, individuals' previous experiences with similar situations as well as their predictions of the value of the outcome resulting from the exchange process influence the decision to engage. So, based on the anticipated outcome further exchange with others is increased or decreased (Ekeh, 1974; Thibaut & Kelley, 1959). Due to all parties evaluating the outcome of an interaction, and only engaging in social exchange when the interaction is expected to be rewarding, social exchange is a rewarding process for all parties involved during situations of exchange (Emerson, 1976).

Thibaut and Kelly (1959) point out that "interaction affords many opportunities for response interference to arise" (p. 16), which can interfere with the rewards and costs of an interaction. Interferences in interactions hinder functioning interactions due to interferences making it more likely that responses are performed less well (Thibaut & Kelley, 1959). The authors assume that interference occurs in symmetrical relations so that interference of one party comes along with interference from the other party as well. Interferences lead to heightening the costs of producing a response, as well as receiving and processing the content of the response (Thibaut & Kelley, 1959). Thus,

interferences demand more energy from individuals. Hinders to listening can be understood as interferences to functioning interactions. In contrast to response interferences, factors such as emotional stability and control, adaptability, and tolerance, as well as an attitude of goodwill toward others are considered as factors to keep costs low (Bonney, 1947, as cited in Thibaut & Kelley, 1959). Regarding a well-intentioned and supportive attitude Thibaut and Kelley (1959) also summarize that a person agreeing with another person's opinion not only constitutes a reward but also reduces costs by minimizing fears of potentially unacceptable expressions. Consequently, the behavior of all parties involved in the exchange process influences how costly or rewarding an interaction is perceived to be.

Relations in social exchange

Even though the value of the costs and rewards of an interaction highly depend on exogenous factors such as individuals' values, skills, and predispositions to anxiety (Thibaut & Kelley, 1959), pre-existing relations also impact the outcome. Relations are an important component of social exchange due to the influence of social structures and social capital to influence the outcome of interactions. Therefore, the nature of the initial relationship between involved parties, and the larger social and cultural context in which the relations exist must be considered in social exchange, as they significantly influence the assignment of meaning to interactions (Törnblom & Kazemi, 2012). Davlembayeva and Alamanos (2023) point out that social capital can be a factor in restricting as well as facilitating exchange, and likewise also be a reward of relations for instance in the form of enhanced social ties and networks (Wang & Liu, 2019, as cited in Davlembayeva & Alamanos, 2023). Thibaut and Kelley (1959) also point out that the reward of interaction can be affected by the status of the party of interaction, giving individuals access to rewards that would not be available from associating with people of lower status. However, interactions with individuals within the same social class and status levels are less costly, making these interactions most comfortable (Thibaut & Kelley, 1959).

Hence, regarding relations in social exchange, we must note that not only some relationships are more satisfactory than other relationships, but also some interactions within a pre-existing relationship are more satisfactory than other interactions (Thibaut & Kelley, 1959). Interactions within a relationship are continued when the relationship is considered to be satisfactory based on the comparison level as "the standard against which the member evaluates the "attractiveness" of the relationship or how satisfactory it is" (p. 21) based on what they feel they "deserve". In addition, the comparison level for alternatives is "the standard the member uses in deciding whether to remain in or to leave the relationship" (p. 21) based on "the lowest level of outcomes a member will accept

in the light of available alternative opportunities" (p. 21). Consequently, pre-existent relationships must be considered as the context in which interactions take place when evaluating how satisfactory interactions are. Yet, interactions within relationships are also evaluated against one's personal standard and against alternative opportunities to interact.

Reciprocity: Sustaining social exchange

The principle of reciprocity refers to "the mutual reinforcement by two parties of each other's actions" (Ekeh, 1974, p. 47). Reciprocity is of importance during the process of motivating engagement in an exchange situation due to the assumption that the favor will be returned (Davlembayeva & Alamanos, 2023) as well as the longevity of the relation due to the specific timeframe in which the return takes place being uncertain (Molm, 1997, as cited in Davlembayeva & Alamanos, 2023). Based on reciprocity an interdependence of two or more parties can manifest in mutually rewarding relationships, in which the parties continue to compensate the other for the resources provided (Molm, 2003 as cited in Davlembayeva & Alamanos, 2023). Therefore, there is an expectation of "payoffs at play" (Iman et al., 2022). However, reciprocations can be mutual between two individuals or univocal between three or more individuals. When the reciprocations are not functioning, so both parties do not likewise receive benefits, ruptures arise due to underlying inequality. However, equality is needed in social interactions to continue and function (Ekeh, 1974).

Ekeh (1974) explains that cooperation, equality, and reciprocity are developed together in relationships when individuals are not divided by their status (Piaget, 1932, as cited in Ekeh, 1974). Still, status non-equals can engage in stable social exchanges, however, this inequality of parties threatens the social exchange situation and thus, makes equality needed for social interactions to continue and function (Ekeh, 1974). Moreover, social exchange can be restricted when individuals focus on avoiding offending the other. Ekeh (1974) describes these restricted exchanges as mechanical solidarity, and brittle in nature. In restricted exchange low trust is involved and thus, an expectation to immediately receive rewards after providing own resources is dominant (Ekeh, 1974). In generalized exchanges, however, the trust of others reciprocating in favor of society rather than self-interest exists (Ekeh, 1974). Ekeh (1974) describes this belief in individuals being credit-worthy and trusted to reciprocate as a credit mentality. Thus, restricted exchange lacks trust, which individuals require to engage in interactions freely. According to Cropanzano and Mitchell (2005, as cited in Davlembayeva & Alamanos, 2023) and Molm et al. (1999, as cited in Davlembayeva & Alamanos, 2023) the mechanism of reciprocity in social exchange ensures "more long term and reliable relations through the development of trust, loyalty and mutual commitment" (no page number).

Summary

Summing up, social exchange theory explains how social interactions must be reinforced. Individuals are motivated to engage in social interactions by rewarding outcomes, which are achieved through receiving resources from the other parties involved in social exchange to fulfill their own needs. However, every interaction does not only lead to a reward. The outcome of social interactions is individually determined by the rewards received and the costs induced by interacting. How high or low the rewards and costs are perceived to be depends on one's own interpretation of the meaning attached to rewards and costs as well as on previous experiences, on the relationships with the parties involved, and on the behavior of all individuals throughout social interaction. Lastly, the principle of reciprocity enables sustaining social exchange due to individuals trusting that their costs of interaction will eventually be compensated by receiving rewards from the other parties. However, equal relationships and a degree of mutuality in receiving benefits from social interactions must be given for sustaining relationships.

Chapter 4: Methodology

In this chapter, the research approach, process, and reflections are presented. First, social constructionism is explained to give further insight into how reality is understood as well as how the methodological approach was chosen. Then, the chosen method as well as the sampling of participants are briefly outlined. Furthermore, a guide through the process of the collection of empirical material as well as the approach to analyzing the material is given. Lastly, ethical considerations and reflections are outlined.

Research approach

To encounter the research problem, a qualitative approach was chosen to understand the hinders of listening and the connection between listening and psychological safety. A qualitative approach is most beneficial due to the difficulties of observing or measuring listening (Heide & Svingstedt, 2024) as well as the high subjectivity of psychological safety, since individuals must evaluate themselves, if "the work environment is safe for interpersonal risk taking" (Edmondson, 2019, p. 8). Moreover, the relationship between listening and psychological safety has previously been studied through a quantitative lens (Castro et al., 2016; Castro et al., 2018; Itzchakov et al., 2015; Itzchakov & Kluger, 2017). Thus, applying a qualitative approach will enable me to gain different insights into the connection between listening and psychological safety by understanding how the concepts connect and through which interactions individuals experience it in practice. Thus, by applying a qualitative approach to the research problem, I can gain a closer look at "the lived realities of other people" (Alvesson, 2003). Based on the understanding of interactions through social exchange theory, qualitative interviews enable me to learn about why and how individuals decide to speak up and engage as well as to listen. Through individuals' reflections, insights into this decision process and how listening influences their decisions can be gained.

This study is conducted from a social constructionist epistemological perspective within the interpretive paradigm. From an interpretive perspective, the research problem can be studied as a subject of individuals' everyday lives, as it exists within their "*Lebenswelt* in which

individuals make sense of the phenomena they encounter" (Prasad, 2018, p. 14). Consequently, the research questions are explored by understanding and analyzing these individual experiences (Merriam & Tisdell, 2016). Reality is understood as emerging from interactions within these individual experiences. Thus, reality is socially constructed and sustained between the interactions of people as well as "historically and culturally relative" (Burr, 2015, p. 5). What is perceived as knowledge is not dependent on objective observations but is produced within the social processes and interactions, for instance through language, with one another (Burr, 2015). Therefore, individuals' experiences with listening, the hinders of listening, and listening in connection with psychological safety are understood as emerging from social processes. Moreover, social constructionism sees language as having "practical consequences for people that should be acknowledged" (Burr, 2015, p. 11), highlighting the active role of communicating through language. From this understanding, individuals' interactions through communication, including listening to each other, construct knowledge and further consequences. Thus, when researching listening, listening is understood as an interactive practice, which is an essential part of constructing knowledge and reality through social interactions. Moreover, in communicative interaction with individuals, who share their experiences through language, the individual's reality can be constructed and made sense of.

