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How do brokers broker?
Exploring brokering through a process perspective

Presentata da: Irene Sala

Coordinatore Dottorato

Chiara Orsingher

Supervisore

Cristina Boari

Co-supervisore

Andrea Lipparini

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Thesis overview

This PhD thesis explores the way in which brokers broker and aims to increase the understanding of how and why individuals perform brokering and thus facilitate interactions among other actors towards the achievement of innovative outcomes. It contains a collection of three papers, two empirical and one theoretical, taking a process perspective to address this issue and considering brokering as a behavioral process. Focusing on how brokering unfolds and on its underlying dynamics it provides empirical and theoretical contribution to the literature on networks, brokers, creativity and innovation.

Answering the question "how do brokers broker?" is particularly relevant. It not only allows to provide scientific contribution in understanding the processes through which brokers produce impact. It also addresses the need for useful models and frameworks that could enhance professional brokers' effectiveness within dynamic and complex processes in real life, such as in project networks aimed at producing innovative products or processes, or in social innovation arrangements intended at finding inter-disciplinary solutions to social issues.

To explore this issue the first paper investigates brokers' behaviors within a cross-sector partnership active in the north of Italy formed by multiple and heterogeneous members participating in a social innovation process to generate and elaborate novel solutions on how to tackle the issue of school dropout. I adopt a case study and multi-level process methodology and use an abductive approach for analyzing qualitative primary and secondary data collected from the field. I develop a multi-level process model showing how brokers, through their behaviors, facilitate the social innovation process' advancement over time, enabling the multiple and heterogeneous participants to generate novel collective solutions. Furthermore, I highlight how brokers' behavioral dynamics are in turn affected by the emergence of relational challenges from the innovation process.

The second empirical paper explores how brokers affect ties contents in a collective innovation setting. It uncovers the multiple basis on which individuals' relations build within an innovation process enacted within a highly heterogeneous and numerous group of partners of the same cross-sector partnership. It analyzes multiplex brokering as the behavioral process through which brokers make the multiplexity of instrumental and affective ties develop allowing participants' achievement of collective innovative outcomes. I adopt an interview-based study methodology and inductive approach and process perspective for analyzing qualitative data. I develop a process model showing how brokers combine instrumental- and affective-related behaviors to address multiplex dynamics of interaction throughout the different stages of the collective innovation process.

The third paper theoretically uncovers the fragmentation characterizing extant research addressing the question "how do brokers broker?" and proposes a novel definition of brokering aiming at laying the groundwork for a comprehensive stream of research based on a process ontology and epistemology. Borrowing from process and complexity theory, it also outlines an agenda for future research highlighting key points of reflection for increasing understanding of the processes through which brokers broker.

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Brokering in social innovation:
Influencing the collective generation of novel solutions*

ABSTRACT

Network research on the role of brokers in innovation has provided advancements in our understanding of the antecedents of brokerage position and of their effects on innovative outcomes. Nonetheless, the process through which brokers impact the generation of novel solutions to complex problems is still mostly unexplored. Using a qualitative and multi-level process approach, we explore how brokers behaved within a social innovation process performed within a multi-actor cross-sector partnership settled in the north of Italy and involving multiple heterogeneous actors with the aim of generating novel and useful interdisciplinary solutions on how to tackle the high local rate of school dropout. We analyze the behavioral process that brokers performed to facilitate the unfolding of relationships among heterogeneous participants throughout the first phases of the innovation process focusing on the generation of collective novel solutions. Setting the tone, facilitating cognitive flexibility, providing guidance and providing emotional support were the behaviors that brokers enacted to reach that aim. Furthermore, we highlight that the way in which these behaviors unfolded over time was linked to brokers' identification and addressing of relational challenges as dynamic factors emerging from the innovation process.

Keywords: Brokering, brokers, behaviors, relational challenges, social issue, social innovation, solution, process, heterogeneity, cross-sector partnership

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INTRODUCTION

Network research recognizes the important role that brokers can play for the achievement of innovation. Most of this investigation has traditionally assumed that brokers hold an advantage associated with their intermediary position within open triads, which provides them greater access to diverse information and knowledge (Burt, 1992) and consequently a better ability to generate new and good ideas (Burt, 2004; Fleming, Mingo & Chen, 2007). More recently research has shown that it is through their agency that brokers broker (Burt, 2012; Burt, Kilduff & Tasselli, 2013), producing impact not only on their own creativity but also on others' innovation processes and outcomes (Obstfeld, 2005; Lingo and O'Mahony, 2010; Obstfeld, 2017). Following this acknowledgment research has widely started explaining brokers' performance on the basis of their personal characteristics, psychological traits and cognition (Tasselli, Kilduff & Menges, 2015; Obstfeld, Borgatti & Davis, 2014). More rarely, it has investigated brokers' behaviors (Spiro, Acton & Butts, 2013; Quintane & Carnabuci, 2016) and behavioral processes (Lingo & O'Mahony, 2010; Burt & Merluzzi, 2016; Obstfeld, 2017) to understand how they impact on network changes, processes and outcomes.

However, while taken as a whole these studies have provided important evidence of the role that brokers' agency has for innovation, the understanding of the process through which brokers influence others' generation of novel solutions remains still underdeveloped. This knowledge is especially relevant in innovation contexts where multiple and heterogeneous people engage in the process of addressing complex problems. As for instance in project networks aimed at producing innovative products or processes, or in social innovation arrangements intended at finding inter-disciplinary solutions to social issues. These contexts are usually characterized by numerous and complex social interactions among the heterogeneous actors involved who often have no shared understanding of the underlying causes of the problem to be addressed nor of how to define it. Brokers can play a key role in

facilitating interactions among participants and this requires them to perform labor intensive brokering for enabling the bridging of different perspectives, visions and interests (Obstfeld et al., 2014).

The purpose of this paper is to provide new understanding of how brokers influence a social innovation process through facilitating the generation of novel collective solutions among multiple and heterogeneous actors. We conducted a longitudinal qualitative study taking a process perspective (Langley, Smallman, Tsoukas, & Van de Ven, 2013) to explore the behavioral process that brokers performed within a multi-actor cross-sector partnership (Selsky & Parker, 2005) active in a Province in the north of Italy and having the aim of finding novel solutions on how to tackle a local social issue: the high rate of school dropout.

In this way we offer two important contributions to organization studies. First, we provide grounded evidence of patterns of behaviors that individual brokers performed to facilitate the generation of collective solutions within the social innovation process over time. These behaviors were performed to facilitate the unfolding of relationships among heterogeneous participants, with the aim of enabling mutual understanding and perspective integration, necessary conditions for achieving collective solutions to which all the parties could be aligned. *Setting the tone*, *facilitating cognitive flexibility*, *providing guidance* and *providing emotional support* were the behaviors that brokers enacted to reach that aim. Second, we propose a multi-level process model to foster the understanding of how brokers broker to produce impact on a social innovation process involving a plurality of actors. We highlight how brokers' behavioral process affected and was in turn affected by the innovation process. In particular, to enable the collective process to advance till the reaching of a novel collective solution, brokers had to be aware of and address the relational challenges emerging over time from the innovation process.

THEORETICAL BACKGROUND

From brokerage to brokering: uncovering the role of brokers' behavioral processes in impacting innovation

Brokers have been widely investigated to uncover their association with the production of innovative outcomes. Network scholars have traditionally studied the role of brokers in the generation of innovation following structural hole theory (Burt, 1992). Early research has considered brokers as intermediaries positioned within open triads where they bridge two otherwise unconnected alters (Burt, 1992). Taking for granted the role of agency (Burt et al., 2013) it has emphasized that it is thanks to the position they cover in the network that brokers produce novel and creative outcomes. Scholars refer to this position as "brokerage", and look at it as bringing with itself an information advantage to brokers, allowing them to transcode, transfer and draw analogies between knowledge and information coming from the intermediated parties and eventually synthesize them to generate novel and good ideas (Burt, 2004).

More recent research has recognized the existence of differences in brokers' performance and the limitations of the traditional structural view in capturing the underlying mechanisms leading to this diversity (Burt et al., 2013). This has resulted in the introduction of the idea that what explains these differences is the agency linked to brokerage, that makes brokers able to produce change. Indeed, the advantage brokers have in producing innovative outcomes does not result only from the position they cover in a network and the related possibility to access diverse information or knowledge, but it is rather a consequence of the agency through which they process diverse information to make diverse contacts communicate (Burt et al., 2013). The broader view of brokerage resulting from this shift of thought has also led to the acknowledgment that brokers can be encountered not only in open triads but also in closed settings (Obstfeld et al., 2014), where their intermediary position allows them to facilitate and

coordinate interactions between already connected alters (Obstfeld, 2005). In line with this new understanding, scholars have started studying not only the effects that brokers produce for themselves as *tertius gaudens*, benefiting from their position for their own creativity, but also the influence they have on others' achievement of innovative outcomes (e.g. Hsu & Lim, 2013; Tortoriello, McEvily, Krackhardt, 2014; Obstfeld, 2017; Clement, Shipilov, & Galunic, 2018; Balachandran & Hernandez, 2018).

A set of studies have followed, investigating brokers' personal characteristics (Jang, 2017; Brands & Mehra, 2019), personality and psychological traits (Burt, 2012), including self-monitoring (Mehra, Kilduff & Brass, 2001; Oh & Kilduff, 2008; Sasovova, Mehra, Borgatti & Schippers, 2010; Tasselli & Kilduff, 2018), the Big Five personality traits (Fang et al., 2015), sense of power (Landis, Kilduff, Menges & Kilduff, 2018), strategic orientation (Obstfeld, 2005; Obstfeld et al., 2014; Kauppila, Bizzi & Obstfeld, 2018; Grosser, Obstfeld, Labianca & Borgatti, 2019), and cognition (Janicik & Larrick, 2005; Brands & Kilduff, 2013; Kleinbaum, Jordan & Audia, 2015) in the attempt to explain the reasons why individuals cover a brokerage position and produce impact.

Reinforcing this shift towards agency some scholars have acknowledged that the "action problem" linked to brokers' bridging position and related to the difficulty of mobilizing and coordinating people, is also in need for investigation (Obstfeld, 2005). Obstfeld, Borgatti and Davis (2014) have claimed the separation of the concept of brokerage as a social behavior from the structural notion of brokerage. These authors have defined brokerage as a process, such as the "behavior by which an actor influences, manages, or facilitates interactions between other actors" (p. 141). This has entailed the recognition that it is through their actions that brokers can produce impact (Burt, 2012) and has thus uncovered the importance of studying the process through which brokers' behaviors impact the creation and perpetuation of innovation. This novel definition has opened towards the investigation of "brokering", as the "behavioral

processes through which organizational actors shape others' relationships" (Halevy, Halali & Zlatev, 2019, p.215). Nonetheless, only few studies have until now exploited the explanatory value of this behavioral perspective and investigated how brokers behave as an important element to be analyzed for uncovering how they produce impact. Most of them have focused on some specific set of actions that brokers perform, such as information brokering (Quintane & Carnabuci, 2016) and structural brokering (Spiro et al., 2013; Burt & Merluzzi, 2016), linking the analysis of brokers' behaviors to the dynamic changes occurring in the structure of the network in which they are embedded. Others have highlighted the behaviors that brokers perform in correspondence with different conditions characterizing the context in which they intervene (Kellogg, 2014) and in relation to different strategic orientations (Soda, Tortoriello & Iorio, 2018). A smaller number of studies have instead focused on the exploration of the behavioral process that brokers perform to enable the achievement of innovative outcomes and processes. Obstfeld (2017) has specifically shed light on the process of knowledge articulation and the related communication actions that brokers perform to transfer, translate and transform knowledge with the aim of achieving novel outputs from innovation projects. Instead, Lingo and O'Mahony (2010) have focused on the sequence of practices that brokers performed to achieve creative synthesis and integration along a collective creativity process, highlighting that brokers changed their strategic approach to reduce different kinds of ambiguity arising throughout the process.

This research has provided important contributions to the understanding of brokers as agents producing impact through their actions and of the role they can play in knowledge articulation and ideas synthesis and integration. Furthermore, it has opened towards a first understanding of the process through which brokers perform their actions to produce impact, and the conditions (in terms of context-specific ambiguities) that shape their actions. Nonetheless, further investigation is needed to achieve a comprehensive understanding of the

behavioral process through which brokers influence the advancement of innovation processes and of the dynamic factors influencing how these behaviors unfold over time. Especially, we still have scarce knowledge of how brokers facilitate the process laying the foundations of the production of innovation, entailing the generation of novel solutions on how to tackle complex problems. In this process, solutions are often created from scratch from the multifaceted interactions occurring among multiple and heterogeneous actors working together for achieving a collective outcome (Hargadon & Bechky, 2006; Harvey, 2014). Studying brokers in these heterogeneous contexts has the potential to provide important advancement in our understanding of brokers in action, as it allows to uncover the complexity linked to their brokering dynamics. Indeed, "[w]hile broker facilitation occurs in all structures, such facilitation becomes more labor intensive in the face of heterogeneity", requiring the broker to respond to the "challenge of coordinating people with different interests, unique perspectives, and language" (Obstfeld et al., 2014, p. 153).

With this paper we aim to provide new understanding of how brokers influence an innovation process through facilitating the generation of novel collective solutions. In particular, we explore the behavioral process that brokers performed while intervening in the first phases of a process of social innovation entailing the involvement of multiple and heterogeneous actors in the collective generation of novel solutions on how to tackle a local social problem: the high rate of school dropout.

SITE AND METHODS

For addressing our research question, we chose to analyze brokers' intervention within a social innovation process in a cross-sector partnership. Because of the limited understanding of the phenomenon under inquiry, we analyzed the empirical setting as a single case study (Dyer & Wilkins, 1991; Siggelkow, 2007) taking a process perspective (Langley et al., 2013) to uncover

the behavioral process through which brokers influenced multiple and heterogeneous actors in the collective generation of novel solutions to a social issue.

The cross-sector partnership chosen is an ideal and privileged site to explore for obtaining these answers. On the one hand, cross-sector partnerships are inter-organizational collaborations involving multiple participants from different sectors (public, private for-profit and nonprofit) formed explicitly to address social issues and causes (Selsky & Parker, 2005). They actively engage members in addressing social challenges arising in sectoral interstices (Selsky & Parker, 2010; Gray & Purdy, 2018) in novel and interdisciplinary ways. Thanks to the involvement of people coming from different sectors and viewing social problems from different perspectives, these organizations have the potential to illuminate needs and causes otherwise unintelligible (Selsky & Parker, 2005), and thus to address social issues through the strategic and novel combinations of ideas, resources and capabilities (Le Ber & Branzei, 2010). These differences, while nurturing the chance to produce social innovation, can lead to the emergence of complex and chaotic relationships that can put at risk the successful generation of novel and collective solutions. Indeed, success goes beyond the simple matchmaking between partners or the signing of a resource sharing agreement but is highly linked to the way in which individual participants develop a shared understanding of the problem, of the process through which they are going to tackle it and of the common goal they aim to attain (van Tulder & Keen, 2018). Within this context brokers can play an important role as (internal or external) bridging agents facilitating the integration of different perspectives and interests (Manning & Roessler, 2014; Stott, 2019).

On the other hand, the process towards the generation of novel solutions developed within the chosen cross-sector partnership had an extended duration of almost two years (since end-2013 till mid-2015), which allows an in-depth view of the unfolding of events, activities and choices that led to the generation of collective innovative outcomes, of the actions and

behaviors that a plurality of brokers enacted within this process and of the dynamics underlying this behavioral process (Langley, 1999).

The empirical setting

The empirical setting chosen for this study is a local tripartite cross-sector partnership involving individuals coming from organizations in the public, private non-profit and for-profit sector and formed in 2013 thanks to the triggering activity of a Community Foundation (a private entity) active in a Province in the north of Italy. The aim was to engage the whole local community in providing novel and inter-disciplinary answers to address a local social issue: the high rate of school dropout.

To overcome its previous failures in involving the local civil society in the implementation of mutually reinforcing actions to address local problems, in particular related to youngsters and their families, the Community Foundation had embarked upon the introduction of the concept of collective impact[1] in the local community. As this approach was till then mostly unknown in the national and local realms, its President and General Secretary had sent an external collaborator for some months in the United States of America, where the approach was already widely adopted, to study its implementation. The idea was to shift from the traditional model of providing grants to organizations for the implementation of single (even if related) projects to tackle a same social issue towards the building of a network of organizations from different sectors that could work together in a common project.

In 2013 the Foundation's external collaborator came back from his study trip and presented the main features of the collective impact approach to the Board of Directors. As a first move for starting its implementation, the Community Foundation decided to bring together

[1] "Collective impact" is a structured and disciplined approach for bringing cross-sector organizations together to focus on a common agenda that results in long-lasting social change (Kania & Kramer, 2011).

in one room the main local authorities of the Province[2] to ask them which was the most important and urgent social problem that needed to be faced in the territory. They all agreed that the increasing number of minors dropping out from school was the most alarming one, as its percentage was higher respect to the national average rate and increasing over time. "Out of 100 students from [the Province] who start any high school - either professional institutes or other kinds of high schools - almost 30 do not reach the end"[3], quoted an article in a local newspaper in December 2013.

As an indicator of widespread youngsters' distress, the issue was strictly linked to difficulties emerging at different levels of society (e.g. the family, the school, the society) and to other transversal complex social issues (e.g. the high immigration rate, the high consumption of drugs among adolescents) characterizing the local area. While it was surfacing at the interstices of public sector, businesses and civil society, it had till then been addressed with single organizations' individual interventions, which had resulted in maintaining the rate of school dropout high and even increasing. The lack of recognition of the joint responsibility of all social actors had provided an institutional void (van Tulder & Keen, 2018) that could be covered only with innovative and joint interventions.

Given the complexity of the issue and its importance at societal level this was the right occasion to introduce the concept of collective impact in the local community. Indeed, an articulated strategy for systemic change actively involving the entire community was needed to address the issue. Since the end of 2013 more than one hundred people from the community, coming from organizations working with juvenile discomfort and with youth and families in general, started joining in several meetings to discuss about this problem and try and define it

[2] The Prefecture, the Provincial authority, the Court, the Municipality, the Scholastic Office, the University, the Main Hospital, the local Health Authority, the Chamber of Commerce, the Italian National Olympic Committee, the Diocese, the Trade associations, the local cooperative banks and another Foundation.
[3] Our own translation from Italian. The original article is available at https://www.corrieredicomo.it/fuga-dai-banchi-di-scuola-a-como-i-numeri-peggiori/

more accurately. In April 2015 they presented the novel collective solutions they had jointly developed on how to prevent, tackle the social issue and offset its consequences and addressing different age ranges of the youngsters. Table 1 provides an overview of the participants to the discussions within the founding group of the partnership and in three sub-groups: Early Childhood, Open Schools and Social Entrepreneurship, and of the novel definition and solutions elaborated in each group. We stopped our analysis in that month, when the partnership had the opportunity to participate to a local competition to receive a grant and the solutions elaborated were included in a project proposal and submitted for evaluation to the grantee.

Insert Table 1 about here

Data collection

The data presented in this paper cover the period between September 2013 and April 2015 and were collected as part of a larger research project aimed at understanding how brokers' behavioral dynamics affect the sustainability of a project network over time, and specifically of a cross-sector partnership (Manning, 2017). As we engaged in the study, we especially got interested in the first partnering stages concerning "problem setting" and "direction setting" (Stadtler & Probst, 2012). Indeed, these could provide an illustrative case of the complexity of relations that develop within a social innovation process engaging multiple heterogeneous individuals in the definition of a complex social problem and in the collective generation of novel solution on how to address it. Within this process, some of the participants were acting as brokers and had a great impact in facilitating the integration of different perspectives among participants, affecting the advancement of the process and supporting the achievement of collective innovative outcomes. It was an interesting case for observing the dynamics underlying brokering within a social innovation process.

Data collection started in May 2017 and followed different stages. We used semi-structured interviews and archival data to reconstruct the social innovation process. We conducted interviews with the key actors (both brokers and participants) who more actively participated in the collective process. We first employed a snowball procedure to select our informants. After an initial meeting with the external collaborator, who presented us the partnership case and suggested further readings to deepen our understanding on the origins and evolution of the partnership, the first author conducted a semi-structured interview with the Community Foundation's General Secretary. This was aimed at collecting further data to assess the organizational structure of the partnership and the story of its evolutionary path, as well as to identify the actors who facilitated the interactions among participants throughout the process. To triangulate and deepen the information collected within these preliminary interviews we consulted archival data available at the Community Foundation (e.g. meeting minutes, lists of participants to the meetings, working documents, project proposals prepared for submission to funders, posts and documents published on the partnership's web community, information published on the partnership website, videos published on the partnership's web tv, journal articles, a book published with the story of the partnership, brochures and other communication material), and compared them with the information gathered through the interviews in order to avoid retrospective bias in the assessment of the evolutionary path of the partnership.

We realized further semi-structured interviews with the actors we had identified as facilitators within the partnership during the first interviews, in order to collect information on their engagement in the process and to assess their actual involvement as brokers. We identified a plurality of individuals behaving as bridging agents at different levels, both within the partnership's Technical Committee and within the sub-groups, in different moments of evolution of the partnership. We focused on three brokers who had a more active role in facilitating interactions among participants with different perspectives and interests within the

founding group of the partnership, in its Technical Committee and in the three subgroups selected for analysis: the *external collaborator*, intervening as bridging agent within the partnership group, the Technical Committee and in all the three sub-groups with different degrees of involvement; the *pediatrician*, as the Early Childhood sub-group coordinator; and the *university professor* as the Open Schools sub-group coordinator.

To triangulate and deepen the information already collected we interviewed other actors among those most actively participating in the partnership. We used semi-structured interviews to help interviewees reconstruct a narration of the events, activities and actions occurred within the partnership over time as well as of their experience within the process and their perception of how relationships unfolded. Events identified during the previous interviews and through consultation of archival data were used to help respondents in linking their memory about actions to "facts" (Adriansen, 2012) in the attempt of avoiding retrospective bias. We interviewed some of the participants twice in order to get further understanding of their narration. In total we conducted 21 interviews with 17 informants. Despite the low number of people interviewed respect to the total number of participants in partnership work, we are confident of the representativeness of the sample. The people interviewed were selected after recommendation by key informants and our examination of the lists of participants to each meeting as those who most actively participated in the process. Data were collected till the reaching of theoretical saturation. Table 2 provides an overview of the participants interviewed and of their roles within the partnership.

Insert Table 2 about here

Data analysis

Data analysis followed an abductive approach with several iterations between data, interpretation and theory (Strauss & Corbin, 1998) in a process of attaining the best explanation

(Lipton, 2003) of the dynamics underlying brokering as the behavioral process influencing the collective generation of novel solutions within a social innovation setting. Following our first round of interviews and the consultation of archival data we developed a case study of the partnership to describe its founding, timeline and changes in structure. We used this case as the starting point to analyze the evolution of the social innovation process (Langley, 1999). We identified two main outcomes that emerged over time in the period analyzed and that had been mentioned by most interviewees: 1) the development of a collective definition of the social issue and 2) the generation of novel collective solutions on how to tackle the social issue. Each of these was that result of the collective effort of multiple participants and of the facilitation provided by different brokers with the aim of producing a collective innovative answer to the local high rate of school dropout. We interpreted those outcomes as milestones and used them to temporally bracket the social innovation process into two phases: phase 1) Developing a collective definition of the social issue; and phase 2) Generating novel collective solutions.

We further analyzed the interviews collected and coded notable themes emerging from the data using NVivo 12 as a software for qualitative data analysis. More than 50 codes resulted from this analysis. Some of them captured partnership activities, including *Partnership meetings* (timing, kind of confrontation, heterogeneity of participants), *Strategy changes* (from a sole focus on teenagers towards attention also to childhood and young adults), *Sub-groups formation* (which sub-groups, how they were formed, with which goals), *Sub-groups work* (participants, numerosity and heterogeneity, tasks, type of relationships, outcomes, brokers involved). Others related to the brokers, capturing for each of them *Brokers' characteristics* (who they were, why they were chosen as brokers, their personality traits, their brokerage position in the groups), *Brokers' actions* (how they engaged in group work, what they did, how they changed their way of acting over time) and *Brokers' outcomes* (which were their goals,

what they achieved, in what they failed). We wrote memos and draw visual maps tracking themes and we engaged in several discussions about our codes and the partnership's evolution.

Following these early rounds of open coding we began to realize that brokers actually had a role in the progress of partnership work (both within the partnership's founding group and in the sub-groups) and in the achievement of collective outcomes. We thus focused our second stage of analysis on understanding how events had developed over time and what were the key elements that allowed brokers to impact them. We tracked the advancement of the social innovation process over time and assigned events within the two previously identified phases. We then attached to each phase the groups and brokers involved in the implementation of activities and the outcomes achieved (see Figure 2).

About brokers' intervention within the process, we first proceeded in identifying brokers' structural roles as conceptualized by Gould and Fernandez (1989) and how they were changing over time. We tracked their evolutionary path within the partnership in the period analyzed to find an explanation of brokers' impact on events and outcomes. Nonetheless, in line with Thompson (2011), we realized that the sequence of snapshots related to structural roles within the network, that existed in discrete moments, was not adequate to describe the whole continuous unfolding of events characterizing the social innovation process, and thus to explain how and why brokers were able to produce impact on it over time. As a second attempt, we focused on recording each broker's personal traits as potential elements of explanation. For doing this we asked the Community Foundation's administrative office to receive the CVs of the three brokers under inquiry and we integrated their analysis to the related codes within *Brokers' characteristics*. While this exercise did provide some interesting insights on brokers' predispositions and behavioral inclinations, we became conscious that these findings alone were not going to enable us explaining how brokers influenced the social innovation process' advancement over time, as they were still too static. Eventually, encouraged by Lingo and

O'Mahony's (2010) claim of the need to focus on "the work brokers engage in when connecting disparate people, knowledge, or ideas" (p. 49) "to produce the most insightful grounded theories as to how brokerage on collaborative projects unfolds" (p. 52), we shifted our attention on *Brokers' actions*. We thus proceeded in coding all the practices (Jarzabkowski, 2004) that were reported by our interviewees as being performed by the three brokers to facilitate the social innovation process' advancement (first column Figure 1). We then gathered those practices according to the different intent they aimed to fulfill into actions. In this way we identified eight actions that brokers performed (second column Figure 1). We then joined them into behaviors, intended as aggregated or patterns of actions through which brokers attempted to "effect a change from a state of affair to another" (Bergner, 2011). After countless confrontations between the two authors and comparison with the literature, we agreed in building four aggregate dimensions: *Setting the tone*, *Facilitating cognitive flexibility*, *Providing guidance* and *Providing emotional support* (third column Figure 1). In order to have a visualization of the timing in which these behaviors were performed, we took note of the phase of the social innovation process in which each single practice was executed and we distinguished them with a sign (see first column Figure 1). We then built a timeline of the sequence of behaviors that the three brokers enacted throughout the two phases (see Figure 2).

Insert Figure 1 about here

Having acknowledged the importance of identifying how brokers behaved to understand how they impacted the process' advancement and outcomes, we realized that we were still missing a clear understanding of the dynamics underlying the behavioral process uncovered. Why did brokers change their behaviors over time? We thus began to discuss more in depth how the progress of the social innovation process and of the brokering process might be related. Initially alerted by a input coming from one of our interviewees, we realized that, given the

multiplicity of participants within both phases of the innovation process, to have a clearer view of how the process had advanced we needed to get a deeper understanding of how relationships had unfolded among participants. We then engaged in collecting further interview data from participants and we analyzed them following a narrative inquiry approach (Clandinin & Connelly, 2000). For instance, we used the information collected from the interviewees as narratives (or stories) embodying participants' own individual internal representation of the social innovation process (e.g. events, thoughts, feelings), with the aim of uncovering how they experienced the events occurring throughout the process and how they perceived that relationships among participants unfolded during these events. We then coded the main events on the basis of the relational challenges that participants had experienced. We identified *Content ambiguity* (related to the contents of the discussion) and *Process ambiguity* (related to the way in which the process of collective generation of novel solution was unfolding) as two challenges linked to the collaboration itself (Zuzul, 2018) and *Cognitive barriers* (related to participants' inability to integrate their perspective with others') and *Emotional barriers* (related to participants' lack of motivation and engagement in the process) as two challenges linked to the psychological underpinnings of collaborating (Offermann, Bailey, Vasilopoulos, Seal, & Sass, 2004). Figure 2 provides a representation of the challenges attached to each event.

Insert Figure 2 about here

Subsequently, we concurrently analyzed the data related to the challenges attached to the activities/events carried out within the partnership and the sequence of brokers' behaviors. We coded specific circumstances where dynamics occurring within the social innovation process were somehow affecting brokers' behaviors and the other way around, and started thinking through potential explanations. As we mapped the feedback dynamics, we eventually tracked multiple cycles of interactions over time and uncovered how brokers were adapting their

behaviors to address relational challenges as dynamic factors emerging from the innovation process.

