



# The dark side of open innovation: Individual affective responses as hidden tolls of the paradox of openness

Ioana Stefan<sup>a,\*</sup>, Pia Hurmelinna-Laukkanen<sup>b</sup>, Wim Vanhaverbeke<sup>c</sup>, Eeva-Liisa Oikarinen<sup>b</sup>

<sup>a</sup> School of Innovation, Design and Engineering, Mälardalen University, Sweden

<sup>b</sup> Oulu Business School, University of Oulu, Finland

<sup>c</sup> Faculty of Business and Economics, University of Antwerp, Belgium

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## ABSTRACT

While creating value in open innovation (OI) requires knowledge sharing, appropriating value in OI entails some closedness and protectiveness. Hence, tensions between generating and appropriating value, known as the paradox of openness, may emerge in OI collaborations. Such tensions have been scarcely explored at the micro-level, even though it is a crucial piece to fully grasping the paradox of openness. Our study bridges this gap by examining individuals' affective responses to tensions and their outcomes in OI, thereby capturing the micro-foundations of the paradox of openness. The study adopts an inductive qualitative approach and delineates various micro-level coping mechanisms that build on figurative language and humor. Accordingly, our study reveals hidden tolls of the paradox of openness, highlighted by the dominance of destructive rather than constructive affective responses. These hidden tolls illuminate a “dark side” of OI, which taps into the potential failures and high costs of opening up.

## 1. Introduction

Strategic decisions to open innovation processes may lead to tensions between creating value with partners and value appropriation by participating organizations. That is, the paradox of openness may emerge (Albats, Alexander, Mahdad, Miller, & Post, 2020; Bogers, 2011; Drechsler & Natter, 2012; Grimaldi, Greco, & Cricelli, 2021; Jarvenpaa & Majchrzak, 2016; Laursen & Salter, 2014; Singh, Gupta, Busso, & Kamboj, 2019). Prior studies on the paradox of openness address organizational challenges to generating profit from collaborative innovation efforts; they show that risks associated with sharing and protecting knowledge can be particularly challenging to manage in open innovation (OI) contexts (e.g., Laursen & Salter, 2014; Buss & Peukert, 2015; Wadhwa, Bodas Freitas, & Sarkar, 2017). The noted tension may be difficult to address, because potential solutions may induce new tensions (Stefan, Hurmelinna-Laukkanen, & Vanhaverbeke, 2021), which could generate negative outcomes, such as intellectual property (IP) misappropriation (Elia, Massini, & Narula, 2019; Lepak, Smith, & Taylor, 2007; Li, Cui, & Liu, 2017; Lorenz & Veer, 2019). The outcomes often have further unwanted consequences at organizational and individual levels (Foegen, Lauritzen, Tietze, & Salge, 2019), such as unrealized

profits, reputational problems, and strain on individuals. In practice, the consequences of such negative outcomes can be significantly influential at the individual level. For instance, in the case of Robert Kearns, filing infringement lawsuits against several car manufacturers for his intermittent windshield wiper invention has taken tolls on his family relationship and mental health (Hagi & Yoffie, 2013; Schudel, 2005). The failures and high unforeseen costs of opening up, as highlighted in the IP misappropriation tolls, could be regarded as a “dark side” of OI, which is often overlooked in OI research (Stanko, Fisher, & Bogers, 2017).

Considering that individuals drive innovation, and their behavior is central to OI (Bogers, Foss, & Lyngsie, 2018), negative consequences of OI at micro-level cannot be discarded. Affective responses influence individuals' decision-making processes (Balconi & Fronza, 2020; Hodgkinson & Healey, 2014), further affecting organizational and relational levels. For instance, prior studies note that dissatisfaction and perceived unfairness among online innovation community members negatively impact individuals' co-creation experience and intention to participate in future initiatives (Gebauer, Füller, & Pezzeri, 2013). Affective responses to tensions influence managerial decisions (Schad, Lewis, Raisch, & Smith, 2016; Waldman, Putnam, Miron-Spektor, & Siegel, 2019), exerting effects at the organizational or ecosystem level.

\* Corresponding author.

E-mail addresses: [ioana.stefan@mdh.se](mailto:ioana.stefan@mdh.se) (I. Stefan), [pia.hurmelinna@oulu.fi](mailto:pia.hurmelinna@oulu.fi) (P. Hurmelinna-Laukkanen), [wim.vanhaverbeke@uantwerpen.be](mailto:wim.vanhaverbeke@uantwerpen.be) (W. Vanhaverbeke), [eeva-liisa.oikarinen@oulu.fi](mailto:eeva-liisa.oikarinen@oulu.fi) (E.-L. Oikarinen).

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Meanwhile, individuals' roles are increasingly emphasized as work life tensions gain prevalence (Best, Miller, McAdam, & Moffett, 2020; Donnelly, 2019; Galati, Bigliardi, Galati, & Petroni, 2019), thus indicating the importance of understanding tensions and their effects at the individual level.

However, research on these aspects is limited. Despite an abundance of organizational-level studies on how to motivate individuals to innovate and on tensions regarding the paradox of openness, few studies examine how individuals respond to tensions and their outcomes (Bogers et al., 2018) and how individuals cognitively construct and experience such tensions (Donnelly, 2019; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018; Schad et al., 2016; Smith & Lewis, 2011) at the individual level. Various study streams, including organizational and innovation management studies (Bogers et al., 2017, 2018; Felin, Foss, & Ployhart, 2015; Locatelli, Greco, Invernizzi, Grimaldi, & Malizia, 2020), attest to the need for more insight into the microfoundations that demonstrate the importance of individuals for organizational outcomes (Felin et al., 2015), thereby shedding light on the paradox of openness. In particular, the various micro-level coping mechanisms that build on affective responses remain largely unexamined (see, e.g., Schad et al., 2016).

Accordingly, building on the previous paradox theory literature (e.g., Schad et al., 2016; Waldman et al., 2019) and on the microfoundations perspective (e.g., Bogers et al., 2018), we posit that focusing on the individual level contributes a richer and holistic understanding of the paradox of openness (Ritala, Husted, Olander, & Michailova, 2018), advancing the discussion on responses to tensions at the micro-level (see Donnelly, 2019). Thus, this study probes individuals' affective responses to tensions and their outcomes within the paradox of openness context. That is, it aims to address the following research question: what kind of affective responses to tensions and their outcomes emerge in the context of the paradox of openness?

The study examines data from interviews with managers of six companies in various manufacturing and service industries, and a group of expert informants to address the research question. Following Jarzabkowski and Lê (2017), the study draws from the observations while investigating tensions and potential solutions to the paradox of openness. The analysis revealed that informants used laughter, dark humor, and figures of speech in specific ways when discussing tensions and negative outcomes in OI collaboration. Such observations on humor and figures of speech helped uncover the affective responses of individuals regarding tensions and their outcomes in the paradox of openness context.

The findings reveal that individual-level affective responses can be grouped into two meta-categories: responses to tensions and outcomes of the paradox of openness. The former encompasses reactions to OI collaboration risks and challenges, such as opportunistic behavior or internal organizational conflicts. The latter highlights reactions to outcomes of paradoxical tensions, such as value creation and capture challenges. They are further divided according to inside and outside perspectives, depending on whether the informant was involved in an OI collaboration directly (OI partner) or indirectly (e.g., intermediary or advisor). Following the typology of responses by Schad et al. (2016), only a few affective responses in our analysis are constructive, highlighting paradoxical thinking in trying to balance conflicting elements (Hahn, Preuss, Pinkse, & Figge, 2014; Schad et al., 2016). Most of the responses are destructive, emphasizing anxiety, frustration, and defense mechanisms (Lewis, 2000; Schad et al., 2016). Hence, the destructive approaches as latent micro-level tolls of the paradox of openness, potentially challenging open approaches in future organizational activities and the innovation ecosystem.

This study contributes to the literature in several ways. Primarily, it responds to recent calls to examine the individual level in OI settings (Bogers et al., 2018), thus advancing existing knowledge on microfoundations in OI. By providing the perspective of how individuals affectively respond to tensions and outcomes under the paradox of

openness, this study complements macro-level studies, thereby providing a better understanding of the paradox (Ritala et al., 2018). Further, the study makes theoretical contributions by illuminating the “dark side” of OI (Stanko et al., 2017) via the hidden tolls of the paradox of openness at the individual level, even when the outcomes do not appear to be negative at organizational level. The hidden tolls might have health and ethical implications in the long term (Kerkkänen, Kuiper, & Martin, 2004; Talay, Oxborrow, & Brindley, 2020). Moreover, the dominance of destructive affective responses will likely shape future negative decisions (Schad et al., 2016; Waldman et al., 2019) in OI, creating so-called vicious cycles at the organizational and ecosystem levels.