Qualitative interviews

To learn about the project members' experiences with listening and psychological safety in interdisciplinary project work, one-on-one interviews are conducted. In interviews "information and background on issues that cannot be observed or efficiently accessed" (Tracy, 2020, p.79), can be collected. It enables me to gain insights into the individual thoughts, opinions, and experiences of participants as well as reasons and justifications for their opinions (Tracy, 2020). However, interviews do not only serve as tools to collect empirical material but also as social interactions, which are context-dependent and bring distinctive ways of speaking and norms of interaction into the interview situation (Alvesson, 2003). Therefore, a reflection on the statements and an interpretation through an understanding of the context must follow. Moreover, one-on-one interviews can create a psychologically safer space for interviewees to speak their minds due to the absence of other individuals who otherwise could impact the interviewees' answers based on social desirability or groupthink bias. Hence, one-on-one interviews are chosen as a research method as they appear to best gain insights into individuals' perceptions of experiences with listening within interdisciplinary project groups and their perception of

listening and psychological safety in project work. However, it must be considered that interviewees can be dishonest or selectively telling the truth. Additionally, they can be guided by their own or collective interests and expectations.

The interviews are semi-structured and thus are characterized by freedom and flexibility in questions. Aiming to stimulate and not dictate the flow of the interview, the interviewee shall be given the power and freedom to focus on specific themes which they perceive to be most important. By having multiple interviews, rich and thick qualitative empirical material will be collected to explain the phenomenon (Chandra & Shang, 2019). Likewise, it enables me to focus on listening, reflecting, and adapting to gain answers, which possess qualitative depth on content and emotional levels (Tracy, 2020). Consequently, the interview guide serves the purpose of giving an overview of questions and topics that are desired to be covered but should not be seen as a static and completed list of questions. I aimed to navigate freely through the flow of the conversation and pick up on themes, which are of special relevance to the individual interviewee. The interview guide can be found in Appendix A.

Purposive sampling

To identify potential interviewees for the study purposive sampling was used. Therefore, active participation in an interdisciplinary research project was the criterion. For the research groups to meet the criteria of a research project, the definition of projects in DIN 69901-5 was applied. All identified groups meet the criteria to be project-like due to being of unique as well as complex character and being restricted by available resources, personnel, and time (cf. Alam & Gühl, 2016). As stated before in Chapter 2, active listening is required to reach a common ground and to engage in dialogue in interdisciplinary work (Dahm et al., 2019; Lemon, 2019). Therefore, members of interdisciplinary projects are expected to have good insights into listening practices within the group, which is critical for the study. Thus, the project groups were required to be interdisciplinary, so that "two or more academic, scientific, or artistic disciplines" (Merriam-Webster, n.d.) are involved within the project groups.

It was ensured that the project groups met the before-mentioned criteria, and then were selected conveniently. The potential candidates for the interview were identified through Lund University's website, where the selected research projects and the respective project members are listed. Within each project group, the members were contacted in order of the names listed on the website, under the premise that their contact details were available. However, I ensured that interviewees from various groups were found to gain insights into different project

communication dynamics. Consequently, I adjusted how many members were contacted based on positive responses from each group. To conceal the interviewees' identities, their disciplinary background, as well as their roles (if any) in the group, and the project group names are not revealed. The participants will only be referred to as "interviewee #" throughout the study.

Table 1: Overview of interviewees and interview lengths

Interviewee #	**Length of the interview**
Interviewee 1	74 min.
Interviewee 2	49 min.
Interviewee 3	43 min.
Interviewee 4	49 min.
Interviewee 5	54 min.
Interviewee 6	84 min.
Interviewee 7	48 min.
Interviewee 8	63 min.
Interviewee 9	50 min.
Interviewee 10	64 min.

In total 10 project members from six different interdisciplinary project groups were interviewed. After analyzing the 9th and 10th interview transcripts, theoretical saturation (cf. Glaser & Strauss, 1967) was perceived to be reached as no new themes were emerging from the interview transcripts (cf. Merriam & Tisdell, 2016). As examined by Hennink and Kaiser (2022), saturation can already be reached in a narrow range of nine to 17 interviews. Therefore, no new potential interviewees were contacted after the empirical material was perceived to be saturated.

Due to the interviewees being researchers and likely being familiar with qualitative semi-structured interviews as a method, I must be aware of performance bias. The interviewees may feel performance pressure and therefore amend their behavior and responses accordingly. Especially in academia individuals may protect their "personal, institutional and occupational prestige and reputation" (Alvesson, 2003, p. 170). As it is rarely possible to rule out dishonest or distorted portrayals of experiences from empirical material, interviews pose a risk to capturing the authentic experience (Alvesson, 2003). However, especially to gain insights into how listening can contribute to psychological safety, I must rely on individuals sharing and elaborating on their honest experiences with listening and speaking up, as this phenomenon cannot be understood from an outside perspective. To ensure the quality of the interviews, a

comfortable environment was created in which the interviewees were enabled to share their honest opinions, experiences, and insights. Furthermore, by providing open questions and asking for examples, the interviewees are required to answer freely by reflecting and providing a detailed description of their experiences.

Collection of empirical material

The empirical material for this study consists of ten qualitative semi-structured interviews with researchers who actively take part in interdisciplinary research work. All interviews were conducted between 18th March 2024 and 12th April 2024. Most of the interviews were conducted online through the video conferencing platform Zoom and are therefore synchronous mediated interviews. Interviewing online enabled me to collect the empirical material without the barrier of differing geographic locations. Moreover, the video call can be answered in a comfortable and non-threatening environment (e.g., from home or one's own office), is cost- and time-effective, and still enables taking notice of hesitation, and detecting sudden changes in mimic. Also, mediated approaches make it more likely for individuals to engage and share their thoughts with strangers. However, the decreased availability of nonverbal and embodied communication is a weakness of computer-mediated interviews (Tracy, 2020). However, since the pandemic, digital communication gained importance and become a necessity for many people working in education. Therefore, it can be assumed that conducting interviews digitally via video calls does not feel as impersonal and alienating as it had before 2020.

Before the interview, the interviewees were informed about the topic, the purpose, the procedure, and the potential risks of the research to ensure transparency. To further ensure transparency and quality of the transcripts, the transcriptions are offered to be sent to the interviewees if desired. Additionally, they were informed about matters of confidentiality as well as their rights as participants in the study. Lastly, they were asked for consent to record the interview to transcribe and analyze the empirical material. The information sheet and consent form can be found in Appendix B.

After each interview, I took time to take notes on the main topics and insights of the interview, as well as to reflect on the emotional tone of the interview, which can help to make sense of and interpret the transcripts afterward (cf. Brinkman & Kvale, 2008). Next, I transcribed the recordings into written language and deleted them after finishing the transcription. The empirical material is analyzed by dividing extracts into the respective themes of the two research questions to which they are referring. Then, within the two themes, hinders to listening and the

connection between listening and psychological safety, more themes relevant to answering the research questions were identified by grouping the respective extracts referring to the same phenomenon. By adopting an abductive approach and alternating between describing and analyzing the findings using elements from social exchange theory, the themes could be sorted into overarching categories. The identified categories enable a structured and meaningful interpretation of the findings. To understand how the interviewees view, perceive, and interpret a phenomenon, it is likewise important to acknowledge that my own interpretation of reality will determine the presented findings and the formation of themes and categories. Due to my own personal and social background as well as my expectations and interests, how the empirical material is selected, ordered, and interpreted, is impacted. Therefore, the findings will be influenced by several complex processes (Alvesson & Kärreman, 2011).

Ethical considerations and reflections

Some ethical considerations must be taken during the collection of empirical material due to interviewing for personal experiences and insights which may be of a sensitive kind to some interviewees. To create an environment of well-being for the interviewees, the interviews began with introductory questions and indirect questions, before asking more personal, direct, and specifying questions, giving the interviewees time to adjust to the interview situation and feel more comfortable. Therefore, themes referring to psychological safety such as *feeling safe to speak up*, are generally approached in the second half of the interview.

At all times, it is necessary to create an environment, in which the interviewees can feel comfortable and encouraged instead of pressured to open up and to reflect on their personal experiences. Thus, engagement in a warm and accepting manner to make the interviewees feel comfortable to speak and express their thoughts and feelings is important (Tracy, 2020). As Tracy (2020) suggests, the interviewees were given sufficient time to answer and to reflect, whereas I listened actively and expressed my attention and interest verbally as well as nonverbally through nodding, eye contact, verbal reassurance, summarizing, and building on the interviewees' statements. However, when empathically engaging in the interview, interviewer bias can be amplified. Thus, by triggering sympathy through empathically engaging with interviewees, the interviewees may want to please the interviewer and engage in themes, that they perceive as beneficial for the interviewer (Alvesson, 2003). Therefore, I had to be aware of my empathic engagement and the potential consequence of steering the interviewee toward specific topics.

Reflecting on the research process, I want to point out that not only the interviewees but also the interviewer needs to be comfortable during the interviewing process to ensure the quality of the interviews. Thus, the interviews differ in quality, due to the needed time to adjust and overcome insecurities in the beginning. Therefore, the first interviews were more static and structured, whereas the last interviews were less structured, and enabled the interviewees to be freer in their responses and choice of interesting topics to focus on.