FINDINGS

Facilitating the development of a collective definition of the social issue (September 2013 – May 2014)

Our analysis revealed that since its early birth the external collaborator intervened in partnership's meetings. He was a voluntary consultant of the local Community Foundation and during the first encounter he participated as a rapporteur to present the collective impact approach to the participants. Thanks to his knowledge and previous experience in other partnerships, participants soon started recognizing him as the coordinator of the group. He assumed this role to facilitate members' relationship and performed four brokering behaviors throughout this phase. First, he proceeded at ***setting the tone*** of the discussion. For *setting a common ground* on which the confrontation could start and further develop he introduced the collective impact approach as a new methodology that they could follow during partnership work. The methodology presented worked through sequential stages, involving the collective analysis and definition of the social problem, the agreement on a common partnership goal, and eventually the generation of collective novel and more effective solutions about how to address the social issue coming from the combination and integration of different perspectives and knowledge. He "was keeping the *fil rouge* of the discussion, making us think about the causes [of the social issue], about what we should address, what were the key elements on which we had to intervene", one of the members remembered. He used posters on which he took notes during the meetings to make participants visualize their interventions and wrote summaries of each meeting. "And then all this was summarized, it was re-sent, there was reflection on our part". Through his intervention he disciplined the group towards the correct adoption of the work methodology, *setting the rules* for the discussion to unroll according to its progressive

stages and avoiding participants to jump to solutions without having discussed about causes and goals.

Second, the broker engaged in ***facilitating*** participants' ***cognitive flexibility***. He referred to the collective impact methodology, "that was a new stuff for everyone", also to enable participants stepping out from their own perspectives and "get out of our role […] and context", bringing them "continually to a general interest, to remove oneself from one's own identity, to focus on the goal of school dropout" and to become open to other people's perspectives, *enhancing cognitive openness*. For doing this he adopted brainstorming techniques for "figuring out where to go, […] what were the priorities" and to "try and give a definition to school dropout". This was undertaken not only to help members to envision the potential contribution of their own vision but also to allow them eliminate stereotypes and prejudices and recognize their same value in others, and thus allow to internalize others' knowledge and perspectives. The external collaborator intervened in the discussion pushing participants to challenge their visions and *facilitating perspective integration*, being provocative and challenging their frames of reference, "to stimulate thought" and push them to "bet high".

Third, he took a mentoring and monitoring position ***providing guidance*** to the participants to "get them to do what this collective impact methodology envisages", helping them to row towards the milestones characterizing it. He engaged in *sustaining collective thinking* over time by supervising the discussion. While educating and accompanying participants in the adoption of the collective impact approach, he guided the group's work and the way in which discussions were developing, in order to enable the achievement of collective thinking and the generation of a collective definition.

Fourth, acting as a representative of the Community Foundation, an organization "that is legitimized by a strong consensus" by all participants and that "guarantees impartiality" given its "figure of neutrality and transparency", the broker engaged in ***providing emotional support***.

He built a sense that collective interactions were developing in a safe and neutral environment "guaranteeing [participants] the maximum freedom to speak among themselves", in this way *fostering intrinsic and prosocial motivation*. This behavior was also aimed at *providing reasons for commitment*. With this aim the external collaborator designed and administered questionnaires to ensure that everybody was participating in the discussion and expressing opinions freely. "Work has been done […] to get everyone exposed, to truly create a climate in which shared issues are discussed", one of the members said. Furthermore, "[the external collaborator] proposed a work plan that was […] impregnated of an ideal value. […] His proposal was playing an ideal chord. […] Something sounded in people". This pushed participants to believe in the possibility to achieve systemic change, increasing commitment.

Eventually, the emerging process led to the construction of a common language among participants and to a common definition of school dropout. Distancing themselves from the ordinary conviction that school dropout is a problem of the individual, of the family, or of the school, they built on the idea that it was a problem concerning the whole society, linked to the difficulty of establishing relationships. After several meetings and discussions, they all agreed that fighting school dropout meant caring for children from cradle to career, through the definition of a global strategy characterized by a balanced approach between prevention, intervention and compensation.

Facilitating the generation of novel collective solutions (June 2014 – April 2015)

Once participants had developed a collective definition of the social issue, it became clear that they were too numerous and with different predispositions toward the different aspects characterizing the partnership goal, that was eventually quite broad. To enable the partnership to proceed towards the generation of more concrete solutions on how to tackle school dropout, in mid-2014 the group decided to re-structure itself by splitting into sub-groups dedicated to

preventing, intervening on or compensating school dropout targeting different youngsters' age ranges. A Technical Committee was also created to support the process. This was comprising some of the participants in the previous phase of issue definition, and continued to be reunited periodically after convocation by the Community Foundation with the aim of confronting on the results of sub-groups' activities, providing feedbacks and suggestions, and eventually internal approval on the solutions generated.

From our analysis, focused on three of those sub-groups, we identified the participants who took a brokering role to support the process and facilitate interactions among participants with different perspectives and interests. Three brokers more actively intervened in this phase: the *external collaborator*, who kept the role of coordinator of the Technical Committee group, acted as Coordinator of the Social Entrepreneurship sub-group and participated in almost all the other sub-groups' meetings as an auditor, intervening when the discussion was stuck or deviating from the work methodology and the shared vision developed in the previous phase; the *pediatrician*, who was nominated by the Community Foundation as the Early Childhood sub-group's Coordinator, as a well-known pediatrician in the Province, also representative of the local Pediatric Network and a public person in the Province given her involvement as a municipal councilor in the local administration; the *university professor*, a physicist with several years of experience in dealing with science communication in primary and secondary schools and holding the role of delegate of the local University Rector for students' orientation, who emerged as the Open Schools sub-group's Coordinator thanks to her charisma, strong commitment and identification with the partnership objectives.

The sub-groups met for a period of one year to discuss about the issue, focusing on the causes rooted in different stages of youngsters' life and trying to generate common solutions to address these causes. Work was organized following the collective impact approach already adopted in the previous phase, in alignment with the partnership's shared vision and goals. New

participants joined the groups with the aim of enriching the discussion bringing in novel and specific competences on which to build multi-disciplinary solutions to tackle the problem in relation to the different age ranges.

In this phase each sub-group's meeting was coordinated by a Sub-group Coordinator who acted as collector of participants' ideas and reported the solutions generated to the Technical Committee for approval. As the work methodology was still new for everybody, though, the sub-groups were often deviating from the right path, suggesting solutions before having discussed causes or stalling in never-ending discussions. The external collaborator, who was auditing all meetings, stepped in to help participants to achieve sub-groups goals. The three brokers performed three brokering behaviors in this phase.

First, they enacted a ***setting the tone*** behavior. When new participants joined the sub-groups, all brokers intervened to make them aware of the already established "tone" of partnership's work. The external coordinator kept *setting common ground* acting as "a glue between the various sub-groups" and "a general supervisor […] of all the sub-groups, which anyway had interconnections". Indeed, he supported the Sub-group Coordinators and the other sub-groups' participants in keeping the discussion in line with the shared vision and goal established in the previous phase. This allowed him to have a complete view of the whole partnership's work advancement, driving the sub-groups towards a coherent path. Furthermore, he sustained the *setting of common rules* through making participants "stick to the collective impact methodology". As the General Secretary of the Community Foundation explained, "he also directed the discussion, but not as much as to say: [this] is the solution. That is, all the solutions to which [the sub-groups] gave life were born from them. But he obliged them to follow a certain methodology". He supervised the adoption of the work methodology, avoiding participants to jump to solutions without having fully examined problems and causes. "Because otherwise they would reunite and then again… they would get out a project".

> And when, suppose, even the [Sub-group Coordinator] was starting to come up with a solution that at that time should not be pulled out, [the external collaborator] was saying: no, stop, because it is not the time. We are doing something else, let's follow the correct methodology."
>
> *(From interview with the Secretary, 2018-05-03)*

Second, the external collaborator intervened for ***providing guidance*** in the discussion towards results. In this phase "in a moment of stall, [he] helped to activate a bit, to overcome that phase of difficulty and then focus on the product that was to be born from the group". For *sustaining* the *collaboration process* he stepped in the conversation when he perceived that the dialogue was stuck, "gathered the common feeling, […] interpreted it, reworked it and then said: do you share this?" and "help[ed] the group to move forward the discussion and produce a result". His actions were also aimed at *giving a sense of direction*, "ask[ing] [participants] to define goals and to go on starting from the various objectives. Because maybe the group was lost, right?". He helped the participants to take stock of the emerging common ideas about possible solutions, to realize their potential and to reach collective solutions' generation completion ("to get to a solution when it was necessary to arrive at a solution"). He also contributed to the discussion introducing analogies and examples of similar existing experiences he had knowledge about as starting points for the discussion to proceed and as suggestions for further elaboration of the solutions proposed.

Third, the Sub-group Coordinators sustained participants' expression of ideas and interests within the sub-groups. They acted as "collectors" of ideas and perspectives, supporting participants' sense of belonging in the sub-group and in the partnership as a whole, "trying to get things out" and *fostering intrinsic and prosocial motivation*. This action was enacted with the intent of ***providing emotional support***. For increasing participants' involvement in partnership work and *providing reasons for commitment*, both Sub-group Coordinators and the external collaborator also transferred to the sub-groups a strong sense of conviction about the ideal underlying the whole process, pushing participants to aim high and to keep engaged. They

also supported their claims providing evidence, with concrete data at hand, of similar successful experiences already in place in other settings. In particular, the external collaborator used his previous knowledge of real experiences already in place for making them aware of the potential impact of their common action. “He saw them realized, so he was the most convinced that they could be realized”.

Eventually, each sub-group came out with the solution of introducing a new professional figure, linked to each youth stage and with specific competencies and roles and with specific actions these new figures had to take to prevent and impact school dropout. This approach was needed for enhancing relations within the family, the school and the society. Table 1 provides a detail of the solutions elaborated by the three sub-groups.

How did brokering unfolded throughout the two phases of the social innovation process?

As showed in Figure 2 brokers performed the behaviors described above in different combinations and activated them at different moments in time. What can thus explain the behavioral changes that brokers enacted throughout the two phases? Why did brokers change their behaviors over time? Our data indicate that the brokering process and the social innovation process were interconnected. That is, brokers’ behavioral process was enacted to influence the process towards the generation of novel collective solutions on how to address school dropout. At the same time, the events occurring within the social innovation process affected how brokers performed their behaviors over time.

We discovered that brokers were actually adapting their behaviors as they were perceiving that participants were experiencing *relational challenges* that could endanger the innovation process’ success. This perception was enabled by their ability to capture those dynamic factors coming from the context and to flexibly calibrate their behaviors in order to address them. Figure 3 provides a representation of the co-evolution of the two processes and shows brokering dynamics.

Insert Figure 3 about here

Brokering dynamics

In our empirical setting, brokers focused their attention to the events occurring within the social innovation process to uncover brokering opportunities that could allow them to intervene facilitating interactions and to produce impact in the generation of innovation outcomes. This was done by capturing the *relational challenges* that characterized the unfolding of relationships among participants during those events. Four kinds of relational challenges were recognized. Then, they activated different brokering behaviors in order to address each challenge (see Figure 3)

First, participants in the social innovation process experienced ***process ambiguity***. They were individuals coming from the same territory but had rarely or never interacted with each other in common work, had little or no knowledge of each other's goals, interests and perspectives and had no clue about how to engage together to reach the partnership's goal. Through a ***setting the tone*** behavior the external collaborator anticipated this challenge by introducing collective impact as a work methodology with distinct steps that could be followed to achieve a collaborative outcome: the collective analysis and definition of the social problem, the agreement on a common partnership goal, and eventually the generation of new collective solutions on how to tackle the social issue. Nonetheless, as participants started confronting on the issue of school dropout it became clear that they had some difficulties in putting the approach into practice. "I am a scientist […]. I am a physicist, so I am used to work looking for solutions. And this idea that we should not find a solution but we should analyze the problem […] [entailed] a very difficult journey", explained us one of the participants. The General Secretary of the Community Foundation confirmed this tendency: "what [participants] wanted to do, and I think it's a bit the idea of everyone, was to say: 'well I already have the solution,

let's implement it. You are the [Community] Foundation, you put the money, we implement it'". Nonetheless, this was not in line with the work methodology everybody had agreed to adopt. As the external coordinator clarified, "if you go directly to the solutions, it can be the best solution in this world, but the solution divides, the solution does not unite. While the objectives unite. The moment you manage to get the discussion on the objectives, then you also create a common language. After this the answers emerge almost automatically. If instead we start immediately with: 'we must solve the problem', here is the thing. Surely this creates tensions and divisions". Thus, "here someone [was] needed to always clearly invite them… […] Let's say a coordinator who always invites them to stay calm, to reflect, to repeat a bit about the various things, where they want to go, which is the goal we want to set. Then the actions come from there". The external collaborator took this brokering role and enacted a ***providing guidance*** behavior.

The same behavior was performed in the second phase as participants in the sub-groups again showed necessity of support for being able to successfully engage in the collaborative process and produce a collective outcome from it. As the General Secretary explained us:

> "The coordinator of the First Childhood [sub-group] was the pediatrician responsible for all the pediatricians in the Province […]. So, she was competent in her field, right? But she was not competent on the technique of collective impact, she didn't even know what it was ... Yes, in the end by dint of repeating it to her... But there was always a need [of support] ... since it is a new thing. In fact, we were the first ones in Italy to import it. It is a completely different work method compared to what they were used to. It is not so easy to change the working method".
>
> *(From interview with the Secretary, 2018-05-03)*

The external collaborator stepped in to guide them through a somehow pre-defined trajectory considering sequential milestones to be achieved, impeding to stall in never-ending discussion loops and pushing them towards concretization. As one of the members explained "[he] was always present when the group did not go on. In the sense, if you ... I think he participated in

almost all groups, but when he realized that a group alone could not go on, that it was stalled, then he took over to help the group to move forward the discussion and produce a result".

Second, brokers identified brokering opportunities in correspondence with the arising of ***content ambiguity*** among participants. This challenge manifested at the very beginning of the first phase. On the one hand, exactly as expected for the adoption of the collective impact approach, participants "clearly spoke different languages" and "[some] thought one thing, others thought a completely different one" on the social issue they needed to discuss. As the external collaborator explained us "the goal [was] to achieve a systemic change, not to experiment with a solution and then bring it to scale. The idea is to say: the problems are complex, […] to actually solve them or deal with them adequately there is the need of so many elements [to be present] simultaneously... Building on a single piece eventually is useless, so we have to set up many elements that start in some way to row more or less in the same direction. This is the basic idea". On the other hand, participants showed great difficulties in managing the content of the discussion as envisioned by the work methodology in each of its steps. Furthermore, the discussion was stalling as they seemed not to be able to reach a shared vision and goal for partnership's work to build on. The external collaborator engaged in addressing this challenge through performing a ***setting the tone*** behavior, to enable the successful achievement of a common understanding, of a shared vision and goal and eventually the development of a common definition of the issue while respecting work methodology requirements. All three brokers, trough the same behavior, addressed content ambiguity also in the second phase. As the President of the Community Foundation told us, "if there was to describe the general picture to [participants] of how this intervention was placed within the [sub-group] and in the general context [of the partnership] maybe [the external collaborator] participated, in that sense". Indeed, despite the discussion built on the grounds developed during the previous phase, this challenge emerged again, mainly linked to the necessity of aligning the

members of the sub-groups, and especially the newly added members, to the shared vision and goals defined in the previous phase, to maintain sub-groups' work coherent with the partnership's goals and vision and to encourage the advancement towards the production of a collective impact.

Third, brokering opportunities were recognized in relation to the arising of ***cognitive barriers*** among participants. As in the first phase, the heterogeneous group of actors got involved in the process of collectively defining the social issue started confronting on a variety of different perspectives about school dropout, the discussion often stuck in never-ending debates on individuals' suggestions of pre-defined best solutions coming from their own experience. As the Secretary of the Community Foundation clearly stated, on the one hand "the first temptation of all these people was: I already have the solution to the problem of early school dropout in my pocket". On the other hand, they "have heard others telling them: no, explain it differently, otherwise we do not understand you". Given their lack of familiarity and their diversity of perspectives and interests, in order to be able to start discussing novel and collective solutions, participants had to be ready to expose their different perspectives and visions, engage in mindful exploration and acquire new information from others, synthesize and integrate them toward a common definition of the problem. Nonetheless, participants were unable to reach the cognitive flexibility needed, as they were yet locked in their roles and their own perspectives. Again, the external collaborator took the chance to intervene as a broker by performing a behavior aimed at ***facilitating cognitive flexibility***. This, with the aim of helping participants stepping out from their own perspectives and eliminating stereotypes and prejudices through cognitive openness, while adopting the new work methodology as a tool for achieving collective thinking and allowing them to get out from their self-interest and their original roles.

Fourth, ***emotional barriers*** also emerged, linked at the beginning to the inability of participants to communicate and exchange their views without restraints and their necessity to perceive the partnership as an environment allowing safe and free expression of perspectives, ideas and interests. For example, as the General Secretary explained, some participants "[…] [were] afraid even to communicate to others what they do, because maybe then 'I will be copied', things like this". The external collaborator addressed this challenge through ***providing emotional support*** by presenting himself as a representative of the Community Foundation, building a safe and neutral climate in which free expression of perspectives, ideas and interests was allowed and ensured. At the beginning of the second phase Sub-group Coordinators also performed this behavior, sustaining participants' expression of ideas and perspectives. Furthermore, during the first phase and at the end of the second phase, it appeared clearly that meetings were highly intense, both in terms of frequency in time and of intellectual work required for achieving collective thinking. Participants thus needed to maintain a high level of motivation to participate and belief in the usefulness of the whole process in order to sustain their commitment over time. The external collaborator and Sub-groups' Coordinators addressed this challenge providing the emotional support needed to sustain intrinsic and prosocial motivation and commitment, especially in moments in which difficulties emerged (e.g. when the temperature of the discussion became burning), endangering the success of the collective work. Indeed, as one of the participants explained us, "the people who were at the round table were, on average, volunteers". They were involved in the process as volunteers, participating to partnership work in their free time, or were representing organizations that hadn't the possibility to lose time and resources in an infinite process of confrontation. As their commitment was not necessarily high and alike, emotional support was needed to motivate them to engage over time.

DISCUSSION

The purpose of this paper is to increase our understanding of how brokers influence a social innovation process through facilitating others' efforts in generating novel collective solutions to a complex problem, and the dynamic factors influencing brokers' behavioral trajectories within this process. Despite network scholarship has highlighted the important role that brokers can play in the achievement of innovation, its traditional focus on their structural position and personal characteristics as elements of explanation has led to overlook how brokers actually influence innovation processes, which remains difficult to grasp. This lack of understanding is due to the rare attention that brokerage literature has paid on the way in which brokers operate within innovation contexts (see Lingo & O'Mahony, 2010; Burt & Merluzzi, 2016; Obstfeld, 2017 for exceptions).

To address this question, in this paper we explore brokers facilitating interactions among multiple and heterogeneous actors, with the aim of enabling them to generate novel collective solutions on how to tackle a complex social problem. We focus on brokers' behaviors and their dynamics over time as prime drivers of the impact that brokers produce on this collective innovation process. We conduct a qualitative and process study that allows us to bring in our analysis the complexity of the context in which brokers are embedded and thus to uncover the dynamics and conditions underlying the process through which they facilitate the achievement of collective novel solutions.

We uncovered a set of behaviors that brokers performed to facilitate the unfolding of relationships among the heterogeneous participants, aimed at enabling them to integrate their different perspectives, reframe collectively on the social issue to be tackled and think collectively to achieve collective solutions on how to address the problem. *Setting the tone*, *facilitating cognitive flexibility*, *providing guidance* and *providing emotional support* were the behaviors that brokers iteratively performed within the process to address the relational

challenges emerging over time, such as *content ambiguity*, *process ambiguity* (Zuzul, 2018), *cognitive barriers* and *emotional barriers* (Offermann et al., 2004), correspondingly.

We built a multi-level process model showing how brokers behaved in correspondence of the advancement of the innovation process over time, and the outcomes obtained from this interaction. We showed that as brokers affected the collective process' advancement and its outcomes through their behaviors, their actions were at the same time affected by the response of the targeted others' to these behaviors and to the impact that they produce on them. Thus, brokers dynamically changed and calibrated their behaviors in order to address the dynamic factors emerging from the collective process over time, also in consequence of their own actions. We identified the relational challenges emerging from the first two phases of the innovation process over time as the stimuli that drove the dynamics of interaction between the two levels.

Contributions

Our findings shed light on the importance of focusing on brokers' actual behaviors to understand how innovation processes develop. Looking for explanations of brokers' capacity to impact these processes, network scholars have mainly accounted for the structural position they cover in a social network (Rost, 2011; Sgourev, 2013) and, taking a more agentic perspective, for their individual characteristics (Fang et al., 2015; Tasselli et al., 2015). Nonetheless, it is their agency in terms of action that allows brokers to put into practice and concretize the opportunities coming from their structural position and their personal traits in order to produce impact (Burt, 2012).

In this paper we highlight that brokers' behaviors and the effects that they produce on the environment in which they are embedded (Emirbayer and Mische, 1998) affect the development of innovation processes and the achievement of innovation outcomes. In particular, our findings support Obstfeld's (2017) suggestion that nonroutine actions are of crucial importance within

an innovation context as the one analyzed in this paper. Facilitating multiple and heterogeneous participants engaging in the process of generating previously not envisioned collective solutions entails brokers to engage in proactive and reactive actions (Lingo & O'Mahony, 2010) in response to multiple and sometimes unpredictable emerging problems and possibilities (Emirbayer & Mische, 1998), and requires them to reconstruct novel behavioral trajectories over time (Obstfeld, 2017; Burt & Merluzzi, 2016). Thus, a focus on brokering as the behavioral process through which brokers intervene within the innovation process, affecting and in turn being affected by the dynamic factors emerging from the process itself, is important to achieve a novel and more comprehensive understanding of how brokers facilitate innovation.

The exploration of brokers within a specific context over time and the adoption of a process and qualitative research approach (Cornelissen, 2017) for studying their behaviors, allow to appreciate the complexity of brokers' action and to highlight the importance of the contextual elements affecting the brokering process and brokers' ability to produce impact. Bringing in our analysis the complexity of the context observed allows us to overcome the theoretical simplification linked to the analysis of brokers' interactions within single triads (Halevy et al., 2019) and to avoid "offering decontextualized generalization" (Tsoukas, 2017, p.149). Consistent with Obstfeld et al. (2014), this enables us to uncover that within a complex and dynamic social setting involving multiple and heterogeneous actors in collective innovation work, it is the brokering process, and not the brokerage structure, that is of increasing importance to understand brokers' impact. As suggested by Obstfeld (2017) in this kind of setting "structural advantages are more difficult to maintain and leverage, while deployment of brokerage behaviors provides a means for adapting these multifaceted and rapidly evolving circumstances" (p. 46). In line with this insight, the interactions that we observe are extremely fast, frequent and mostly overlapping, which does not allow a clear identification and separation of the evolution of the single triadic interactions among participants. This confirms Sutton and

Hargadon's (1996) suggestion that when many individuals participate in the process of generating novel solutions, as it happens in settings where the problem to be addressed is complex and different skills and expertise are required (Drazin, Glynn, & Kazanjian, 1999), how the interactions among individuals develop becomes difficult to unravel. We thus distance ourselves from brokerage studies traditionally relying on structural dynamics characterizing brokers as elements of explanation. In our study these dynamics appear to be discrete in time in their essence as snapshots that existed only for a moment (Thompson, 2011), and necessarily incomplete given the multiplicity and complexity of the interactions unrolling in the context (Obstfeld, 2017) and not adequate to explain how and why brokers were able to produce impact over time.

Differently from network research studying brokers' role in the generation of innovation outcomes focusing on their structural position within open (Burt, 1992) or closed triads (Obstfeld, 2005), we propose a shift of attention from brokers, as the actors whose agency is driven by their specific structural position within social networks (e.g. Quintane and Carnabuci, 2016) and by their personal characteristics (e.g. Tasselli et al., 2015), towards brokering as the behavioral process that these actors entail to influence the innovation process. While acknowledging the importance of individuals' brokerage role (Gould & Fernandez, 1989) and of their personal characteristics as antecedents of brokering, this distinction allows us to provide an in depth account of the behaviors that brokers enact within a complex and whole network (Provan, Fish & Sydow, 2007). In this way we are able to uncover behavioral dynamics and interactions between the micro-foundations (Barney & Felin, 2013) of innovation – such as brokers' behavioral dynamics – and the collective process underlying its generation, that may otherwise remain unnoticed.

Thanks to the deep analysis of the context in which brokers intervened, we were able to identify relational challenges emerging within the innovation process as important elements

explaining how brokers performed brokering and its dynamic changes over time. These relational challenges, which emergence produces brokers to activate with a certain behavior within the innovation process, are largely superimposable to the primary needs theorized by Perry-Smith and Mannucci (2017) with reference to a creative process. This confirms their findings and potentially allows their generalization as dynamics factors causing changes in the actions that need to be performed over time to allow successful process advancement.

Our process model thus provides further understanding on the interaction between brokers' behaviors and the context in which they behave, highlighting the co-evolutionary patterns linking them. Our results extend the current scholarly conversation on how brokers' behaviors unfold over time, providing new evidence for understanding the process through which brokers combine different types of behaviors over time (Lingo & O'Mahony, 2010; Obstfeld et al., 2014) and in correspondence with different conditions characterizing the context in which they intervene (Kellogg, 2014), and the co-evolution of actors and networks (Paquin & Howard-Grenville, 2013; Boari & Riboldazzi, 2014; Clement et al., 2018). We also extend the literature that recognizes brokers as strategic actors aimed at reducing ambiguity to enhance collaboration (Fligstein, 2001; Lingo & O'Mahony, 2010). In particular, we claim that this process is not linear, as relational challenges (e.g. content and process ambiguity) do not only emerge from the complexity of interactions among the multiple and heterogeneous actors involved within the context or process that brokers aim to facilitate, but can also emerge as a consequence of the same brokers' intervention, which entails the co-evolutionary feature of the process.

LIMITATIONS AND FUTURE DIRECTIONS

The exploration of brokers' behaviors within a dynamic and complex collective process allowed us to shift the attention from the structural properties underlying brokering and to focus

on uncovering the dynamics underlying the process, proposing an explanation of the process through which brokers produce impact on innovative processes and outcomes.

While we believe that our study advances several theoretical insights, we acknowledge its limitations. We studied the innovation process unfolding in a single longitudinal case study, focusing on a social innovation process unfolding within a local multi-actor cross-sector partnership in its formation phase, with a transformational aim (Austin & Seitanidi, 2012) and characterized by high partners' heterogeneity. This implies that its generalizability is limited to settings with similar characteristics, as our findings are likely to be tied to these specific contextual features. Future research is needed to investigate how the innovation process is enacted and how brokers intervene in it within different types of cross-sector partnerships, depending on the kind of partners involved, their geographical distribution (Selsky & Parker, 2005), and their partnership and collaborative stage (Austin & Seitanidi, 2012), as well as in other settings characterized by different levels of heterogeneity of participants. As our results are linked to a specific phenomenon, such as a the generation and elaboration of novel collective solutions on how to tackle a social issue, future research could investigate brokers' behaviors unfolding in different phases of the process, in relation to different kinds of innovations as well as in other kinds of collective processes.

Furthermore, our analysis focused on the effects of brokers' behaviors within the innovation process, without accounting for the effects that the structural properties of the network and their dynamics could have produced on the interactions between brokering and the collective process' advancement. In our study we identified different brokers covering different positions in the network and changing their structural roles (Gould & Fernandez, 1989) over time. The actors who covered at some point in time a central position within the whole network or in some sections of it (e.g. within the sub-groups) were those who enacted behaviors aimed at bridging different visions, perspectives and interests among the participants. Nonetheless, a

change in position of these actors did not necessarily meant they did not continue being able to perform these behaviors. For instance, when the external collaborator changed his position to play the role of a liaison among the sub-groups, he continued performing a setting the tone behavior in order to maintain coherence on the shared vision already developed in the previous phase and sustain the adoption of the new work methodology. This insight provides a twofold suggestion: on the one hand, it is through their behaviors and not through covering a certain position that brokers produce impact on network level processes and outcomes; on the other hand, while brokers' position can be an antecedent of their ability to enact specific kinds of actions this is not a sufficient nor a necessary condition for explaining why brokers behave in particular ways. Instead, the changes in brokers' position seemed resulting from the more or less conscious choice of the agents, linked to the necessity to address the primary intangible needs emerging from the process, and to the kinds of actions and behaviors they felt were necessary to be enacted in that specific moment in time to allow the process to advance.

Further research is then needed to study the dynamics characterizing the link between brokers' behaviors and network structure and their impact on the innovation process. In particular, we encourage scholars to bring Cornelissen's (2017) call for a greater exploitation of the explanatory power of qualitative research in the study of brokers. The adoption of qualitative methods of inquiry, and specifically of the combination of the detailed particularities of a case study (Tsoukas, 2009) with the explanatory potential of a multi-level process approach (Langley et al., 2013; Cornelissen, 2017), complemented with the adoption of social network analysis (Gummesson, 2007) can provide important advancements in our understanding of how the interrelation of different dynamics underlies brokers' ability to produce impact in innovation (and other) processes.