The remainder of this paper is structured as follows. Section 2 presents the theoretical background and a discussion of the paradox of openness, related tensions, and general coping mechanisms at the individual level. Section 3 highlights the research design and methodology. Section 4 furnishes the findings in the light of the existing literature. Section 5 concludes the study and notes the theoretical contributions, practical implications, and limitations of this study, from which this study paves the way for future research.

## 2. Theoretical background

### 2.1. The paradox of openness: A multi-level perspective

Public and private organizations are increasingly engaging in OI (Bogers et al., 2018; Kankanhalli, Zuiderwijk, & Tayi, 2017; Lee, Hwang, & Choi, 2012) because OI provides numerous benefits (Albats et al., 2020; Chesbrough, 2003, 2020; Greco, Grimaldi, & Cricelli, 2019; Grimaldi et al., 2021). However, innovation collaboration has inherent risks and may delineate new internal and external boundaries (Alexy, Henkel, & Wallin, 2013; Dell'Era et al., 2020; Grama-Vigouroux, Saidi, Berthinier-Poncet, Vanhaverbeke, & Madanamoothoo, 2020; Gueler & Schneider, 2021; Ritala & Stefan, 2021; Salter, Criscuolo, & Ter Wal, 2014). This situation likely presents challenges and creates tensions that might affect participating organizations and individuals therein.

Specific intrinsic tensions between OI value creation and capture have been dubbed the paradox of openness (Bogers, 2011; Laursen & Salter, 2014). This refers to contradictory activities underlying OI value creation and appropriation: creating value entails openness and sharing knowledge with external stakeholders, while capturing value may require protective actions, such as partly withholding information to preserve sources of firm-specific possibilities to profit from innovation (Capaldo & Petruzzelli, 2011; Niesten & Stefan, 2019). This paradox is present in inbound, outbound, and coupled OI processes and has been investigated in various prior studies, particularly at the organizational level of analysis (Buss & Peukert, 2015; Laursen & Salter, 2014; Zhong & Sun, 2020).

However, investigations into the tensions of the paradox of openness at the individual level are rare, specifically considering how individuals in organizations respond to tensions between value creation and appropriation. Among the few studies that address these aspects, Salter et al. (2014) investigate crucial challenges of individuals who work in R&D, pinpointing potential solutions to these challenges, and Foege et al. (2019) examine the microfoundations of the paradox of openness in outbound OI, specifically in crowdsourcing contests, revealing individual-perceived tensions and identifying formal and informal value appropriation practices that potentially curb sharing-protecting tensions. Following such insights, as well as the prior paradox (Schad et al., 2016; Waldman et al., 2019) and OI (Bogers et al., 2018; Ritala et al., 2018) literature, this study suggests that the micro-level is essential to understanding the paradox of openness. The potential negative outcomes of tensions between value creation and capture, such as IP misappropriation, have proven to be severe (Foege et al., 2019; Lorenz & Veer, 2019). Therefore, the reactions to the said outcomes warrant examination, along with the tensions as their premises. Individuals in

Trope	Definition	Possible functions
Coping laughter	Manifestation of laughter, joy (Crawford, 1994)	<ul style="list-style-type: none"> <li>• release of negative energy (Meyer, 1990)</li> <li>• reinterprets stressful situations (Cann et al., 2010)</li> <li>• reduces problems to a manageable size (Crawford, 1994)</li> </ul>
Dark humor	Based on deviation from values and transgression of social norms (Aillaud & Piolat, 2012)	<ul style="list-style-type: none"> <li>• helps to distance from life-threatening and/or traumatic events (Rowe &amp; Regehr, 2010)</li> </ul>
Irony	Contradiction of what is actually conveyed (Berntsen & Kennedy, 1996; Ruch et al., 2018; Gylfe et al., 2019)	<ul style="list-style-type: none"> <li>• helps individuals in organizations cope with organizational paradoxes (Gylfe et al. 2019)</li> <li>• shows negative emotion (Colston, 2015)</li> </ul>
Hyperbole	Exaggeration of a situation (Burgers & van Mulken, 2017)	<ul style="list-style-type: none"> <li>• ironic role (Hoyle &amp; Wallace, 2008)</li> <li>• clarification, emphasis (Colston, 2015)</li> </ul>
Repetition	A statement repeated in the same text (Burgers & van Mulken, 2017)	<ul style="list-style-type: none"> <li>• ironic role (Burgers &amp; van Mulken, 2017)</li> </ul>
Anomaly	Something abnormal; emphasizes dissimilarities between elements (Oswick et al., 2002)	<ul style="list-style-type: none"> <li>• enables reframing (Oswick et al., 2002)</li> <li>• contributes new ways of thinking about accepted phenomena (Oswick et al., 2002)</li> </ul>
Metaphor	Focus on similarity between two or more elements (Oswick et al., 2002) A type of analogy (Berntsen & Kennedy, 1996)	<ul style="list-style-type: none"> <li>• clarification (Colston, 2015); conveys prior knowledge (Oswick et al., 2002)</li> <li>• describes perceptions and feelings related to change (Palmer &amp; Dunford, 1996)</li> <li>• conveys meaning in settings of complexity and uncertainty (Srivastva &amp; Barrett, 1988; Palmer &amp; Dunford, 1996)</li> <li>• illustrates difficulty of controlling occurrences (Smolian, 2014)</li> </ul>
Rhetorical questions	A question that does not require an answer	<ul style="list-style-type: none"> <li>• shows negative emotion (Colston, 2015)</li> </ul>
Tautology	States the truth but provides no novel information (Berntsen & Kennedy, 1996)	<ul style="list-style-type: none"> <li>• points to attitudes of :                             <ul style="list-style-type: none"> <li>• acceptance (laissez-faire)</li> <li>• self-justification</li> <li>• conservatism (Berntsen &amp; Kennedy, 1996)</li> </ul> </li> </ul>
Understatement	Applies reduction to diminish importance (Berntsen & Kennedy, 1996)	<ul style="list-style-type: none"> <li>• shows negative emotion (Colston, 2015)</li> </ul>

Fig. 1. Tropes: definitions and possible functions.

organizations do not necessarily perceive or respond to tensions and their outcomes in the same way. Furthermore, the ability and willingness of individuals to act in specific ways affect the achievement of organizational goals (see, e.g., Hannah & Robertson, 2015; Olander, Hurmelinna-Laukkanen, & Heilmann, 2015). Hence, different individuals might use distinct mechanisms to respond to the same kind of tension or outcome. Accordingly, the following discussion addresses the existing theories on these aspects.

## 2.2. Coping with tensions at the individual level

The prior literature suggests that it is relevant to study tensions, defined as “stress, anxiety, discomfort, or tightness in making choices, responding to, and moving forward in organizational situations” (Putnam, Fairhurst, & Banghart, 2016, p. 68), to understand complex real-life phenomena. At the individual level, the study of tensions is particularly important because tensions impact the behavior of individuals in organizations and networks (Galati et al., 2019; Schad et al., 2016; Smith & Lewis, 2011). Further, the exploration of tensions and paradox

at the individual-level provides rich investigative opportunities, because individuals perceive tensions every day, and produce behavioral responses and coping mechanisms (Smith & Lewis, 2011).

Beyond behavioral reactions, existing research provides rather limited evidence of how individuals interpret paradox at a cognitive and emotional level, and how they respond to or cope with tensions (Miron-Spektor et al., 2018; Schad et al., 2016; Smith & Lewis, 2011). Providing some direction, studies in psychology identify constructive and destructive responses to tensions (Schad et al., 2016). The constructive responses, such as paradoxical thinking, emphasize more positive approaches to paradox, entailing efforts to balance tension elements (Hahn et al., 2014) and channel individual responses toward organizational levels (Felin et al., 2015). However, destructive responses denote a disintegrative perspective, cultivating anxiety, defense mechanisms, uncertainty, or frustration (Schad et al., 2016). Therefore, such responses adopt defense mechanisms to reduce stress in the short term (Lewis, 2000; Schad et al., 2016).