Chapter 5: Findings & Analysis

In the following chapter, the research questions are answered by presenting and interpreting the main findings using elements of the theory presented in Chapter 3. The chapter is divided into two sub-chapters, in which the research questions are answered. First, identified hinders of listening behavior in interdisciplinary project work are presented. Social Exchange Theory is used to better understand individuals' behavior in interactions. By taking a closer look at resources, costs, and rewards in interactions, how listening is hindered can be outlined. Second, the connection between listening and psychological safety will be further explored. To examine how listening contributes to psychological safety, social exchange theory allows us to gain an understanding of individuals' needs in social interaction. As feeling psychologically safe is considered as feeling safe enough to speak, it is examined how individuals' needs in interaction can be satisfied by the provision of support as a resource through listening and hence, enabling them to engage. All quotes from the interview transcripts will be presented without regard to filler words and repetitions to ensure better readability.

Hinders of listening

First, the research question "*RQ1: What hinders listening in interdisciplinary project work?"* is answered in the following sub-chapters. Within the interviews, multiple hinders of listening were discussed and could be identified in the empirical material. Within all identified hinders, six thematic subgroups were formed. The subgroups were formed by abductively alternating between empirical material and theory to identify and categorize extracts referring to the same phenomenon. In the following, all subgroups are listed and analyzed by presenting relevant quotes from the empirical material. Then, by using elements from social exchange theory, the various hinders of listening are interpreted and reflected upon to gain a deeper understanding of how listening is hindered.

Lack of interest and reason

The first theme arising from the empirical material is a lack of interest and reason, which hinders listening. Thus, listening does not function well, when the individual finds "*the topic which is presented uninteresting*". However, when individuals find a common and genuine interest in each other's discipline, listening to each other is reported to work well. An example is given by Interviewee 6, who points out that when the relationship with a person from another discipline is not based on genuine interest, but rather is characterized by seeing their knowledge and abilities as serving one's own interests, the quality of interaction including listening decreases. He states:

> *So, you see that a lot of research projects with engineers and cell biologists, they run really well. Bring in a clinician and the situation is very different. And that's, and now I'm a little bit exaggerating, of course, but that's because they think that engineers and biologists are there to serve them.* – Interviewee 6

Consequently, when the knowledge of another person and their field is genuinely valued, and an interaction is mutually rewarding for creating knowledge, listening works well and on the same level. However, when a person from another discipline joins the interaction, who does not perceive all fields of knowledge as equally contributing, it can negatively influence the situation by shifting the focus on the "interesting" fields, which hinders mutual listening. From a social exchange theory perspective, social exchange requires interactions between actors who both find value in the interaction, so that the effort of engaging is rewarded and therefore reinforced (Thibaut & Kelley, 1959). Additionally, the highest satisfaction of needs is reached, when individuals possess resources that satisfy each other's needs (Thibaut & Kelley, 1959). Thus, when a genuine interest in a topic exists, an individual can expect to gain relevant knowledge from the interaction to satisfy their own needs, exchanging the effort of listening actively and own knowledge, for insights of the other party.

Furthermore, Interviewee 6 mentions that the name of the project pre-determines the topics that the group is going to discuss. These topics have "*dominated the topic that people talk about"* and are closer to some disciplines than others. Interviewee 5, whose disciplinary background and research interest align well with the project name, states that she has a natural curiosity to listen and engage. Moreover, she points out that *"it's possible that others might be less interested in the topic. So, it's possible that (...) they are also less interested in the discussions and in listening than I am*". Therefore, having a big overlap in one's own disciplinary background and the specific name and theme of the project supports listening and engagement,

whereas individuals with more distant disciplinary backgrounds to the project's theme encounter challenges engaging and being listened to. In this case, other team members' interest as motivation is not as evidently granted, because listening and engaging in discussions may be less frequent and strongly rewarding as for others with higher disciplinary proximity to the project theme. However, when an individual's knowledge can satisfy other members' need for knowledge, the interaction is rewarding (cf. Thibaut & Kelley, 1959), and "*friendly curiosity*" as interviewee 7 describes, is experienced. As the example shows, friendly curiosity can stem from the own disciplinary background, implying that knowledge exchange within disciplinary topics is professionally motivated.

Another interviewee points out that when she is listening, she also communicates that she is interested. Moreover, she gives an example of how she is listening differently when she is not interested in the topic of discussion:

> *Sometimes I feel like people in this group are talking about things that might not be so relevant for the topic and I still listen. But in that case, I'm not actively encouraging them to talk more about that. Like when they're drifting away, (...) like applying methods on a completely different field, like a completely different topic, then I might say something (...).* – Interviewee 5

She further explains that in such a situation she would steer the conversation back to the - in her perception – relevant topic by directly saying "*Oh, I'm bored with (that). I don't care about (that) (...). So, in that case, I use my listening to maybe, try to sort of get people to stop talking or, or change the sort of scope of it*". From a social exchange perspective, it is evident that the interviewee perceives listening to topics, in which she shows no interest, does not bring her any reward. Instead, listening and engaging in a non-rewarding conversation is costly because she is required to use her energy as a resource for listening and interacting. Even though she points out later that she thinks these conversations are interesting discussions, the reward for engaging is not big enough to sustain further interactions (cf. Thibaut & Kelley, 1959). Moreover, she tries to steer the interaction in a way, that is more rewarding for her by using her active listening to encourage, and respectively her comments to the other person as discouraging, them to continue speaking about the topic. By discouraging she brings interferences into the situation, which increases the costs of the speaker (cf. Thibaut & Kelley, 1959). However, due to the premise that individuals follow their intention to maximize rewards and decrease costs (Molm, 1997 as cited by Cook, 2015), she actively chooses and steers the discussions toward a rewarding outcome.

Interviewee 1 especially points toward missing motivation and reason to interact. He points out:

> *(T)he whole reason why you're doing something in a group and not by yourself is because there's something that somebody else has, that you don't have (...). So, in a sense, (...) the sort of base dynamic is realizing that the people that are involved in that project all have something that they think that they could think they can contribute to. (...) (Y)ou fundamentally have to allow people to develop something that is seen as an extension of what they're already doing and seen as enhancing what they're already doing. If it's not enhancing what they're already doing, if it's not improving something in their life already then, they're not going to take part in it.* – Interviewee 1

Likewise, Interviewee 6 points out that "*when you want to have an interaction, a research interaction with someone, always think about the added value for both. So, what is in it for them*?". Thus, if every member can provide resources that result in a valuable and rewarding outcome for the group, they will be rewarded by others listening to and engaging with them as well as by succeeding in project contribution. Otherwise listening is not practiced because people "*don't see a reason for doing it*", but not because they simply do not want to, as Interviewee 10 clarifies. He states and asks:

> *You're normally not listening to people, actually, I would say, but you need to have a good reason to listen to somebody. And, particularly, if you don't have a reason to listen to somebody. So, what can make you, if you don't see a reason for it, what can make you listen then?* – Interviewee 10

So, if individuals can contribute to the main goal, they are given a reason to be in the project group, a reason to speak, and a motivation to speak as others are given a reason to listen. From the perspective of social exchange theory, listening is enabled when all members are needed to contribute because engaging is mutually rewarding for all parties. Then, every member can contribute to the project with resources that satisfy other's needs, which accounts for satisfactory relationships (cf. Thibaut & Kelley, 1959). Moreover, the need for every team member to contribute their expertise mutually reinforces interactions, which based on the principle of reciprocity, sustains interactions, and develops relations (cf. Ekeh, 1974). The interpretation of the interviewees' statements shows that listening is motivated by the expected reward of expanding one's own knowledge in a way that is relevant to one's professional interest and contribution

to the project. Whereas active listening requires resources and accounts for costs, anticipating a positive, rewarding outcome of interaction motivates and justifies the costs of listening.

Lack of taking other perspectives

The following theme "lack of taking other perspectives" is especially connected to interdisciplinarity, because of the need to change perspectives and let go of disciplinary boundaries in interdisciplinary collaboration (cf. Schmitt et al., 2023). Interviewee 9 summarized that listening is a key element to interdisciplinarity because "*if somebody is coming at (my topic) from another perspective, then I feel I have something to learn and I do that by listening*". However, sometimes "*you can come across bigger egos who are married to their ideas and therefore, will not really take into account some gaps or criticism towards the idea*". Then, individuals refuse to listen actively and take other perspectives into account. Therefore, there is a need for good listening skills and practices to enable interdisciplinary work (Dahm et al., 2019; Létourneau, 2021).

The consequence of not taking other perspectives into account can also hinder listening on a larger scale. The example of not considering critique to decisions by leaders was given. Interviewee 7 points out that without referring to what initially was being said, the basic requirement for communicative interactions is not met because the other person did not change their point of view. Consequently, the working ways of the group leaders were perceived to be untransparent and shifted the power dynamic in the group from being on equal levels to group members to not being able to take part in decision-making. The interviewee even described the lack of transparency of decisions, and that the leaders "*didn't appreciate having their decisions being put into question*" as the reason why the project work ended up not working out. Thus, not listening can put the internal climate at risk (Heide & Svingstedt, 2024) and prevent further practices of listening to each other. Additionally, the negative experiences of not being listened to, hence investing resources without receiving rewards, can impact future decisions to engage with these individuals negatively (cf. Ekeh, 1974; cf. Thibaut & Kelley, 1959).