Similarly, in our study we identified multiple brokers combining their actions for facilitating reframing, perspective integration and collective thinking, especially in the second

phase of generating novel collective solutions. While we acknowledged that individuals' characteristics certainly affect the way in which actors behave, in our empirical case we observed that the impact produced at network (process) level was linked to a combination of behaviors that could change over time and that could be enacted simultaneously by multiple actors complementing each other's. For instance, the necessity to face different emerging relational challenges during the process required brokers' ability to mindfully sense the organizational dynamics in order to understand what actions needed to be taken to allow the collective process to proceed, which also asked for their behavioral adaptability and agility. While single brokers' ability to achieve this might depend on individuals' characteristics, we observed that brokers engaged in actively supporting one another for carrying out this complex task in the most effective way. They achieved the expected results by combining their different personal characteristics (e.g. competencies, previous experiences, motivations, orientations) and concrete actions at the same moment in time. These insights allow us to uncover the importance of studying brokers' behaviors independently of individuals' personal characteristics to understand the impact brokering can produce on the innovation process. Nonetheless, we did not investigate how different personal characteristics combine to achieve effective brokering, disentangling the micro-dynamics of multiple brokers' collaboration. Future research could tackle this issue. We also encourage future research to investigate how different individuals' attributes can impact on the ability of brokers to perform the actions needed at a certain point in time within the process to be successful. This could also allow to uncover novel reasons why some brokers are more successful than others in brokering and producing positive impact. Furthermore, further research could also tackle the issue of how (and why) some personal characteristics are not static but can change dynamically (Tasselli et al., 2015; Tasselli, Kilduff & Landis, 2018). Some brokers, through their relations with higher processes can change some of their personal characteristics (e.g. attitudes, cognitions…) over

time in a process of "learning by doing" that can allow them to adapt more flexibly to the needs emerging from the context. The following excerpt from one of the Sub-group Coordinators clearly suggests this:

> In these years my way of managing relationships has changed because I met people who made me open my eyes and allowed me to grow from other points of view. Working with [the participants] […] I began to work on myself and I have certainly changed, and so my way of managing relationships has changed. [...] I am much more attentive to the process, and therefore I value the result even if it is not what I had thought at the beginning. Because I am attentive to how the process develops. [...] I pay attention to the mental path that people do when we work. I've always been ... I'm a scientist, so I have a goal, right? […] In this case I learned to be a bit less attentive to the result. […] I valorize the talent that the person in front of me has. […] In a group context I try to bring out what people have. [...] It's something that I try to do, I do not always succeed very well, but I try to make sure that people take each other's hands.
>
> *(From interview with MP, member of Technical Committee and Sub-group Coordinator, 2017-10-24)*

Future research could also be conducted on the motivation that leads brokers to enact certain behaviors and how different motivations are linked to brokers' differences in impacting the context in which they are embedded, as well as how changes in brokers' motivation over time lead to different results of brokering.

Furthermore, as our empirical setting did not allow us to identify the triadic interactions that are the smallest possible unit of sociological analysis within which it is possible to uncover brokers in action, future research could advance further theorization of the behavioral dynamics highlighted in this paper disclosing how they link to triadic interactions, also studying the kind of content that flows within the ties that form these triads and how this changes over time.

Eventually, we focused in this study on emerging relational challenges as contextual aspects affecting brokers' behaviors. We acknowledge that other characteristics coming from the environment in which brokers are embedded could affect their brokering behaviors (e.g.

resource constraints; disruptive events). Future research could investigate how other characteristics from the context affect brokering as well as brokers' ability to impact on collective processes and outcomes. Among others, the study of how others' perceptions affect brokers' behaviors and their impact would provide interesting insights.

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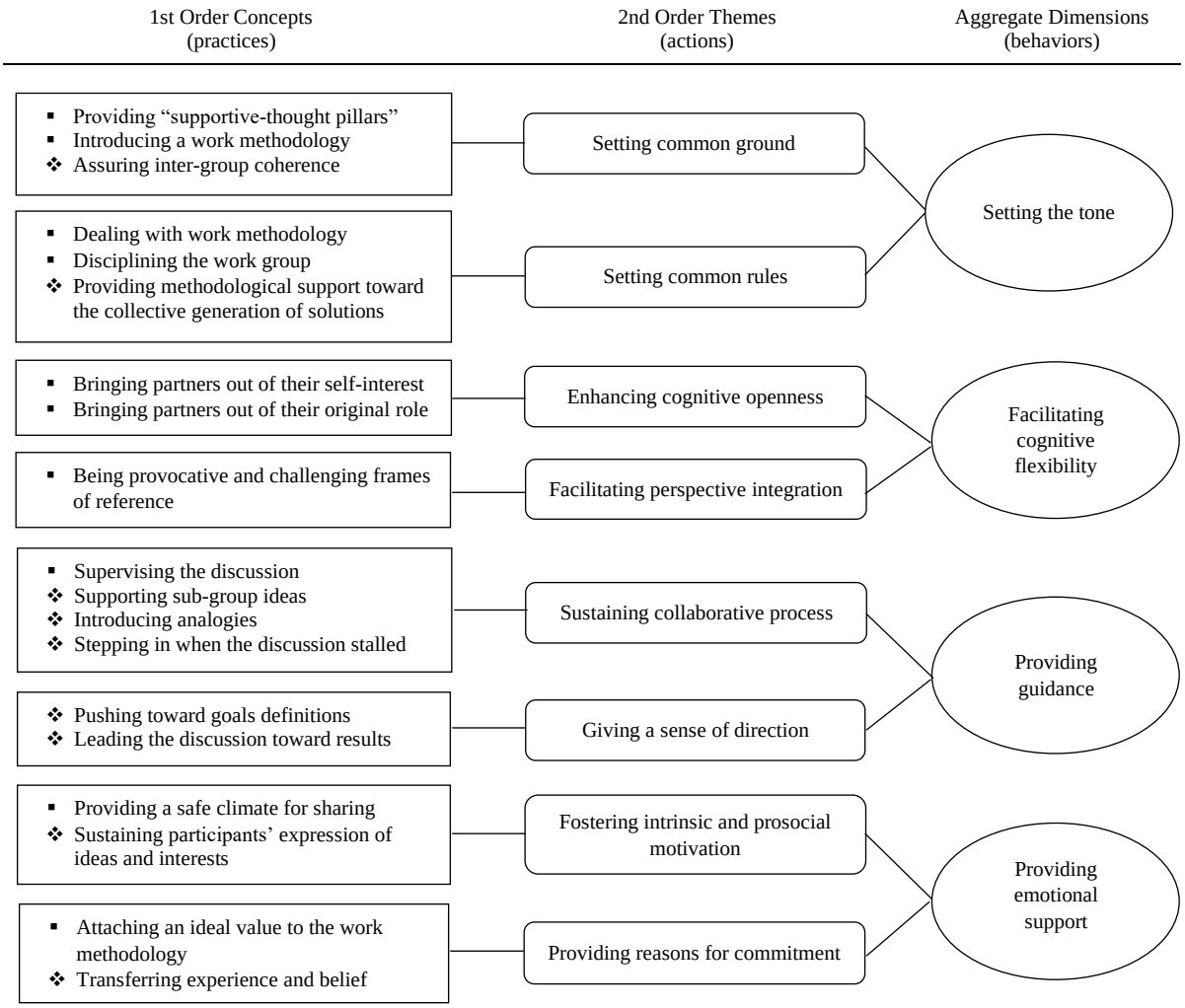
FIGURES AND TABLES

Figure 1. Data structure: brokers' practices, actions and behaviors



- Phase 1 - Developing a collective definition of the social issue (September 2013 – May 2014)

❖ Phase 2 - Generating novel collective solutions (June 2014 – April 2015)

Figure 2. Social innovation process' events and relational challenges and brokers' behaviors

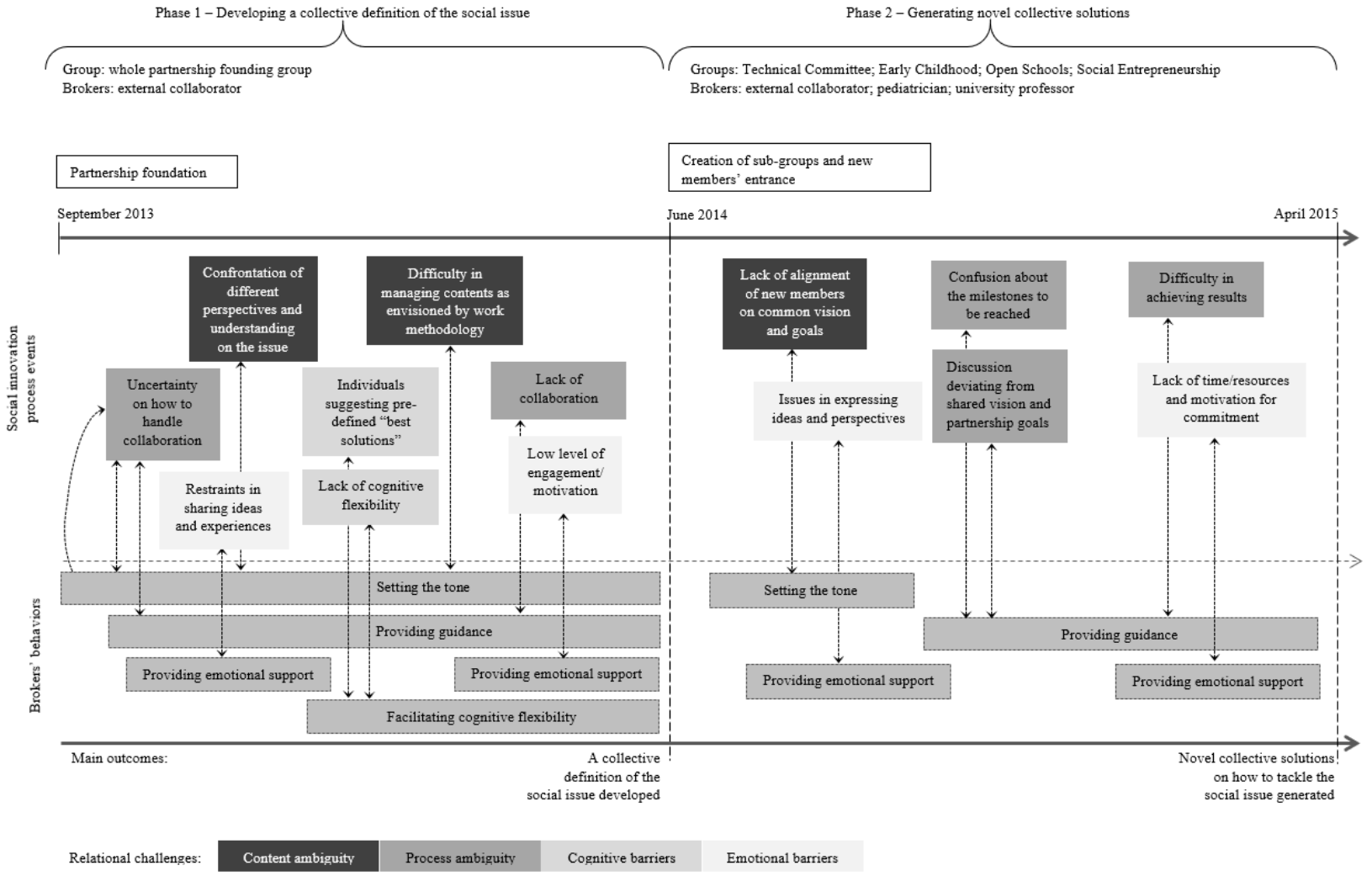
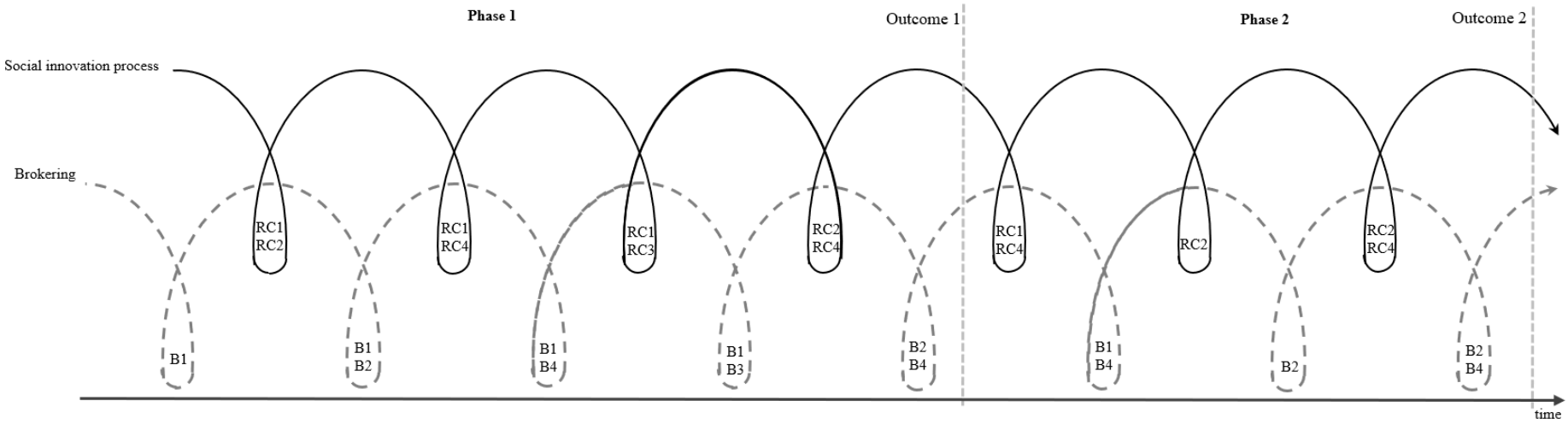


Figure 3. Brokering dynamics



Relational challenges:	Brokers' behaviors addressing RC:
RC1 = Content ambiguity	B1 = Setting the tone
RC2 = Process ambiguity	B1 = Setting the tone B2 = Providing guidance
RC3 = Cognitive barriers	B3 = Facilitating cognitive flexibility
RC4 = Emotional barriers	B4 = Providing emotional support

TABLE 1. Participants to the process

Type of participant partnership group	**n.**	**Type of participant Early Childhood**	**n.**	**Type of participant Open Schools**	**n.**	**Type of participant Social Entrepreneurship**	**n.**
Teachers/School Administrative staff - Public schools (1) - Private schools (4)	5	Teachers - Private schools (2)	2	Teachers/School administrative staff - Public schools (1) - Private schools (2)	3	Teachers/School administrative staff - Private schools (1)	1
Healthcare doctors - Public (4)	4	Healthcare doctors - Public (7) - Private (9)	16				
Civil society representatives - Services to families (4) - Services to disabled people (3) - Social and educational services (13) - Sport (2) - Environment (1) - Other (5)	28	Civil society representatives - Services to families (4) - Services to disabled people (9) - Social and educational services (7) - Sport (2) - Environment (2) - Other (5)	29	Civil society representatives - Services to families (1) - Services to disabled people (2) - Social and educational services (4) - Other (3)	10	Civil society representatives - Services to disabled people (1) - Social and educational services (8) - Other (2)	11
University professors - Physician (1) - Sociologist (1)	2			University professors - Physicist (1)	1		
Local administrators - Province (1) - Municipality (4) - Local scholastic office (2)	7	Local administrators - Municipality (1)	1	Local administrators - Province (1) - Municipality (1) - Local scholastic office (1)	3	Local administrators - Municipality (1)	1
Representatives of the Diocese - Priests (3) - Administrative staff (5)	8			Representatives of the Diocese - Administrative staff (1)	1		
Delegates of firms' representative institutions - Cooperatives / Social enterprises (1) - Small enterprises (1) - Companies (3)	5	Trade Unions (1)	1	Delegates of firms' representative institutions - Companies (2)	2	Delegates of firms' representative institutions - Cooperatives / Social enterprises (3) - Small enterprises (1) - Companies (1)	5
Banks' representatives (1) Entrepreneurs (2)	3	Entrepreneur (1)	1			Banks' representatives (1)	1
Communication professionals (3)	3	Architects (2) Parents (3)	5				
Tot.	**65**	**Tot.**	**55**	**Tot.**	**20**	**Tot.**	**19**
		N. of meetings (recorded) [from July 2014 till April 2015]	10	N. of meetings (recorded) [from July 2014 till April 2015]	5	N. of meetings (recorded) [from June 2014 till April 2015]	10
		Mean n. participants/meeting (recorded)	14	Mean n. participants/meeting (recorded)	10	Mean n. participants/meeting (recorded)	6
OUTCOMES		**OUTCOMES**		**OUTCOMES**		**OUTCOMES**	
Causes of the problem: School dropout is an indicator of widespread youth distress: it is often synonym of isolation in the family, school and social environment.		**Causes of the problem:** Many parents struggle to develop emotionally engaging relationships with their children, which often manifests in an exponential increase in neuropsychiatric requests.		**Causes of the problem:** Schools represents a physical and relational heritage that is underemployed.		**Causes of the problem:** Inadequate role of the nonprofit sector. Instead of being a supplier of services for third parties it should act as a catalyst for community energies.	
Definition of the problem: fighting school dropout means caring for children from cradle to career, through the definition of a global strategy characterized by a balanced approach between prevention, intervention and compensation.		**Novel solution:** The hypothesis is that these difficulties arise from the isolation of the families. Promoting solutions that help parents get out of their isolation through the involvement of professionals to whom parents can turn to.		**Novel solution:** "Open schools" can strengthen community ties, while creating a more appropriate environment for children and young people themselves.		**Novel solution:** Need of a change of mentality and the introduction of new professional figures. A specialization course for proximity fundraisers will be experimented, also as a new occupational opportunity for youngsters.	

TABLE 2

Participants interviewed

Person	Role in the partnership	N. interviews
External collaborator	Broker (partnership and sub-group level)	2
General Secretary of the Community Foundation	Supporter	2
President of the Community Foundation	Supporter	1
Professor at local University	Broker (sub-group coordinator)	1
Pediatrician	Broker (sub-group coordinator)	1
Administrative staff of the Community Foundation	Assistant	1
Researcher 1 at local University	Participant	1
Researcher 2 at local University	Participant	1
President of association providing services to families	Participant	2
Member of the Board of Directors of the Community Foundation	Participant	1
Psychologist and teacher at private school	Participant	2
Movie director	Participant	1
Manager at institution representing artisan and small firms	Participant	1
President association for the protection of the environment	Participant	1
Project manager at association providing social and educational services	Participant	1
President of family association providing social and educational services	Participant	1
President of association providing services for disabled people	Participant	1
Total N. interviews		21

ANNEX 1

Brokers' practices, actions and behaviors per phase

SOCIAL INNOVATION PROCESS PHASES (Quotes from interviews collected in the field)	**First-order concepts (practices)**	**Second-order themes (actions)**	**Aggregate dimensions (behaviors)**
DEVELOPING A COLLECTIVE DEFINITION OF THE SOCIAL ISSUE			
Practically my role [as the external collaborator] was to introduce the concept [of collective impact], to explain it to the various realities and authorities that could be interested in the idea, and then manage everything. *(From interview with the external collaborator, 2017-12-05)*	Introducing a work methodology	Setting common ground	Setting the tone
We were meeting, [the external collaborator] was keeping the *fil rouge* of the discussion, making us think about the causes [of the social issue], about what we should address, what were the key elements on which we had to [intervene]. And then all this was summarized, it was re-sent, there was reflection on our part. *(From interview with MP, member of Technical Committee and Sub-group Coordinator, 2017-10-24)*	Providing "supportive-thought pillars"		
More than the topic [it was] the operating mode. How to deal with it. It could be this, school dropout, it could be any other theme heard from the community, but [the external collaborator] knew exactly how to deal with that collective impact methodology. *(From interview with the Secretary, 2018-05-03)*	Dealing with work methodology	Setting common rules	
It is this collective impact technique. So, the role of [the external collaborator] was to bring them back ... For example, they spent many months, maybe even a year, […] just to reflect. Because they were all thrown into operations. Let's do this right away. We already have the project in mind. But the collective impact is not like that, it does not work that way. So, he always had to block them. I remember him [stepping in] and saying: no, no, no, this is already a solution, not good, we have not yet arrived at that point. We will get there later but now we still have to discuss and so on. *(From interview with the Secretary, 2018-05-03)*	Disciplining the work group		
[The external collaborator] proposed the work methodology, and brought us continually to a general interest, to remove oneself from one's own identity, to focus on the goal of school dropout. *(From interview with AMV, member of Technical Committee and sub-group, 2018-05-03)* Sometimes we did a brainstorming […]. It helped us in the definitions. I remember we did a brainstorming exercise that was very useful for figuring out where to go, right? What are the priorities... and everyone marked on the cards, we hung them and then in the end we tried to give a definition to school dropout, to the theme we were dealing with. […] *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)* We did the brainstorming a few times in the Technical Committee. I think [the external collaborator] asked us to set goals […] to go ahead. Because maybe the group was lost, right? We had stopped at the definition ... but let's try to define the goal, then we go on. Maybe there are 10 definitions and all 10 are good. But from there, how do we go on? *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)*	Bringing partners out of their self-interest	Enhancing cognitive openness	Facilitating cognitive flexibility
Let's say that probably starting from the collective impact theory, that was a new stuff for everyone, we all tried a little to get out of our roles, get out of our contexts. Beyond that, obviously we had to refer to those contexts there, but... I did not go there as [name and surname], responsible for the training office. I [as a member] went there as [name and surname], let's see what happens, let's try to make a contribution. *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)*	Bringing partners out of their original role		
[The external collaborator] bet high, in my opinion. It is not a utopia. He bet high because he had data at hand of something that works, so it's not a utopia. *(From interview with AMV, member of Technical Committee and sub-group, 2018-05-08)*	Being provocative and challenging	Facilitating perspective integration	

For example, there were meetings where he had us do some exercises. […] Like ... I take one that I have in mind ... 10 post-it each. First question: […] [let's say,] how could we solve the problem of school dropout. [The interviewee makes the move of writing on a post-it] Second question: how could the problem of school dropout be solved? [The interviewee makes again the move of writing] Third question: how it could be solved ... The same question 10 times ...it is a technique […] to stimulate thought. […] In other words, try to answer the same question in 10 different ways. There were 20 of us and then we categorized the answers. *(From interview with SM, member of Technical Committee and sub-group, 2018-05-08)*	frame of references		
[The external collaborator] tried to make them respect this methodology. […] So he acted as a supervisor. *(From interview with the Secretary, 2018-05-03)* [The external collaborator's] task was to get them to do what this collective impact methodology envisages. *(From interview with the Secretary, 2018-05-03)*	Supervising the discussion	Sustaining collaboration process	Providing guidance
Work has been done for, how to say ... to get everyone exposed, to truly create a climate in which shared issues are discussed. *(From interview with SM, member of Technical Committee and sub-group, 2018-05-05)* This was the role of the Community Foundation, clearly guaranteeing [participants] the maximum freedom to speak among themselves. *(From interview with the Secretary, 2017-07-25)* The Community Foundation guarantees impartiality, because we are a bridge between those who donate and those who then carry out utility projects in the area. We do nothing operationally, therefore for us one theme or another is the same. […] Everything is basically fine. We guarantee ... we have this figure of neutrality and transparency. *(From interview with the Secretary, 2017-07-25)* The [Community] Foundation has clearly a strong role, but it has a role that is legitimized by a strong consensus. Precisely because the Foundation did not arrive with its own agenda, it did not have in the agenda what needed to be done. It had in the agenda that there was a problem and that something had to be done. And what, depended on how the discussion, the opportunities, the resources emerged. *(From interview with the external collaborator, 2017-05-16)*	Providing a safe climate for sharing	Fostering intrinsic and prosocial motivation	Providing emotional support
[The external collaborator] proposed a work plan that was, how to say, impregnated of an ideal value. […] His proposal was playing an ideal chord. […] Something sounded in people. *(From interview with AMV, member of Technical Committee and sub-group, 2018-05-08)*	Attaching an ideal value to the work methodology	Providing reasons for commitment	
GENERATING NOVEL COLLECTIVE SOLUTIONS			
[The external collaborator] was a general supervisor […] of all the sub-groups, which anyway had interconnections. […] His intervention was more linked ... to a glue between the various sub-groups. *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)* [The external collaborator] had the great positivity of knowing how to be present everywhere, to have a bit of an overview. *(From interview with IB, member of Technical Committee and sub-group, 2018-05-08)*	Assuring inter-group coherence	Setting common ground	Setting the tone
[The role of the external collaborator in the sub-groups] was always to make them stick to the collective impact methodology. Because otherwise they would reunite and then again ... they would get out a project. […] So, his job was always to say: no, wait. Stop. […] *(From interview with the Secretary, 2018-05-03)* It's not that [the external collaborator] really had to stimulate them so much. But yes, well, clearly, he also directed the discussion, but not as much as to say: [this] is the solution. That is, all the solutions to which [the sub-groups] gave life were born from them. But he obliged them to follow a certain methodology. *(From interview with the Secretary, 2018-05-03)*	Providing methodological support toward the collective generation of solutions	Setting common rules	

And when, suppose, even the [Sub-group Coordinator] was starting to come up with a solution that at that time should not be pulled out, [the external collaborator] was saying: no, stop, because it is not the time. We are doing something else, let's follow the correct methodology. *(From interview with the Secretary, 2018-05-03)* [The external collaborator's] role has always been that of ehm ... encourage to go ... and to contain towards the direction of a project that gave life to a new collective impact culture. Mostly...he facilitated, led and pushed in a certain direction: that of spreading the collective impact culture. *(From interview with IB, member of Technical Committee and sub-group, 2018-05-08)*			
[The external collaborator] gathered, because then he always gathered the common feeling, right? He interpreted it, reworked it and then said: do you share this? Yes, no ... In fact, something came out of this group too. *(From interview with IB, member of Technical Committee and sub-group, 2018-05-08)*	Supporting sub-group ideas	Sustaining collaboration process	Providing guidance
I remember that [the external collaborator] also made an example of an area in the United States […] in industrial degradation. […] The various families that still lived there got together [in] neighborhood committees, let's say, and thanks to these neighborhood committees they tried to no longer bring the single interest, but the interest of N people to large banking groups […]. And in the end this action, let's say from the community, brought a much higher result than what the singles had managed to get, right? And on the basis of this, all the talk about the [open schools] started [in the sub-group]. [...] At the end, things that seem impossible become possible, right? *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)*	Introducing analogies		
[The external collaborator] was always present when the group did not go on. In the sense, if you ... I think he participated in almost all groups, but when he realized that a group alone could not go on, that it was stalled, then he took over to help the group to move forward the discussion and produce a result. *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)*	Stepping in when the discussion stalled		
[The external collaborator] asked to define goals ... and to go on starting from the various objectives. Because maybe the group was lost, right? It had stalled on the definition ... but let's try to define the goal, then let's move on. Maybe there are 10 definitions and they are all good. But from there, how do we keep going? *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)*	Pushing toward goals definitions	Giving a sense of direction	
[The external collaborator intervened in the sub-group], let's say, to get to a solution when it was necessary to arrive at a solution, in the sense ... Or in a moment of stall, he helped to activate a bit, to overcome that phase of difficulty and then focus on the product that was to be born from the group. *(From interview with ER, member of Technical Committee and sub-group, 2018-05-03)*	Leading the discussion toward results		
The [Sub-group Coordinator] collected. Let's say that rather than disciplining, […] [that] was the role of [the external collaborator], she was more a collector. So with her professional experience and also her sensitivity she was trying to get things out. *(From interview with PL, member of Technical Committee, 2017-06-12)*	Sustaining participants' expression of ideas and interests	Fostering intrinsic and prosocial motivation	Providing emotional support
[The external collaborator] was the one who had taken a course in the United States, he had seen things. And so, even in that sense he was the expert, in quotation marks, right? So how to say… he saw them realized, so he was the most convinced that they could be realized. […]. In my opinion, he believed deeply in it. He is also a bit idealistic, let's say […], so he produced a kind of contagion in this ... in this search for values, right? *(From interview with AMV, member of Technical Committee and sub-group, 2018-05-03)*	Transferring experience and belief	Providing reasons for commitment	

Multiplex Brokering: Impacting Instrumental and Affective Ties Multiplexity in Collective Innovation*

ABSTRACT

Network research generally highlights that brokers can impact the generation and production of innovation. This literature also emphasizes these actors' ability to affect the instrumental and affective content of the ties that link the individuals involved in the production of innovative outcomes. However, while researchers recognize the relevance of the multiplex presence of these ties for the generation of creativity and innovation, whether and how brokers address this multiplexity is still unclear. To address this issue, we take a qualitative inductive approach and conduct an interview-based study on a group of multiple and heterogeneous individuals working together within a multi-actor cross-sector partnership active in a Province in the north of Italy for the generation of a novel collective solution on how to prevent school dropout. We discover that brokers adopt multiplex brokering for sustaining and fostering the multiplexity of instrumental and affective ties characterizing collective innovation, enabling participants to generate a collective outcome. We provide a process model showing how brokers combine instrumental- and affective-related behaviors to affect multiplex dynamics of interaction throughout the innovation process.

