



The persuasive power of facial expression when performing monitoring duties

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Abstract

Organizations exhibit different types of ‘monitoring relationships’, sharing the common characteristic of a group of auditors (e.g., board of directors) overseeing a group of auditees (e.g., top management). This research aims to provide insight into the underexposed social dynamic aspects of these relationships, by examining the role of persuasiveness when performing monitoring duties. Literature on social psychology and corporate governance indicates that persuasiveness is an important dimension of effective monitoring. Therefore, understanding the characteristics that promote persuasiveness provides insight into what constitutes effective monitoring. Current literature identifies various persuasiveness-inducing characteristics, also called ‘source attributes’ (e.g., expertise, likeability, physical attractiveness, and trustworthiness). A novel source attribute – emotions conveyed through facial expression – is examined in real-life persuasion settings, i.e., monitoring relationships between the governing boards and executive committees of Dutch Water Authorities. The dataset contains 600 face-to-face meetings between governing boards and executive committees. Meeting duration is taken into account as a moderator of the direct relationship between facial expression of emotions and persuasiveness. The results reveal a significant, but not robust, positive relationship between facial expression of positive emotions and persuasiveness.

Keywords

Board of directors, monitoring, persuasiveness, facial expression.

1. Introduction

According to agency theory, board members are hired by shareholders to carry out monitoring activities to reduce managerial self-interest and increase shareholder value (Walsh & Seward, 1990). A large body of literature in the field of corporate governance has been devoted to identifying drivers of effective monitoring, e.g., board composition, ownership arrangements, and committee structures (Baysinger & Butler, 1985; Deutsch, 2005; Walsh & Seward, 1990; Jensen & Meckling, 1976; Fama & Jensen, 1983a; Morck, Schleifer, & Vishny, 1988; Tuggle et al., 2010). However, the results are diffuse and amount to an inconsistent overview (Dalton et al., 1998; Hambrick, Misangyi, & Park, 2015; Boivie, Bednar, Aguilera, & Andrus, 2016). In contrast to these board-level predictors, other scholars have focussed on characteristics of individual board members that determine monitoring effectiveness (Hambrick et al., 2015; Gordon, 2007). While providing valuable insight into what traits foster adequate monitoring, these inquiries have mostly excluded social dynamic aspects of monitoring. Although prior research has accentuated behavioural facets of corporate governance (Van Ees, Gabriellson, & Huse, 2009; Westphal & Zajac, 2013), “an improved understanding of the social dynamics of effective monitoring is a high priority” (Hambrick et al., 2015).

The current research conceptualizes the interpersonal process of persuasion as an essential dimension of effective monitoring, since monitoring activities consist largely of prompting others to reevaluate existing views and perform intended behaviour, such as provision of information (Jena & Pradhan, 2018; Hambrick et al., 2015). A few common characteristics can be identified for every *persuasion setting*: an individual or group subjected to persuasive endeavours (i.e., the recipient), conveyed through some type of communication (i.e., the message), originating from another individual or group (i.e., the source) (Albarracín & Johnson, 2018; Briñol & Petty, 2009). The current research conceptualizes *monitoring relationships* as persuasion settings, referring to situations in which a group of auditors (e.g., board of directors) is charged with overseeing a group of auditees (e.g., top management). In this view, a board of directors qualifies as ‘source’ and a top management team as ‘recipient’.

Traditional assumptions of rationality and utility-maximizing behaviour suggest that top managers judge persuasive messages solely or primarily based on arguments (Van Ees et al., 2009; DiRita, 2014). Departing from these assumptions, the current research relies on a behavioural theory of boards, highlighting the notions of bounded rationality and decision-

making by means of heuristics (Van Ees et al., 2009). Literature on social psychology suggests that persuasion is not merely based on an extensive analysis of information and arguments, but largely relies on swift and unconscious processing of peripheral information (Chaiken, 1980; Cacioppo & Petty, 1984). An influent part of this peripheral information is composed of source-related variables, or ‘source effects’, referring to persuasiveness-inducing characteristics of individuals or groups (Albarracín & Vargas, 2010).

Extant literature mainly focuses on source effects such as expertise, likeability, physical attractiveness, and trustworthiness (Albarracín & Vargas, 2010; Pornpitakpan, 2004; Wilson & Sherrell, 1993). Central to this thesis is the effect of emotions conveyed by a board of directors. A thorough understanding of the influence of emotional manifestation when performing monitoring duties can be insightful, as emotions are a means of social influence and thus a potential determinant of persuasiveness (Côté & Hideg, 2011). Specifically, emotions conveyed through facial expression will be examined, given that emotions are primarily displayed through facial movement (Ekman, 1993). The effect of emotional manifestation in this sense will be studied where it is presumably most apparent: face-to-face encounters between board directors and top managers in board meetings. The persuasive power of emotions is expected to depend on meeting duration, as the ability and motivation of managers to process persuasive messages diminish over time. Literature on social psychology suggests that lessened ability and motivation to assort persuasive messages increases the persuasive impact of peripheral information, e.g., the facial expression of a board of directors.

These relationships are examined based on the following research question:

“What is the influence of emotions conveyed through facial expression by a board of directors on persuasiveness in monitoring relationships, and how does meeting duration moderate this relationship?”