However, not taking other perspectives does not have to be related to refusing to switch lenses. The interviewees also pointed out that group members tend to think within their own disciplinary boundaries, which leads them to prioritize their own perspectives instead of other views. Thus, Interviewee 6 reports that in interdisciplinary work:

> *(Y)ou're sort of mentally funneled (...), so all the information that you get, you relate it to your problem. So, you don't relate it to a broader perspective. No, you*

relate it to what you are interested in. (…) I think it's a, it's a very logical thing to do because you get so much information, on a daily basis that you cannot process everything very wide and very open. I mean, I think it's almost a necessity to do this funneling, but if you do too much, then indeed you get stuck. You get a disbalance in how important it is that you're doing relative to what the other person is doing. And then, you get indeed this hierarchy. – Interviewee 6

From a social exchange perspective, listening to others and relating aspects that directly contribute to one's own interest is more rewarding since own ideas are enriched and problems can be solved. On the contrary, listening actively and changing perspectives requires skills (Dahm et al., 2019) and more resources, to build a base on which collaborative communication can take place (cf. O'Rourke et al., 2023). Additionally, there is a risk that the outcome may not be directly rewarding for oneself, which negatively impacts the motivation to engage (cf. Thibaut & Kelley, 1959). However, as Interviewee 6 describes, there is a risk of pushing the conversation too much into the own direction by only picking up elements that are relevant to one's own interest. This may not be rewarding and predominantly costly for the other person. Then, future interactions are at risk because social exchanges are sustained by being rewarding for all parties involved (Emerson, 1976; Ekeh, 1974).

Interviewee 6 highlights that for him the interest in hearing another perspective can decrease when he assumes that he also knows about this perspective:

So, (for) me working with professionals in their own expertise, there's no problem because (…) that's what they know, so that's what they should do. And it's more when I work with people who do things, let's say, who perform things, that I think I know also about. That's as if I don't take them serious as a professional. I think that's when problems arise. And it's a typical professor problem. – Interviewee 6

Interviewee 6 reports that the proficiency of another person as well as his own knowledge-ability in a topic are important for him to decide whether to listen or not. From a social exchange perspective, the expected outcome of an interaction with a person in a field that he expects to also know about is less rewarding than engaging with someone from another field. Thus, based on his own assumptions about the resources of the other person as well as his prediction of the outcome, motivated to anticipate a rewarding outcome by expanding his own knowledge (cf. Ekeh, 1974; cf. Thibaut & Kelley, 1959), he decides to not listen as well as he could.

For others, discussing within one's own field can feel instantly rewarding due to fewer resources needed and faster information exchange. Though, Interviewee 2 points out that being

productive and creative together by "*completely tun(ing) in to what the other person is saying*" is highly rewarding. However, it is also costly as Interviewee 4 explains:

> *(I)t's easier to listen to something that isn't so new to me. If you are listening to a discipline that is more far from me, it takes lots of energy to just put that in the context and to make that paradigm visible or understand that and see how it differs and what conclusion that can lead to.* – Interviewee 4

Thus, the needed resources for taking other perspectives are high, but the rewards of working together using these different perspectives can be even higher so that the outcome is perceived as greatly positive. Consequently, interviewee 3 points out that "*that's the important part of interdisciplinary work that, that everyone has to make that effort to actually try to understand the other's perspectives because we have so different perspectives*". Therefore, active listening including asking questions can be understood as an enabler for interdisciplinary work (cf. Dahm et al., 2019), which requires more effort in terms of resources, but therefore also offers an opportunity to receive highly rewarding outcomes.

Moreover, power dynamics within the group are interfering with individuals' willingness to change perspectives. From a social exchange perspective, all individuals within the group evaluate, which interaction with which individual is expected to be the most valuable and compare it to the level of alternatives (cf. Thibaut & Kelley, 1959; cf. Emerson, 1976). The status of individuals is one of the factors, which impact the evaluation of the outcome as resources are assigned higher values depending on the resource provider (Foa & Foa, 2012; Thibaut & Kelley, 1959). Then, engaging in social exchange with individuals of higher status is expected to be more rewarding, which makes it more likely that an interrupting professor is being listened to than an interrupting junior researcher. Interviewee 4 states that hierarchies are sometimes "*a blind spot".* Furthermore, she explains that "*you are so used to work within a field that you have different roles. You are used to have people listening to you or not"*. So, she explains that some people are used to being listened to due to their usual work environment, which shifts the focus of the listeners into the direction of the speaker's interests, thus, prioritizing the speaker's chances to engage in rewarding interactions.

Thus, active listening is essential to interdisciplinary work, however, it is hindered by individuals not being willing to change perspectives due to the outcome not being expected to be rewarding enough considering the heightened effort needed to actively listen outside of one's own disciplinary boundaries and expertise. Though, the next category explains that a missing

change of perspective can also stem from a lack of basic knowledge within other fields, which is needed as a premise for interdisciplinary interactions.

Lack of interactive expertise

Just like within the last category, Interviewee 1 describes that team members were thinking narrowly and in their specialized ways. However, this category exemplifies that not changing perspectives can also stem from a lack of interactive expertise. The interviewee gives a positive example of collaborating with one team member who was trained in a more boundary-crossing way in the Dutch academic system. Therefore, he believes this team member to be more "*naturally amenable to talking with about things that he thought were interesting because I was doing all the interviews, that he thought would be really helpful for all the quantitative stuff that he was doing*". This team member could more easily span different fields than other team members who were more narrowly focused on their own tasks and fields. So, difficulties in listening can stem from not being familiar with another method, but also from a lack of familiarity with theoretical or respectively practical thinking, as Interviewee 4 suggests. From a social exchange perspective being trained in two different fields, including learning about various approaches to collecting and explaining data, reduces the needed resources to understand each other compared to others, who are unfamiliar with different research approaches. Thus, due to the expected costs of interacting being lower, the anticipated outcome is more rewarding (Thibaut & Kelley, 1959).

Moreover, having a broader disciplinary background makes it easier to connect to various kinds of knowledge, possibly finding more rewarding ways to connect information to own knowledge in interdisciplinary discussions as well as avoiding the discomfort of leaving one's own disciplinary comfort zone. Interviewee 10 describes it as follows:

> *"That means that engaging in (other fields) (…) means that everybody needs to step a little bit out of their specialty, which means you're also getting out of your comfort zone a little bit. And you need to engage with a field where you're not a specialist. And that's unstable because we gravitate towards where we're comfortable."* – Interviewee 10

When leaving one's comfort zone is associated with negative emotions, such as being uncomfortable or anxious, an interaction incurs high costs (Thibaut & Kelley, 1959). Then, engaging in the interaction and active listening to discussions within other disciplines is hindered.

Whereas narrowed thinking can stem from a prioritization of one's own field and wanting to complement own knowledge rather than immersing oneself into other fields is a choice to reduce costs, not being able to understand because of lacking knowledge is not a choice, and can be counteracted by teaching and clarifying. Interviewee 10 explained that this lacking knowledge is a lack of interactive expertise, which is needed to "*know enough to talk to somebody with contributive expertise*", hence, to someone who can contribute to their field.

Another interviewee explains that some team members speak a "*common language*" when coming from similar disciplines based on the disciplines' traditions. Thus, it is likely "*that people get stuck in certain ideas and, and can't listen very well*", they are "*lured into, into, um, into details, which makes sense for the people within that group of four, but not for the rest. So, they're lost*". Speaking in one's "own language" demands more resources from individuals from other disciplines. For them as "outsiders" it results in higher costs due to more mental effort being required to follow the discussion (cf. Thibaut & Kelley, 1959). When knowledge of others' disciplinary language is missing, and therefore interactive expertise is lacking, listening, and understanding other perspectives is hindered. Therefore, the ability to listen as a prerequisite to engage is missing.

Moreover, if it does not come naturally or has not been studied to span different disciplines in previous education, it is necessary to close gaps between different disciplinary understandings. Interviewees 5 and 3 both state that having conversations about these topics was "*really helpful for clarifying (...) these different starting points and the way we think about academic work and what that means*". Also, she adds that "*that helped actually also to bring that curiosity and openness*". So, the lack of understanding prevents listening and prevents new motivation to engage to arise, due to negative emotions incurring high costs (Thibaut & Kelley, 1959). From a social exchange perspective, generating an understanding of each other's ways of understanding research enabled people to be curious and open to new perspectives again since the naturally heightened costs in interdisciplinary interactions are decreased when having interactive expertise.

Lack of prerequisites for social interactions

It was previously identified that listening can be hindered by individuals deciding to save resources and not engage for various reasons. However, not having access to needed resources can also be a reason to not engage in listening. Interviewee 4 underscores language barriers as a major obstacle to effective group communication. She expresses frustration, saying, "*it gets*

a little bit frustrating to even listen to me because it takes time and (...) I can't move as fluently (...) (as) when I talk in Swedish." She also voices concerns about being misunderstood due to her English proficiency, stating, "*I fear to be misunderstood based on my English language skills*". Moreover, she notes that the mixture of Swedish and English spoken by the majority leaves some participants feeling excluded, leading to the need for clarification, as she mentions, "*some people are left out and have to ask when they do not understand*". group communication. Language barriers increase the resources needed for effective communication in terms of energy to cope with negative emotions (cf. Thibaut & Kelley, 1959). Then, some individuals opt out of the conversations due to the associated higher costs of energy that they must invest. In contrast, other members can fluently interact in other languages and therefore have access to the English language as a pre-requisite to engage in the project.