Constructive and destructive responses to tensions are coping mechanisms, which may include humor (Smith & Lewis, 2011) or tropes



(Burgers & van Mulken, 2017; Hoyle & Wallace, 2008; Oswick, Keenoy, & Grant, 2002). Tropes are also commonly known as figures of speech (Oswick et al., 2002) or figurative language (Colston, 2015), such as metaphor and hyperbole. Tropes enable the transmission of meaning (Oswick et al., 2002) and represent ways of emphasizing a speaker's attitudes (Berntsen & Kennedy, 1996). Metaphor and irony are the most common tropes when investigating tensions (Sillince & Golant, 2017). Other tropes (Burgers & van Mulken, 2017; Colston, 2015; Oswick et al., 2002) and humor (Kuiper, Martin, & Olinger, 1993; Martin, 1996) have also been identified as coping mechanisms.

Notably, there is some ambiguity in the categorization of tropes in prior studies. For instance, some studies focus on metaphor, irony, understatement, and tautology (Berntsen & Kennedy, 1996), while others consider metaphor, metonymy, anomaly, and irony (Oswick et al., 2002). Further, others suggest metaphor, hyperbole, understatement, rhetorical question, and repetition are markers of irony (Burgers & van Mulken, 2017), whereas others propose that irony can unveil underlying meanings through humor, understatement, or sarcasm (Oswick, Putnam, & Keenoy, 2004). Moreover, irony is useful when coping with organizational paradox (Gylfe, Franck, & Vaara, 2019). From linguistic and psychological perspectives, irony is a concept distinct from humor (Attardo, 2002), as they differ in comic styles (Mendiburo-Seguel & Heintz, 2020; Ruch, Heintz, Platt, Wagner, & Proyer, 2018). Such styles are classified as either "darker" or "lighter," with irony as one of the "darker" comic styles along with satire, sarcasm, and cynicism.

Fig. 1 presents the main tropes and certain types of humor (coping laughter and dark humor) frequently highlighted in management research and relevant to responding to tensions and paradox, along with their definitions and functions.

Despite no consensus on tropes or humor type and function classification, some trope functions converge in many ways. The right-hand side of Fig. 1 shows the converging functions. For instance, irony, rhetorical questions, and understatement reveal negative emotions (Colston, 2015), while repetition and hyperbole have ironic roles (Burgers & van Mulken, 2017; Hoyle & Wallace, 2008). Moreover, metaphor and hyperbole are assigned to the clarification function (Colston, 2015); meanwhile, metaphor also conveys meaning in complex, uncertain settings (Palmer & Dunford, 1996; Srivastva & Barrett, 1988) or illustrates challenges in controlling situations (Smollan, 2014), similar to coping laughter in reinterpreting stressful situations (Cann, Stilwell, & Taku, 2010) or reducing problems to manageable sizes (Crawford, 1994).

Humor is particularly important in coping with tensions at the individual level; however, it has been widely disregarded in prior innovation management research (Hurmelinna-Laukkanen, Atta-Owusu, & Oikarinen, 2016). It is linked to so-called relief-theories (Meyer, 2000; Morreall, 2014; Romero & Pescosolido, 2008) and may be viewed as a two-dimensional form of communication (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003), which enhances a person's internal self or interpersonal relationships while exerting positive or negative effects. Self-enhancement is a positive humor functionality that provides a means to cope with different stressors via new angles of interpreting stressful situations (Cann et al., 2010). However, dark humor is based on deviations from values and transgression of social norms; it can provoke positive (e.g., amusement) and negative (e.g., shame or disgust) emotions (Aillaud & Piolat, 2012). Despite the possible negative effects, dark humor is useful in critical situations in the healthcare sector where, for example, professionals can utilize humor to convey thought and cope with calamity (Dean & Major, 2008; Rowe & Regehr, 2010).

Humor is frequently associated with coping laughter (Wilkins & Eisenbraun, 2009). However, these constructs are distinct, as coping laughter can exist without humor (Warner-Garcia, 2014). While laughter is akin to behavior, humor is a cognitive construct (Tugade, Fredrickson, & Feldman Barrett, 2004). Individuals experience similar physiological reactions, whether they laugh to appreciate incongruities or release tension (Wilkins & Eisenbraun, 2009). Attardo (2002) regards laughter as an exceptional marker of humor, which is generally

neglected in the literature.

The noted coping mechanisms and functions have not been explicitly connected to the paradox of openness, which highlights the need for further investigation. Fig. 1 illustrates that various figures of speech and humor types help cope with organizational tensions at the micro-level. Hence, this study empirically examines the tensions regarding the paradox of openness and how individuals in organizations respond accordingly.

### 3. Methods

#### 3.1. The choice of qualitative approach and research design

The study adopted a qualitative research methodology for an in-depth understanding of specific aspects of tensions regarding the paradox of openness (Firestone, 1993; Yin, 1989) by analyzing different dimensions of the phenomenon (Eisenhardt & Graebner, 2007; Stenbacka, 2001). This approach was further motivated by the abundance of quantitative studies in prior research on the paradox of openness (Stefan, Hurmelinna-Laukkanen, & Vanhaverbeke, 2021), leaving the depths of the phenomenon largely unexplored. Further, exploring the micro-level provides a holistic understanding of this phenomenon (Ritala et al., 2018), for which qualitative research provides appropriate tools.

This study initiates as a multiple-case study combined with in-depth interviews across six case companies and a group of expert informants. The companies were primarily selected for their managers' experience of OI collaboration tensions, regarding the paradox of openness. Additionally, the study aimed for comprehensive information (Coyne, 1997). Moreover, we selected organizations from different industries and sizes to improve the result transferability (Khurshid & Snell, 2021). Moreover, the number of case studies fits within the recommended criteria in prior studies; that is, between 4 and 10 cases (Eisenhardt, 1989; Taylor, Jack, Madsen, & Alam, 2021).

The choice of the companies responds to calls in the literature to investigate tensions between value creation and capture in industries other than ICT (Appleyard & Chesbrough, 2017) such as logistics (Klein & Rai, 2009), energy (Niesten & Jolink, 2012), oil and gas (Olsen, Haugland, Karlsen, & Husøy, 2005), or mining (Frishammar, Ericsson, & Patel, 2015). Informants from the companies experienced value creation and capture tensions first-hand in OI projects. While some informants generated technical solution ideas (e.g., Project Engineering Manager or Industrial Engineering Manager roles), others managed IP (e.g., Head of IP Management roles) or headed business units. The diversity in OI project roles provided diverse perspectives on the subject. Table A.1 of Appendix A provides further details on the case companies and informants.

The experts were selected following similar criteria as the company representatives; they had experienced value creation and capture tensions and they had several decades of experience in different key roles in OI projects. The experts also had different perspectives on the tensions. Two experts who have long been CEOs of OI intermediary firms perceive tensions in the early phases of seeking and selecting OI collaboration partners, where tensions may emerge from opportunistic behavior and the need to disclose knowledge to stir up partners' interest (Foege et al., 2019; Stanko et al., 2017). Further, one expert has experience working with start-ups and could provide additional input on the specific perils that small and young firms may face when sharing knowledge with external partners (Katila, Rosenberger, & Eisenhardt, 2008). Another expert with years of venture capital experience provided further insight into start-ups. Two experts are experienced IP attorneys with international experience in IP infringement and misappropriation lawsuits. Prior studies show that IP misappropriation without formal protection (e.g., via patents) has negative organizational effects, as it may cause firms to refrain from future OI collaboration (Lorenz & Veer, 2019). One of the expert IP attorneys is also the head of IP management for a large