Keywords: Brokering; Multiplexity; Ties content; Behaviors; Collective innovation; Process

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INTRODUCTION

Brokers can impact the generation and production of innovation by influencing the content of the relationships occurring between the individuals directly or indirectly involved in the innovation process (Obstfeld, Borgatti, & Davis, 2014). A considerable stream of network research has investigated them as intermediaries bridging knowledge and information between others (Burt, 1992) and thus influencing instrumental relations taking place in knowledge- or advice-sharing networks. This research has focused on the consequent effects of brokerage on brokers' own creativity (Burt, 2004; Soda, Tortoriello, & Iorio, 2018) and on others' ability to produce innovative outcomes (Obstfeld, 2005; Obstfeld, 2017). Other studies have examined brokers' impact on friendship ties (e.g. Sasovova, Mehra, Borgatti, & Schippers, 2010; Kleinbaum, Jordan, & Audia, 2015) and how these actors' embeddedness in networks characterized by affective contents influence innovative productivity (Gómez-Solórzano, Tortoriello, & Soda, 2019). Taken as a whole, these works have provided important insights into the consequences that brokers' influence on ties contents produces on innovation. Thanks to these insights we can confidently argue that brokers can positively or negatively affect ties (Emirbayer & Mische, 1998) of different kinds such as, for instance, instrumental and affective ties, to influence innovation outcomes (Perry-Smith & Mannucci, 2017).

However, as the study of brokers' influence on instrumental and affective ties has been conducted separately – respectively within information or advice networks the former and within friendship networks the latter – we still miss a clear understanding on whether brokers, to impact innovative performance, do not only handle single-content ties but also address multiplex ties, such as ties composed of contents of different nature simultaneously flowing between individuals (Ahuja, Soda, & Zaheer, 2012). Indeed, while some researchers have suggested brokers' potential to concurrently address and influence both kinds of ties (Lingo & O'Mahony, 2010; Obstfeld, 2017), if and how brokers actually play a role in addressing this

multiplexity of ties to achieve innovation outcomes remains unexplored. Nonetheless, this is an important issue to be uncovered, given the crucial role that instrumental and affective ties coexistence (or multiplexity) has for creativity and innovation (Amabile, Barsade, Mueller, & Staw, 2005; Casciaro, 2014; Casciaro, Gino, & Kouchaki, 2014), especially in collective innovation networks involving multiple and heterogeneous actors (Harvey, 2014).

The purpose of this paper is to explore whether and how brokers contextually influence the development and interrelation of both instrumental and affective ties to maximize innovation outcomes in a context of collective innovation. To address this question, we take a qualitative inductive approach and conduct an interview-based study within an Italian multi-actor cross-sector partnership (Selsky & Parker, 2005) involving multiple and heterogeneous partners in the generation of novel ideas on how to address a social issue. Identifying the underlying dynamics that contribute to the achievement of collective innovative outcomes we unpack the multiplexity of instrumental and affective ties characterizing the relationships developing among participants. We thus uncover and analyze the behavioral process through which brokers influence those instrumental and affective ties allowing participants' achievement of collective outcomes. We eventually develop a process model showing how brokers combine instrumental- and affective-related behaviors to address the multiplexity of the dynamics of interaction throughout the different phases of the collective innovation process.

In this way we give a twofold contribution to organization studies. First, we provide grounded evidence that brokers do address both instrumental and affective ties in a dialectic way to enable the achievement of collective innovative outcomes within a process involving multiple and heterogeneous participants. Second, we contribute to increasing knowledge on how brokers broker, introducing a process perspective highlighting the dynamics through which brokers' behaviors affect the multiplex relationships underlying a collective innovation process.

THEORETICAL BACKGROUND

In the attempt to better understand the conditions that lead network contacts to achieve innovation, network scholarship has recently shifted the attention from the sole consequences related to the structural properties of networks toward what flows through the ties composing network structures (Rodan & Galunic, 2004; Balkundi & Harrison, 2006). Ties content, its change (Ahuja et al., 2012) and recurrence over time (Levin, Walter, & Murnighan, 2011; Walter, Levin, & Murnighan, 2015) are drivers and locus of change in networks (Ferriani, Fonti, & Corrado, 2013). Ties of one kind can influence the formation and dissolution of ties of other kinds (Lomi & Pattison, 2006; Rank, Robins, & Pattison, 2010; Shipilov & Li, 2012), which implies that networks are characterized by the existence of "multiple ties with different contents between the same set of actors", also called "multiplexity" (Ahuja, et al., 2012, p.438).

Scholars have distinguished between instrumental and affective (or expressive) ties (Balkundi & Harrison, 2006) as the two main components of human relations within work- or task-related networks (Casciaro et al., 2014). The first kind of ties refers to the flows of knowledge and information occurring between individuals when performing tasks, while the second concerns the relational affect underlying individuals' interpersonal attraction (Casciaro, 2014). Scholars have recently recognized affect as a "fundamental motivational function that can either activate or inhibit task-oriented social action" (Casciaro, 2014, p. 227). They have also uncovered the important role that the multiplexity of instrumental and affective ties have in the achievement of work-related tasks (Casciaro & Lobo, 2008), creativity (Amabile et al., 2005) and innovation (Perry-Smith & Mannucci, 2017), especially in networks involving multiple and heterogeneous actors (Harvey, 2014). Furthermore, they have highlighted how the psychological and moral implications linked to some instrumental ties can produce positive or negative effects on the affective content of relations (Casciaro et al., 2014).

In line with the recognition of ties content as a determinant of network dynamics and outcomes, network research has recognized that brokers, as actors covering an intermediary position between alters (Burt, 1992), have the ability to sense and influence the content of the ties that they bridge (Obstfeld et al., 2014), also impacting the achievement of innovation outcomes (Obstfeld, 2017). An established stream of research has investigated brokers as embedded within knowledge- or advice-sharing networks, where they bridge knowledge and information (e.g. Carnabuci & Diószegi, 2015; Hahl, Kacperczyk, & Davis, 2016; Li, Li, Guo, Li, & Harris, 2018). This research has highlighted the potential benefits that the influence of brokers on instrumental ties in those networks have on brokers' own creativity (Burt, 2004; Soda et al., 2018) and on others' ability to produce innovative outcomes (Obstfeld, 2005; Obstfeld, 2017).

Other studies have focused on investigating brokers within friendship networks and their role in forming or impacting friendship ties (e.g. Sasovova et al., 2010; Kleinbaum et al., 2015; Tasselli & Kilduff, 2018). Recent advances in this research have also highlighted the positive impact of innovators' involvement in friendship networks on innovative production, though underlying the counter-productive effect of their contextual involvement in non-overlapping cliques characterized respectively by strong knowledge-sharing ties and strong friendship ties (Gómez-Solórzano et al., 2019).

This research has provided evidence of brokers' ability to influence different ties contents and of the consequences of this on innovation. Nonetheless, these studies have investigated brokers as intervening in networks in which relationships are characterized by one single content – either instrumental or affective. This has led scholarship to overlook brokers' intervention and impact within networks characterized by multiplexity, as in innovation networks involving multiple and heterogeneous actors, where ties composed of different kinds of contents (e.g. instrumental and affective) simultaneously flow among individuals (Harvey,

2014; Ahuja et al., 2012). Therefore, while some researchers have suggested that brokers have the potential to concurrently address and influence both instrumental and affective ties (Lingo & O'Mahony, 2010; Halevy, Halali, & Zlatev, 2019; Sala & Boari, 2019), if and how brokers actually play a role in addressing this multiplexity in relations remains unexplored.

In this paper we aim to address this gap, unveiling the behavioral process that brokers as individuals undertake to influence the content of the ties characterizing relationships among participants of a collective innovation process aimed at finding new proposals on how to address a social issue, impacting their ability to generate innovative outcomes.

DATA AND METHODS

We explore this issue by investigating brokers as individuals sustaining collaborative innovation among a group of multiple heterogeneous people, comprising individual professionals and representatives of organizations of different sectors (public, private for profit and nonprofit). The group was founded in July 2014 as a subsection of a cross-sector partnership established few months earlier in a Province in the north of Italy to address the local issue of school dropout. The partnership aimed to identify novel and inter-disciplinary approaches to prevent, tackle the problem and offset its consequences targeting different age ranges of the youngsters.

The group we inquire was called Early Childhood and was formed of a total of 55 individual partnership members who had experience in working with children and families and were interested in trying and defining novel ideas on how to prevent school dropout since children's early age, targeting 0 to 6 years old children and their parents. Those individuals were representing different organizations from the public, private for profit and nonprofit sectors as well as different professional groups (see Table 1 for further details). During the period under enquiry (July 2014 to April 2015) the group changed its composition and became

bigger and heterogeneous, with meetings' participants wavering from a minimum of 11 to a maximum of 22 people.

Insert Table 1 about here

This setting provides a critical case to study whether and how brokers intermediate and concurrently influence different ties contents in collective innovation. First, it enables to highlight the multiplexity of relations, both instrumental and affective, characterizing an innovation process involving multiple individuals with different and sometimes conflicting perspectives and interests attempting to work together to find new solutions to address a complex social issue. Indeed, the lack of clarity on the issue as well as the general novelty of the task to be completed led the group's participants to engage in long-term, frequent and highly emotional-intense interactions.

Second, it allows to investigate how two brokers concurrently behaved over time to influence the content of participants' relationships, as well as to analyze the dynamics that allowed them to reconcile these behaviors with the collective innovation goal. In facts, two brokers intervened in the group supporting the multiple and heterogeneous members in interacting with each other: the group coordinator, in the person of a well-known pediatrician in the Province and representative of the local Pediatric Network, actively part of the group since its formation; and an external collaborator, already engaged as a coordinator of the whole cross-sector partnership, who exceptionally intervened in the group to help overcome relational difficulties.

Data collection and analysis procedure

For conducting this study, we used data collected within a wider research project aimed at investigating how brokers, through their behaviors, facilitate collective processes aimed at obtaining innovative outcomes within a multi-actor cross-sector partnership. While conducting

that research we especially questioned whether considering brokers only within their most commonly investigated role of brokering nonredundant knowledge and information was enough to achieve a complete understanding of their actual role in the progression of an innovation process. Were other kinds of relational dynamics, as for instance affective ties, characterizing the collective innovation process? If so, did brokers address this multiplexity of relationships to allow process advancement? And how?

For answering these questions, we decided to analyze deeper the data collected on one of the groups that were part of the cross-sector partnership inquired, that we call here Early Childhood. In this group, as in the other groups forming the partnership, some individuals had engaged as facilitators of interactions among participants. We refer at them as "brokers". In this specific group, though, something had gone wrong during the process and the achievement of collective outcomes had been studded with difficulties. This finding unveiled the opportunity to analyze the innovation process more in detail and to investigate more deeply the dynamics underlying it, as well as the behavioral process that brokers undertook to facilitate them.

Interview data

When we started collecting data in 2017 the phenomenon that we analyze in this paper had already occurred. For this reason, we use interviews as our primary source of data and triangulate them with archival data. We began data collection by conducting semi-structured interviews with two founding members of the cross-sector partnership in order to achieve a better understanding of its structure and its evolution over time. Through these first interviews and using the list of participants of each meeting as a support, we identified the main actors involved in partnership operations and participating in each of the groups composing the partnership. We then realized semi-structured interviews with a selection of partnership members comprising the Early Childhood group's participants who more actively participated in group's activities and who had been more involved in the interactive process of generating

novel ideas, the brokers (the group coordinator and the external collaborator) and other members who, thanks to their position in the partnership (i.e. within its governing bodies) had a privileged external view on the group's dynamics. Our aim was to understand how the collective innovation process worked, how individuals related with each other and how brokers intervened in the process.

In total, we conducted 21 interviews with 17 informants. Table 1 provides account of the informants interviewed. Despite the relatively low number of participants interviewed, the relevance of these actors' intervention in shaping interactions within the process or their privileged position as observers of those interactions provides the sample to be significant and to enable reaching theoretical saturation. Each interview was audio-recorded and transcribed. Four interviewees were listened twice, two Early Childhood group's participants and the two founding members of the partnership that we had interviewed as first informants, in order to get further insights regarding the information collected from others and to best triangulate them. One of the two founding members of the partnership came out to have taken a brokering role in the Early Childhood group, intervening in meetings when the discussion stalled to help participants proceed towards results. We named him "external collaborator", as while he was the coordinator of the whole partnership, he was a supporter but not a formal member of the Early Childhood group. During the interview we asked him an account of his involvement in the group work, to better grasp the reason of his intervention and to uncover his role and the actions he enacted within the group.

While we collected data on the whole partnership work from its foundation in 2013 till 2017, for the purpose of this paper we will focus on the narratives and documents related to the events occurred between mid-2014, when the group was created, and mid-2015, when groups' collective proposals were generated and included in a common project document.

Archival data

During the interviews some of the informants referenced to documents, meeting minutes, lists of participants and communication material that had been produced during partnership work. We asked permission to borrow and copy the whole hardcopy archival available at the partnership's offices and in October 2017 we spent 7 hours there revising and copying paper documents on file. We also obtained further electronic material about projects drafts and proposals developed within the partnership from the administrative office. Furthermore, we gained access to the partnership's web community and we copied all posts and documents published there on server. We also electronically filed information published on the partnership website and videos uploaded on its web tv website. These data were then used to triangulate the information collected through semi-structured interviews and to get further knowledge about members' organizational affiliation and origin and about their actual participation in the meetings.

Analysis

In analyzing our qualitative data we adopted Miles, Huberman and Saldaña's (2014) methodology for qualitative analysis and we built codes, categories and aggregate dimensions within a process of constant iteration between data and theory (Strauss & Corbin, 1998).

First, we identified the relational dynamics that our informants reported within their narratives as characterizing the collective innovation process occurred between July 2014 and April 2015. After several iterations between data and literature on innovation, creativity and network, we gathered them into instrumental- and affective-related categories (see second column Figure 1). In particular, we grouped the dynamics comprising instrumental ties into three categories: *Individual reframing*, involving individuals' identification and questioning of existing assumptions once they get involved in interactions with others (Hargadon & Bechky, 2006); *Knowledge sharing*, entailing the exchange of past experiences and different

perspectives among participants that provides the raw materials for solving a problem in new ways (Hargadon & Bechky, 2006); and *Knowledge integration*, such as the participants' actions to combine individuals' shared knowledge to create new collective outcomes (Okhuysen & Eisenhardt, 2002). We instead categorized the affective-based dynamics in correspondence with Tasselli's (2019) conceptualization of three kinds of "love" having organizational significance given their role as important facilitators of interpersonal relations: Eros, Philia and Agape. Consequently, we built three categories entailing three different kinds of affective dynamics: *Individual engagement*, linked to Eros, includes affective dynamics urging individuals to create union with others and express their selves freely; *Trust building*, related to Philia, entails the empowering of trust and reduction of strangeness among participants; and *Attention to others and commitment to common goal*, associated to Agape, involves individuals in temporarily marginalizing themselves to enable interpersonal collaboration and interconnection.

Second, adopting a process perspective (Langley, 1999; Langley, Smallman, Tsoukas, & Van de Ven, 2013) we identified three different phases in which the process of addressing the social issue unfolded (van Tulder & Keen, 2018). We then gathered the instrumental and affective categories that emerged in the same phase and created three aggregate dimensions, each related to each phase of the process (see third column Figure 1).

Insert Figure 1 about here

At a next step we identified the behaviors that brokers performed to influence the contents of the relationships among participants throughout the innovation process (see first column of Figure 2) and we categorized them as addressing instrumental or affective ties. We categorized instrumental-related behaviors as: *Stimulating individual reframing*; *Encouraging knowledge exchange*; and *Fostering knowledge integration*. We instead gathered affective-related

behaviors as: *Supporting individual engagement*; *Sustaining trust building*; and *Fostering attention to others and to a common goal* (see second column Figure 2). We then constructed aggregate dimensions related to each of the three phases of the process (see third column Figure 2), each composed of both instrumental- and affective-related categories: *Fostering individuals' attachment to the problem and their awareness of the need of others to address it*; *Facilitating a creative mindset and relationships based on trust* and *Driving creativity towards shared outcomes*.

Insert Figure 2 about here

Eventually, we built a process model showing how the dynamics underlying the innovation process (both instrumental and affective) and the brokers' behavioral process facilitating them unfolded, allowing the achievement of a collective outcome.

FINDINGS

This paper investigates whether and how brokers contextually influence the development and interrelation of both instrumental and affective ties to maximize innovation outcomes within a collective innovation process involving multiple and heterogeneous individuals in the generation of a novel solution on how to address a social issue. The collective innovation process that we analyzed within our empirical setting was composed of three different phases indicating the advancement of the work carried out by participants to achieve a collective outcome: *Scrutinizing the problem and involving relevant stakeholders*; *Building consensus on problem's causes and on goals*; and *Achieving agreement on a common novel idea on how to address the problem*. Within each phase we found that individuals, in order to be able to proceed throughout the process, had to build and develop their relationships not only on the acquisition and exchange of knowledge or information but also on building an affect-based relationship among them. In order to allow the collective innovation process to advance and to reach a

collective outcome, these underlying dynamics, based on instrumental ties the firsts and on affective ties the latter, had to be interrelated. For instance, individuals' ability to reframe was affected by and in turn affected individuals' engagement; the exchange of knowledge among participants was enabled by and in turn enabled relationships based on trust among them; and knowledge integration was achieved through and in turn impacted participants' openness towards others and to a common goal.

As our analysis uncovered, two brokers intervened in the process to enable participants to develop and interrelate these two kinds of ties, achieving the multiplexity of ties needed for the process to advance towards a collective outcome. Through the combination of their behaviors these two individuals intervened in each phase of the process to influence the content of the ties (and consequently their multiplexity) whenever they perceived that the group was stuck and was not going to be able to pass to the next phase. The two brokers performed a combination of instrumental-related and affective-related behaviors resulting from the combination of different actions that they performed independently or in collaboration (substituting or complementing each other) to influence instrumental and affective ties among participants. This enabled them to realize the brokering multiplexity needed to successfully lead to a collective innovative outcome. Figure 3 provides a process model that shows the above-mentioned dynamics.

Insert Figure 3 about here

In the following paragraphs we describe for each phase of the process the instrumental and affective dynamics characterizing participants' relations and the behaviors that brokers performed to influence them, their multiplexity and to enable the achievement of collective outcomes in terms of collective novel solutions on how to address the social issue of school dropout.

Phase 1 - Scrutinizing the problem and involving relevant stakeholders

The first meeting of the group saw the participation of few representatives of the civil society, a teacher from a private school, a pediatrician (the group coordinator) and the Medical Director of the child and adolescent neuropsychiatry unit of the local hospital. Other founding members of the cross-sector partnership, including the external collaborator, audited the meeting. The discussion started from clinical data provided by the neuropsychiatrist who was reporting an extremely high number of children requesting access to the hospital unit he was directing. The puzzle was that only around 20% of these children were found to be affected by an organic pathology. The others were just representing a situation of distress.

This phase entailed individual participants to engage in the discussion and try and provide a definition of the problem. At the beginning, though, the group was too small and homogeneous, which was putting at risk its capacity to achieve a novel and inter-disciplinary view on the issue. In order to increase the variety of visions available, new members entered as new relevant stakeholders in addressing children's and their families' difficulties and having different professional backgrounds and perspectives on this. In this way, the discussion was enriched and deepened, fostering individual motivation to engage and the group's ability to get to the core of the issue. Other doctors and representatives of nonprofit organizations working with children and families, representatives of nursery schools, but also architects, individual parents and local administrators, among others, joined the group and broadened the discussion on the problem.

Individual reframing and individual engagement were the dynamics that were required to concurrently work in this phase, instrumental the first, affective the second, in order to allow the achievement of an adequate scrutinization of the problem and the involvement of the relevant stakeholders needed to obtain it.

Individual reframing

Confronting with the need to tackle the issue of school dropout since early childhood, participants had to start scrutinizing the reasons underlying it, engaging in analyzing its multifaceted characteristics and identifying its key underlying causes. They first had to mobilize their own past experiences, identities and knowledge on the topic and brought their first impressions on the discussion table. "We were meeting all together and each of us was giving his vision according to his angle", the group coordinator explained. As some of the participants highlighted, memebers "had very precise identities, […] everyone had his own style with a very specific viewpoint" and "everybody represented a different world". Thus, "they could give inputs, or clarifications, or implementation proposals" to the group for discussing. Getting in contact with different others stimulated their own individual reframing, and they started questioning personal existing assumptions on the problem. One of the brokers, when speaking about participants' reaction to this opportunity of exchanging views, highlighted that "many [of them] said that this stuff helped them to learn a lot". After few meetings, they agreed that the medical data reported by the neuropsychiatrist were an indicator of growing difficulty of relationships between adults and children. Yet the question remained: why so many children were suffering such a discomfort? To achieve a wider comprehension of the problematic situation participants actively engaged in mindful exploration to acquire new information from other (and newly engaged) participants in order to be able to further reframe and propose novel insights that could help unveil the issue. As the group coordinator described it, "this was truly a moment of great flowering of ideas and work, when in fact we tried to identify together problems and the possible solutions that could be implemented".

Individual engagement

Participants got involved in the process pushed by different motives linked to the different positions they covered in relation to the issue, to their background and previous experience on it, to their affiliation to organizations of different sectors and to their different roles within these

organizations. This engagement and motivation to participate within a collective, though, was quite difficult to achieve at the beginning. For instance, engaging new members and widening the discussion meant "putting together so many different heads, which is not easy, […] with visions a little different from each other" and also raise "professional competitiveness… […] because they had very specific interests to protect […]. Their own bell tower, their own backyard".

Brokers' intervention, as we describe later, was key for helping participants to overcome this self-closure. After a period of meetings it became clear that everybody generally recognized that the topic discussed was important and that there was the need to identify novel and more effective solutions to tackle it. Thus, they all got interested in being engaged in a meaningful conversation with others having different expertise related to children and families.

> "The people who remained in the group were those that had already worked in the territory but didn't have obtained much results. In the sense that in any case they were really interested in trying a way to be there on the territory".

Eventually, everybody openly engaged to bring their different identities, ideologies and knowledge on the table. As one of the group participants clearly explained, individuals' commitment was motivated by the feeling of having a strong ideal for which it was worth to engage together with others:

> "The amazing thing of this stuff here […] is that there was the ideal note of saying: 'we do something for our children, in [the Province]. Let's get together and try to do something new'. That makes the difference."

Brokers' behaviors

The brokers' behavior characterizing the first phase of the process was related to supporting participants in engaging in the process and fostering their perception of the importance of the social issue to be tackled. Furthermore, they encouraged participants to get in contact with other

stakeholders with different perspectives and interests on the topic in order to enable them to reframe on the issue and scrutinize its underlying causes more effectively. This behavior allowed brokers to address both instrumental dynamics, stimulating individual reframing, and affective dynamics, supporting individual engagement.

Stimulating individual reframing

Both the two brokers intervening in the group, the external collaborator and the group coordinator, performed this behavior, in different but related ways. The external collaborator, after the first group meeting, stimulated participants to "expand the group to disparate people, because [they] need[ed] to have perspectives, somewhat different views". As he explained to the group: "if you all speak the same language, more or less all think the same way, this thing doesn't work, it doesn't allow you to see things that maybe an outsider would see". In this way he enabled participants to increase the opportunities available for them to compare their visions with different ones that they recognized as valuable to discuss with, fostering their possibility to reframe.

When the group became more heterogeneous and numerous, and the discussion more complex, the external collaborator engaged in driving the direction of individuals' thoughts towards continuing analyzing the problem in a deeper way first, a process that was needed to set the grounds for a common understanding of the problem and its underlying causes, and that could set the bases for a more effective discussion on possible solutions later on. As the group coordinator explained

> "when we perhaps were deviating, [the external collaborator] was telling us: no, we must go back to understanding the situation, then we will find solutions, but now we must understand all the dynamics".

The group coordinator, at the same time, encouraged individuals' reframing by broadening the range of information that participants had at their disposal bringing to the group "the identification of mothers' problem […] [which] was very important for [them]". She enriched

the discussion by providing data and information that she had collected during her long experience not only as a pediatrician with more than 2,000 patients but also as a representative of the Pediatric Network of the Province. She especially bridged information coming from stakeholders that were crucial for the issue at hand, as "she knew also the mothers, the foreign mothers, and therefore all the targets on which you could really even intervene on so many things". Which importantly stimulated participants' thinking and reframing.

Supporting individual engagement

While the group coordinator kept her role of transferring new knowledge and information to the group for nourishing the discussion, the external collaborator also engaged in supporting the affect-related side of participants' intervention. In order to support participants' individual engagement within the group and throughout the process, he engaged in different strategic interventions to foster individuals' attraction to each other, providing opportunities for making them start and maintain relationships over time. First, he encouraged participants to make their own proposals about the relevant stakeholders that could be invited to join the conversation.

> "[The external collaborator] personally never contacted anyone. […] We [participants] were the ones who contacted the people, who knew who, […] and they were contacted."

In this way he acted as a neutral figure, providing participants with a greater sense of attachment to and ownership of the group. Second, his encouragement to open the group to novel members with different perspectives and interests increased the appeal of the challenge that the group was going to face, increasing the complexity of the discussion but also the likelihood of successfully reach the generation of a novel and more effective solution on how to tackle the social problem, fostering participants' motivation for commitment. As one of the group members claimed, participants' commitment was very high at this point:

> "We had a glorious moment in which we all really believed in [our task], we were motivated, because we hoped we could do this [find a novel and effective solution to the problem]."

Third, once the new partners had been introduced, he supported their commitment creating a sense of community among participants, attaching to their task a higher ideal value that could be shared by everybody, producing "a kind of contagion in this search of values" and showing them that he strongly believed in it:

> "When they [the new group members] came there […] it's like if you had created a community where you could still believe in values, right? This thing in my opinion was also intriguing. Because in any case [it involved] the beauty, even of life, of being able to believe in impossible things. Because [the external collaborator] proposed us impossible things, but he believed in them deeply and concretely."

Phase 2 - Building consensus on the problem's causes and on goals

While the very first phase of group work was mainly aimed at fostering individual commitment to the task, the collective innovation process subsequently entailed efforts aimed at breaking the relational boundaries existing among participants. This allowed the flows of knowledge and information to move among them and reduce unfamiliarity, and the achievement of an agreement on the issue's causes and on a common goal. In this phase, after a long period of discussion, the group eventually reached consensus on the causes of the problem: children suffering was caused by parents' inability to emotionally engage in the relationship with them since early childhood. As participants agreed that the problem was coming from the social isolation of the family, finding solutions to help parents getting out from their alienation became the group's goal.

Knowledge sharing was the instrumental underlying dynamic characterizing this phase, and trust building was instead the affective component. The interrelation of these two dynamics allowed the group to achieve consensus on which were the causes of the problem to be addressed and on the common goals that had to be reached.

Knowledge sharing

As the group participants allowed themselves to open their minds and engage in working with others on the issue, a next requirement for the process to go on was to put all their different expertise, competencies, perspectives on the topic on a table and share them with each other. As one of the participants explained "there were very different skills within the group. […] And this actually worked at the beginning". Nonetheless, when the number of participants increased, widening their differences in expertise and pedagogical views, the exchange of visions and thoughts started occurring chaotically and without containment. "A lot of richness but also a lot of disorder", another participant told us describing group work in that period.

Looking at the group from outside, one of the partnership members referred that there had been some conflict in there, as "it's not that everyone agrees on the definitions, on everything. So, it was hard to get to one [definition]". Thus, brokers had to intervene to avoid the group to stuck and to allow a meaningful sharing of ideas and perspectives.

> "And so, there was a bit more of a mediation role, probably, to find a way out, because visions, thoughts, even theoretical visions were different."

Another partnership member, reflecting on this issue afterwards, highlighted the difficulty of disciplining and mediating all the different visions and thoughts resulting from individuals' reframing on this complex problem in order to achieve consensus on the problem's causes and on goals:

> "Let's say that there [in the Early Childhood group] the problem of disciplining the traffic of ideas and stimuli was even more pronounced because… because the early childhood is at the origin, and therefore at the origin you have the Big Bang. That is, you have a storm of ideas, of thoughts on what can be done. Which was not so easy to organize."

Trust building

Trust had to be built among participants in order for the sharing of knowledge to work properly and to get to a shared consensus on causes and goals. During several meetings participants had

"great discussions [in which they] talked about [the problem] a lot". As one of the partnership founders remembered "they often met and continued to argue but [they seemed] never to […] produce a concrete idea". Nonetheless, as one of the group participants told us:

> "[being many people participating] in effect allowed, slowly, to discuss a lot about [the issue], and this has been useful, to get to know each other and then start to elaborate a project".

This allowed participants to have "made a journey" together and to eventually "share a mentality". "[…] Having worked together so much, we have inside a common fabric", reported one of the participants. This was the result of having built a relationship based on trust in one another, which allowed to create "a broader network culture". "We do an exercise in perception" explained one of the group participants:

> "In my opinion, there is a perception on everything others do. I know what he does, what she does. Then we interact. Then I go on. Then maybe there's a contact so you can agree maybe partially for one thing. But it is more an exercise in the perception of the other rather than a collaboration with the other."

Despite the conflict of visions among them, they eventually seemed enjoying participating in the meetings and never ended up in quarrels.