Time is another prerequisite for resource exchange which is limited to project work (cf. Alam & Gühl, 2016; cf. Foa & Foa, 2012). When time is scarce, listening can be hindered. Interviewee 8 describes that when she leads the discussion, she is strict in shutting it down when it moves into an unproductive direction, however, when it is "*a good scientific discussion" she wants to "let them just bounce the ball from this side of the table to another*" for a while to reach a potentially rewarding outcome. So, when time is available and the discussion is expected to be fruitful, a space to listen is facilitated. Also, Interviewee 6 highlights the need for time in interdisciplinarity because "*you should take the time to teach people things*". As understanding a completely new topic requires time and "*effort from both sides*", scheduling enough time to enable a basic understanding for everyone is of utmost importance. Furthermore, he stresses that when time is scarce "*people get under time constraints. You cut corners. You know that you have to make a decision quickly and then you almost do it intuitively (...) and you sort of lose the rational part*". Therefore, a lack of time can hinder listening to other perspectives and taking them rationally into account when making decisions or when discussing within a project. As a pre-requisite for social exchange (Foa & Foa, 2012), time is required to speak as well as to listen.

Another prerequisite for exchange which is lacking and hinders listening is energy. Interviewee 2 reports that bad sleep and a general tiredness and exhaustion "*that you carry with you all the time*", leads her to "*zoom out*" and not listen sometimes. If the prerequisites for exchange to invest resources are not available to an individual, the generation of rewarding outcomes is prevented, because social exchange is prevented (cf. Foa & Foa, 2012). In contrast to interactions with heightened costs, which require more effort, interactions that lack prerequisites for interaction prevent the chance of interacting, and hence to listening, overall. From the empirical

material, language skills, time, and energy could be identified as prerequisites for social exchange in interdisciplinary project work. A lack thereof accounts for added costs in social interactions.

Lack of functioning leadership in discussions

Extensive listening of others can help a conversation to go in an unwanted direction. To prevent this, active listening which requires understanding and questioning the content must be practiced. Therefore, communication skills, communication rules, or leading the conversations are needed to keep discussions discursive, productive, and rewarding (cf. Dahm et al., 2019; cf. Létourneau, 2021). When one person is taking up most space and time to speak in group discussions, listening within the group can be hindered. As Interviewee 8 describes, it can happen that an outspoken person is steering the conversation in one direction and speaking for a large amount of time. Moreover, Interviewee 2 reports that listening to someone or multiple people in monologues instead of a discussion makes her "*frustrated*" and she does not "*have the patience*" as these monologues are "*quite tiring when people just keep going on forever*". Then, she feels irritated and tired, saying "*the more tired I am, the more irritated I get*". Then, considering that there are only limited resources available to engage in interactions, investing resources in potentially unrewarding discussions is decided against, as it will negatively impact the overall outcome of interactions (cf. Thibaut & Kelley, 1959). Due to the interviewees perceiving the result of long monologues of others as not valuable, they decide against interacting and eventually against losing resources for listening.

Regarding people speaking for a long time and not making room for others, Interviewee 6 sums up that it is not fair when people take up much time and space to speak, not only because time is scarce but more importantly because the energy of listeners is limited. To prevent one person from having "*drained people's brains*", he emphasizes that discussions must be led so that we do "*not allow people to speak more than a certain amount of time*". However, he perceives chairing discussions, where someone would "*give the word instead of someone taking the word*", as "*undervalued*". Thus, having a chairman or discussion leader, who manages available resources in the room by installing communication rules, may be necessary in a project group that is characterized by some people taking the word and others passively listening instead of interfering, questioning, and discussing. Yet, Interviewee 2 explains situations where discussions were led by raising hands and speaking in order as stressful and uncomfortable. She says that people are "*waiting actively all the time*" which is stressful for the facilitator of the

discussion and that people are just "*stacking monologue on monologue*". Interviewee 3 also reports that:

> *If you want to have a common process or get somewhere together if only one person is speaking, you don't get that back and forth and it could be that person speaks a lot that doesn't help the process forward and you are not allowed to interfere or ask questions*. – Interviewee 3

This way of discussion leads the discussion facilitator to focus on the order of speaking, which takes away from her ability to listen actively and take part in the discussion herself. Moreover, the other group members must remember what they want to say and wait until they are allowed to speak, which takes away discourse character from the conversation. Then, the conversation is less inclusive, collaborative, and hence, not mutually rewarding for all parties, which risks ruptures due to inequality in social exchange (cf. Moreno-Cély, 202; Ekeh, 1974). As described by the interviewees, such ruptures result in the halt of listening to each other.

Interviewee 7 gives another example of poor leadership qualities regarding facilitating discussions. He states that leaders would interrupt the discussions between group members by joining the group mid-discussion. He highlights that they would be "*more like questioning or stopping the process than monitoring*". By facing interferences to the interaction through being interrupted additional resources are needed to continue the discussion (Thibaut & Kelley, 1959).

Interviewee 7 mentions situations of disagreement as other situations where communication rules and good leadership in discussions were missing. He describes that some situations feel like "*stonewalling or just ignoring*" as "*the response to expect*" from team members, who would actively and passively discourage people from speaking by leaving the room, not answering emails, or stating that "*more talking won't be helpful*". In such situations, group members accept high costs to speak up, disagree, or criticize, however, an outcome, whether positive or negative, is actively withheld from them. Consequently, further interaction between the parties eventually comes to an end, because the motivation to engage by increasing rewards and avoiding costs (Molm, 1997 as cited by Cook, 2015) is not given without any outcomes.

This theme exemplifies that a lack of functioning leadership counteracts the desired function of leadership to lead the team members and enable them to interact more easily. Instead, team members' costs of interactions are additionally heightened while they should be lowered by leaders.

Lack of psychological safety within the group

The last theme that emerged from the interviews was the lack of psychological safety within the group. When an environment is perceived to be psychologically safe, people feel free to take risks and express themselves, hence, to speak up instead of staying silent and restricting themselves due to suspected negative consequences for expressing thoughts, and ideas (Edmondson, 2019; Clark, 2020). However, when a group or an environment is not perceived as psychologically safe, individuals prefer to restrict expressing themselves. Interviewee 4 explains that:

(I)t's easier to listen to some persons in the group that have this more open, inviting way of talking (...). (T)hey want to have open discussions without this (...) personalizing, but just the subject and it's not personalized. So, then it's easier to talk and listen to them also. – Interviewee 4

The interviewee describes that an open and inviting climate is important when interacting. Then, discussions should not be taken personally. She emphasizes that it is important in discussions to stay focused on the topic when criticizing. Otherwise, individuals can feel personally criticized or even attacked and unsafe to speak as Interviewee 4 explains. She states that *"(she) can read in the group that someone want to say, for example, someone that is opposing of that, but (...) (doesn't) want to be (...) attacked. So, they are silent instead.*" Then, listening is difficult for her because she feels that "*people are wanting to say some stuff, but they aren't of some reason. So (...) I have a hard time listening when I feel that someone is forcing the group to listening to something that they want to say (...)".*

In such cases of staying silent, people choose to not risk the costs of experiencing negative emotions, that are predicted to come along with speaking up and entering the discussion due to the anticipated outcome to be negative. Thus, these situations make it impossible to maximize rewards and prevent costs, and thus, no motivation to speak is given (cf. Molm, 1997 as cited by Cook, 2015). In addition to some individuals being prevented from speaking, the internal climate can also hinder others from listening. Further connections between listening and psychological safety are mapped out in section 5.2 to answer the second research question.

Connecting listening and psychological safety

In this chapter the second research question "*RQ2: How can strategic listening practices among project staff contribute to creating psychological safety in interdisciplinary projects?"* is answered. In the previous chapter, the lack of other psychological safety was already identified as a barrier to listening. However, listening was also found to support the emergence of psychological safety within the group. How listening affects feeling psychologically safe in interdisciplinary project groups will be mapped out by presenting three themes, which were identified in the empirical material. By using social exchange theory to interpret the empirical material, it can be further understood how listening and feeling psychologically safe and thus, encouraged to speak and connect.

Appreciation and validation

During the interviews feeling validated was mentioned to be important when being listened to. When individuals feel listened to, they perceive their contribution is valued and is worth engaging further. In contrast, feeling not listened to or even ignored can lead to feeling a sense of invalidation. As Interviewee 10 describes:

> *(Collaborating interdisciplinary) means that everybody needs to step a little bit out of their specialty, which means you are also getting out of your comfort zone a little bit and you need to engage with a field where you are not a specialist. And that's unstable because we gravitate towards where we're comfortable*. – Interviewee 10

Moreover, he states that people "*feel secure*" in their sub-specializations because "*that's what you get rewarded for in your career*". Hence, leaving the own field is not as associated with positive experiences as staying in the specialization. Consequently, leaving one's comfort zone, individuals tend to doubt the value of their potential contributions because they are not used to not being experts when engaging in research projects. Thus, validation may be of special importance in interdisciplinarity.

Moreover, appreciating each other's contributions may be of special importance to individuals in junior positions. Interviewee 5 highlights that due to her being a more junior researcher compared to her team members, she feels like "*the others have more important things or equally important things to say and I don't feel like I need to teach them things*". Thus, reinforcing engagement by mutual active listening is important to interact as equals and to

overcome the hinders of speaking due to seniority. Then, more stable social exchanges, which enable interactions to be reciprocated, are ensured (Ekeh, 1974).