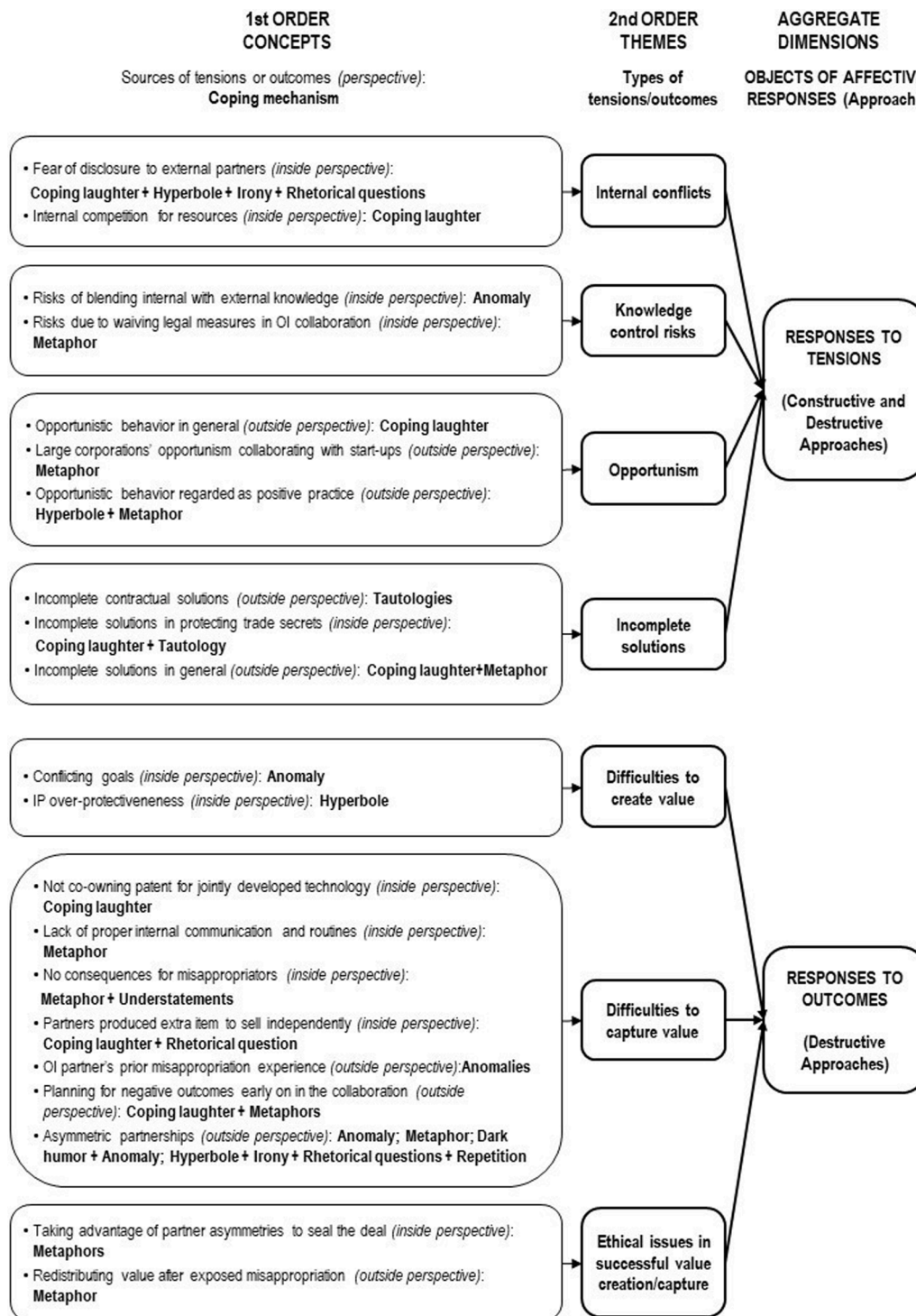


Fig. 2. Data structure (cf. Gioia et al., 2013).

multinational for many years and could provide some insights into the perspective of a large company. Another expert informant with extensive experience as head of OI in another large multinational firm provided similar insight. The expert views allowed for examining the patterns of antecedents and consequences of tensions beyond the data from the case firms.

The main data was collected, recorded, and transcribed from semi-structured interviews. Other materials which were not highly relevant for individual-level analyses, but offer adequate background information include public source documentation, such as announcements and

descriptions of firms from webpages, annual reports, email correspondence with respondents. The interviews spanned 30–90 min, averaging approximately 70 min. Since we focus on individual responses to tensions and outcomes related to the paradox of openness, we refer directly to the informants, numbered 1–14 (Table A.1). The interviews with both case companies' managers and expert informants included questions concerning: types of external partners and collaboration content in OI; motives for engaging in OI; IP protection mechanisms used in OI; causes of tensions experienced in OI collaboration and possible solutions to mitigating these; perceptions of value created and captured in OI. The

TYPES OF COPING MECHANISMS	FUNCTIONS OF COPING MECHANISMS	TYPES OF RESPONSES	EXAMPLES OF ILLUSTRATIVE QUOTES
Anomaly	<ul style="list-style-type: none"> <li>reframing</li> </ul>	Responses to tensions Responses to outcomes	"We don't <b>contaminate</b> our intellectual property" (Informant_9) - example illustrates a response to tensions
Coping laughter	<ul style="list-style-type: none"> <li>releasing negative energy</li> <li>reinterpreting stressful situations</li> <li>making problems manageable</li> </ul>	Responses to tensions Responses to outcomes	"But for answering technical questions I'm the only person for the whole group <b>[laughs loudly]</b> " (Informant_2) - example illustrates a response to tensions
Hyperbole	<ul style="list-style-type: none"> <li>clarification, emphasis</li> <li>ironic role</li> </ul>	Responses to outcomes	"They missed that chance and now they <b>act crazy</b> when it comes to intellectual property" (Informant_5)
Metaphor	<ul style="list-style-type: none"> <li>conveying meaning in uncertain settings</li> <li>illustrating difficulty to control occurrences</li> <li>clarification, emphasis</li> </ul>	Responses to tensions Responses to outcomes	"It is not a <b>happy end</b> if you see the process you go through to reach there." (Informant_7) - example illustrates a response to outcomes
Tautology	<ul style="list-style-type: none"> <li>acceptance (laissez-faire)</li> <li>self-justification</li> <li>conservatism</li> </ul>	Responses to tensions	"If you <b>work with good people</b> , there is no need for a contract. If you work with <b>bad people</b> , no contract will cover everything" (Informant_4)
Anomaly + Dark humor	<ul style="list-style-type: none"> <li>reframing</li> <li>distancing from traumatic events</li> </ul>	Responses to outcomes	Comparing IP misappropriation to <b>removal of vital organs</b> – reference to scene in the <b>dark comedy</b> Monty Python (Informant_3)
Coping laughter + Metaphor	<ul style="list-style-type: none"> <li>releasing negative energy</li> <li>reinterpreting stressful situations</li> <li>making problems manageable</li> <li>conveying meaning in uncertain settings</li> <li>illustrating difficulty to control occurrences</li> <li>clarification</li> </ul>	Responses to tensions Responses to outcomes	"There is no <b>magic bullet [laughs]</b> ... I don't know what else to say <b>[laughs again]</b> ." (Informant_6) - example illustrates a response to tensions
Coping laughter + Rhetorical questions	<ul style="list-style-type: none"> <li>releasing/showing negative energy/emotion</li> <li>reinterpreting stressful situations</li> <li>making problems manageable</li> </ul>	Responses to outcomes	"Which is surprising because <b>[laughing] why would they make one extra? [laughing again]</b> " (Informant_1)
Coping laughter + Tautology	<ul style="list-style-type: none"> <li>releasing/showing negative energy/emotion</li> <li>reinterpreting stressful situations</li> <li>making problems manageable</li> <li>acceptance (laissez-faire)</li> <li>self-justification</li> <li>conservatism</li> </ul>	Responses to tensions	"We don't ask for trade secrets from anybody because <b>they are secret [laughs]</b> " (Informant_9)
Hyperbole + Metaphor	<ul style="list-style-type: none"> <li>conveying meaning in uncertain settings</li> <li>illustrating difficulty to control occurrences</li> <li>clarification, emphasis</li> <li>ironic role</li> </ul>	Responses to tensions	"Being a <b>clever shark</b> is praised by some people as being <b>really good</b> ." (Informant_4)
Metaphor + Under-statement	<ul style="list-style-type: none"> <li>conveying meaning in uncertain settings</li> <li>illustrating difficulty to control occurrences</li> <li>clarification, emphasis</li> <li>showing negative emotion</li> </ul>	Responses to outcomes	"We do <b>very little</b> [about misappropriation] ... It is easy for our partners to <b>get off the hook</b> " (Informant_1)
Coping laughter (OR) Repetition + Hyperbole + Irony + Rhetorical questions	<ul style="list-style-type: none"> <li>releasing/showing negative energy/emotion</li> <li>reinterpreting stressful situations</li> <li>making problems manageable</li> <li>coping with paradoxes</li> <li>clarification, emphasis</li> <li>ironic role</li> </ul>	Responses to tensions  Responses to outcomes	"Many [of our colleagues] react badly <b>[gasps]</b> to the idea of opening up to external actors. They say: <b>"Are you insane? Do you want to give it all away?"</b> They are <b>shocked</b> if we suggest opening up..." (Informant_12 and Informant_13 both laugh)  "Look at <b>big companies</b> today, <b>what do they do?</b> They start an <b>incubator</b> . All <b>big companies</b> have their own <b>incubator</b> . <b>What do they do there?</b> They invite small firms: 'Come here we'll give you 50 000 euros and then <b>we'll share, we'll innovate, awesome!</b> What happens when it's done? <b>Oops! Thank you...</b> " (Informant_14)

Fig. 3. Coping mechanisms and their functions at the individual level.

interview questions draw from highly cited, relevant studies on the interplay between openness, appropriability, and performance to capture the value creation and appropriation dimensions of OI collaboration (e.g., Hertzfeld, Link, & Vonortas, 2006; Laursen & Salter, 2006, 2014; Miozzo, Desyllas, Lee, & Miles, 2016; Ritala & Hurmelinna-Laukkanen, 2013).