> "Well there were also opposite visions, quite different inside [the group], right? […] For example […] there were two irreconcilable visions, really. […] And […] it's not that it happened… they didn't fight or anything, but those were two very different visions of the world of childhood".

Building trust allowed participants to create stronger relationships among them. "There is also a matter of personal relationship" explained us a group participant "which are things that bring us closer in the field as well". These relationships also allowed participants to overcome "a certain fear […] that some pieces will be taken away from them" and to openly share their knowledge, allowing to "really put together completely different experiences."

Brokers' behavior

The behavior that brokers performed in this phase was aimed at fostering the group's collective creative mindset towards the achievement of a common idea on which were the causes underlying the issue of school dropout, and at encouraging them to build trust among each other for a more effective knowledge sharing and for the definition of a common group goal. This behavior thus enabled to address both instrumental dynamics, encouraging knowledge exchange, and affective dynamics, sustaining participants in building trust among them.

Encouraging knowledge exchange

The group coordinator was the broker who mainly encouraged knowledge exchange among participants. She collected all the ideas coming out from the discussion and she mainly engaged in transferring the flow of knowledge and information coming from participants during the meetings, encouraging knowledge exchange. After each meeting, with the help of the external collaborator who audited all the meetings, she summarized what had been proposed and sent it back to participants for engaging them in internalizing the new knowledge and ideas exchanged.

> "I used to gather the ideas of that [meeting]. We put down a summary of the things that had arisen and sent them to everyone".
>
> "Well, we did a job, then I [the group coordinator] said: look, we arrived at this point. All with emails, everyone received emails. And then we made a summary of the things that had been said".

Then, she proposed this summary as a starting point for the next meeting's discussion.

> "That is, what do we write? We write like this, we send everyone around. Do you agree on what we wrote? Let's change [the content]."

In this way the broker supported participants in familiarizing with each other's knowledge and she started being recognized as an intermediary and reference point for expressing and exchanging ideas:

> The pediatrician [the group coordinator] has done this element [of reference point] a bit... […] In fact we referred to her to say things […].

Her competence as a pediatrician on early childhood was an added value for being involved in the discussion. Being part of their professional group, she had a key role in translating knowledge and information that doctors participating in the group were bringing in so as to make them comprehensible also to the others. As one of the participants explained us:

> "[…] many of those who we had co-opted at the beginning were doctors, psychologists. And therefore, for her [as a pediatrician] it was easier to understand them".

Sustaining trust building

Despite the group coordinator's effort to gather and encourage knowledge exchange, once the group became larger and more heterogeneous it became clear that for the sharing to be effective participants needed to build trust among each other. While the pediatrician had actively engaged in facilitating knowledge exchange among participants, she seemed to fail in sustaining the affective contents of their relationships. Her experience as a pediatrician had improved the effectiveness of the exchange of knowledge, but the downside of it was that, once the group expanded to a larger variety of participants, she seemed not to be able to get out from her individual experience.

> "[The group coordinator] was competent. She is a doctor though… […] She lived everything through her angle, rightly, her experiences with mothers, with illness. […] Which is fine, but she was a doctor".

This made her "either […] unable to mediate or […] [to have] such a motivated interest to involve the group in one direction". Which resulted in some of the participants getting stuck on personal opinions and positions without building a sense of affinity and proximity with others.

As one of the participants highlighted, she did not activate the emotional intelligence needed for facilitating the affective dynamic needed for knowledge sharing to work. This excerpt, in which this participant makes a comparison with another group's coordinator, clearly explains this:

> "There should have been, let's say, a [hybrid] figure among the educator, the therapist ... Having concurrently... [technical competence] but also […] an organizational capacity. Which is a figure not easy to find. […] In the school you can have the experience of a good teacher who still has the ability to grasp also the relational aspects, the emotional intelligence also to grasp these aspects of the stomach further than those of the head, right? […] [The other group's coordinator] personifies this, doesn't she? Here [in the Early Childhood group], absolutely [it was not like this]".

The external collaborator stepped in to help the group coordinator when the discussion got stuck, so as to enable people to come out of their entrenchment and to participate to the knowledge exchange process with mutual confidence. He partly succeeded in this, as he presented himself as a neutral figure external to the group ("at the Early Childhood" group level "[the external collaborator] was not recognized as a group leader") and intervening just to facilitate the unfolding of the relationships among participants, as he did not have competence on the topic of the discussion ("[…] his skills were others. He tried to address [difficulties]").

Phase 3 - Achieving agreement on a common novel idea on how to address the problem

Building trustworthy relationships and exchanging knowledge was not enough to reach the generation of a collective innovative outcome integrating group members' different perspectives. Becoming a "creative collective" (Hargadon & Bechky, 2006) sharing a collective vision and work collectively towards a common outcome was needed. Within this phase the discussion shifted to the definition of concrete solutions on how to tackle the social issue. Participants proposed different solutions based on their own experience and background and the group initially seemed no to be able to reach a common agreement on which was the best approach to be applied to tackle the problem. Eventually, the group reached a novel common idea that overcame individual diversities and was finally accepted by all the parties: a new professional figure acting as a relational facilitator was going to be introduced in the society

and collaborate with public and private services to support parents in their journey with their children since pregnancy.

Knowledge integration and attention to others and to common goal were the instrumental and affective underlying dynamics within this phase, allowing participants to reach a common novel solution on how to address the social issue.

Knowledge integration

In order to enable participants to reach a collective idea, the exchange of knowledge realized within the previous phase had to evolve into a multiplication of the resources available to the group, creating a synergistic energy. The process towards reaching this integration took long time. Indeed, participants "were not able to really build a compact group's strength that was synergistic, that considered the uniqueness, the diversity of each one, but managed to [integrate perspectives]". One of the group members expressed us his feeling of having failed in this integration:

> "This experience is not a multiplier … How to say, sharing as a resource multiplier, right? There is still so much the idea that in any case at the end of the day it is better if one looks after her own backyard and goes on doing what she is already doing".

Despite having developed familiarity among each other, individuals hadn't engaged in listening others and communicating among them. "If you continue to criticize, you destroy everything but don't give me an alternative… What do you build?", told us a participant. "Everybody was clung to his position" she explained, "[barriers] have probably risen even more".

> "Well, if you don't meet […], you don't say what you think and don't have a way for communicating, you remain stuck on your previous position and you barricade yourself even more, don't you? […] We always come back to the usual issue of proper communication and capacity for listening […]. Because everything always revolves around this […]".

When asked about this group's performance the external collaborator agreed that this group "was a complex group that went a bit on its own, so in the end it was a bit complicated to

succeed on the content". "But […] when they talked together at the end […]", he said, "I think they understood each other quite well".

As one of the partnership members explained us, this was also linked to the topic of the discussion that made the acceptance of others' perspectives and knowledge even more difficult. Within this group "there is also a lot of science, in the sense of theory […]. So obviously I imagine […] it is more difficult to come to the sharing of a thought". Even if participants could agree on a general goal, then the challenge was to "go into it, understand what it means. Of course, when you have entered a certain level it is clear that everyone has his own method". Thus, they had to find a solution that "was fine in any case", that could reconcile their different visions.

> "To take an action on early childhood, everybody thinks in a totally different way from the other. It is difficult to get to have a common thing. Then, when they arrived at the relational facilitator everyone agreed. Because the relational facilitator was fine in any case. In other words, a person who helps parents to be more empathetic with their children, who put their parents in communication with all the services in the area, etc. It was a figure who instead reconciled all the positions."

Attention to others and commitment to common goal

By the time they had to generate a collective novel idea on how to concretely prevent school dropout, and thus parents' isolation from society as its main underlying cause, it became clear that participants' individual interests were still prevailing over the will to build something new together. As some of the group participants highlighted, while "everyone worked to reach the goal [that] was the same for everyone […] [t]he ways to achieve the goal were different". Some of the members were just "there to make a contribution", others "also envisaged an economic revenue" or had "interests much more demanding [in terms of] job [involvement]" in the future operationalization of the solution. Furthermore, most of them had "a strong identification with

one's own mission and therefore this makes [members] more withdrawn with respect to encountering with the other, with the mission of the other".

> "We talked, we talked and then, how to say, we didn't get anywhere. It is as if we continued to walk in the lawn and turned in circles".

Achieving a common understanding "required a quite considerable investment. And also throwing ourselves […] much more", overcoming the "personalisms and prima donnas" and the idea that "I'm from my party, you're from your party", being "willing to put together the experiences" and "go above each one's own identity".

This was something difficult to achieve, given the same topic on which the discussion was held, as one of the group participants explained us:

> "When you talk about early childhood you have so many variables. From the pediatrician to the health worker, but also those who do care work, those who do prevention, those who support, those who do games, the kindergarten. There are so many figures that are a bit of paradises on their own, right? That's why it becomes very difficult [to interact]. It is really necessary to have a willingness to think in a way that deconstructs yourself a bit from what is your specific competence and try and build [something] together".

Especially thanks to the intervention of one of the brokers the group eventually succeeded in this also enabling knowledge integration:

> "All this research, study and in-depth work has been very interesting to create relationships with people, to meet and even to open one's mind".

Brokers' behavior

The brokering behavior performed to address the above described underlying dynamics characterizing this phase was aimed at driving participants' creativity towards shared outcomes, fostering on the one hand the integration of participants' knowledge into an innovative idea,

and on the other hand their openness towards the others and their attention to the group's common goal. This behavior was mainly performed by the external collaborator.

Fostering knowledge integration

When participants entered in never ending discussion on theoretical and philosophical issues about early childhood, the external collaborator intervened in the process to help the group proceed towards the generation of a novel collective idea.

> "At a certain point [the external collaborator] told us: well, yes, these things here, but you have to create, you have to create something, you have to create something. […] Then he gathered, he gathered anyway, because then he always gathered the common feeling […]. He interpreted it, re-elaborated it and then said: do you share this? Yes, no… In fact, something came out from this group too".

Leveraging his neutral vision, he interpreted and re-elaborated the knowledge and ideas resulting from the discussion. He supported and fostered the flow of thoughts coming from the group "every now and then […] pos[ing] problems in the discussion […] or giving ideas telling some stories" but "without ever […] leveraging his position". More importantly, what the external collaborator brought into the group was a "methodological aspect that […] was independent of the subject, of the profession. So, it had nothing to do with psychologist, doctor, administrator", that allowed the participants to overcome their differences and invest in really starting communicating with and listening each other and thus try and build something together that could reconcile all their individualities.

Fostering attention to others and to a common goal

The external collaborator motivated participants to achieve their group's goal, pushing them to marginalize their own interests and opening themselves to others' perspectives. As one of the group participants explained, he made participants aware of the potential connections among their ideas, "find[ing] a logical thread" and pushing them to recognize the value of others' thoughts and perspectives, "always remember[ing] that [their] purpose was [the partnership's

goal]" and "mak[ing] sure that everyone arrived at the end". While pushing individual thinking further towards collective goals, he also tried to stimulate shared thinking:

> "Well [the external collaborator] always participated with the role of succeeding in putting everything together, I must say ... Of a stimulus, of course, of [individual thinking] ... and then putting everything back together, trying to bring us back to [our goal]."

Being ignorant about the topics at hand in the group, his intervention focused on stimulating individual thinking, interpreting the common feeling and moving the discussion to a less technical and scientific level to foster knowledge integration towards a collective innovative outcome. He also encouraged participants to realize that aside the important ideological aspect of the discussion there was a material (economic) aspect linked to the possibility to concretely experiment the ideas coming from this integration. This allowed them to put to the side their worries about the sustainability of their engagement and feel more free to be creative.

> "[The external collaborator] had the ability… there was an actual aspect and an ideal aspect to carry forward together, always […]. A material, and an ideal aspect. […] If you do only material things at some point you ask yourself: what am I doing? And then stop going. The things that really create something generative are the things that bring these together".

DISCUSSION

Brokers have been recognized by network scholars as drivers of innovation thanks to the opportunities linked to their structural position allowing them to bridge alters (Burt, 1992; Burt, 2004) but also to influence the content of the ties that link them (Obstfeld, 2005; Obstfeld et al., 2014). Despite recent suggestions about brokers' potential in shaping and sustaining both instrumental and affective ties (Lingo & O'Mahony, 2010; Obstfeld, 2017; Halevy et al., 2019), research studying brokers has till now mainly overlooked the relevance of accounting for the multiplexity of the relationships developing within networks highlighted by network scholars. Considering network ties as involving both instrumental and affective components and their

interrelation (Granovetter, 1973) is key for understanding how innovation outcomes are achieved (Ahuja et al., 2012; Shipilov, 2012; Casciaro, 2014).

Brokers' role in influencing instrumental and affective ties has till now been studied separately within instrumental (e.g. Ibarra, Kilduff, & Tsai, 2005; Sapsed, Grantham, & DeFilippi, 2007; Carnabuci & Diószegi, 2015; Hahl et al., 2016; Li et al., 2018) and friendship networks (e.g. Sasovova et al., 2010; Kleinbaum et al., 2015; Tasselli & Kilduff, 2018). This has led to a missed opportunity to uncover the actual behavioral process that brokers undertake in contextually impacting the development and interrelation of these two kinds of ties for the achievement of innovation outcomes.

We address this issue by exploring brokers acting within a collective innovation setting involving multiple and heterogeneous participants working together for the generation of a novel inter-disciplinary solution on how to address a social issue. We examined the instrumental and affective dynamics underlying participants' interactions in three different phases of the innovation process and the behaviors that brokers performed to sustain and foster them for facilitating the achievement of a collective outcome. We uncovered that brokers, within a same innovation network, combined instrumental- and affective-related behaviors within a multiplex brokering process to address multiplex dynamics of interaction throughout the innovation process. This multiplexity was enacted by two brokers, who complemented and/or substituted each other throughout the three phases.

Contributions

In unpacking these findings, we make two main contributions to organization theory. First, we show that the previously distinct conceptions of brokers as separately influencing instrumental and affective ties in networks are interwoven throughout the innovation process. Second, we provide a process model that identifies the different types of instrumental and affective relational dynamics, and their interrelations, encountered within different phases of a

collective innovation process involving multiple and heterogeneous participants, and uncover the behavioral process through which brokers influence this multiplexity of relations for supporting the achievement of collective outcomes.

Multiplex brokering: a dialectic approach to brokers' behavioral process in producing impact on innovation. Despite network literature recognizes the presence of both instrumental and affective ties in innovation networks (Ahuja et al., 2012; Casciaro, 2014), scholars have studied brokers' impact on instrumental and affective ties separately. Existing research on brokers relies on a strong distinction between instrumental and friendship networks (e.g. Gómez-Solórzano et al., 2019), overlooking the importance of the multiplexity of instrumental and affective ties for the generation of innovation outcomes. Thus, we have a deep understanding of brokers' role in influencing knowledge and information flows within instrumental networks (Ibarra et al., 2005; Sapsed et al., 2007; Carnabuci & Diószegi, 2015; Hahl et al., 2016), and of their influence on friendship networks (Sasovova et al., 2010; Kleinbaum et al., 2015; Tasselli & Kilduff, 2018). At the same time, literature on brokers has recently suggested the potential that brokers could have in both affecting instrumental and affective ties within work- or task-related networks (Obstfeld, 2017; Halevy et al., 2019), especially when multiple and heterogeneous perspectives and interests need to be reconciled for the achievement of a collective outcome (Lingo & O'Mahony, 2010; Sala & Boari, 2019).

By examining multiplex brokering within a collective innovation process, we overcome the separation of these two seemingly contradictory roles and show that brokers play a dual function to enable the achievement of novel collective outcomes within an innovation network involving multiple and heterogeneous participants. Brokers in our empirical setting did not influence instrumental ties separately from affective ties. Instead, they interwove instrumental- and affective-related behaviors throughout the collective innovation process, following a dialectic approach to addressing the multiplexity of instrumental and affective dynamics

underlying participants' interactions, necessary for the achievement of a collective outcome. This multiplex brokering can be carried out by a single person (broker) or by multiple brokers (for instance, two in our empirical setting) who complement or substitute each other's actions for the achievement of a common outcome.

As brokers facilitated information and knowledge flows among the heterogeneous actors involved in the creativity process – stimulating individual reframing, encouraging knowledge exchange and fostering knowledge integration – these same behaviors could result in an unsuccess for the achievement of a collective outcome if enacted alone. Indeed, while managing knowledge was an essential element for building on and integrating different perspectives and expertise, it was participants' willingness to be engaged and their availability to build trustworthy relationships and to raw towards a common goal what built the preconditions for instrumental dynamics to successfully unfold. To address this need of multiplexity brokers undertook a multiplex brokering process combining behaviors influencing both instrumental and affective dynamics when this was necessary for enabling participant to successfully proceed throughout the different phases towards the generation of a collective outcome.

A process model of multiplexity in collective innovation and brokers' behavioral process in sustaining it. Literature on networks and innovation has uncovered the importance of considering the multiplexity between instrumental and affective relationships within networks for the achievement of network outcomes (Balkundi & Harrison, 2006; Ahuja et al., 2012). This has led to the acknowledgment of the impact that relationships' affective contents have on instrumental or task-related ones (Casciaro & Lobo, 2008; Sosa, 2011; Gómez-Solórzano et al., 2019) and vice versa (Casciaro et al., 2014). Our findings add to this literature by uncovering three different kinds of dynamics that need to be sustained for achieving the successful advancement of the process of creating collective innovative outcomes, each composed of both an instrumental and affective component in interrelation. Each multiplex

dimension emerging from this combination characterizes different phases of evolution of the collective process. These findings unpack and deepen our understanding of the multiplex dynamics characterizing the process and enable the identification of strategic actions that can be taken to impact its progress towards the achievement of collective outcomes.

In line with literature on brokers and innovation that recognizes the important function that brokers cover in innovation networks and in the achievement of innovation outcomes (Burt, 1992; Obstfeld, 2005; Hsu & Lim, 2013; Balachandran & Hernandez, 2018), we uncovered the key role that brokers played in sustaining the collective innovation process. This literature has mainly focused on the role of brokers in impacting innovation and creativity through managing knowledge and information flows among unconnected or already connected others (e.g. Kirkels & Duysters, 2010; Boari & Riboldazzi, 2014; Wang, 2015; Samford, 2017; Li et al., 2018) and only recently has suggested their potential in brokering also affective contents (Lingo & O'Mahony, 2010; Obstfeld, 2017; Sala & Boari, 2019). Whether and how they concurrently address instrumental and affective dynamics and their multiplexity is though still unclear. We thus uncovered the behavioral process that brokers performed for influencing instrumental and affective ties characterizing the innovation process. This multiplex brokering, combining both instrumental and affective-content behaviors and their dynamic change in relation to changes in collective underlying dynamics, sustained and fostered the multiplexity underlying the process allowing the achievement of a collective outcome.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Although we believe that multiplex brokering may be more popular than extant research suggests, we acknowledge that our research focused on a specific setting and industry, characterized by the involvement of multiple and highly heterogeneous participants, with few or no previous direct contacts, in the collective generation of a novel and inter-disciplinary idea

on how to tackle a complex and previously undefined social problem. It may thus be the case that in other settings characterized by less complexity (e.g. with fewer and more homogeneous participants) the affective dynamics that we found to be so important to be tackled in our empirical setting could present with a lower strength. It thus remains an open question whether brokers intervening in settings and industries with different characteristics may need to address both kinds of dynamics, if the same or different instrumental and affective dynamics would emerge, and what role they would play in addressing them. Future research could examine multiplex brokering across different industries and kinds of innovations, also characterized by different levels of heterogeneity of participants and different levels of acquaintance among them, to explore how brokers sustain and foster ties multiplexity. Furthermore, we focused on three phases of the innovation process, corresponding to the generation of a novel solution on how to tackle a social issue, while future research could explore brokers' multiplex role in addressing instrumental and affective dynamics at different phases of the innovation process (Perry-Smith & Mannucci, 2017).

This research has also implications for how scholars examine brokers' behaviors in networks. Rather than focusing on behaviors addressing single ties contents, we need to investigate how the multiplexity of ties characterizing the context in which brokers are involved requires them to combine multiple behaviors, allowing them to achieve the expected impact and outcomes. Indeed, scholars need to scrutinize how brokers address existing situations to influence the advancement of collective processes aimed at answering complex problems, as those characterizing our society. The challenges characterizing relationships that originate from the complex organizational forms that we increasingly adopt, as for example those involving organizations and individuals into project networks (Lundin et al., 2015) or cross-sector collaborations (Bryson, Crosby, & Stone, 2015; Murphy, Perrot, & Rivera-Santos, 2012), as well as from the wickedness of the problems that we need to tackle in interaction with others

(Weber & Khademian, 2008), suggest that brokers will have a significant role in impacting multiplex interactions. Brokers' behaviors in addressing different kinds of multiplexity may also be studied, at different levels of analysis. For instance, research may consider multiplexity involving social and economic ties (Ferriani et al., 2013), competition and cooperation (Shipilov & Li, 2012), hierarchical and horizontal relationships (Uzzi, 1996), to name a few.

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FIGURES AND TABLES

Figure 1. Data structure collective innovation underlying dynamics

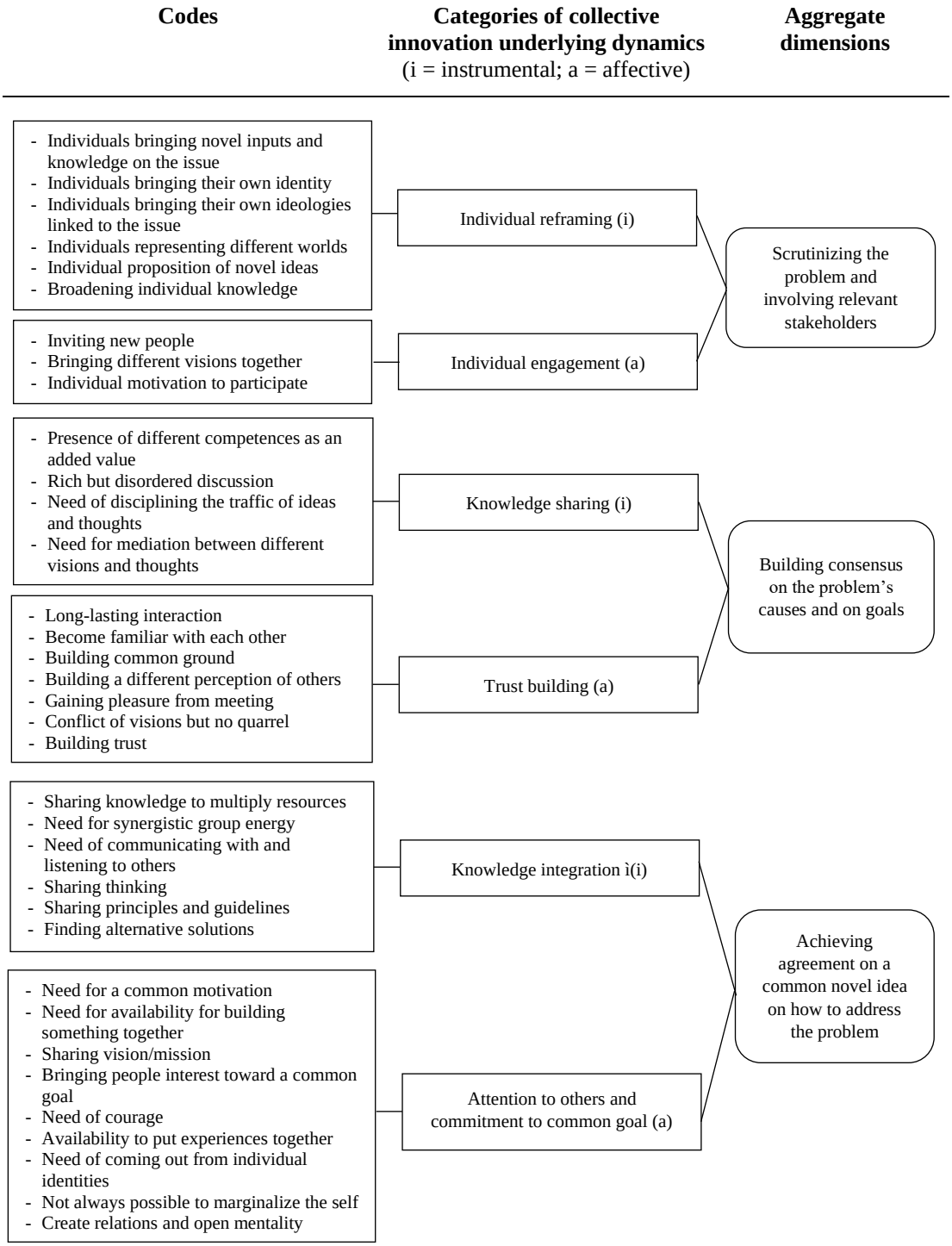


Figure 2. Data structure brokers' behaviors

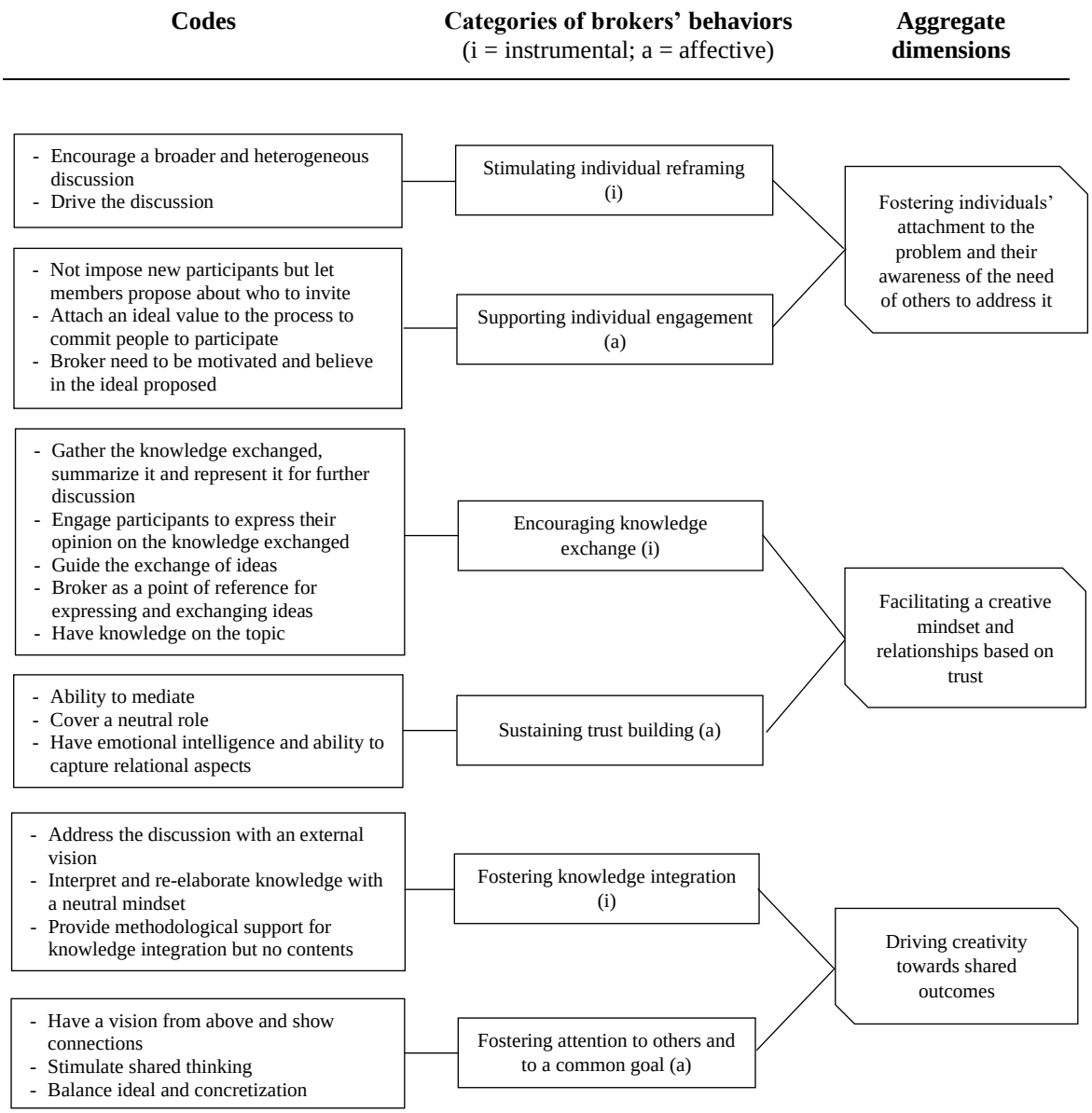
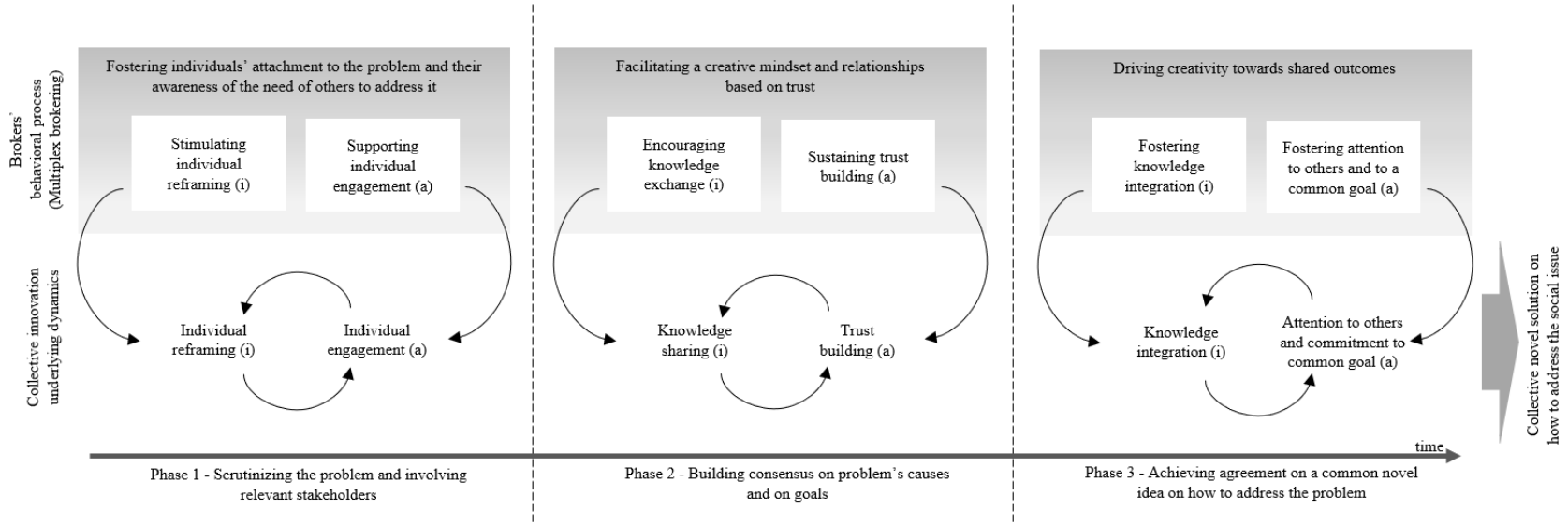