Interviewee 9 exemplifies that when she is listened to she "*would feel that (…) (her) research or what (…) (she has) to say is relevant and interesting*". She says that "*attentive listening is a sign that they are interested, get drawn into the topic and that (…) (she) probably (…) (has) something interesting to say or contribute*". Moreover, she as well as Interviewee 2 explicitly mention feeling encouraged to elaborate more when she is being listened to and others are giving cues "*like nodding the head or, you know, yeah, looking interested and accused. Then I would have more sort of desire to speak on the topic*". Also, when the listeners verbally communicate their interest or ask questions she feels "*more sort of engaged in the process*". From a social exchange theory perspective, the active listening of others validates that the speaker's input is of value to them, and therefore, contributes to a rewarding outcome of the interaction. As the speaker then expects the interaction to be a rewarding process for everyone involved, she continues to engage (cf. Emerson, 1976). Interviewee 2 explains that when non-verbal cues are missing, she feels insecure and wonders if others are irritated, not interested, or want her "*to stop talking*". Therefore, non-verbal cues like nodding and smiling are especially important. One could also interpret nodding and smiling as a form of agreeing or, at least, not disagreeing, showing goodwill to understand each other.

Interviewee 7 points out:

> *(It is) easier to listen when there is mutuality if the person is listening to me and I mean, that goes for any kind of relation really. If you want (…) the other person to listen to you, you better listen to that person as well*. – Interviewee 7

Thus, reciprocating listening is important to the person. As explained by Davlembayeva and Alamanos (2023) reciprocity in social exchange ensures to building of "reliable relations through the development of trust, loyalty and mutual commitment" (no page number). Reciprocity in listening means that you can trust that if you listen to others, others will listen to you, and therefore build a base on which a mutually rewarding relationship can be built. In listening to each other mutual validation, appreciation, and interest are given.

For Interviewee 4 to feel comfortable to speak and make her view "*available to others"* she needs "*to know that they are wanting to have my definition and that that is welcomed*". Thus, she wants her contribution to be valued and needs to feel the interest of others before she speaks. Then, she can make sure that her contribution will be "*welcomed*" and likely met with a positive reaction. Since "the degree to which the result of the exchange is valuable to a person"

(Davlembayeva & Alamanos, 2023 referring to Blau, 2017 and Homans, 1961) influences their decision on interaction, noticing that others actively listen and interact, it comprehensible to the speaker that the exchange is of value for others. So, if others have a desire to listen to her, she will feel that her contributions, and her resources, are of worth to others and that the interaction will have a mutually rewarding outcome.

By validating and appreciating each other through mutual listening, a positive attitude toward the speaker and their contribution is shown. An attitude of goodwill is a factor to keep the costs of an interaction low (Bonney, 1974, as cited in Thibaut & Kelley, 1959). Thus, the costs of interpersonal barriers to speaking up are kept low, which also accounts for higher psychological safety within the group.

Acceptance and respect

Next, showing openness and acceptance in interactions through listening was identified as a recurring theme. For the interviewees, a welcoming and tolerant atmosphere within the group contributes to feeling psychologically safe to speak. They appreciate environments in which they can express themselves without fearing negative reactions, such as judgment, being personally attacked, or being made fun of.

For Interviewee 4 feeling accepted is especially important because of feeling insecure due to her English language skills. She states that she is "*still not so safe to talk English. In Swedish, I would have participated more actively in a discussion and maybe also taking up some new topic*". Thus, speaking English in discussions already comes at a higher cost for her due to the insecurity, and was amplified by negative experiences where "*because of the language barrier*" she was "*misinterpreted and that's not so nice to be. So, (...) it's been very hard to make what I really mean come across*". Having been misunderstood before, she predicts that the outcome of speaking up is more likely to be negative and costly instead of more rewarding than it could be in Swedish contributions (cf. Thibaut & Kelley, 1959). Consequently, she has "*become more and more quieter as the time has gone*". This example highlights the importance of positive experiences of acceptance and openness, as they have the power to encourage speaking by minimizing the perceived costs of engaging.

Interviewee 3 points out that it is important that:

> (*E)veryone is willing to listen. I'm willing to consider (...) what the others are saying, not just, no you're wrong, but saying, okay let's take this and look at it and does it, con we run with that or not? And that has been really important, this kind*

of openness and willingness to hear from my perspective and also willingness to do the same for their perspectives. – Interviewee 3

She stresses the importance of others listening actively and therefore having the feeling of her perspective being thought about, approached openly, and considered. So, when feeling heard, it leads to individuals feeling respected, and free to express themselves (Lemon, 2019; Dahm et al., 2019). Thus, the internal group climate fosters an environment in which risks by speaking up can be taken without having to fear negative consequences. However, when individuals do not feel heard and reproducing active listening behavior within the group is neglected, the positive climate, internal relationships (cf.) as well as the reciprocation of further interactions can be risked (cf. Heide & Svingstedt, 2024; cf. Davlembayeva & Alamanos, 2023).

The importance of accepting, respecting, and welcoming each other through listening can best be exemplified when looking at situations of disagreement. Interviewee 8 exemplifies that disagreeing is "*about discussion. It's not to bring down someone or to insult someone*". Thus, the culture of disagreement in her group is based on trust that people can disagree and still value and respect each other's opinions. Interviewee 4 concludes that in disagreement, it should be disconnected from "*the personal side of a subject instead of making the subject as its own. It can be there and it's okay to talk about even the things that are hard, but it's not a mirror of me as a person*". Then, the costs that facing disagreement or criticism can bring are minimized because it does not reach a personal level. Additionally, the reward, which is only reached by disagreeing and discussing, is focused. Lastly, the increased reward can serve as a motivation to further engage in discussions (Molm, 1997, as cited by Cook, 2015).

An example of unfriendly disagreement is provided by Interviewee 7 who explains that he does not feel heard or valued when he gives his opinion in a discussion, but others are not responding to his input saying "*but, and then tell (him) how (he is) wrong*". Instead of staying silent, Interviewee 7 decided to speak up. However, he repeatedly encountered negative outcomes at his own cost and eventually stopped expecting other rewarding responses. He exemplifies as follows:

There have been some bad experiences and people have learned to not spend time listening to some of the people in the group and also, that they have stopped believing that some people in the group would listen to them. So that's unfortunately a change in the listening patterns. This friendly curiosity (..) and the openness (are) more selective. – Interviewee 7

He explains that when other perspectives are not being considered, it is "*extremely invalidating. It's like saying that those arguments are not even worth considering*". Moreover, he states "*(i)f nobody's talking, there's no point in listening, right? Or if nobody's listening, there's no point in talking*". As experienced consequences of social interactions must meet a standard of acceptability (Thibaut & Kelley, 1959), and in this case, the reward of feeling validated by someone listening and responding to his contribution is lacking, further interactions are decided against. Moreover, it is costlier to engage across hierarchies (Thibaut & Kelley, 1959). Therefore, making negative experiences with individuals in an overpowering position due to e.g. their social status or their dominance in the room can further amplify the negative effect due to the higher costs of the interaction. Consequently, people may choose not to speak and hence, to minimize costs.

A negative example by Interviewee 4 can demonstrate the connection between showing acceptance and respect through listening and psychological safety. She tells about a situation where she can feel that a group member is opposing a point in the discussion but keeps quiet to prevent being attacked. Based on previous experience the person decides to stay silent because they do not "*want to put (themselves) in that position anymore. And that silenced people*". We understand that in this group opposing opinions are not met with hearing each other out and accepting and respecting their perspective. Therefore, the psychological safety of individuals is rather low, leading to not expressing oneself freely.

Moreover, Interviewee 3 says that some issues where people have different views and understandings, and therefore are unlikely to agree, "*can be really sensitive and difficult to speak up about*". When individuals agree with another person's opinion it is a validating experience, which simultaneously reduces costs (Thibaut & Kelley, 1959). In contrast, when people are likely to disagree, the costs of interaction are higher because the speaker must deal with unwanted negative emotions, which may arise when facing disagreement.

Building personal connections

Another theme, that emerged from the empirical material, is building personal connections to enhance psychological safety. When individuals approach each other as equals rather than in hierarchical constructs, communication becomes simpler. Speaking up becomes more comfortable, and trust and respect for each other can be built based on a personal connection.

Interviewees 6 and 9 stress that an open physical environment can contribute to feeling safe to speak. Interviewee red criticizes the seating arrangement in a lecture hall and points out

how it "*is less inviting (to ask a question) than if you would sit in a circle*". It is less open and therefore others are less focused on seeing "*you as a person*" but more focused on the words. Interviewee 9 reports that when meetings are held in a big room, and you do not know each other previously, "*you feel more physically distant",* whereas being in a small room, having coffee and pastries together feels *"more like sort of people getting together to talk. (...)It comes naturally to ask questions*". Thus, the environment can help to create a personal connection by enabling seeing and listening to each other as well as speaking more personally. For Interviewee 9 it is particularly important that you can "*see the reactions*" when being "*much closer together physically as well*", which gives her the security of being able to adjust the presentation or "*do something else to get people into the conversation*" when needed. Thibaut and Kelley (1959) point out that interactions with others within the same social class are less costly, which in turn makes engaging and speaking up more comfortable. Thus, when people can connect personally on the same level, such as in a smaller room where it "is not this hierarchical" as in another setting, costs can be reduced, and people can feel safe enough to speak. Then, they are given the chance to be listened to and to build valuable connections.