The initial analyses were conducted to examine the organizational level; however, we first considered the perceptions and responses regarding tensions more closely at the individual level (Jarzabkowski & Lê, 2017). Specifically, during the transcription and analysis process, we noticed that some informants laughed or used figures of speech when describing tensions or outcomes of the paradox of openness. Together, such coping mechanisms constitute affective responses to tensions and outcomes of the paradox of openness. Thus, similar to Jarzabkowski and Lê (2017), this study employs inductive reasoning.

For the micro-level analysis, the combination of the informants from the case companies and expert informants proved to be essential: while informants from case companies described tensions perceived first-hand in OI collaboration, expert informants most often offered views on tensions they had witnessed or helped mediate as third parties. This setting provided a more holistic point of observation and allowed for distinguishing between and comparing affective responses perceived first-hand, such as partners in an OI collaboration (i.e., inside perspective), and by third parties, such as those indirectly involved in the OI (i.e., outside perspective).

### 3.2. Data analysis

We analyzed the interview data with the help of the NVivo software.

One or more informants from each case-study company and nearly all expert informants employed tropes or humor when referring to tensions inherent to the paradox of openness or their outcomes. We also incorporated such notes. In the primary analysis stage, we coded data based on the terms provided by the informants (Gioia, Corley, & Hamilton, 2013; Strauss & Corbin, 1998). This initial coding yielded over 120 codes on topics of interest, regarding situations where figurative language and humor were used. Revising and contrasting these topics subsequently eliminated overlapping or repetitive items and converged observations on figurative language and humor. We then grouped the topics into fewer concepts with stronger theoretical links that bore less resemblance to terms used by informants, and thereafter bundled them into themes (see Gioia et al., 2013). For instance, concepts such as “risks of blending internal and external knowledge” and “risks due to waiving legal measures in OI collaboration” were grouped under the “knowledge control risks” category. Finally, following the aggregate dimensions by Gioia et al. (2013), we combined the themes into two main meta-categories of objects of affective responses, based on whether we could observe tensions or outcomes in the second-order themes. Deviating slightly from Gioia et al. (2013), instead of aggregating the mechanisms into affective responses at this stage, we focus on the initially observed reactions. Fig. 2 illustrates the data structure. Tables B.1 and B.2 of Appendix B present the 14 informant quotes and the context underlying the data structure.

### 4. Findings and discussion

The findings show two meta-categories of objects of affective responses at the micro-level: responses to tensions and responses to the



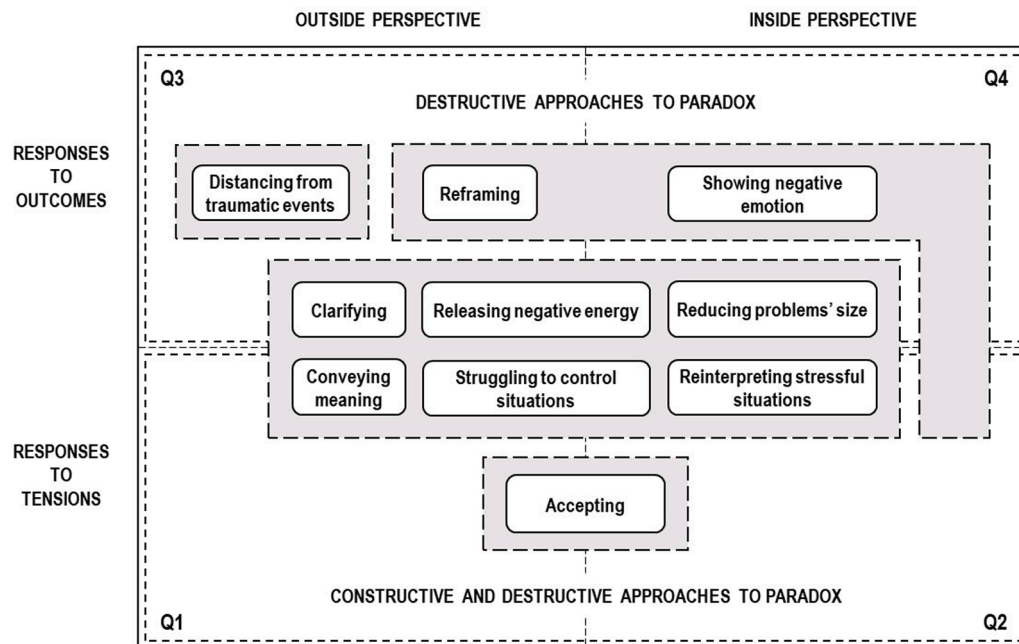


Fig. 4. Functions of coping mechanisms in affective responses at the individual level considering the inside and outside perspectives of informant.

outcomes of tensions. The former defines individuals' affective responses to perceived tensions, while the latter pinpoints the micro-level affective responses once tensions escalate, regardless of whether they have been resolved. Another layer to the meta-categories draws from categorizing constructive and destructive responses, as per [Schad et al. \(2016\)](#). Accordingly, the responses to tensions meta-category comprises constructive and destructive (most frequent) approaches. The responses to outcomes meta-category delineate destructive approaches only. As observed, constructive approaches foster paradoxical thinking in balancing elements ([Hahn et al., 2014](#)); destructive responses feature frustration, uncertainty, nurturing anxiety, or disintegrative perspectives ([Schad et al., 2016](#)). Most of the affective responses are destructive; however, the constructive and destructive responses are not mutually exclusive. For instance, Informant\_4 expresses both destructive and constructive responses ([Tables B.1 and B.2](#)).

Further, the responses to tensions and responses to outcomes meta-categories comprise respective sets of themes. Affective responses to tensions relate to internal conflicts, knowledge control risks, opportunism, and incomplete solutions. Affective responses to outcomes, concern difficulties to create value, difficulties to capture value, and ethical issues in successful value creation/capture. While the first two categories of themes for responses to outcomes involve negative results of tensions, such as IP misappropriation; the latter is connected with seemingly positive or successful outcomes of tensions, though ethical issues may emerge that trigger destructive individual-level affective responses. Appendix B has detailed quotes and context descriptions on the categories and themes showing the use of humor or tropes as related coping mechanisms.

[Fig. 3](#) provides an in-depth overview of the coping mechanisms by informants in their affective responses. Specifically, [Fig. 3](#) illustrates the coping mechanisms in ascending order of complexity: in several instances, coping laughter and tropes are used alone; in others, tropes and types of humor are bundled into more complex, compound coping mechanisms. For instance, anomaly, coping laughter, and metaphor are used as singular coping mechanisms in responses to tensions and responses to outcomes. Understatement, repetition, and dark humor are employed solely in compound coping mechanisms, where they become affective responses to outcomes. Tautology is used in responses to tensions only. [Fig. 3](#) also shows the potential functions of singular and

compound coping mechanisms aggregating into affective responses to tensions or outcomes. Such affective responses follow the discussion on functions of tropes and humor in prior studies (see [Fig. 1](#)).

To gain better understanding of the affective responses, we further map them across inside and outside perspectives, as per their connection to tensions or outcomes, to better understand the affective responses ([Fig. 4](#)). As previously noted, the inside (outside) perspective entails affective responses perceived first-hand (by third parties) from the viewpoint of an OI partner (intermediary). Thus, [Fig. 4](#) has four quadrants (Q1–Q4), each corresponding to a combination of categories (e.g., Q1 represents affective responses to tensions from the outside perspective).

[Fig. 4](#) shows that some coping mechanism functions in affective responses appear in all four quadrants, while others are specific to one or two quadrants. For instance, affective responses comprising functions of clarifying ([Colston, 2015](#)), conveying meaning ([Palmer & Dunford, 1996](#)), reducing problem size ([Crawford, 1994](#)), reinterpreting stressful situations ([Cann et al., 2010](#)), struggling to control events ([Smollan, 2014](#)), and releasing negative energy ([Meyer, 1990](#)) are prevalent. They cover all four quadrants and are expressed through coping laughter, metaphor, and hyperbole. However, differences regarding whether responses emerge in connection to tensions or outcomes and have inside or outside perspectives remain. As noted, the responses to tensions (Q1 and Q2) include both constructive and destructive approaches to paradox, while the responses to outcomes (Q3 and Q4) only delineate destructive approaches.