Figure 3. Process model



i = instrumental; a = affective

Table 1. Early Childhood group participants and informants

Early Childhood group

Interviewees

Professional affiliation	Sector affiliation	Role in the group	N. of group meetings attended (07/2014-04/2015)	% of participation to group meeting (07/2014-04/2015)	N. interviews	Time interview (h)
Pediatrician	Public healthcare	Group coordinator	7	70%	1	0:34
President of association providing services to families	Private nonprofit	Participant	9	90%	2	0:56 1:18
Psychologist and teacher	Private school	Participant	9	90%	2	0:50 1:19
President of association for the protection of the environment; former teacher at nursery school	Private nonprofit	Participant	9	90%	1	1:14
President of family association providing social and educational services	Private nonprofit	Participant	8	80%	1	0:56

Participants

N. of teachers (private schools)	N. of healthcare doctors		N. of civil society representatives		N. of architects	N. of parents	N. of others	Total N. of participants to group meetings	Total N. group meetings (07/2014-04/2015)	Mean N. of paticipants to each meeting
	Public	Private	Doctors	Other staff						
2	*7*	*9*	*9*	*20*	*2*	*3*	*3*	***55***	10	14

Other groups / partnership members interviewed	N. interviews
Administrative officer at bank foundation; President of national association of community foundations (external collaborator)	2
General Secretary of community foundation	2
President of community foundation	1
University professor and physicist	1
N. 2 university researchers	1
Administrative staff at the community foundation	1
Statistician; president of local association	1
Movie director; communication professional	1
Manager at institution representing artisan and small firms	1
President of association providing services for disabled people	1
Project manager at association providing social and educational services	1

ANNEX 1 – Quotes and coding collective creativity underlying dynamics

Quotes	Codes	Categories	Theoretical dimensions
Invitations to the Early Childhood table were made by the Foundation's secretariat [who managed the partnership]. How? By inviting doctors, inviting whoever, through their connections, they knew that could give inputs, or clarifications, or implementation proposals to understand how to move. (Interview with IB, group participant, 2018-05-08)	Individuals bringing novel inputs and knowledge on the issue	Individual reframing	Scrutinizing the problem and involving relevant stakeholders
When we identified all these figures of reference, what happened is that on the one hand we had the information, that is on what the problems were, what the needs could be. (Interview with AMV, group participant, 2017-12-05)			
What happened, however, is that these people had very precise identities, and therefore also that they already had important roles and tasks […]. So […] everyone had his own style with a very specific viewpoint. (Interview with AMV, group participant, 2018-05-03)	Individuals bringing their own identity		
[One of the participants] had this naive idea... So, I don't know how to say, we were not agreeing already on this thing. Because you understand […] ... on her part there was a pursuit of an old ideal that had been verified as not being good, because otherwise it would have yielded results. But if we have a high school dropout, and until now we have built kindergartens, kindergartens, kindergartens and it has not gone well, you say: okay, there can be many variables. But one of the important variables we found was the sense of belonging, therefore staying with the mother. So, if you claim that the mother must be autonomous ... do you understand? She had entered into an ideology, for example. (Interview with AMV, group participant, 2018-05-03)	Individuals bringing their own ideologies linked to the issue		
We met all together. Then yes, there was ... when it was needed to sum up maybe we were meeting in a few, but ... there were moments when we were less, to wrap up, but mainly [we met] all together, because everyone represented a different world. (Interview with RM, group coordinator, 2017-10-25)	Individuals representing a different world		
We were meeting all together and each of us was giving his vision according to his angle. And this was truly a moment of great flowering of ideas and work, when in fact we tried to identify together problems and the possible solutions that could be implemented. (Interview with RM, group coordinator, 2017-10-25)	Individual proposition of novel ideas		
Then that [architect] maybe came once. Then maybe he had some crazy ideas, he wanted to limit cars' speed to 30km/h [downtown] and that's it. […] But it's all part [of the game] ... It entailed structuring little by little, and also de-structuring. (Interview with IB, group participant, 2017-10-23)			
The point is that normally they didn't talk together. Many [participants] said that this stuff helped them to learn a lot. I don't know, this is a phrase that often recurred. (Interview with BC, external collaborator, 2017-12-05)	Broadening individual knowledge		
The nice thing was putting these experiences together. For example, I came to know a vast world of people who work on this topic of early childhood, of situations that I may have known by name but never verified. Beautiful experiences, instead. (Interview with GB, group participant, 2018-05-03)			
All the participants [were proposing people to invite]. They said: you know I know an architect who takes care of the environment, of a healthy environment. So, can we invite him? Yes, let's invite him. (Interview with IB, group participant, 2017-10-23)	Inviting new people	Individual engagement	
Clearly it was putting together so many different heads, which is not easy. […] Different heads, and this is good, even though with visions a little different from each other. As it is right in these occurrences. (Interview with GB, group participant, 2018-05-03)	Bring different visions together		
The people who remained in the group were in a certain way those that had already worked in the territory but didn't' have obtained much results. In the sense that in any case they were really interested in trying a way to be there on the territory. (Interview with AMV, group participant, 2018-05-03)	Individual motivation to participate		
The amazing thing of this stuff here […] is that there was the ideal note of saying: 'we do something for our children, in [the Province]. Let's get together and try to do something new'. That makes the difference. (Interview with GB, group participant, 2018-05-03)			
We had a glorious moment in which we all really believed in [our task], we were motivated, because we hoped we could do this [find a novel and effective solution to the problem]. (Interview with AMV, group participant, 2017-12-05)			
Perhaps [there was] professional competitiveness ... [...] because they had very specific interests to protect [...]. Their own bell tower, their own backyard. (Interview with IB, group participant, 2018-05-08)			

It is not that there were so many roles. There were very different skills within the group. So,[…] there was the pediatrician, there was for some time the neuropsychiatrist, […] there were various skills, and this actually worked at the beginning. (Interview with GB, group participant, 2018-05-03)	Presence of different competencies as an added value	Knowledge sharing	Building consensus on the problem's causes and on goals
[There was] a lot of richness but a lot of disorder [in the discussion], I can tell you this. (Interview with IB, group participant, 2018-05-08)	Rich but disordered discussions		
Let's say that there [in the Early Childhood group] the problem of disciplining the traffic of ideas and stimuli was even more pronounced because... because the early childhood is at the origin, and therefore at the origin you have the Big Bang. That is, you have a storm of ideas, of thoughts on what can be done. Which was not so easy to organize. (Interview with PL, partnership member, 2017-12-06)	Need of disciplining the traffic of ideas and thoughts		
If I'm not mistaken there has been some conflict ehehe. Especially in the Early Childhood, among educationalists. Because they did not arrive ... I mean, it's not that everyone agrees on the definitions, on everything. So, it was hard to get to one [definition]. And so, there was a bit more of a mediation role, probably, to find a way out, because visions, thoughts, even theoretical visions were different. (Interview with ER, partnership member 2018-05-03)	Need for mediation among different visions and thoughts		
It was indeed managed, I have to say, with great discussions. We talked about [the problem] a lot and then in the end […] we managed to find a ... let's say an operational strategy. (Interview with GB, group participant, 2018-05-03)	Long-lasting interaction	Trust building	
Let's say that the Early Childhood group was the one that had a longer history than the others. […] That is, [all groups] took a suitable period of time before giving birth to their idea, but the Early Childhood [group] was never giving birth, really never ehehe. You were never arriving [to the end] eheheh. That is, they kept ... they often met and continued to argue but [they seemed] to never come to a ... to produce a concrete idea in the end, right? (Interview with MT, partnership founder, 2018-05-03			
[Being many people participating] in effect allowed, slowly, to discuss a lot about [the issue], and this has been useful, to get to know each other and then start to elaborate a project. (Interview with GB, group participant, 2018-05-03)	Become familiar with each other		
What remains is the relationship between individuals. Because I meet [another group's coordinator] […], I meet [a founding member of the partnership], I meet [the external coordinator], I meet people I made a journey with. We share a mentality. If tomorrow we happen to make a project in which we are all involved, how to say, we could already agree more quickly. […] Not that we all think the same, but it would bring to a much more effective job. Because having worked together so much, we have inside a common fabric. So, in my opinion that is the result of all this experience. (Interview with AMV, group participant, 2017-12-05)	Building common ground		
What has been created in my opinion is a broader network culture. Because everyone always worked on his own and that's it. Now instead […] we do an exercise in perception. In my opinion, there is a perception on everything others do. I know what he does, what she does. Then we interact. Then I go on. Then maybe there's a contact so you can agree maybe partially for one thing. But it is more an exercise in the perception of the other rather than a collaboration with the other. (Interview with AMV, group participant, 2017-12-05)	Building a different perception of others		
[They had] a different educational approach. But in the Early Childhood pedagogy is quite important ehehe. But this is my analysis, I do not know if this was a reason [for the discussion lasting so long]. Or it was because they liked to meet. (Interview with MT, partnership founder, 2018-05-03)	Gaining pleasure from meeting		
Well there were also opposite visions, quite different inside [the group], right? There were those who thought in a way that was more traditional, for example ... [...] And there was, for example, another [part], [...] that instead was thinking in a totally opposite way. [...] For example, on this [matter] there were two irreconcilable visions, really. Because after all one was thinking in a way... And […] it's not that it happened ... they didn't fight or anything, but those were two very different visions of the world of childhood. (Interview with MT, partnership founder, 2018-05-03)	Conflict of visions but no quarrel		
When you put together all those associations, social cooperatives that operate in the sector, there is a certain fear in everyone that some pieces will be taken away from them. […] There is a terrible fear of coming together, as if you fear that something will be taken away from you. It is a bit the problem of the Third Sector of [not being able of] growing on this way ... This said, I tell you, in my opinion the positive fact was precisely that of having really put together completely different experiences. (Interview with GB, group participant, 2018-05-03)	Building trust		
For me, how to say, these are useful connections. You really realize that we are so many [working on early childhood] and there is still need [of us]. So, it is not that I have to worry about working less than the other ones. Of course, then if they ask me to give the names of my donors ... I mean, you're telling me something delicate, strategically delicate, isn't it? [...] There is also a matter of personal relationship, which are things that bring us closer in the field as well. (Interview with SM, group participant, 2018-05-08)			

This experience is not a multiplier ... How to say, sharing as a resource multiplier, right? There is still so much the idea that in any case at the end of the day it is better if one looks after her own backyard and goes on doing what she is already doing. (Interview with SM, group participant, 2018-05-08)	Sharing knowledge to multiply resources	Knowledge integration	Achieving agreement on a common novel idea on how to address the problem
We were not able to really build a compact group's strength that was synergistic, that considered the uniqueness, the diversity of each one, but managed to [integrate perspectives]. (Interview with IB, group participant, 2018-05-08)	Need for synergistic group energy		
If you continue to criticize, you destroy everything but don't give me an alternative ... What do you build? Let's experiment, let's see, if it works it works, if it doesn't it doesn't. Interview with IB, group participant, 2018-05-08)	Need for availability for building something together		
Everyone was clung to his position. And above all, it is very true that we did not put ourselves into practical play. Let's experience one thing. Well, no, it doesn't work. Well, because here ... But how do you know? (Interview with IB, group participant, 2018-05-08)			
[Early Childhood] was a complex group that went a bit on its own, so in the end it was a bit complicated to succeed on the content. But […] when they talked together at the end […] I think they understood each other quite well. There were no problems. [...] I believe that the problem was not so much the difficulty in communicating but the fact that they never communicate. [...] The different professions have no opportunity to discuss on that [issue]. When they discuss, they actually understand each other relatively well, but they never discuss, so everyone goes easily on his own way. That is, there are no moments when you somehow compare yourself with others. But when you compare yourself, I have not received particular difficulties in discussing with one another. (Interview with BC, external collaborator, 2017-12-05)	Need of communicating with and listening to others		
Yes, [the barriers] have probably risen even more. Well, if you don't meet […], you don't say what you think and don't have a way for communicating, you remain stuck on your previous position and you barricade yourself even more, don't you? If you don't experiment and you don't have the possibility to know if there is someone who is doing this experimentation. We always come back to the usual issue of proper communication and capacity for listening, isn't it? Because everything always revolves around this, doesn't it? (Interview with IB, group participant, 2018-05-08)			
I must say that then […] many ideas were taken from what [was discussed]. The discussion certainly served [to our goal]. (Interview with GB, group participant, 2018-05-03)			
Maybe there [within the Early Childhood group] there is also a lot of science, in the sense of theory […]. So, obviously I imagine, an educator follows a line of thought rather than that of another one. So there, it is more difficult to come to the sharing of a thought. (Interview with ER, partnership member, 2018-05-03)	Sharing thinking		
What I said before, […] it is good for a mother who has a child from zero to three years to have support, maybe even with home visiting. Who doesn't agree? But then go into it, understand what it means. Of course, when you have entered a certain level it is clear that everyone has his own method. (Interview with SM, group participant, 2018-05-08)			
It is a work of thought, not of concept, but it is difficult then that [it becomes concrete]. In the end it means sharing principles, guidelines […]. (Interview with SM, group participant, 2018-05-08)	Sharing principles and guidelines		
To take an action on early childhood, everybody thinks in a totally different way from the other. It is difficult to get to have a common thing. Then, when they arrived at the relational facilitator everyone agreed. Because the relational facilitator was fine in any case. In other words, a person who helps parents to be more empathetic with their children, who put their parents in communication with all the services in the area, etc. It was a figure who instead reconciled all the positions. (Interview with MT, partnership founder, 2018-05-03)	Finding alternative solution		
The group was so big. There are the neuropsychiatrist, the pediatrician, etc., who are already doing other things [on early childhood]. That is, they are there to make a contribution. Instead, […] the group also had people who aimed ... I mean, which contribution, rightly, also envisaged an economic revenue, I suppose, from this thing. (Interview with GB, group participant, 2018-05-03)	Need for a common motivation	Attention to others and commitment to common goal	
In my opinion, how to say, it is not a bad intention. It is just that there is a mindset such that you cannot [avoid it]. Because, I do not know how to say…we should find the contractual economic power of this meeting, this comes to my mind [...]. In the sense that people meet if there is a goal, even an economic one. It should not only be economic, but also economic [...] If I do not have the motivation to meet the other, I will not meet him. I remain an individual standing apart from the other. (Interview with AMV, group participant, 2017-12-05)			
Everyone worked to reach the goal, note. […] The goal was the same for everyone. The ways to achieve the goal were different. (Interview with GB, group participant, 2018-05-03)			
In voluntary associations, more or less voluntary work etc., what happens is that there is a strong identification with one's own mission and therefore this makes [members] more withdrawn with respect to encountering with the other, with the mission of the other. (Interview with AMV, group participant, 2017-12-05)	Sharing vision/mission		

[We were entrenched] on theoretical positions. Also because when you theorize and then you don't concretize... That's why the next step that I forced, almost, really, within the group, was to say: here there is a project. Is it ok for you? Do you feel like sharing it and authorize experimentation? This was it. (Interview with IB, group participant, 2018-05-08)	Binging people interest toward a common goal		
In groups of this type there are internal dynamics with completely different interests. [...] Interests which sense… What could have been mine, of [the group coordinator's), etc., were proper interests to […] achieve objectives. Instead, others may also have interests […] much more demanding [in terms of] job [involvement], right? Even linked to having a chance to work and consequently also to managing to hold economically. (Interview with GB, group participant, 2018-05-03)			
In my opinion [reaching a common understanding] required a quite considerable investment. And also throwing ourselves, in my opinion, much more. (Interview with GB, group participant, 2018-05-03)	Need of courage		
The difficulty, as usual, is […] to be willing to put together the experiences. This is a difficulty. (Interview with GB, group participant, 2018-05-03)	Availability to put experiences together		
We talked, we talked and then, how to say, we didn't get anywhere. It is as if we continued to walk in the lawn and turned in circles, I don't know how to say. It has not been possible to go above each one's own identity. (Interview with AMV, group participant, 2018-05-03)	Need of coming out of individual identity		
When we were founding ourselves with different points of view, she [another participant] was saying: you're wrong. That is, she had an ancient mode. […] There is me who is right, and you are the wrong one, right? I mean today, paradigms […] are all right, okay? And so, how to say, she placed herself in a multitude of people, claiming that her paradigm was right. Maybe I was doing the same thing, but I was doing this based on something that was already recognized, right? So, what I wanted to say is that she immediately put herself in a way like ... I don't know how to say, the modality of the old parties […]. I'm from my party, you're from your party. (Interview with AMV, group participant, 2018-05-03)			
In the other groups in my opinion there were no strong individualities […]. And so, what happened: that a [group coordinator] says something and the others follow her, right? And instead in our group everyone had a very precise idea, so to no one came into mind to follow another one. (Interview with AMV, group participant, 2018-05-03)			
Personalisms and prima donnas, many prima donnas, […], or many leading men, lead to nothing, right? (Interview with IB, group participant, 2018-05-08)			
We talked about anthropology. Therefore, a conception of the human being for which we believe these steps must be done in this way. And someone else doesn't. But in facts there […] have been tight meetings. But […] as you are already doing a job [in the field], how can you [change your position about that]? How do you really confront [with others] on this? Or even elaborate on [the matter] if it is better to send [the child] to the kindergarten or not [...]. [You remain in your position,] above all because you continue to do that work [in the field]. So, you don't have to put into play something that [is so radical]. I mean, it's not that you must involve your organization so radically to have to argue [its foundations]. Surely, you can contribute with something [but not at that deep level]. (Interview with SM, group participant, 2018-05-08)	Not always possible to marginalize the self		
It was a mobilization. That is, for the most part awareness raising, right? Surely the goal was that we started talking. Trivially, one realizes that he has different methods [than others], it is obvious. So, there has been sharing… Maybe a bit flawed because especially in some tables, like the Early Childhood, they were all technicians. That is, there was the pediatrician, the psychologist, the educator, the other psychologist. (Interview with SM, group participant, 2018-05-08)			
All this research, study and in-depth work has been very interesting to create relationships with people, to meet and even to open one's mind. (Interview with AMV, group participant, 2017-12-05)	Create relations and open mentality		
When you talk about early childhood you have so many variables. From the pediatrician to the health worker, but also those who do care work, those who do prevention, those who support, those who do games, the kindergarten. There are so many figures that are a bit of paradises on their own, right? That's why it becomes very difficult [to interact]. It is really necessary to have a willingness to think in a way that deconstructs yourself a bit from what is your specific competence and try and build [something] together. (Interview with IB, group participant, 2018-05-08)			

ANNEX 2 – Quotes and coding brokers' behaviors

Quotes	Codes	Categories	Theoretical dimensions
At the beginning [Early Childhood] was the most homogeneous group. So, pediatricians, neuropsychiatrists, psychologists ... they were all of them. And so we invited them to say, no look it's not working here, you must have worlds that are also different from yours. And so they tried to invite a bit of everything. (Interview with MT, partnership founder, 2017-07-25)	Encourage a broader and heterogeneous discussion	Stimulating individual reframing	Fostering individuals' attachment to the problem and their awareness of the need of others to address it
The First Childhood group was very homogeneous, because they were all neuropsychiatrists, pediatricians, they were all among themselves, more or less themselves, that is, as professionals. And then [the external collaborator] insisted on saying: no, look [it is needed] that you expand the group to disparate people, because you also need to have perspectives, somewhat different views. Because if you all speak the same language, more or less all think the same way, this thing doesn't work, it doesn't allow you to see things that maybe an outsider would see. (Interview with MT, partnership founder, 2018-05-03)			
What [the coordinator] brought us was the identification of mothers' problems. It was very important for us. (Interview with AMV, group participant, 2017-12-05)			
And then there was this thing that she […] knew also the mothers, foreign mothers, and therefore all these targets on which you could really even intervene on so many things. And so, she also did this role a bit. (Interview with AMV, group participant, 2017-12-05)			
Each of us produced ideas ... it was [the external collaborator] who drove, this is the reality. (Interview with RM, group coordinator, 2017-10-25)	Drive the discussion		
It was [the external collaborator] who coordinated us in our group. And he was a fundamental figure, because when we perhaps were deviating, he was telling us: no, we must go back to understanding the situation, then we will find solutions, but now we must understand all the dynamics. (Interview with RM, group coordinator, 2017-10-25)			
[The external collaborator] personally never contacted anyone. […] We [participants] were the ones who contacted people, who knew who, […] and they were contacted. (Interview with AMV, group participant, 2018-05-03)	Not impose new participants but let members propose about who to invite	Supporting individual engagement	
When they [the new group members] came there […] it's like if you had created a community where you could still believe in values, right? This thing in my opinion was also intriguing. Because in any case [it involved] the beauty, even of life, of being able to believe in impossible things. Because [the external collaborator] proposed us impossible things, but he believed in them deeply and concretely. (Interview with AMV, group participant, 2018-05-03)	Attach an ideal value to the process to commit people to participate		
[The external collaborator] believed [in his ideal] deeply, in my opinion. He is also a bit of an idealist, let's say, in quotation marks, right? […] Then he produced a kind of contagion in this search for values, right? (Interview with AMV, group participant, 2018-05-03)	Broker need to be motivated and believe in the ideal proposed		
Well we did a job, then I [as group coordinator] said: look, we arrived at this point. All with emails, everyone received emails. And then we made a summary of the things that had been said. Ok, we were [the external collaborator] and I, […] but those were things that had been said by everyone, not by me. (Interview with RM, group coordinator, 2017-10-25)	Gather the knowledge exchanged, summarize it and represent it for further discussion	Encouraging knowledge exchange	Facilitating a creative mindset and relationships based on trust
I used to gather the ideas of that [meeting]. We put down a summary of the things that had arisen and sent them to everyone. In short, [the external collaborator] helped me a lot. (Interview with RM, group coordinator, 2017-10-25)			
That is, what do we write? We write like this, we send everyone around. Do you agree on what we wrote? Let's change [the content]. Sometimes [the external collaborator] sent us questionnaires. (Interview with RM, group coordinator, 2017-10-25)	Engage participants to express their opinion on the knowledge exchanged		

The pediatrician [the group coordinator] has done this element [of reference point] a bit... […] In fact we referred to her to say things […]. (Interview with AMV, group participant, 2018-05-03)	Broker as a point of reference for expressing and exchanging ideas		
[The group coordinator] did gather a bit in fact. Also because many of those who we had co-opted at the beginning were doctors, psychologists. And therefore, for her [as a pediatrician it was easier to understand them]. (Interview with AMV, group participant, 2017-12-05)	Have knowledge on the topic		
[The group coordinator] either was unable to mediate or, I would say, she had no interest […], she had no such a motivated interest to involve the group in one direction. [...] [She did not lead the group], she gathered the possibilities. (Interview with AMV, group participant, 2018-05-03)	Ability to mediate	Sustaining trust building	
[The group coordinator] was competent. She is a doctor though… [...] She lived everything through her angle, rightly, her experiences with mothers, with illness. […] Which is fine, but she was a doctor. (Interview, with IB, group participant, 2018-05-08)	Cover a neutral role		
At the [Early Childhood] group level [the external collaborator] was not recognized as a group leader. Because his skills were others. He tried to address [difficulties]. Then there were entrenchments, […] very heavy ehehehe. (Interview with IB, group participant, 2018-05-08)			
There should have been, let's say, a [hybrid] figure among the educator, the therapist ... Having concurrently... [technical competence] but also […] an organizational capacity. Which is a figure not easy to find. […] In the school you can have the experience of a good teacher who still has the ability to grasp also the relational aspects, the emotional intelligence also to grasp these aspects of the stomach further than those of the head, right? […] [The other group's coordinator] personifies this, doesn't she? Here [in the Early Childhood group], absolutely [it was not like this]. (Interview with IB, group participant, 2018-05-08)	Have emotional intelligence and ability to capture relational aspects		
At a certain point [the external collaborator] told us: well, yes, these things here, but you have to create, you have to create something, you have to create something. […] Then he gathered, he gathered anyway, because then he always gathered the common feeling, right? He interpreted it, re-elaborated it and then said: do you share this? Yes, no ... In fact, something came out of this group too. (Interview with IB, group participant, 2018-05-08)	Interpret and re-elaborate knowledge with a neutral mindset	Fostering knowledge integration	Driving creativity towards shared outcomes
Every now and then [the external collaborator] was the one who posed problems in the discussion. […] Or he was giving ideas telling some stories. And then he was always the one who tried to put together everything that came out in the discussions, right? But without ever …how can I say, leveraging his position. He always tried to put things together. (Interview with GB, group participant, 2018-05-03)			
[The external collaborator] brought the methodological aspect that […] was independent of the subject, of the profession. So, it had nothing to do with psychologist, doctor, administrator. So, he was right […] above parties. No contents, do you understand? (Interview with AMV, group participant, 2018-05-03)	Provide methodological support for knowledge integration but no contents		
[The external collaborator] tried to get things out of people. […] Having a vision of everything [that was happening in the partnership] […] he always tried to find a logical thread, to always remember that our purpose was [the partnership's goal], wasn't it? To make sure that everyone arrived at the end. (Interview with GB, group participant, 2018-05-03)	Have a vision from above and show connections	Fostering attention to others and to a common goal	
Well [the external collaborator] always participated with the role of succeeding in putting everything together, I must say ... Of a stimulus, of course, of [individual thinking] ... and then putting everything back together, trying to bring us back to [our goal]. (Interview with GB, group participant, 2018-05-03)	Stimulate shared thinking		
[The external collaborator] had the ability ... there was an actual aspect and an ideal aspect to carry forward together, always [...] A material, and an ideal aspect. Things always go together in the social, also because ... [..] The tables in which there is just talking are boring. If you only do material things at some point you ask yourself: what am I doing? And then stop going. The things that really create something generative are the things that bring these together. (Interview with CB, partnership member, 2018-05-08)	Balance ideal and concretization		

Reconceptualizing Brokering: Overcoming Ontological Drifts in the Definition of the Construct

ABSTRACT

Network research has recently recognized the importance of capturing the behavioral processes through which brokers broker to understand how they produce impact. However, research aiming at addressing the question "how do brokers broker?" is fragmented and follow different epistemologies in the study of this processual phenomenon, providing a lack of clarity on what the nature of brokering is. While some studies have maintained an alignment between processual ontology and epistemology, others have undertaken a drift between a processual ontology and an entitative epistemology. In this paper I show that this ontological drift originates from the confusion generated by an ambiguous definition of the constructs underlying this research, "brokering" and "brokerage process", that have been defined concurrently as both an entity ("behavior") and a process ("behavioral process"). I then claim the importance of ontological and epistemological alignment for a clearer understanding of the nature of brokering and develop a novel definition of brokering building on its processual character. Eventually, I propose an agenda for future research for the operationalization of the construct.

Key words: brokering, process, epistemology, ontology, ontological drift, construct definition.