When a personal connection is established, the additional costs that interactions across hierarchies bring (Thibaut & Kelley, 1959), are reduced. Therefore, Interviewee 9 tells that it was easier to speak up in a group with another "*famous, (...) big figure"* in her discipline after they got to know each other and she could see that this person was *"also very nice and welcoming (...) so that distance, that barrier has gone down somewhat and now the conversations just flow*". Similarly, Interviewee 6 states "*if you feel equal, if you feel yourself my equal, there's no problem because you can tell anything to me. I will listen, but you have to tell it*". Thus, seeing eye to eye without hierarchies separating one another enables feeling safe to speak up.

Interviewee 5 differentiates her behavior in asking questions by stating that in her group she is unafraid to ask what potentially simple terms from other disciplines mean because she is "*not expected to know anything about history" for example. Though, she "might not want to reveal (...) in a situation where (...) (she needs) to make an impression on people that don't know me that well already*" that she does not know something, what could be considered "*a stupid question*". Hence, the personal connection that she has to the people in her group makes it easier to ask questions, regardless of the topic. So, contrary to the situation with strangers, she can trust based on the personal connection that no one would make fun of her. By having had positive experiences in the group, where others would not call her question stupid but rather "*just answer and explain*", the costs associated with asking a "stupid question" are minimized. Interviewee 5 highlights that the "*friendly (...) and tolerant atmosphere*" enables the group to

"*challenge each other*", "*interrupt someone, or reject something that someone said*". Furthermore, she explains: *"I think in another setting in a group where we wouldn't know each other that well or I think some of the things that has happened in this group could have potentially led to conflict, but it doesn't happen here*".

Therefore, they can take more extreme positions, provoke, and oppose in heated discussions, or as Interviewee 8 reports, tease each other, without damaging the group atmosphere with these interactions. This group does not face the restriction of social exchange, which happens due to avoiding offending each other (cf. Ekeh, 1974). Rather they can trust that the group handles provoking exchanges on a level that does not impact each other's psychological safety, and hence, does not lead to negative impacts on the speaking behavior of the group. Interviewee 5 concludes that kickoff activities such as having dinner or going on excursions "*help so that you (...) know each other in a different way and then, you can speak more freely*". Interacting within pre-existing relationships impacts the way that individuals assign meaning to the outcome of interactions. Having an already established base on which interactions are built in a potentially psychologically safe environment, can reduce costs from exogenous factors such as predispositions to anxiety (Thibaut & Kelley, 1959). When a relationship is already established and others' behavior is more predictable, costs can be kept low due to the perceived stability and control over the interaction (Bonney, 1947, as cited in Thibaut & Kelley, 1959).

Chapter 6: Concluding Discussion

A special phenomenon in interdisciplinary project work is the need for individuals to leave their own disciplinary comfort zone, which can bring insecurity, discomfort, and instability. When not communicating in the familiar "language" of one's discipline, project members are likely to misunderstand each other, or face the need to find a common language to collaborate. Hence, interdisciplinary groups face additional challenges regarding interpersonal struggles as well as barriers to effective communication, which require additional energy to overcome (cf. Bresman & Edmondson, 2022). This thesis focuses on communication in interdisciplinary project work and aims to identify the hinders of listening as well as to understand how listening contributes to psychological safety. It is crucial to understand what hinders listening in interdisciplinary work because when listening is hindered, achieving accuracy as well as support in interactions is hindered. However, listening is required for *accuracy* to communicate across disciplines with a common understanding, as well as for *support*, to be encouraged and feel able to communicate across disciplines despite insecurity and uncertainty (Cooper, 1997). To enhance interdisciplinary project work, the challenges and hindrances of interdisciplinary listening must be explored so that strategic implications to release the potentially positive impacts from listening on the group can be discussed.

The results suggest that, when working in interdisciplinary project groups, multiple hinders of listening are encountered. The identified hinders of listening are a lack of interest and reason, not taking other perspectives into account, a lack of interactive expertise, a lack of prerequisites for social interactions, a lack of functioning leadership in moderating discussions as well as a lack of psychological safety within the group. The identified themes of hinders and their interpretation exemplify that listening is hindered in two different ways. Thus, the identified hinders can further be grouped into two categories: reward-driven hinders and cost-increasing hinders. (1) **Reward-driven hinders** of listening include the lack of interest and reason, as well as being unwilling to take other perspectives into account. These hinders were identified to result mostly from the individual's personal and professional interest, and goals, as well as from their attitude toward other people and topics within the project. Listening is predominantly hindered in this category because individuals expect the outcome of interacting to not be

rewarding enough given the costs that it would cause them. Hence, they decide not to listen. The lack of interactive expertise, the lack of functioning leadership, the lack of psychological safety in the group, and lacking prerequisites for social exchange, however, are (2) **cost-increasing hinders** of listening. In contrast to reward-driven hinders, these hinders affect individuals in their capability to listen. Therefore, they do not result from personal decisions to engage, but from external circumstances, which hinder individuals from engaging by heightening the costs of interacting. Cost-increasing hinders of listening demand more mental effort from individuals in interaction due to the hinders interfering with the interaction. Then, additional energy is needed as a pre-requisite for social exchange to compensate for the interferences.

Referring to the second research question the results suggest that active listening is a practice that contributes to psychological safety by enforcing (1) appreciation and validation of each other, (2) showing openness, acceptance, and respect, as well as (3) building personal connections. Being listened to actively communicates to the speaker that their perspectives are valued. Moreover, individuals are validated and encouraged to speak more. The listener communicates by listening actively that they are open to other perspectives, regardless of agreeing or disagreeing personally. Rather, their openness shows that everything can be expressed and will not be met with judgment, punishment, or ridicule, which is crucial for psychological safety to emerge (cf. Clark, 2020). Lastly, by listening actively and showing interest in the other individuals, a personal connection can be established, on which trust can be built, which also enables people to interact freely, and to gain a deeper understanding of each other.

Thus, listening contributes to psychological safety by creating an internal climate that is characterized by appreciation and validation, openness, acceptance, and respect as well as by contributing to building a personal connection. Then, individuals can feel free to express themselves and are invited to connect with others. By exploring how listening contributes to building psychological safety in interdisciplinary project work through a lens of social exchange theory it becomes evident, that does not only need a constant reciprocated exchange of information for effective interdisciplinary dialogue but also a growth of stable and equal relationships by exchanging mutual gestures of support.

As identified before, low team psychological safety can hinder active listening, and therefore hinder the emergence of fruitful interdisciplinary dialogue. However, the results further display that the listeners can contribute to creating a psychologically safe environment for the speaker by listening actively, decreasing the costs of interacting (cf. Thibaut & Kelley, 1959; cf. Bonney, 1947) associated with speaking. Rather, by being listened to genuinely and

actively, positive experiences can be made, based on which the speaker is likely to reevaluate the costs of engaging to be lower. Moreover, by supporting the recreation of a psychologically safe environment through listening, the cost-increasing hindrance of low psychological safety within the team can be eliminated. Thus, fostering high team psychological safety through promoting active listening to one another is of utmost importance to minimize other team members' costs of interacting. It became evident that listening to each other has a great impact on relationships between the team members and the overall climate within the project team due to the listening changing the costs of social interactions on all parties' sides.

Contributions to theory

The exploration of the two research questions clarified that listening practices can contribute to psychological safety in interdisciplinary research groups and act as an enabler for creating a project climate in which meeting each other equally, respectfully, and openly for establishing supportive relationships within the team is desired. Thus, in alignment with previous research (Castro et al., 2016; Castro et al., 2018; Itzchakov et al., 2015; Sharifirad, 2013; Itzchakov & Kluger, 2017) that quantitatively explored the relationship between listening and psychological safety. This qualitative study offers deepened insights into how listening contributes to psychological safety. Moreover, this study provides an understanding of the interdependence of listening and psychological safety by identifying low team psychological safety as a hindrance to listening and listening as an enabler for fostering psychological safety.

Additionally, a better understanding of various hinders of listening in interdisciplinary project work was gained. Approached through a perspective of social exchange theory, active listening can be understood as a prerequisite for social exchange and functioning as both, a cost due to requiring mental effort, and a reward, which is received in interaction and fulfills psychological and social needs. Listening can be considered a prerequisite for the exchange of information as resources in interactions because it enables information and support to be received. The analysis exemplifies that when listening is performed well, the costs of interactions can be minimized. However, listening encounters many hindrances in interdisciplinary project work because listening actively simultaneously causes and reduces costs. Whereas listening to others can be a reward to *them* and reduce *their* costs of speaking, listening actively demands *own* mental and physical effort from the listener, which causes costs.

Consequently, the challenge of listening in interdisciplinarity lies in ensuring a rewarding interaction for project members, so that they are willing to accept the costs of engaging in

a form of mental effort to actively listen to others. A rewarding outcome can be ensured by (1) communicating reason and building motivation for team members to engage in rewarding interdisciplinary discussions, and by (2) decreasing the costs of engaging by preventing not the costs of active listening from arising, but by preventing other hinders of listening to interfere and demand additional energy. Additionally, due to active listening being energy-demanding, it is a challenge to reach the tipping point where listening begins to become easier. Then, engaging is enabled more naturally because costs are lowered, and engagement is reinforced by each other's listening. Hence, coworkers can reciprocally produce and reproduce a climate that is characterized by active listening and psychological safety. Active listening can therefore be considered as a strategic investment of effort to build a base on which other's costs are minimized, positive outcomes are increased, and social exchange of information as well as support in fruitful interdisciplinary dialogue is enabled.