Moreover, responses to tensions in Q1 and Q2 (i.e., inside and outside perspectives) commonly have the affective response of acceptance, marked by the use of tautologies. For instance, when asked about the risks of revealing trade secrets to OI partners, Informant\_9 answered: "We don't ask for trade secrets from anybody because they are secret [laughing]." Tautologies have the function of acceptance, also implying conservatism and self-justification ([Berntsen & Kennedy, 1996](#)). This function of acceptance entails a certain inertia unique to tautology, not being shared by any of the other tropes.

Affective responses highlighting reframing ([Oswick et al., 2002](#)) or showing negative emotion ([Colston, 2015](#)) spread across Q2–Q4. Such responses are not exhibited in Q1 (i.e., responses to tensions; outside perspective). Likely, perceiving tensions from an outside perspective

requires a narrower palette of coping mechanisms, as it may be easier to distance oneself from tensions at this stage. Interestingly, reframing and showing negative emotion appear in Q3, where the outside perspective is also represented. We interpret this as a sign that individuals indirectly involved in OI collaborations perceive negative outcomes, such as failure to capture value, more severely than tensions.

The following quote is an example of the affective response of reframing: “We don’t contaminate our IP [with external IP].” This quote by Informant\_9 includes an anomaly when referring to a highly protective IP approach adopted with regard to a settlement for a false accusation of IP misappropriation. The anomaly “contaminates” or changes the connotation (Oswick et al., 2002) of sharing knowledge from a generally positive one – sharing knowledge is commonly regarded as the crux of value creation (Capaldo & Petruzzelli, 2011; Laursen & Salter, 2014; Ritala & Stefan, 2021) to a negative connotation (pollution).

Affective responses of showing negative emotion also appear via the use of hyperbole and rhetorical questions (e.g., when highlighting internal conflicts in Q2). Informant\_12 and Informant\_13 refer positively to OI, while noting their colleagues’ reluctance to open up, mainly for fear of revealing potentially valuable IP or other internal organizational knowledge to external actors. Such conflicting perspectives among co-workers cause tensions in potential OI endeavors. In response to such tensions, Informant\_12, for instance, uses hyperbole and irony (e.g., “insane,” “give it all away,” and “shocked”) and rhetorical questions to embellish how some colleagues react to notions of sharing knowledge. Additionally, Informant\_12 gasps; prior studies highlight gasping as a marker for irony (Burgers & van Mulken, 2017). Ultimately, Informant\_12 and Informant\_13 laugh to release negative energy (Crawford, 1994; Meyer, 1990) and highlight the irony (Burgers & van Mulken, 2017) in their prior description of their colleagues’ fears.

Most of the examples of responses to tensions demonstrate a destructive approach, emphasizing techniques to temporarily reduce negative emotions and stress (Lewis, 2000; Schad et al., 2016). However, few also demonstrate constructive approaches to tensions (Hahn et al., 2014; Schad et al., 2016). For instance, Informant\_10 takes a constructive approach to OI collaboration, emphasizing the need for balance while signaling tensions: “We wanted to have the cake and eat it too.” Specifically, Informant\_10 uses this metaphor to describe tensions spurred from the need to maintain certain freedom in choosing future innovation partners and enforcing legal mechanisms to ensure value appropriation in the current OI collaboration with a supplier. Similarly, Informant\_4 demonstrates a constructive approach to responses to tensions via tautology: “If you work with good people, there is no need for a contract. If you work with bad people, no contract will cover everything.” This quote signals the need to calibrate and adjust to the limitations of contracts by embracing the need to balance typologies of partners with typologies of contractual agreements. The constructive approach is conveyed by separating the conditions under which contractual limitations cause and do not cause tensions. Further, it is a potential separation mechanism for alleviating tensions between value creation and capture (Ritala & Stefan, 2021). Moreover, metaphors and tautologies seem to have a double role in accommodating constructive and destructive approaches to paradox.

Dark humor is used as an affective response to outcomes from the outside perspective in Q3, which is interesting since it does not appear in any of the other quadrants. For instance, Informant\_3 compares a scene from the dark comedy series *Monty Python’s Flying Circus* with challenges to capture value. Specifically, Informant\_3 refers to an episode where hidden clauses in organ transplant forms lead to the retrieval of organs, even though the organ donor still needed them. The informant compared the scene to IP misappropriation via hidden contractual clauses in OI collaboration (i.e., IP misappropriation is attributed to the metaphor of vital organ removal). Informant\_3 employs dark humor to reframe (Oswick et al., 2002) a negative situation and create a psychological distance from potentially traumatic events (Rowe & Regehr,

2010), likely because the informant (and organization) do not have a direct stake in the described cases. Obviously, the distancing is a caring reaction, despite the difference in stakes relative to an OI partner. The finding follows prior studies that indicate the potential psychological consequences of the paradox of openness at the individual level (Foege et al., 2019). Further, the negative outcome of IP misappropriation in OI collaboration receives particular attention, irrespective of the perspectives. This further hints at severe emotional tolls at the individual level related to IP misappropriation, reflected in the wider variety of coping mechanisms employed to respond to outcomes of misappropriation.

## 5. Conclusions

### 5.1. Concluding remarks

This study investigates individuals’ affective responses to tensions and outcomes of paradox to better understand the paradox of openness. Against this backdrop, our study ascertains the affective responses to tensions and outcomes that emerge in the context of the paradox of openness, thus responding to calls to examine how individuals respond to paradox (Jarzabkowski & Lê, 2017; Miron-Spektor et al., 2018; Smith & Lewis, 2011) and on microfoundations in OI (Bogers et al., 2018).

Our findings suggest that most responses (regardless of response or perspective) adopt destructive approaches, revealing anxiety and defense mechanisms (Lewis, 2000; Schad et al., 2016). Few constructive approaches to paradox emerge, including balancing elements in tension (Hahn et al., 2014) or separating elements to isolate factors that create tensions (Smith & Lewis, 2011). We argue that the domination of deconstructive affective responses points to hidden tolls of tensions and negative outcomes of the paradox of openness at the micro-level, highlighting a dark side of OI. However, an informant might express both constructive and destructive responses. Thus, it is crucial to foster paradoxical thinking in embracing tensions and seeking mechanisms to balance contradictory paradox poles (Schad et al., 2016; Smith & Lewis, 2011).

Our analysis also reveals specific meta-categories of affective responses: those emerging in connection to tensions, and those related to tensions’ outcomes. Responses come in different forms, whether individuals respond to tensions or outcomes from an inside or outside perspective. As informants move from responding to tensions to responding outcomes, and from outside to inside perspectives on OI collaboration, humor and figures of speech gain variety and complexity. Notably, responses to outcomes do not include tautology, which signals acceptance. Likewise, a distinctive issue characterizing responses to outcomes with the outside perspective is using dark humor to enable distancing as an affective response. The findings of this study have theoretical and practical implications, as discussed below.

### 5.2. Theoretical and practical implications

This study contributes to extant research in several ways. First, by exploring individuals’ affective responses to tensions and outcomes, the study contributes a better understanding of the microfoundations approach (Felin et al., 2015), scarcely researched, though acknowledged to be relevant, in the extant OI research (Bogers et al., 2018). Understanding affective responses to tensions and their outcomes at the micro-level, is essential to complement the macro-level perspective for a complete understanding of the paradox of openness (Ritala et al., 2018).

Second, our study sheds light on the “dark side” of OI, which taps into the failures and high or unforeseen costs of opening up. These aspects have been largely overlooked in prior OI research (Stanko et al., 2017) and also in research conducted on innovation at individual-level. Studies on the innovation activity of individuals often focus on aspects that promote innovation, overlooking failures and tolls. By pinpointing the affective responses to tensions and their outcomes, this study shows how a dark side to OI manifests as hidden affective tolls from the



tensions and outcomes of the paradox of openness. This finding is in line with Foege et al. (2019) who indicate psychological consequences of the paradox of openness at the individual level. However, this study's approach provides detailed insights into the affective responses. The fact that most approaches to responses are destructive (see Schad et al., 2016), reinforces the negative nature of tensions regarding the paradox of openness, particularly when considering the individual level.