INTRODUCTION

Network research has recently suggested that brokers' structural position (Burt, 1992; Burt, 2004) or their personal characteristics (e.g. Oh & Kilduff, 2008, Sasovova, Mehra, Borgatti & Schippers, 2010; Tasselli, Kilduff & Menges, 2015) are not enough to explain their role in generating impact, and that it is their actions what enables them to achieve results. "How do brokers broker?" has thus become a question to which it is extremely important to provide answers (Spiro, Acton & Butts, 2013; Quintane & Carnabuci, 2016) to capture the behavioral process through which brokers act (Obstfeld, Borgatti, & Davis, 2014). Some studies have adopted a processual view to address this point, taking temporality into consideration and uncovering the unfolding of brokers' behaviors over time and their dynamics as elements of explanation (Lingo & O'Mahony, 2010; Spiro et al., 2013; Burt & Merluzzi, 2016). A second bunch of research has focused instead on a static perspective in the study of brokers' behaviors, identifying different categories of behaviors that brokers perform while brokering, in relation to different strategic orientations (Soda, Tortoriello & Iorio, 2018), different situations encountered (Kellogg, 2014) and to different kinds of networks in which brokers are embedded (Quintane & Carnabuci, 2016). Thus, the study of how brokers broker has developed in two distinct directions following different assumptions and opposite epistemological visions on how to provide answer to this question.

Even though this fragmentation can be seen as an opportunity to get deeper knowledge on brokers' agentic intervention by combining different approaches to address the same question (i.e. Van de Ven & Poole, 2005), it is in fact the result of an ontological drift (Thompson, 2011) that risks producing theoretical confusion in this research, undermining the understanding of what the nature of brokering is. Indeed, the attempt to provide static answers to a more processual "how" question (Langley, Smallman, Tsoukas & Van de Ven, 2013) has

led to a misalignment between the claim of the importance of understanding the process of how brokers broker and the more entitative conceptual lens through which this is discussed (Thompson 2011). I claim that this drift is a consequence of the lack of clarity of the constructs that underly this research stream. Indeed, both the constructs "brokerage process" and "brokering", that have been used almost interchangeably in this research, have been concurrently defined as "behavioral processes" and "behaviors" (Obstfeld et al., 2014; Halevy, Halali & Zlatev, 2019), providing them a double connotation as both processual and static concepts. This has led to a misalignment between epistemology and ontology (or ontological drift; Thompson, 2011) in their definition, providing "an entitative existence to processes" (Thompson, 2011, p. 759).

The purpose of this paper is to uncover this ontological drift and propose a re-conceptualization of brokering that reveals its processual connotation. A clear definition of brokering aims at highlighting its underlying attributes, as well as the contextual conditions in which the concept is applicable and its relationship with other related constructs. This provides the founding bases for a more comprehensive future research agenda that will enable to strengthen our understanding of brokering.

The remainder of the paper will be organized as follow. I first introduce an overview of the contributions that the studies on brokers' behaviors and behavioral processes have provided over time towards the definition of brokering, highlighting the ontological drift characterizing some of them. Then, I propose a reconceptualization of the construct of brokering adopting Suddaby's (2010) framework for building clear constructs in management and organization theories, to better define its boundaries and provide a handy and clearer definition on which future research could build. Finally, I identify an agenda for future research on brokering, also borrowing from process and complexity theory.

BROKERING: AN ENTITY OR A PROCESS?

To understand the state of the art of research aiming at answering the question "how do brokers broker?" and to envision a path forward, an exploration of the theoretical assumptions that underlie previous works is needed (Alvesson & Sandberg, 2011). In the attempt to understand brokers' impact, network literature on brokers has recently distinguished between brokerage as the intermediary structural position that brokers cover in networks and brokering as the agentic intervention that these actors produce in the networks in which they are embedded (Obstfeld et al., 2014). A relatively new stream of research has explicitly highlighted that it is through people's actions that brokering is enacted and allows the achievement of innovation at firm and industry level (Burt, 2012). Indeed, brokerage as actors' intermediary position is not what leads them to produce these results, but it is just one of the conditions that can facilitate them in achieving this impact (Hargadon & Sutton, 1997; Hargadon, 2002; Burt, Kilduff, & Tasselli, 2013). The acknowledgment of this "action problem" (Obstfeld, 2005) has opened towards a novel cognition of the way in which brokers produce change on others' relationships and outcomes.

With the aim of understanding how brokers produce impact on organizational phenomena scholars have started studying brokers' action taking two different theoretical perspectives. A small group of studies has taken temporality into account and has considered the unfolding of brokers' behaviors over time and their dynamics as elements of explanation (Lingo & O'Mahony, 2010; Spiro et al., 2013; Burt & Merluzzi, 2016; Obstfeld, 2017). This research, following a process epistemology and ontology, has studied brokering as the process resulting from certain behaviors that brokers perform over time. Other scholars have instead taken a more static perspective, considering brokering as a behavior performed at discrete points in time and causally linked to brokers' position within a network (or a triad) (Quintane & Carnabuci, 2016), to brokers' particular personal traits (Soda et al., 2018) or to specific features characterizing the

situation in which they intervene (Kellogg, 2014). This second stream of research has then attempted to study brokering, which is an inherently processual phenomenon, through an entitative epistemology, focusing on static causal explanations and providing interesting insights on what can influence brokers' action.

However, while this fragmentation of research could be considered positive for achieving a deeper understanding on brokers' agentic intervention through the combination of different approaches to address the same research question (i.e. Van de Ven & Poole, 2005), it risks to produce theoretical confusion in the study of *how brokers broker*, blurring the understanding of what is the nature of brokering and leaving the process through which brokers produce impact (the *how*) mainly unnoticed.

The misalignment between the claim of the importance of uncovering the behavioral process through which brokers broker to understand how they produce impact and the more entitative lens through which this is studied is symptom of an ontological drift (Thompson, 2011) that is a consequence of the fuzziness of the constructs underlying this research stream. Indeed, the constructs of "brokerage process" and "brokering" that are used quite interchangeably in this research have been provided over time with a double connotation as both processual and entitative. For instance, Obstfeld, Borgatti and Davis, in their 2014 conceptual piece, have advanced a conceptualization of "brokerage as a process" distinguishing it from "brokerage as a position" and defining it as the "behavior by which an actor influences, manages, or facilitates interactions between other actors" (p. 141). Thus, despite emphasizing the processual ontology linked to the new concept, they have attached to it an entitative and static property – as a behavior – producing an ontological drift. More recently, Halevy, Halali and Zlatev (2019) have distinguished between "brokerage" as brokers' position (in open triads) and "brokering" as the "behavioral processes through which organizational actors shape others' relationships" (p.215) (in both open and closed triads). Despite suggesting a processual view

on brokering (that the use of the gerund also strongly suggests), though, their further conceptualization of brokering as "the behaviors that individuals pursue when acting as brokers" (p.216) represented a new ontological drift in the study of "how brokers broker".

As shown above, the ontological drift characterizing the conceptualization of "brokerage process" and of "brokering" has resulted in a dichotomization of theoretical perspectives and in a lack of clarity on what the nature of brokering is. Overcoming this fragmentation of research and restoring an ontological alignment between a processual ontology and epistemology would allow this research to produce more centered answers on how brokers broker and to provide a more precise understanding and explanation of the phenomenon of brokering.

Finding answers to the question "how do brokers broker?" is important, not only to provide scientific comprehensiveness in our understanding of the process through which brokers produce impact, but also to contribute to practice with useful models and frameworks that could enhance professionals' brokering effectiveness within dynamic and complex (e.g. innovation) processes in real life (Langley, 2009; Corley & Gioia, 2011). Acquiring knowledge on how brokering unfolds over time is particularly urgent. Indeed, organizations increasingly tackle problems that are complex and consequently adopt complex organizational forms and processes to handle these problems (Van Tulder and Keen, 2018; Lundin et al., 2015). These envisage the collaboration of multiple and heterogeneous actors with different perspectives and knowledge engaging in generating and putting into practice collective ideas or solutions on how to address the given problem. This not only suggests that brokers will be highly required for making these organizational forms function to avoid collaborative inertia (Huxham and Vangen, 2000), conflict (Bryson, Crosby & Stone, 2006) or ineffectiveness (Van Tulder, Seitanidi, Crane & Brammer, 2016). It also entails that the task that brokers must perform to

facilitate the complex relationships underlying them will become more and more complex and dynamic (Obstfeld et al., 2014).

In this paper, I adopt Suddaby's (2010) framework and develop a new and straightforward conceptualization of brokering as a first step towards opening the way for a new path for research that can address this challenge and recover a process ontology and epistemology (Langley et al., 2013; Langley & Tsoukas, 2016) in the study of this phenomenon. To clarify the concept I specify the features, attributes and characteristics of the phenomenon that it represents and that distinguishes it from other related phenomena (Podsakoff, MacKenzie & Podsakoff, 2016). This also allows its consistent operationalization in research (Hirsch & Levin,1999).

RE-CONCEPTUALIZING BROKERING

I develop here a novel definition of brokering suggesting the need to overcome the dualism between static and processual view in the study of this phenomenon. For doing this I adopt Suddaby's (2010) framework for building clear constructs. First, I identify the essential properties and characteristics of the phenomenon in order to uncover the salient attributes that may compose its definition. Second, I define the contextual conditions under which the brokering construct does or does not adhere, specifying its "boundary limits" or "scope conditions" (Suddaby, 2010, p. 349). Third, I highlight the relationship of the concept of brokering with other related constructs. Eventually, I propose a definition of the construct that coherently addresses the previously defined attributes and contextual conditions.

1. Attributes of brokering

Brokering has been defined as "the behavioral processes through which organizational actors shape others' relationships" (Halevy et al., 2019, p. 215) and as "the process that alters

interaction between two or more parties" (Obstfeld et al., 2014, p. 136 on "brokerage process"). More static definitions have intended it as "the behaviors that individuals pursue when acting as brokers" (Halevy et al., 2019), "the social behavior of third parties" (Obstfeld et al., 2014, p. 135) or the "behavior by which an actor influences, manages, or facilitates interactions between other actors" (Obstfeld et al., p. 141). Starting from these definitions and complementing them with the findings of the empirical works on brokering or brokerage processes above described (Welch, Rumyantseva & Hewerdine, 2016) and with insights from process and complexity theory, I identify and discuss the main attributes characterizing this phenomenon.

1.1.The behavioral character of brokering

As most of the definitions above mention, brokering is related to brokers' performing of behaviors (or behavioral processes). Differently from other research taking an agency perspective in the study of brokers and highlighting that their success is conditioned to their personal characteristics (i.e. personality and psychological traits), research on brokering has highlighted (more or less explicitly) its behavioral character. Hargadon and Sutton (1997) showed that brokering "takes place through the actions of teams and people" (p. 730). Obstfeld (2005) and Obstfeld et al. (2014) suggested the importance of considering brokers' "strategic behavioral orientations" as antecedent of their behaviors for understanding how they behave to reach various ends in networks. Burt and Merluzzi (2016) identified "network oscillation" as the behavior through which brokers iteratively perform sequences of closure and brokerage, alternating periods in which they deeply engage in a group (closure) with periods in which they connect the group with other groups (brokerage). Soda and colleagues (2018) highlighted how different brokers' behaviors, namely arbitrating and collaborating behaviors, affect their individual performance. Lingo & O'Mahony (2010) and Kellogg (2014) referred to brokers' behaviors as "practices" or "repertoire of actions", claiming the need to focus on "the work brokers engage in when connecting disparate people, knowledge, or ideas" (Lingo & O'Mahony, 2010, p. 49) "to produce the most insightful grounded theories as to how brokerage

[brokering, ed.] on collaborative projects unfolds" (p. 52). Indeed, studying brokers' work practices (or behaviors) allows to examine how individuals combine their expertise and knowledge in new ways to creatively solve problems or come up with new ideas (Lingo & O'Mahony, 2010).

1.2.Interactivity in brokering

Brokering is a process that is not only inherently relational but also interactive (Langley & Tsoukas, 2016). This entails that brokers intervening in brokering do not act in a void and that their behavior is somehow influenced by their interaction with other agents and with other elements of the context in which they intervene. Within this process brokers' behaviors affect others and the context in which brokering is enacted and are in turn affected by these changes and the relative answers they contribute to produce, in continuous loops. Research on brokers has highlighted that these actors are affected by the characteristics of the context in which they act, such as by the culture characterizing it (Xiao & Tsui, 2007), the kind of tasks that are carried out (Kellogg, 2014), the existence of supporting institutions (Stovel, Golub & Milgrom, 2011) and the social organization around the structural hole (Burt, 2015). Nonetheless, the definitions of brokering considered at the beginning of paragraph 1. above do not explicitly regard this characteristic. Indeed, while some of them acknowledge that brokers may produce a change in others' relations and interactions, they do not mention the possibility that brokers' actions could be somehow affected by others' perceptions, answers and actions. Empirical research taking a process perspective, by highlighting brokers' proactive and reactive behaviors to situational challenges, seems to suggest this bidirectional impact. Indeed, Lingo & O'Mahony (2010) showed how brokers' intended outcomes of their practices were disrupted by others' behaviors or other unexpected happenings in the music production process, which entailed the need for them to adopt novel practices or approaches to answers these new situations. Burt & Merluzzi (2016) also suggested that brokers need to be ready to adapt their behaviors to any occurring circumstance in order to obtain the expected outcome from brokering. Similarly, Obstfeld et al.

(2014) took into consideration this element making reference to Weick's (1979) double interact and expanded it to triadic interact (Obstfeld et al., 2014, p.148), highlighting the centrality of the communicative act to brokering. As the authors explained it "in the double interact, someone acts, for example by communicating a message to a second person, the second person responds, and the first person makes an adjustment to their original message based on that response" (p.148).

The emphasis on interactivity developed within complexity theory helps conceptualizing this attribute of brokering. According to this theory, organizations are "adapting, evolving networks of interacting entities" (Maguire, Allen & McKelvey, 2011, p. 17), or "complex systems" (p.10). In these systems multiple elements interact dynamically and in a nonlinear fashion (Thietart & Forgues, 2011). Any element of the system can influence and be influenced by any other, in positive and negative feedback loops of interactions (Maguire, 2011). From these interactions, new behaviors and responses to others emerge, which can "lead to unexpected, unintended and potentially radical consequences over time" (Langley & Tsoukas, 2016, p. 8). As Maguire and colleagues (2011) explain "over time as agents and actors experience the outcomes of their beliefs and behaviors, they will sometimes feel them confirmed and other times revise and change them, leading to new system behaviour and responses" (p.2). This implies that interactions occurring within brokering processes are usually not linear and continuously change in a nonrandom way (Anderson & Meyer, 2016).

1.3.The processual character of brokering

Research on brokering suggests that brokering is an evolving phenomenon (e.g. Spiro et al., 2013; Lingo & O'Mahony, 2010). Literature investigating brokering dynamics has openly argued that brokers require to combine different behaviors to "match the situation" (Obstfeld et al., 2014, p. 153) and to be ready to do whatever needs to be done, as well as to adjust their actions in response to "developments in the surrounding" (Burt & Merluzzi, 2016, p. 387). Lingo & O'Mahony (2010) have uncovered that brokers change their practices to leverage their

brokerage role "depending on the type of ambiguity confronted" (p.47) in different phases of the music production process. Thus, brokers behaviors continuously change and combine over time to address emerging challenges and to allow the achievement of intended (or unintended) outcomes.

These insights suggest that a processual view on brokering allows to acknowledge the complexity and dynamism of brokers' agency (Langley & Tsoukas, 2016), uncovering sequences of activities and complexes of processes unfolding in time. Process research "focuses empirically on evolving phenomena, and it draws on theorizing that explicitly incorporates temporal progressions of activities as elements of explanation and understanding" (Langley et al., 2013, p.1). Taking a processual perspective for studying brokering thus enables to obtain a more complete understanding of the micro-processes underlying brokering, of how brokering is actually performed and to provide useful contributions to practice (Tsoukas & Chia, 2002), producing know-how instead of know-that type of knowledge (Langley et al., 2013).

1.4.The role of brokers' agency in influencing interactions

Research on brokering originates from a shift of perspective towards the study of brokers from considering brokers' position as the mechanism through which brokers produce impact to the recognition of the importance of the agency of actors covering a brokerage position for enabling them to produce impact. As Obstfeld et al. (2014) have noticed, brokers do not only act as "intermediaries" among two or more parties. They intervene as "facilitators" (Obstfeld, 2005) or "buffers" (Kellog, 2014) among them. As intermediaries they engage with two or more others who do not have a tie with each other. They thus connect these actors, (temporarily) losing their intermediary position (Obstfeld, 2005), or maintain them unconnected and keep acting as a bridge among them (Burt, 1992). As facilitators (or buffers) they engage with two or more others that may already have a tie of some kind (Obstfeld, 2005). In this case, they take action to enable (or inhibit) alters in building some missing "content" of this tie which existence

may facilitate (and which lack would hamper or make more difficult) their relationships to unfold in the direction of collaboration (e.g. the multiplexity of affective and instrumental content of the tie).

In line with this analysis of brokers' roles, I claim that brokering entails brokers' agency aimed at enabling and/or impeding interactions. For sake of simplicity and clarity in the definition, the term "enable" here includes also brokers' activity aimed at connecting actors who do not have a tie, and the term "inhibit" involves also their actions (or inaction) aimed at keeping those actors apart.

2. Scope conditions

As suggested by Suddaby (2010), constructs in organization theory often do not have universal applicability. Thus, in this section I highlight the contextual conditions underlying the definition of brokering in terms of space, time and values.

2.1. Space constraints

Constraints of space refer to the contextual conditions under which the construct of brokering applies (Suddaby, 2010). I identify here four conditions that characterize the contexts in which brokering can be operationalized.

2.1.1. Different levels of complexity of the context

As suggested by Obstfeld et al., (2014) and Obstfeld (2017), brokers' intervention is especially intense in complex and dynamic contexts. The complexity of these contexts entail a great heterogeneity of multiplex relationships (i.e. the contextual presence of different tie contents) and the involvement of multiple actors with heterogeneous identities (i.e. ethnicity, professional origin, interests, objectives) and resources (Obstfeld et al., 2014) in complex and dynamic relationships.

a) Plurality of actors

Brokers do not only act within triads, but also within more complex settings in which more than three actors are involved. Obstfeld et al.'s (2014) definition of brokering as "the process that alters interaction *between two or more parties*" (p. 136, emphasis added) highlights this important element, that founds the definition of brokering. While the structural view of brokerage benefits from the abstraction of brokers' presence in triads to highlight the structural micro-processes related to brokerage and closure, the study of brokering necessarily entails the acknowledgment that "the triad enables considerably more complex social dynamics than those found in the dyad, and that are often characteristic of numbers greater than three" (Obstfeld et al., 2014, p.141, referring to Simmel, 1950). Obstfeld (2017), highlighting the non-routinely action that brokers entail in creative projects, has noticed that "participation in creative projects involves a greater number of choices regarding a broader range of potential participants" and that more active brokering is needed in front of this increased participation (p.85). This suggests that it is in collective settings where more than three actors are involved that it is possible to better uncover the complexity and dynamism of brokering (Lingo & O'Mahony, 2010).

b) Heterogeneity

As Burt's (1992) structural hole theory states brokers bridging structural holes hold an information advantage thanks to their early access to "diverse, often contradictory, information and interpretations" (Burt, 2004, p.356). Thus, an underlying assumption of brokerage theory is that the alters that brokers' bridge are in some way heterogeneous. This heterogeneity, that provides the broker with the challenge of connecting or coordinating people with different ties or different attributes, backgrounds, resources, skills, interest and motivations, is what founds the "action problem" of brokerage position (Obstfeld, 2005). Indeed, as Obstfeld et al. (2014) suggest, greater heterogeneity (e.g. in identity, relationships and resources) demands "greater brokerage intensity in order to produce cooperation, coordination, or other results" (p. 153).

Further than this, brokers do not only structurally connect others. They also enable them to "match" different contents of the ties that link them, which multiplexity is needed for collaboration to develop. This entails that the contexts characterized by high heterogeneity in participants' characteristics and by multiplex relationships linking them are those in which brokering can be better studied.

c) Complexity of relations

Brokering can be enacted in contexts that entail different levels of complexity in relationships, linked to the number and level of heterogeneity of the participants involved but also to the complexity of the aim these actors have in working together, of the issue they aim at tackling, of the organizational form they adopt (Van Tulder & Keen, 2018) and of the process in which they engage to address this issue (Zuzul, 2018). Cross-sector partnerships (Selsky & Parker, 2005), project networks (Lundin et al., 2015) and ecosystems (Davis, 2016) are some of the organizational forms that are used for tackling complex processes addressing complex issues. In these organizations, relationships are often horizontal (Provan & Kenis, 2008) and based on mutual trust and reciprocity among members with different interests and perspectives, which entails the impossibility to control partners' behaviors and a higher need for coordination (Lundin et al., 2015). Furthermore, the processes in which these different actors engage are often ambiguous and novel, producing difficulties in interactions (Zuzul, 2018). As Obstfeld et al. (2014) have suggested, higher levels of complexity in relationships among members "demand greater brokerage intensity in order to produce cooperation, coordination, or other results" as brokers "need to do more active coordinative and translation work" to match this complexity (p.153). Nonetheless, brokering can also be enacted in settings characterized by lower levels of complexity in interactions, for example in which the numerosity and heterogeneity of actors involved is lower. Furthermore, it can be investigated within whole networks (Provan, Fish & Sydow, 2007), uncovering the full complexity of its relational

dynamics, or focusing only on some of their parts (i.e. sub-groups or triads), lowering complexity and exploring more in depth some of its constituent interaction patterns.

2.1.2. Different levels of analysis

Brokering can be enacted by single or multiple actors, that can be either individuals, organizations or both. Furthermore, it can entail a specific focus on brokers' behavioral processes or the adoption of a multi-level perspective in studying how it interacts with other elements in the context.

a) One or multiple (collective) brokers

Brokering is often studied as considering the behavior of a single broker as the unit of analysis. Nonetheless, overcoming the limiting view of brokers as having a unique advantageous position within a triad, if we have a look at a whole network and at the different layers of ties content that could be embedded in it, we may find multiple brokers co-participating and complementing each other throughout the brokering process. Thus, the study of brokering may entail the study of each broker's behaviors and micro-processes of interaction among them. Or, it could consider the brokers intervening in the process as a collective entity, entailing the study of the behaviors resulting from the collaboration among them.

b) Brokers as individuals or organizations

The study of brokering can also take into consideration the behavioral processes carried out by brokers as individuals or as organizations, or both, or as collectivities of individuals and/or of brokering organizations. Indeed, brokering does not only occur in settings where individuals take the role of brokers (i.e. Lingo & O'Mahony, 2010), but also in contexts in which it is an entire organization that covers this role (i.e. Stadtler & Probst, 2012).

c) Multiple levels of analysis

Furthermore, as previously mentioned, the brokering process develops in an interactive way with the context in which it is embedded. As Anderson & Meyer (2016) explained "the elements of a complex system constrain and are constrained by the actions of other elements" (p.129)

pertaining to different levels. Broker's behaviors may thus be the product of interactions among units of analysis at different levels of aggregation. The study of brokering could then take into consideration "multiple levels of analysis that are sometimes difficult to separate from one another" (Langley, 1999, p. 692).

2.2. Time constraints

Constraints of time consider the extent to which the concept is stable, or it is expected to be dynamic over time (Podsakoff et al., 2016). Given the processual conceptualization of brokering, the study of this phenomenon entails the consideration of the centrality of time (Langley et al., 2013). In line with Langley et al. (2013), differently from a variance-kind of study that "abstracts away from the temporal flow of much of organizational life", the study of brokering does not entail the search for "empirical regularities and contingency models of explanations" but considers "the temporal structure of social practices and the uncertainty and urgencies that are inherently involved in them" (p.2).

2.2.1. Weak vs strong process view

Different ontologies of the social world can lead to different views of temporality in the study of this process. Thus, a weak or strong view of the process can be equally taken (Van de Ven & Poole, 2005). The first considers the process as exogenous. This entails that the process of brokering is studied considering the context in which it is embedded as staying pretty much the same (Hernes & Weik, 2007), as it exists independently of the brokering process and its "underlying nature does not change although [its] qualities may change" over time (Langley et al., 2013, pp. 4-5). In this view, the observer can identify phases, stages or events as time is regarded as "divisible, but differentiated, with certain points serving as 'critical values'" (McGrath and Kelly, 1986, p. 33). The study of brokering following this perspective can thus entail the "empirical investigation into the structure of an evolving process" or either "unravel the process" analyzing "states changed as part of the process" (Van de Ven & Poole, 2005, p.

1392). This view may be then adopted if the investigation of brokering entails for instance a focus on how it changes the qualities of an entity (Langley et al., 2013).

A strong view of the process, instead, "presumes the world is composed of processes" (Van de Ven & Poole, 2005, p. 1390) and focuses on becoming (Tsoukas & Chia, 2002), highlighting the ever-changing nature of reality (Langley & Tsoukas, 2016). As Langley & Tsoukas (2016) explained "such an approach does not deny the existence of events, states or entities, but insists in unpacking them to reveal the complex activities and transactions that take place and contribute to their constitution. […] It rests on a relational ontology, namely the recognition that everything that is has no existence apart from its relation to other things" (p. 6). This view of process thus implies that we acknowledge the complexity of the world rather than reduce it (Tsoukas, 2017) and allows to answer research questions focusing on how brokering processes themselves "emerge, develop, grow, and decline" and how they unfold over time (Langley et al., 2013).

2.2.2. Time boundaries in the study of brokering

As reality can be seen as being in constant motion and composed of processes of never ending becoming (Tsoukas & Chia, 2002), the study of brokering necessarily requires its researchers to take explicit decisions on its time boundaries. This may be linked to the determination of starting and ending points of the stages or phases composing the process itself or the context in which brokering is embedded, also related to particular events occurred (Van de Ven and Poole, 2005) taken as critical points for its analysis (McGrath and Kelly, 1986). Boundaries can also be set in relation to the observation of brokers' activity, that can be temporary or enacted for longer periods of time. As Obstfeld (2005) suggests, brokering may entail interactions occurring within discrete episodes in time or be sustained in an ongoing fashion over time.

2.3. Values constraints

Constraints of value are conditions that arise in relation to the hidden assumptions founding the theorizing of the construct (Suddaby, 2010). In this paragraph I proceed at explicitly identifying

four assumptions underlying the theoretical development of the attributes of brokering and its space and time constraints reported above.

2.3.1. Brokering has both an individual and collective goal

A first hidden assumption relates to the goal of brokering. Studies accounting for brokers' impact have traditionally focused on highlighting the benefits that brokers acquire thanks to their brokerage position within a network (or a triad) (Burt, 1992) or the effects on their individual performance accruing from their function of transferring, translating and transforming nonredundant knowledge and information (Burt, 2004; Burt et al., 2013). More recently some research has instead started considering brokers' intervention as a "public good" (or a "public liability") as their actions do not only produce effects for them (i.e. advantages deriving from their early exposition to diverse knowledge) but also externalities for the others involved in the network in which they perform brokering (Shipilov, Li & Greve, 2011; Clement, Shipilov, & Galunic, 2018). This acknowledgment comes also from the recognition that brokers can be found not only in open triads but also in more dense and closed settings (Obstfeld et al., 2014), which entails brokers' action in facilitating and coordinating interactions between already connected alters (Obstfeld, 2005) and the consequent production of effects on their relationships and on the outcomes coming from their collaboration. In line with this novel comprehension of brokers' impact, the definition of brokering developed here entails the recognition that brokers engage in brokering not only for pursuing their self-interest (which could be different in relation to the different motivations that drive their intervention) but also for enabling the achievement of a collective outcome coming from the collective effort of the multiple and heterogeneous actors involved in the process (Lingo & O'Mahony, 2010; Clement et al., 2018).

2.3.2. Brokering is characterized by bounded rationality

A second assumption relates to the acknowledgment that brokering is a process that is performed under conditions of bounded rationality (Simon, 1991). Brokers, as bounded rational

actors, have limitations in their perception of the network in which they are embedded and of the processes of interaction they influence to achieve an intended outcome, which are necessarily not perfectly objective and accurate. This is not only linked to their individual characteristics (i.e. personality traits), but also to situational and interactional factors characterizing the social context in which they intervene (Casciaro, 1998). In brokering, the complexity and dynamism of the relations characterizing the process makes it difficult for them to represent and make valid or accurate predictions about the system (Simon, 1962; Maguire, 2011). Evolution and change characterizing this process thus lead to the impossibility to have full knowledge and to the inevitable uncertainty linked to the behavior of individual elements inside the system and of the system as a whole, as well as on the way the system interact with other systems and responds to changes in the environment (Allen & Boulton, 2011). This entails that brokers cannot "simply optimize and then implement the solution that denotes the global optimum" but "have to search adaptively for sufficiently good solutions" (Baumann & Siggelkow, 2011, p.498).

2.3.3. Brokering may lead to both intended and unintended (positive or negative) outcomes

The third assumption is related to the non-predictability of the outcomes of brokering. Given that interactions among the elements composing the system underlying this process are nonlinear and uncertain, the actual outcome deriving from brokers' intervention is difficult to anticipate (Anderson & Meyer, 2016). Indeed, while brokers may possess an arbitrage advantage deriving from their intermediary position (Burt, 2019) that allows them to recognize and develop opportunities (Soda et al., 2018) on how to interpret and combine information in novel ways, this advantage could also not materialize due to contextual factors (Xiao & Tsui, 2007; Burt, 2015). Depending on the set of practices they engage in (i.e. connecting vs buffering practices; Kellogg, 2014), brokers may expect to affect interactions positively or negatively (Halevy et al., 2019). The realization of these intended outcomes, though, depends on the

contemporaneous state of the interconnected elements composing the system (Anderson & Meyer, 2016). Nonetheless, as brokers intervene to change interactions, their actions produce fluctuations that perturb the system and disrupt a momentary state of equilibrium in such a way that new forms of behavior emerge within the system to reach a new equilibrium (Anderson & Meyer, 2016). In this way, and especially in complex systems, brokers' intentions are likely to produce unpredictable changes in the process, leading to the eventual production of unintended outcomes.