Implications for practice

Project leaders and internal communicators must be aware of the reciprocal relationship between active listening and psychological safety in project groups. Since introducing the concept of psychological safety to the group was not found to increase team psychological safety (cf. Dusenberry & Robinson, 2020), promoting active listening by discussing rules of project communication can be a key to unlocking psychological safety due to the contribution of active listening practices to psychological safety. To enable active listening it is moreover necessary to find strategies to minimize cost-increasing hinders and to motivate team members to listen by communicating rewarding reasons to engage in the project. Due to active listening competing with hinders to listening for project members' energy as a prerequisite to engaging, mental energy must be made available by decreasing the costs and enhancing the outcome of listening to foster active listening in interdisciplinary project work.

Whereas taking each other's perspective is inevitable for interdisciplinary discourse, it is also a needed skill for effective listening (Heide & Svingstedt, 2024; Dahm et al., 2019), which is beneficial for all kinds of project work. To ensure inclusive communication across disciplines, and thus, across traditions, Moreno-Cély's (2021) listening-based framework of the circle of dialogue of wisdom can be an approach to accept the co-existence of knowledge systems, to avoid power and subjectivities reducing the possibilities of an inclusive dialogue, and to prevent imposing own ideas by letting go of thinking in own disciplinary boundaries.

Overall, the results suggest that in practice, the costs of engaging in social exchange must be reduced to enable people to interact in interdisciplinary project work. As previously identified, external hinders to listening can be minimized by reducing the heightened costs of interacting resulting from these hinders. Therein, functioning leadership plays a key role, as it connects to all identified external hindrances. Leaders can actively support shaping a project culture, which values the diversity of interdisciplinarity and the various perspectives within. Consequently, functioning leadership and management of interdisciplinary project work can also support balancing out unevenly distributed power by making a variety of perspectives heard, fostering interactive expertise as the needed knowledge to interact, and to actively listen to new perspectives. Furthermore, project leaders can provide some of the prerequisites for social exchange such as spaces and timeslots to meet, which are available and inviting to connect with each other. As previous research suggests, leaders also play an important role in fostering psychological safety (Pounsford et al., 2024; Edmondson, 2019; Heide & Svingstedt, 2024) and team psychological safety (Edmondson, 1999). However, as the results suggest, listening from coworkers within the group also contributes to fostering a psychologically safe environment. Therefore, leaders must also use their position to counteract external hinders, reducing externally induced costs of interacting, to foster team psychological safety as well as a functioning and productive project environment.

A psychologically safe project climate supports overcoming barriers to listening as well as speaking up. In alignment with Dusenberry and Robinson (2020), interviewees report an enhanced climate and being more confident to speak compared to the starting phase of the project, which speaks for the emergence of psychological safety improving with time spent together. Hence, taking time to build relationships, is of utmost importance at the beginning of project work to decrease the costs of interacting with each other. Especially in interdisciplinary work, where individuals seem particularly different from one another, it is beneficial to provide time and space to genuinely understand each other's fields and interests.

During the interviews, it became evident that internal project communication was not discussed at the beginning of the project work. Thus, group discussions would not follow any communication rules, which can lead to certain individuals overpowering others, hindering active listening, and getting lost in energy-demanding but unproductive discussions. Also, the task of moderating discussions in the group was criticized. Therefore, good leadership in interdisciplinary projects can help to facilitate interdisciplinary and inclusive discourse by minimizing barriers to participation and freeing resources to invest in fruitful interactions. Furthermore, leaders can help to establish a listening culture by practicing active listening themselves.

Moreover, leaders, who actively listen can contribute to psychological safety (Pounsford et al., 2024; Edmondson, 2019; Heide & Svingstedt, 2024) and to coworkers' well-being (Jónsdóttir & Fridriksdottir, 2019; Sharifirad, 2013). Consequently, leaders should function as role models and strategically use their position to support fostering a listening culture that lowers the costs of interaction within the project by listening themselves. Then, reciprocating listening can be a facilitator of further engagement, and a basis to grow mutual trust and psychological safety, which ensures that costs of engagement are kept low.

Suggestions for further research

This study highlights that listening in connection to psychological safety must be explored on a coworker level to ensure reinforcing a group climate which is in favor of facilitating psychological safety to enhance successful project work outcomes as well as project work experiences. It became evident that the way that project members listen to each other has a great impact on relationships and the overall climate within the group. Since research focusing on listening from a coworker perspective is sparse, further research should explore the impacts of listening on coworker behavior and well-being. Moreover, how psychological safety can be fostered by coworker behavior should be explored in organizational settings to improve organizational cultures to benefit employees' mental health needs. The identified ways of listening contributing to psychological safety can further be explored quantitatively to explicitly research the effects of appreciation, validation, respect, and openness, through listening on feeling psychologically safe in project work. Lastly, due to the importance of strategic listening practices for effective interdisciplinary work, how a listening culture can be fostered in interdisciplinary settings is worth exploring, both from a coworker perspective as well as through the lens of leadership in interdisciplinary settings.

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Appendix A: Interview Guide

General information about the interview & interviewee

Interviewee	
Date, Time & Location	

Introduction to the interview

Thank you for agreeing to having this interview with me. Your insights will help me with my study about **the role of listening in interdisciplinary project work.**
The interview is scheduled to last circa 45 minutes. As mentioned in the form of consent that I already sent you, I will record the conversation in order to transcribe and analyze the interviews. I will handle the recording with care, store it separately on a hard drive, and delete it after finishing the study. Only I will have access to the data.
All the information you share with me is confidential and every statement will be anonymized in the thesis.
Do you have any further questions about the process or the form of consent before starting the interview?

If I have your consent, I will begin with the recording now.

Questions

Introduction / Overall project communication

1. Can you shortly describe which kind of project you are working in and what your role is within it?
    - How does the structure of the project look like?
    - What is the goal of the project?
        - Teams/Hierarchies? Role of project coordinator? Dynamics?
        - Communication platforms
        - Language?
2. Can you tell me a bit about the **project meetings**? What are they like?
        - Communication with others
        - Communication challenges? Why? What makes it challenging?

Psychological safety

3. Can you tell me about your experience with speaking up in project work? (when and why are you speaking up? How do others respond?)
        - Motivation for speaking
        - How does your disciplinary background impact the way you communicate in the theme work?
        - How may the disciplinary background of other group members impact them?
        - Situations that make you comfortable speaking up? (what do they look like? what makes you feel like you can speak up/say anything?)

    - What about these situations makes you comfortable?
        - Situations where you don't feel comfortable speaking your mind? (what do they look like?)
    - Criticizing?
    - Asking for help/clarification?
    - Why?
        - Thoughts before speaking
        - In an ideal scenario: How would you wish others would behave when you speak up)

    Feeling heard

- What makes you feel heard?
- What makes you feel not heard?

Listening

4. Can you tell me something about listening in your project work? (discussed before? Awareness of listening?)
   - Which role does listening play in interdisciplinarity?

   You
   - How does the listening of others impact you?
   - How do you think does **your** listening impact others?
   - Do you feel like it's easier to listen to some project members than others? Why?

   Good listening
   - When does listening work well? When doesn't it?
   - In which situations are you focused on listening?
   - What are your reasons for listening?

   No listening
   - When are you not listening?
   - For what reasons are you not listening?
   - What hinders listening?

Conclusion

- Is there a difference in listening practices within the group now compared to when you started?
- What changed?
- How do you think can a project group and/or project leaders facilitate environments that promote listening?
- How do you think can a project group and/or project leaders facilitate environments that promote expressing oneself?

Appendix B: Information Sheet and Consent Form

Informed Consent for Participating in a Research Interview

Information about the research

Project Title	Understanding strategic listening in interdisciplinary project work
Purpose of the Study	The purpose of this research is to understand the role of strategic listening in interdisciplinary project work. The method of semi-structured qualitative interviews will be used to explore the research topic. I am inviting you to participate in this research project because you can give valuable insights on the researched topic based on your experiences collaborating in interdisciplinary project work.
Procedures	1. The procedures involve an interview of circa 45-60 minutes online on Zoom. The interview will be conducted in English. The researcher takes written notes during the interview as well as record the interview. Only the researcher has access to the recording. The recording will immediately be deleted after transcription. 2. The interview will be transcribed and can, if required, be sent to the interviewee. To ensure anonymity, the term "interviewee #" will be used within the transcription. 3. The transcriptions will be stored on an external hard drive which can only be accessed by the researcher. All data will be handled confidentially. 4. After approval of the study, the data will be deleted. The study will only be published on the database for student papers of Lund University.

Potential Risks	No potential physical or psychological risks could be identified.

Terms of participation

1. I have received sufficient information about the research project and I understand the purpose of my participation in the research project.
2. I participate in the interview voluntarily and free from any means of coercion. There are no direct benefits from participating.
3. I understand and agree to the procedure of the interview.
4. I have the right to withdraw from the participation in the research project at any time.
5. I have the right to not answer and skip any questions without having to give a reason.
6. I have been informed about the anonymity and confidentiality of the information discussed in the interview. The researcher has informed me to not identify me by name in any documents deriving from the interview including the final report. Further use of the data will be subject to the data protection policy at Lund University.
7. I have the right to withdraw my consent at any time without giving an explanation by contacting the researcher.

Please keep this document for your own record.
If you have any questions, or want to withdraw from the research project, please contact me via e-mail or phone: [redacted]

I,_____, agree to participate in a research study led by Christine Helling (researcher) from Lund University, Campus Helsingborg. This document confirms that I have read and agreed to the terms of participation in the study.

Date

Signature