Similarly, the use of varied and complex tropes, including dark humor, in the responses to outcomes of the paradox of openness (regardless of perspective) also highlights the dark side of OI and suggests that the difficulties to create and capture value affect those directly involved in the collaboration, as well as other third parties or bystanders who are indirectly involved. These effects could include potential long-term consequences of individual responses to tensions and outcomes, such as long-term health outcomes related to coping humor (Kerkkänen et al., 2004). This further raises ethical issues regarding the ramifications of the negative outcomes of the paradox of openness and the importance of being aware of the risk of such outcomes in OI collaboration. Consequently, ramifications of the hidden tolls of the paradox at the individual level could have social sustainability implications (Talay et al., 2020). Moreover, regarding the dark side of OI, the dominant destructive affective responses arguably hint at subsequent negative decisions and outcomes in OI collaboration, with implications for research on the affective and cognitive dimensions of innovation management. Prior studies demonstrate the importance of affective responses in shaping future decision-making processes (Balconi & Fronda, 2020; Gebauer et al., 2013; Hodgkinson & Healey, 2014). Therefore, such vicious cycles should be managed appropriately to avoid negative outcomes over time.

Third, this study contributes insight into coping mechanisms at the individual level in the OI context. It responds to recent calls from organizational management scholars for a better understanding of the responses to individual-level paradoxical tensions (e.g., Schad et al., 2016) and the use of humor when addressing paradoxical tensions (see Jarzabkowski & Lê, 2017). While metaphor and irony are commonly investigated coping mechanisms in the literature (Sillince & Golant, 2017), this study employs a more diverse palette of figures of speech (Burgers & van Mulken, 2017; Colston, 2015; Oswick et al., 2002) and types of humor (Kuiper et al., 1993; Martin, 1996) that may be used in responses to tensions and outcomes of the paradox of openness. This further contributes to studies such as Jarzabkowski and Lê (2017) by highlighting various types of micro-level responses.

Beyond the theoretical implications, this study also raises several important practical insights. First, managers must disentangle the individual and organizational consequences of the paradox of openness. While the negative outcomes of the paradox of openness (e.g., IP misappropriation) may not entail severe economic losses at the organizational level, especially for larger organizations, contingent upon the type of OI project and IP, the hidden tolls may be high at the individual level. Such emotional tolls highlight stress and frustration in the face of organizational uncertainty and complexity, and further comprise perceptions of injustice while encountering unethical behavior. Thus, managers should be aware of the likelihood of such tolls affecting employees or even affecting them via psychological or health-related consequences. Hence, this study has implications for the wellbeing of individuals. Second, managers must appreciate that the micro-level hidden tolls are likely to shape subsequent behavior and affect decisions on external partners and even intraorganizational issues. This is particularly important, given that the findings point to micro-level hidden tolls for individuals from the inside and outside perspectives. Third, although deconstructive responses to tensions and their outcomes dominate, highlighting frustration, anxiety in relation to the paradox of openness, our study also highlights that an individual might foster both constructive and destructive approaches. Thus, it is important to increase awareness of the risks and potential challenges regarding the paradox of openness at all organizational levels, for individuals to

embrace paradox and seek mechanisms and tools to balance interrelated yet contradictory elements.

In relation to this, the emergence of constructive and deconstructive responses can be utilized for managerial purposes. Further, seemingly negative individual responses may improve group coherence and have other stress-relieving features, as managers can change negative elements into tools of empowerment by signaling the approval of such responses within the organization.

### 5.3. Limitations and directions for future research

Our study is not without limitations. The study focuses on responses that employ figurative language (tropes) and humor as coping mechanisms, to react to tensions and outcomes at the individual level. While tropes transmit meaning (Oswick et al., 2002) and emphasize individuals' attitudes (Berntsen & Kennedy, 1996), they convey less about the actions taken by individuals in response to tensions or outcomes. Therefore, future research could extend the findings of this study with behavioral elements and investigate more dynamic responses, as per Jarzabkowski and Lê (2017). Such studies would contribute insight to the actions that managers take in response to tensions and negative results in OI collaboration.

The empirical data also pose some limitations. Inductive approaches and small sample sizes in qualitative studies challenge generalizability and validity (Stenbacka, 2001). Therefore, we focus on analytical generalization (Firestone, 1993; Stenbacka, 2001; Yin, 1989), which entails bringing the empirical material to a general level to investigate individuals' behavior and grasp the incentives that drive them (Stenbacka, 2001). Moreover, although the data covers various industries and inside and outside views across organizations of different sizes, most informants in the study, work in large organizations that can avoid or recover from economic losses from IP misappropriation more easily than small organizations with limited resources (Katila et al., 2008). Thus, future studies can conduct in-depth qualitative research in specific industries, across more diverse organizations. Furthermore, given that public and private firms increasingly engage in OI (Bogers et al., 2018; Kankanhalli et al., 2017; Lee et al., 2012), probing individuals' affective responses in public organizations would likely reveal additional layers of the hidden tolls.

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### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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### Appendix A

#### Table A.1

**Table A1**  
Informant details.

Informants representing case companies			
Informant	Position	Location	Company characteristics
Informant_1	Project Engineering Manager	Norway	<ul style="list-style-type: none"> <li>• Large company</li> <li>• Oil &amp; gas</li> <li>• Headquarters: United Kingdom</li> <li>• Total informants interviewed in relation to the case company: 5</li> </ul>
Informant_2	Head of IP Department	France	
Informant_5	Head of IP Department	Germany	<ul style="list-style-type: none"> <li>• Large company</li> <li>• Transport &amp; Logistics</li> <li>• Headquarters: Germany</li> <li>• Total informants interviewed in relation to the case company: 2</li> </ul>
Informant_10	Industrial Engineering Manager	Sweden	<ul style="list-style-type: none"> <li>• Large company</li> <li>• Pulp &amp; paper, oil &amp; gas</li> <li>• Headquarters: Finland</li> <li>• Total informants interviewed in relation to the case company: 1</li> </ul>
Informant_11	Head of Business Unit	Sweden	<ul style="list-style-type: none"> <li>• Small or Medium Enterprise (SME)</li> <li>• Energy sector</li> <li>• Headquarters: Sweden</li> <li>• Total informants interviewed in relation to the case company: 1</li> </ul>
Informant_12	Head of Strategic Research	Sweden	<ul style="list-style-type: none"> <li>• Large company</li> <li>• Mining &amp; construction</li> <li>• Headquarters: Sweden</li> <li>• Total informants interviewed in relation to the case company: 3</li> </ul>
Informant_13	Head of Business Innovation	Sweden	
Informant_14	Business Incubator Advisor	Sweden	<ul style="list-style-type: none"> <li>• Small company (start-up)</li> <li>• Transport &amp; Logistics</li> <li>• Headquarters: Sweden</li> <li>• Total informants interviewed in relation to the case company: 2</li> </ul>
Informants representing the expert group			
Expert informant	Position	Location	Expert informant experience
Informant_3	Strategic Alliance Director	Netherlands	OI services–Former head of OI Intermediary
Informant_4	IP Attorney	Belgium	Legal–Patent and IP Attorney
Informant_6	Head of Venture Capital unit	United States	Biotechnology–Venture Capital
Informant_7	IP Attorney	Netherlands	Legal–Patent and IP Attorney
Informant_8	Head of OI Intermediary	United States	OI services–Head of OI Intermediary
Informant_9	Head of OI	United Kingdom	Consumer goods–Head of R&D and OI