2.3.4. Agency in brokering is complex and dynamic

The fourth assumption highlights the complexity and dynamism of agency within brokering. A turn towards agency is clearly visible in the actual conceptualization of brokering, that generally entails the purposeful action of brokers to "*shape* others' relationship" (Halevy et al., 2019, p.215, emphasis added) or "alter" their interaction (Obstfeld et al., 2014, p.136), both positively or negatively. This conception of agency entails brokers as being completely aware of their intervention and takes for granted their ability to envision the impact resulting from their actions. Furthermore, it recognizes their success in achieving this expected impact as a direct consequence of these intervention. As Simmel (1950) noted "social life is constantly *determined* in its course by the presence of the third person" (p. 149, emphasis added), who fundamentally transforms dyadic interactions and relationships, influences others' outcomes and shape their own outcomes (Halevy et al., 2019, p.217). Obtstfeld et al.'s (2014) definition of brokerage overcome this simplistic orientation and considers the behaviors through which an actor "influences, manages, or facilitates interactions".

In line with this latter conceptualization, agency in brokering entails more complexity than the production of impact directly from broker's purposeful actions. As Lingo & O'Mahony (2010) found in their ethnographic study of producers' practices within the music production process, agency in brokering entails a more dynamic conceptualization. These authors showed

how brokers "navigated between *tertius iungens* and *tertius gaudens* approaches, depending on the stage of the process, the ambiguity present, and the parties involved" (p. 58). Thanks to their experience in the process these actors "developed the capability to identify when particular nexus work practices should be used" (p. 74). This allowed them to "anticipate potential challenges that could arise during subsequent phases" (p. 63) as well as to exercise their agency to respond to ambiguities emerging from the process and move the music production project forward. Similarly, Burt & Merluzzi (2016) suggested that "experience with change is preparation for change" (p. 387), asserting that brokers with previous experience in "oscillating" from engagement in and disengagement from groups, acquire greater ability to flexibly address emerging opportunities. Thus, as Emirbayer & Mische (1998) conceptualized it, agency is "a temporally embedded process of social engagement, informed by the past (in its habitual aspect), but also oriented toward the future (as a capacity to imagine alternative possibilities) and toward the present (as a capacity to contextualize past habits and future projects within the contingencies of the moment)" (p. 963).

These findings entail the need for a broader conceptualization of the role of agency in brokering, not considering their intervention as simply "shaping" or "altering" others or the context in which brokering is enacted but accounting for its complexity and dynamism, also through underlining its projective, reactive, adaptive and emergent nature.

3. Relationship with related constructs

The concept of brokering that I develop in this paper is thought as having the role of an umbrella construct (Hirsch & Levin, 1999) that drives research on brokers' behavioral processes towards a common direction "establishing intellectual linkages among otherwise isolated researchers" (Hirsch & Levin, 1999, p. 205) and suggesting novel paths for answering the question "how do brokers broker?" taking a process perspective. As an umbrella construct, thought, it includes

various underlying elements that could be uncovered through defining its different typologies that could be useful for putting it into operationalization. Typologies can be linked to the different kinds of ties (or of multiplex ties) that brokers facilitate (or buffer), as well as to the different dynamics of interrelation of these different layers of brokering. Nonetheless, as it is not the aim of this paper to define these typologies and put the concept into practice, in this paragraph I aim at reinforcing the boundaries of the umbrella concept of brokering through highlighting its relationships with other related (umbrella) constructs.

Brokerage

The first construct that is strictly linked to brokering is the concept of "brokerage". This concept has been defined in various ways within network literature, and it has also been adopted in some instances associate with the word "process" to indicate the brokers' behavioral processes (i.e. Obstfeld et al., 2014; Spiro et al., 2013) that I define here as "brokering". Nonetheless, the construct in its traditional sense has a specific structural connotation and has been considered both in static and more dynamic (even though often not in an explicit way) terms (Spiro et al., 2013). The most recent definition of brokerage has been proposed by Halevy et al. (2019) who clearly distinguished it as the "particular position in a social network" (p. 216) that brokers occupy, such as the "bridging position between disconnected others" (p. 215), distancing it from the more agentic conception of brokers' behaviors. A more dynamic definition of brokerage looks at it as a mechanism that "occurs when one actor serves as a bridge between two other actors who themselves lack a direct connection to one another" (Spiro et al., 2013, p. 216) or "by which intermediary actors facilitate transactions between other actors lacking access or trust in one another" (Marsden, 1982, p. 202). Or either as a "relation in which one actor mediates the flow of resources or information between two other actors who are not directly linked" (Fernandez & Gould, 1994). In both meanings, as a structural position or as a structural mechanism or relation, though, the term does not directly aim at uncovering the agentic role of

brokers underlying these dynamics but at its (structural) results, an element that distinguishes it clearly from brokering that is instead conceptualized for capturing the dynamics of brokers' actions.

Conflict mediation

Mediation is a concept that is not frequently used in network literature and that refers to a specific stream of literature on conflict resolution. Within this literature, it is defined as "a procedure that is used increasingly for conflict resolution" (Wall & Lynn, 1993, p. 160). In its stricter definition it is the "third-party assistance of two or more interacting parties" (Pruitt & Kressel, 1989, taken from Wall & Lynn, 1993, p.161). It is thus a dynamic process in which mediators adopt a set of strategies and techniques to resolve a conflict arising among parties. As noted by Wall and Lynn (1993) mediators are professionals intervening in disputes because "that is their profession", because "it is to the benefit of their constituencies and allies" or because they "are pressured by their consistency to resolve or defuse the potential conflict" (p.164-165).

Both mediation and brokering involve the agency of a "third party" intervening between/among other parties. Nonetheless, while in mediation this third party is usually an appointed professional mediator, brokering can be entailed by any actor that have the opportunity to influence others' interactions, who could emerge, disappear and re-emerge over time as well as collaborate with other brokers during the process. Another difference between the two concepts is that while mediation is considered as occurring just in case of conflict for solving it, brokering entails a broader conceptualization of third parties' interventions, both positively and negatively affecting others' relations and not only in case of conflict. Indeed, while brokering entails a broad range of actions that brokers perform to achieve personal or collective outcomes, the study of mediation specifically involves the study of professional

mediators intervening exclusively in situations where a conflict has arisen for achieving an agreement.

Boundary spanning

Boundary spanning and brokering both entail the intermediary and integrating role enacted by actors embedded in networks rich of boundaries. As Fleming & Waguespack (2007, p. 169) defined it, boundary spanning is an "integrating role" that is performed by boundary spanners who "work across internal community boundaries" (p. 169) through "gathering, interpreting and disseminating nonredundant information across boundaries" (p.170) with the aim of binding the community together. The peculiarity of boundary spanners is that their role is mainly focused on the facilitation of information exchange across groups to which they concurrently belong (Paraponaris, Sigal & Haas, 2015), reducing uncertainty (Jemison,1984) in situations in which it is important to have access to different expertise (Cross & Prusak, 2002). Brokering instead entails brokers' intermediary and integrating role not only with the aim of exchanging information or knowledge across groups, but also for facilitating relations among parties within a same cohesive group (Obstfeld, 2005). Indeed, the focus of brokering is on the process through which brokers influence others' interactions. Furthermore, brokers can cover different roles within the network (Gould & Fernandez, 1989) and not necessarily are part of all the groups among which they broker. So, as Fleming & Waguespack (2007) put it, "brokers can span boundaries, but not all boundary spanners broker" (p. 166).

Creative leadership

Mainemelis, Kark and Epitropaki (2015) in their analysis of extant literature have defined creativity leadership as generally referring to "leading others toward the attainment of creative outcome" (p. 400). Within this umbrella construct the authors have identified three alternative manifestations through which this leadership is enacted: "facilitating employee creativity; directing the materialization of a leader's creative vision; and integrating heterogeneous

creative contributions" (p. 400). Given this broad conceptualization, brokering can be recognized as a lens through which we can look at creative leaders when facilitating and integrating the creative contributions of heterogeneous actors. Differently from research on leadership, brokering entails a specific focus on how relationships among heterogeneous actors unfold and on how brokers can influence these interactions (and their tie content) through their behaviors. Furthermore, while creative leadership necessarily involves leader-followers kinds of relations (Mainemelis et al., 2015), in brokering this hierarchical superiority is not taken into consideration. Indeed, as previously mentioned, any actor able to (also temporarily) influence others' interactions is recognized as a broker. While trust is required for brokers to produce an impact on others (e.g. Tasselli & Kilduff, 2018), their influence can be enacted also within horizontal kind of relationships.

4. Definition of the concept

In this section I propose a definition of brokering that derives from the analysis developed above. As I aim at defining an umbrella construct that can be used for different operationalizations in research, I parsimoniously include in it only the fundamental elements characterizing its essence, leaving other characteristics mentioned above as stimuli for future research (Hirsch & Levin, 1999; Suddaby, 2010). I then proceed at detailing how each part of the definition corresponds to the identified attributes and constraints (see Table 1 for an overview).

I define brokering as

> *the behavioral interactive process through which brokers aim to enable and/or inhibit interactions among multiple and heterogeneous actors.*

According to this definition brokering entails the *process* through which (one or more) *brokers* enact their agency within the context in which they are embedded. This agency is expressed by a set of *behaviors*, such as goal-driven practices or actions, with which they aim at influencing interactions among other actors. This process is *interactive* as it is not enacted in a vacuum, but it is embedded within a multi-level system of nonlinear and dynamic relations that influence and are in turn influenced by brokers' behaviors. This requires brokers to adapt their behaviors over time depending on different stimuli emerging over time from the context and the participants involved. Given this interactivity and the need for adaptability, brokering can entail different sequences or combinations of behaviors over time, not necessarily pre-defined by the broker but emerging over time. These behaviors can thus be aimed to *enable* and/or *inhibit* interactions among actors, depending on the situation that brokers need to face to achieve individual or collective goals. The actors whose interaction brokers aim to influence are typically *multiple* (two or more) and *heterogeneous*, such as they differ from one another in some characteristic (both personal and relational). This contextual plurality and heterogeneity provides the reason underlying brokers' intervention, as it entails the inability or inadequacy of participants to address their discrepancies by their own and thus the need of some kind of mediation or moderation between/among them for obtaining intended (or either unintended) outcomes. The *interactions* that brokers aim at influence do not only include the existence of a structural tie (the structural connection or disconnection with others), but also the exchange and integration of different ties contents (i.e. knowledge and information, ideas, affect, friendship, among others).

Insert Table 1 about here

DISCUSSION AND AGENDA FOR FUTURE RESEARCH

How can we better increase our understanding of "how brokers broker"? Highlighting the existence of fragmentation in research addressing this issue I uncovered the ontological drift that has attached to this processual phenomenon an entitative meaning (Thompson, 2011) and that might put at risk theoretical clarity in this research and its ability to provide punctual answers to such an important point for both theory and practice. I built a novel definition of brokering adopting Suddaby's (2010) framework for developing clearer constructs uncovering its attributes, the conditions in which it can apply and the distinction with other related constructs (see Figure 1 for a summary).

Insert Figure 1 about here

The definition of brokering I proposed is that of an umbrella construct that highlights all the essential elements composing the construct that are necessary to be considered for its further operationalization (Hirsch & Levin, 1999): its *behavioral character*, its *interactive configuration*, its *processual ontology and epistemology*, and *the role that brokers' agency play in it for influencing interactions*. Nonetheless, the process adopted for reaching this definition uncovered a wide range of applications of the concepts in contexts with different characteristics and through the adoption of different theoretical views on the study of processes. These different circumstances in which brokering can be studied open towards a new research agenda for the study of "how brokers broker". The following paragraphs aim at highlighting some lines for future research on brokering based on the constraints of space, time and value developed above. Table 2 summarizes this agenda for future research.

Insert Table 2 about here

Space constraints: ***How does the brokering process change respect to different levels of complexity in the context in which it is enacted?***

The umbrella definition of brokering proposed above opens towards the study of this phenomenon within different kinds of contexts. As acknowledged by network literature and theorized by complexity theorists, brokers can be involved in different contexts characterized by *different levels of complexity*. In correspondence of different levels of complexity brokering is expected to change importantly, for example in the kind of behaviors it involves, in its timing and in the way and intensity in which brokers engage in brokering (Obstfeld et al., 2014). Nonetheless, how the brokering process changes respect to different levels of complexity in the context is still unexplored. On the one hand, complexity can be linked to the *number and diversity of participants* involved within the context in which brokering is enacted (Anderson & Meyer, 2016). Future research can study brokering in evolving settings focusing on single triads in which brokers are embedded and interact with two others (i.e. Sasovova et al., 2010) or in more complex settings involving more than one triad (i.e. Spiro et al., 2013; Tasselli & Kilduff, 2018). Or in settings where interactions with multiple others are overlapping and changing so fast that it becomes difficult to uncover the different triadic interactions composing this interactive system (Sutton & Hargadon, 1996). Studies can also address cases with different levels of heterogeneity among the actors involved, considering differences not only in participants' characteristics but also in their relationships (Obstfeld et al., 2014). Thus, they can focus on brokering addressing differences in attributes differentiating participants (i.e. identity, personality traits, motivations, interests, objectives) and/or in tie contents that underlie their relationships (i.e. instrumental, affective contents). Furthermore, future research could uncover how brokering is enacted for obtaining the multiplexity (Ahuja, Soda & Zaheer,

2012; Ferriani, Fonti & Corrado, 2013) that is required in some contexts for their functioning.

On the other hand, complexity is related to *the way in which the elements forming a context are interconnected and organized* (Anderson, 1999; Anderson & Meyer, 2016). Future research can explore how the brokering process unfolds within different organizational forms with different degrees of complexity (from more traditional forms of organization characterized by hierarchical control to more horizontal organizational arrangements, Provan & Kenis, 2008; Lundin et al. 2015) also taking into consideration the complexity of the issue tackled (Van Tulder & Keen, 2018) and of the process in which participants get involved to address this issue over time (Zuzul, 2018).

Moreover, following extant literature's developments on the study of brokers, the study of brokering can be carried out at *different levels of analysis*. Future research can thus entail the investigation of brokers as both individuals (Lingo & O'Mahony, 2010) and organizations (Hargadon, 1998), as well as focus on the behaviors of one single broker (Boari & Riboldazzi, 2014) or of a plurality of brokers (Hargadon & Sutton, 1997) who may complement or substitute each other throughout the process. Studies might well focus on brokers' parallel individual behavioral processes (Burt & Merluzzi, 2016), also accounting for their dynamics of interaction, as well as considering brokers as a collective (Sala & Boari, 2019).

Time constraints: ***How does brokering produce change on the context in which it is enacted? And how does brokering unfold over time?***

While developing the definition of brokering I claimed that answering the question "how do brokers broker?" requires the adoption of a processual approach (Langley & Tsoukas, 2016). While this is generally true, studies on brokering can adopt different perspectives for capturing the processual essence of this phenomenon (Langley et al., 2013).

Taking a *weak* or *exogenous perspective*, future research on brokering will go in the direction of providing further understanding on how brokering processes produce changes on the contexts in which they are enacted, under the assumption that context is pre-determined and that brokering is studied as a process through which a context (or organization) passes from one state to another (Van de Ven & Poole, 2005). Taking a *strong* or *endogenous* perspective, instead future studies will focus on inquiring how brokering unfolds over time to understand how the context within which brokering is enacted changes over time. Studies on brokering may also attempt to combine these two ontologies. Through coordinating the insights coming from the study of brokering through these two conceptualizations, then, future research could obtain a richer understanding of brokering.

Furthermore, as Langley & Tsoukas (2016) proposed, the study of brokering could differ depending on the researcher's position when observing the process. Future research could thus investigate brokering observing it while it unrolls, accounting for the evolving process of meaningful experiences constituting it or trying to identify distinct chronological patterns along the flow. Or reconstructing it by focusing on a particular outcome and going back to see how brokering produced it, accounting for brokering as a pattern of experiences or of events unfolding over time. The adoption of these different perspectives and of their combinations would provide a richer understanding of brokering on its micro- or macro-level elements.

Similarly, following a recent trend in studies taking time as a central element to be studied, future studies of brokering may take both an *objective and a subjective lens on time* (Ancona, Goodman, Lawrence & Tushman, 2001; Hernes, Simpson & Soderlund, 2013). This entails considering the brokering process in its more traditional lens as evolving over time on the basis of "the measured, linear, forward-moving, and exact clock time". Or uncovering the more "subjective experience [of time] of each individual" (Ancona et al.,

2001, p. 646) involved in the process and taking into account factors affecting the immediate phenomenological experience of time, such as for instance "the nature of ongoing activities and current psychological and motivational states" (George & Jones, 2000, p.660).

Furthermore, as brokering can be temporary or enacted for longer periods of time (Obstfeld, 2005), studies could either limit their investigation to the analysis of discrete episodes of brokering or take a longer-term view of the process uncovering how different episodes unfold and relate over time. This latter perspective could also allow researchers to appreciate the discontinuity of brokers' actions within the brokering process, uncovering its interruptions (Min & Mitsuhashi, 2012; Hahl, Kacperczyk & Davis, 2016), latencies and recovering (Levin, Walter & Murnighan, 2011; Walter, Levin & Murnighan, 2015) and the (multi-level) dynamics related to these changes. This would allow to uncover the rhythm through which brokering is enacted and its evolution over time. These studies could also focus on the circumstances that lead brokers to change their level of engagement within a certain context over time.

Value constraints: ***Why does brokering lead to unexpected outcomes?***

According to complexity theory, the outcome of brokering is difficult to predict (Anderson & Meyer, 2016). This is due on the one hand to the lack of all necessary information available to the actors involved in it to take rational decisions, on the other hand to the complexity and dynamism of the interactions characterizing the process, that make this information difficult to retrieve (Allen & Boulton, 2011). This means that agency within this process is complex and dynamic, entailing the need for brokers to engage in adapting their actions over time (Lingo & O'Mahony, 2010; Burt & Merluzzi, 2016). The way in which brokers adapt their behaviors thus is linked to the information that they are able to collect from the context in which they intervene and to their arbitrage ability to interpret and combine this information before acting (Burt, 2019). Nonetheless, this adaptability is not solely linked to

brokers' strategic action in managing information. It can also be associated to the motivations that underly their interventions (Kadushin, 2002; Obstfeld et al., 2014). While research on brokers has uncovered the effects of different strategic orientations on brokers' behaviors (Quintane & Carnabuci, 2016; Spiro et al., 2018) or on brokers' outcomes (Kauppila, Bizzi & Obstfeld, 2018), the impact of different kinds of motivations (i.e. intrinsic and extrinsic motivation, Aalbers, Dolfsma & Koppius (2013)) that lead brokers' behaviors and their evolution over time on how brokering unfolds and on the outcomes that it attains is still underexplored. Future research may then investigate the micro-foundations of brokering, taking into consideration changes in brokers' motivations as drivers of change in brokering as well as the result of the interactions characterizing the process over time.

Moreover, network research has highlighted the importance of relational affect, in terms of emotions and moods, in activating or inhibiting social action (Casciaro, 2014). Future research on brokering could explore this rather neglected area of research, investigating how brokers' emotional experience in terms of feelings, sensations, and affective responses to the situations they confront while enacting brokering (Mumby & Putnam, 1992) influences and is turn influenced by brokering interactional dynamics. Similarly, alters' perceptions of brokers' actions (Kleinbaum, Jordan & Audia, 2015) in terms of affect and emotions and their effects on brokering (Stea & Pedersen, 2017) could be inquired. Studies could also examine the effects of positive and negative affect and emotions and their combination and sequences over time on brokering (Casciaro, 2014).

Methodological issues

As highlighted by process scholars (see Langley et al., 2013), depending on the characteristics of the phenomenon under observation and on the research question addressed (i.e. depending on the kind of process and time perspective taken as I referred above), future research on brokering process could rely on *different research methods*, both quantitative

and qualitative and featuring longitudinal data to uncover how the process unfolds over time. As brokering is often quite complex, its investigation "typically involves the collection of large amounts of multifaceted data" (Van de Ven & Poole, 2005, p. 1385) and the adoption of different strategies for managing and making sense of these data (Langley, 1999) and going beyond a surface description to provide explanations (Pentland, 1999). As Pentland (1999) highlighted, a process theory of brokering may be based on a set of features: a sequence in time, identifying a clear beginning, middle and end; objects and characters in the story; an identifiable narrative voice; a sense of moral context, encoding standards against which actions are judged; and other information essential to the interpretation of the events about the context (i.e. time, place) and the actors involved (i.e. their attribute; psychological states) (pp. 712-713). Case studies combining interviews, archival data and observations or studies based on real-time ethnographic data are in particular best suited for examining brokering in depth (Langley et al., 2013; van Hulst, Ybema & Yanow, 2016) allowing to study brokers' behaviors while appreciating the richness and particulars of the case in which it is embedded (Cornelissen, 2017a) and to identify mechanisms of interaction (Cornelissen, 2017b) at different levels.

Scholars may focus on one single case (Dyer & Wilkins, 1991; Siggelkow, 2007) or follow a cross-case approach (Eisenhardt, 1989) comparing brokering across cases and time, within one same context or in different contexts with similar characteristics. Nonetheless, as suggested by Langley and colleagues (2013) there is room for future research adopting quantitative methods for analyzing events and sequences composing the brokering process, for example to "detail shifts in meanings within textual representations over time" (p.10).

CONCLUSIONS

Understanding how brokers broker is necessary for understanding the impact that brokers produce in networks. As "time is an inescapable reality" (Langley, 2009, p.411), taking it into consideration in the study of brokering is extremely important for producing theoretically and practically sound theories. In this paper I uncovered a lack of clarity in the understanding of what is the nature of brokering, highlighting the existence of two main streams of research following different epistemologies in addressing this inherently processual question: processual the first and static the second. I highlighted that an ontological drift (Thompson, 2011) has followed the attribution of an entitative meaning to a processual phenomenon, producing fragmentation in research. Indeed, both constructs of "brokering" and "brokerage process" that has been often used interchangeably in this research have been concurrently defined as "behaviors" and as "behavioral processes". Following Suddaby's (2010) framework for defining clearer constructs I proposed a novel umbrella definition of brokering as *the behavioral interactive process through which brokers aim to enable and/or inhibit interactions among multiple and heterogeneous actors*, with the intention of providing a common definition that could unite research on brokering and provide the ground for an ontologically aligned operationalization of the construct in the future. On this basis I advanced an agenda for future research that provides key points of reflection for exploiting the processual character of brokering.

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FIGURES AND TABLES

Figure 1. A framework for defining brokering

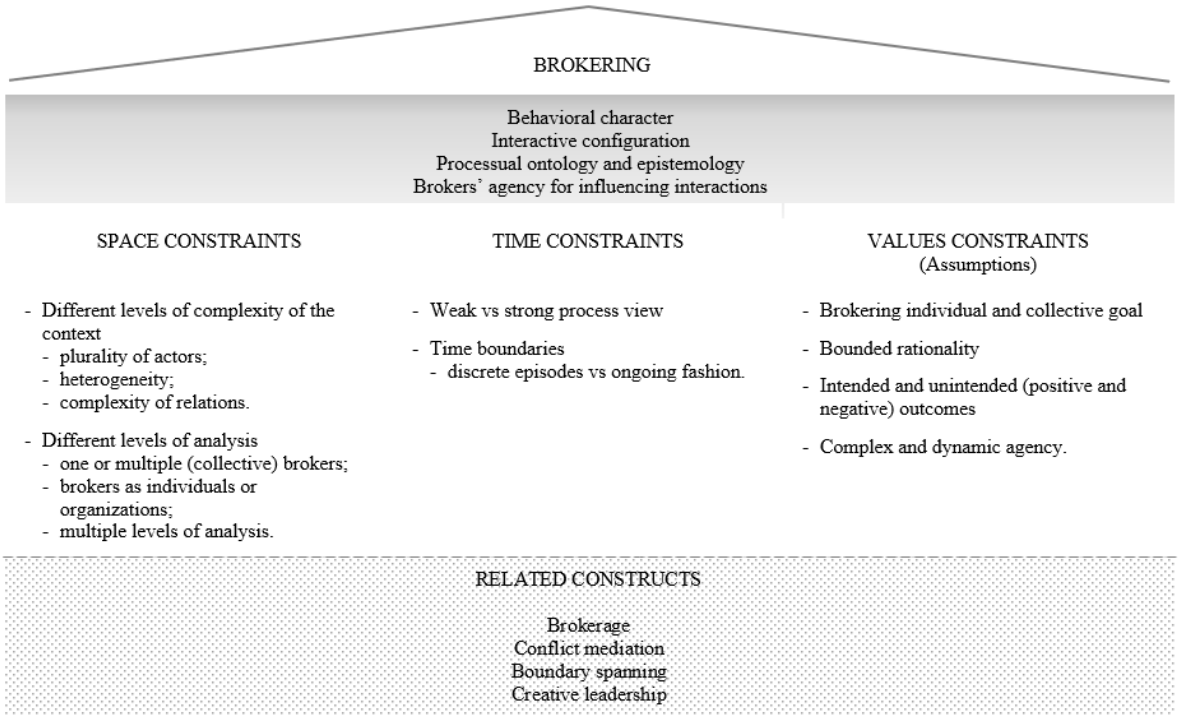

Table 1. Brokering definition's coherence with attributes and constraints

Attributes / constraints	**Definition of brokering**
Behavioral character of brokering	Behavioral
Interactivity in brokering	interactive
Processual character of brokering	process
The role of brokers' agency in influencing interactions	through which brokers aim to enable and/or inhibit interactions
Plurality of actors	among multiple
Heterogeneity	and heterogeneous actors

Table 2. An agenda for future research on brokering

General research questions	Key points of reflection
How does the brokering process change respect to different levels of complexity in the context in which it is enacted?	• *Different levels of complexity linked to number and diversity of participants* (Anderson & Meyer, 2016): - focusing on single triads (i.e. Sasovova et al., 2010) or on more complex settings involving more than one triad (i.e. Spiro et al., 2013; Tasselli & Kilduff, 2018) or collective interactions (Sutton & Hargadon, 1996); - considering differences in participants' characteristics (Obstfeld et al., 2014) - considering differences in their relationships (tie contents and their multiplexity) (Ferriani et al., 2013; Obstfeld et al., 2014).
	• *Different ways in which the elements forming the context are interconnected and organized* (Anderson, 1999; Anderson & Meyer, 2016): - considering different organizational forms in which brokering is enacted and their level of control (Provan & Kenis, 2008; Lundin et al. 2015); - considering the level of complexity of the issue that participants aim at tackling through their common work (Van Tulder & Keen, 2018); - considering the level of complexity of the process in which participants get involved to address this issue over time (Zuzul, 2018).
	• *Different levels of analysis*: - Focusing on brokers as individuals (Lingo & O'Mahony, 2010) and organizations (Hargadon, 1998); - focusing on one single broker (Boari & Riboldazzi, 2014) or on a plurality of brokers (Hargadon & Sutton, 1997); - focusing on brokers' parallel individual behavioral processes (Burt & Merluzzi, 2016) or considering brokers as a collective (Sala & Boari, 2019).
How does brokering produce change on the context in which it is enacted? How does brokering unfold over time?	• *Different perspectives on processes*: - Focusing on pre-defined changes in the context and on how brokering produces these changes (weak or exogenous perspective) or focus on how brokering unfolds and thus produces changes on the context (strong or endogenous perspective) (Hernes & Weik, 2007; Langley et al., 2013; Cornelissen et al., 2016); - Combining weak and strong perspectives (Van de Ven & Poole, 2005); - Focusing on studying processes *from within* or *from outside* and combining them with *in-the-flow* or *after-the-fact* approaches (Langley & Tsoukas, 2016).
	• *Different perspectives on time* - Taking an objective or subjective lens on time (Ancona et al., 2011), considering time as homogeneous (linear, forward-moving clock time) or as heterogeneous (being affected by the subjective; reconstruction of events on the basis of individuals' past experiences and future projections) (George & Jones, 2000; Hernes et al., 2013); - Focusing on short-term (discrete episodes) or on long-term brokering (Obstfeld, 2005), also accounting for interruptions (Min & Mitsuhashi, 2012), latencies and recovering (Levin et al., 2011; Walter et al., 2015).
Why does brokering lead to unexpected outcomes?	• *Micro-foundations of brokering*: - Considering changes in brokers' motivation (i.e. intrinsic, extrinsic) and how they affect and/or are in turn affected by interactions (Aalbers et al., 2013); - Focusing on brokers' emotional experience (Mumby & Putnam, 1992; Casciaro, 2014) or on alters' perception in terms of affect and emotions (Kleinbaum et al., 2015); - Focusing on the effects of positive and negative affect and emotions and their combination and sequences over time (Casciaro, 2014).