**Appendix B**

Tables B.1 and B.2

**Table B1**  
Responses to tensions at the individual level.

Context	Quote	Coping mechanism (type)	Type of tensions
When describing potential missed opportunities given the fear of disclosure to external partners (NIH/not-invented-here syndrome) among their peers within the company	Informant_12: Many [of our colleagues] react badly [gasps] to the idea of opening up to external actors. They say: “Are you insane? Do you want to give it all away?” ... They are shocked if we suggest opening up, it is not as if they are happy about it. [Informant_12 and Informant_13 laugh]	Coping laughter + Hyperbole + Irony + Rhetorical questions (destructive)	Internal conflicts
When talking about the small size of the IP department (three employees) for a large company of over 7,000 employees	Informant_2: But for answering technical questions I’m the only person for the whole group [laughs loudly]	Coping laughter (destructive)	Knowledge control risks
When describing the company’s OI approach: only actors with patented ideas are considered potential partners	Informant_9: We don’t contaminate our IP [with external IP]	Anomaly (destructive)	
Choosing a riskier (but more beneficial in the short term) option in an innovation partnership; that is, less focus on legal aspects, and more focus on aligning partner’s and own goals to make the collaboration successful	Informant_10: We wanted to have the cake and eat it too—have complete freedom to select the suppliers in other parts of the world—at the same time our partner [and] the local supplier intended to expand and become a global supplier; in the short term, we were not sure if they would make it, so we decided to leave the legal measures aside.	Metaphor (constructive)	
When talking about a hypothetical solution to tensions (relative to a game of poker) and reflecting that though it would work in theory, in practice, it would fail because of the opportunistic behavior	Informant_4: I think it would probably not work because human beings are not like that [laughs]. People have cheated at poker since ever so I assume that people would do the same [here].	Coping laughter (destructive)	Opportunism
When generally discussing risks of misappropriation in OI and referring to opportunistic behavior	Informant_6: Sick incentives [to act opportunistically and misappropriate partners’ IP]	Metaphor (destructive)	
When talking about opportunistic behavior of some actors	Informant_4: Being a very clever shark is praised by some people as being really good; that’s considered being a good businessman	Hyperbole + Metaphor (destructive)	

(continued on next page)

**Table B1** (continued)

Context	Quote	Coping mechanism (type)	Type of tensions
When talking about the importance of contracts and what they foresee in OI	Informant_4: There are good people and bad people in the world. If you work with good people, there is no need for a contract. If you work with bad people, no contract will cover everything	Tautologies (constructive)	Incomplete solutions
When emphasizing the lack of clear and universally applicable solutions to tensions	Informant_6: There is no magic bullet [laughs] [...] I don't know what else to say [laughs again]	Coping laughter + Metaphor (destructive)	
When asked how the company protects trade secrets when working with OI partners	Informant_9: We don't ask for trade secrets from anybody because they are secret [laughs]	Coping laughter + Tautology (destructive)	

**Table B2**

Responses to outcomes at the individual level.

Context	Quote	Coping mechanism (type)	Type of outcomes
When referring to long and ongoing negotiations with OI partners; Difficulties in agreeing on OI collaboration terms and creating value are compared to armed conflict	Informant_5: It's like a long-term (never-ending) armed conflict	Anomaly (destructive)	Difficulties to create value
When describing OI partner's IP over-protectiveness given prior misappropriation experience	Informant_5: They missed that chance and now they act crazy when it comes to IP	Hyperbole (destructive)	
Describing an innovation partnership into which his company has invested a lot of resources but has not profited sufficiently from	Informant_11: No [laughs]*  *when responding that their company does not co-own the patent with the OI partner	Coping laughter (destructive)	Difficulties to capture value
When referring to an OI collaboration where own IP rights were not secured; Misappropriation relative to nightmare	Informant_5: It's a nightmare because this was not closed in conjunction with Procurement, Legal, or IP [departments]	Metaphor (destructive)	
When talking about own attempts to "seek justice" by investigating the matter within the firm; When Informant_1 discovered that in cases of misappropriation the company did not pursue matters further by taking, for instance, legal measures; Informant_1 expressed disappointment and perceived unfairness	Informant_1: I tried to dig a bit around the misappropriation cases internally to find out what [...] we do when this happens. To be honest, we do very little. From talking to some of the engineers that are in contact with the suppliers on a daily basis, it turns out that typically we would not pursue the matter further [in court]. It's easy for our partners to get off the hook, so to speak.	Metaphor + Understatements (destructive)	
When describing how a partner produced an extra item for own commercialization (perceived misappropriation)	Informant_1: Which is surprising because [laughing] why would you make one extra? [laughing again]	Coping laughter + Rhetorical question (destructive)	
When describing OI partner's prior misappropriation experience	Informant_5: It was a trauma for them—a catastrophe; they could have earned billions from the IP if they had protected it	Anomalies (destructive)	
When entering a collaboration where one should consider the possibility of misappropriation from the very beginning, despite being an undesired outcome	Informant_4: It is like when people say that you should make a contract about divorce before you get married [laughs]—it just doesn't sound right. I think many people dislike the idea of discussing how they are going to break up before they have even started.	Coping laughter + Metaphors (destructive)	
When describing agreements that are skewed to benefit large companies' interests (generally talking about collaborations between start-ups and large firms); Misappropriation relative to having sold one's soul to the Devil	Informant_3: If they've done enough research, they can write in there that they're allowed to sell your soul to the Devil	Anomaly (destructive)	
In asymmetric OI partnerships large corporations might seek small innovative companies and gain access to their IP under the premise of collaborating with or investing in them	Informant_6: [They] sucked the start-ups out on information	Metaphor (destructive)	
In asymmetric OI partnerships, specifically crowdsourcing, large corporations may pretend to seek solutions to get new ideas from solution providers	Informant_8: We have had clients go on fishing expeditions with the sole intention of scoping the market	Metaphor (destructive)	
In asymmetric OI partnerships where large companies often impose their own template agreements on the smaller firms, who often lack the resources and knowledge to verify whether the agreements are skewed in the large company's favor	Informant_3: Like in the Monty Python movie where they come at the door and say "Hello, your husband filled in the organ transplant forms and we're coming to collect" and they start cutting him open on the kitchen table because he signed a form and they decided they needed the organs now	Dark humor + Anomaly (destructive)	
When describing asymmetric collaborations where large corporations with high bargaining power behave opportunistically	Informant_14: Look at the big companies today: what do they do? They start an incubator. All big companies have their own incubator. What do they do there? They invite small tech ops and smart guys: "Come here, we'll give you 50,000 euros and then we'll share, we'll innovate, awesome!" What happens when it's done? Oops! "Thank you! Now we're going to have a new contest." Yeah! What happened to your ideas and everything else?	Hyperbole + Irony + Rhetorical questions + Repetition (destructive)	
When describing the negotiation phase in an OI partnership with a start-up; The start-up expresses concerns over IP ownership issues; thus, to seal the deal, Informant_5's firm offers additional benefits, but without changing contractual terms	Informant_5: So, in the end it took more than seven months to close this contract and it left a bitter aftertaste on both sides because we created a big, nice carrot and they took it and closed their eyes in terms of what was agreed upon in the contract	Metaphors (destructive)	Ethical issues in successful value creation/capture
When referring to an exposed misappropriation incident where captured value was redistributed—although seemingly resolved, the open atmosphere between partners was affected	Informant_7: It is not a happy end, if you see the process you go through to reach there	Metaphor (destructive)	



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Ioana Stefan is Assistant Professor of Innovation Management at Mälardalen University and holds a PhD in Industrial Economics and Management from KTH Royal Institute of Technology. Her research focuses on open innovation, intellectual property management and sustainability. She has published in academic journals such as *International Journal of*

*Management Reviews, International Journal of Project Management, Technological Forecasting and Social Change, Industrial Marketing Management*. Her doctoral thesis was runner-up for the ISPIIM Dissertation Award 2019.

Pia Hurmelinna-Laukkanen is a Professor of Marketing (esp. International Business) at Oulu Business School, University of Oulu and an Adjunct Professor (Knowledge management) at Lappeenranta University of Technology. She has published over 60 articles in journals such as *Journal of Product Innovation Management, California Management Review, Industrial Marketing Management, and Industrial and Corporate Change*. She has written book chapters, over 140 conference papers, and other scientific and managerial publications. Most of her research involves innovation management and appropriability in contexts like internationalization and interorganizational collaboration.

Wim Vanhaverbeke is Professor of Digital Strategy and Innovation at the University of Antwerp. He is co-editor in chief of *Technovation*. His current research is focusing on open innovation, innovation ecosystems and digital strategies. He published in different

international journals. He was co-editor with Henry Chesbrough and Joel West of “Open Innovation: Researching a New Paradigm” (OUP, 2006) and “New frontiers in open innovation” (OUP, 2014). Furthermore, he published a management book “Managing open innovation in SMEs” (CUP-2017) and an academic volume “Researching open innovation in SMEs” (World Scientific Press-2018). He was appointed as member of the Advisory Committee of the Research Center for Technological Innovation of the Tsinghua University.

Eeva-Liisa Oikarinen is Assistant Professor of Marketing at Oulu Business School, University of Oulu. Her research focuses on marketing topics, including customer satisfaction and behavior with a particular focus on the roles of humor and humanness in digitalized business interactions. She has published in journals such as *European Journal of Marketing, Industrial Marketing Management, Journal of Service Management, Journal of Retailing and Consumer Services, International Journal of Retail and Distribution Management, and International Journal of Innovation Management*.