The above-mentioned aspects are examined in an empirical research conducted amongst various decentralized Dutch government bodies dedicated to local water management (hereafter referred to as Water Authorities). These Water Authorities are led by an executive committee (comparable to a top management team), charged with preparation and implementation of policy, and a governing board (comparable to a board of directors), responsible for determining policy and overseeing implementation (Havekes, Koster, Dekking, Uijterlinde, Wensink, & Walkier, 2017). The relationship between governing board members and executive committee members can be characterized as a monitoring relationship (Ministry of Infrastructure and Water Management, 2019). Based on the similarities regarding tasks and relationships, governing boards and executive committees are conceptualized as boards of directors and top management teams. Board meetings of Water Authorities provide a unique research opportunity as they are open to the public, due to Dutch laws guaranteeing openness of administration (e.g., art. 35 Waterschapswet). This way, facial expression scores are extracted from video recordings of board meetings using a facial recognition algorithm. Additional information is derived from the list of resolutions for all meetings and other resources such as official databases and websites.

In addition to the primary contribution to corporate governance literature by providing insight into the social dynamic aspect of persuasion in monitoring relationships, the empirical context described above may add to the literature on persuasion, given that a significant part of persuasion research centres around internal cognitive aspects of the recipient and is conducted in hypothetical context, while limited research is focused on responses to ‘actual’ behaviour of a source in a non-manipulated authentic setting (Oreg & Sverdlik, 2013).

The remainder of this thesis is structured in the following way. First, the core concepts of the research (monitoring relationships, persuasiveness, and facial expression) are discussed and various hypotheses are formulated (§2). Based on this theoretical foundation, a conceptual model is presented (§3). An elaboration on the data and methodology (§4) prefaces the execution of the analysis and presentation of the results (§5). Expanding on these results, the practical and theoretical implications (§6) are reviewed with due consideration of the limitations of this research (§7). Lastly, the key findings are set out in a conclusion (§8).

2. Theoretical Background

2.1 Monitoring

2.1.1 The concept of monitoring

Following portfolio theory, shareholders traditionally hedge financial risks by means of holding stock in different companies (Markowitz, 1952; Jensen, 1972). The urge to diversify promotes diffuse and dynamic ownership structures, leaving individual shareholders generally uninterested in personally overseeing activities within firms (Fama, 1980; Shleifer & Vishny, 1986; Holderness & Sheehan, 1988). This implies an increased separation of ownership and control and creates the need for shareholders to outsource supervision by way of hiring board members and assigning them the task of exerting control over top management. It is in this light that agency theory suggests monitoring as an internal control mechanism aimed at mitigating the problem resulting from potential discrepancies of interest between shareholders and top managers (Walsh & Seward, 1990; Berle & Means, 1932; Fama & Jensen, 1983b).

Underlying the mechanism of monitoring is the interplay of directors, exerting control over top managers who, in turn, provide information to facilitate monitoring (Westphal & Zajac, 2013). What exactly entails the exertion of control in this context is debated amongst scholars. Van den Berghe and Baelden (2005) qualify monitoring as a category of activities in-between ‘checking and verifying’ and ‘dominance over’, more specifically, they argue that monitoring is the act of regular evaluation and intervention to gain reasonable assurance of control over a certain situation. Hambrick et al. (2015) stress that effective monitoring is about being informed, asking for further information if necessary, speaking up when a problem is potentially imminent, and being persistent in the process. In the same vein, Brudney (1982) presumes monitoring to encompass “assessing performance, discovering flaws, pressing for alterations in managerial practices or programs, and if necessary, replacing management”.

In practice, the role of board director and top manager regularly overlap, blurring the line between auditor and auditee. Agency theory builds largely upon the Anglo-American corporate governance model, implying the existence of a one-tier board in which managers can be part of the very same board of directors that is charged with monitoring management (Kesner, Victor, & Lamont, 1986; Baysinger & Butler, 1985; Eisenberg, 1976). The overlap referred to here is perhaps best illustrated by instances in which the positions of chief executive officer and chairman of the board of directors are occupied by the same person who, consequently, takes

on the contradictory duty of both representing and questioning management (Williams & Shapiro, 1979).

Although the institutional distinction is often unclear, ‘executive’ and ‘monitoring’ components within boards of directors can be differentiated based on functions and affiliations with the focal company (Baysinger & Butler, 1985). This is in line with the widely used distinction in corporate governance literature between insiders (i.e., dependent board members) and outsiders (i.e., independent board members). Board members with a strong psychological or financial tie to the company are generally considered to be inside directors (Baysinger & Butler, 1985; Johnson, Daily, & Ellstrand, 1996). This category contains, for instance, (former) employees, officers (CEO, CFO, COO), or executives of affiliate companies. The monitoring component refers to independent board members, meaning that they are not (and have not been) employed by the company and lack a significant psychological or economic dependence on managers (Eisenberg, 1976; Hambrick et al., 2015; Gordon, 2007). This latter category is charged with monitoring, provides advice, and ratifies decisions made by managers.

Behavioural governance researchers Westphal and Zajac point out that predominantly economic-oriented governance theories like agency theory – which emphasizes monitoring mechanisms to channel managerial self-interest – tend to rely on under-socialized views (Westphal & Zajac, 2013). An important, yet underexplored, interface between behavioural sciences and monitoring literature is the role of persuasion in face-to-face meetings between board directors and top managers.

2.1.2 The role of persuasiveness in monitoring relationships

Hambrick et al. (2015) argue that personal characteristics of independent board members, or monitors, are a decisive determinant of effective monitoring. They synthesize four attributes, or traits, that are affiliated with effective monitoring. The first attribute is independence, to ensure disinterested control. Secondly, expertise should enable directors to comprehend the task at hand. Bandwidth as a third attribute refers to the ability to devote attention and time to the monitoring task. The last attribute, motivation, is the willingness to represent the interests of shareholders. These attributes provide insight into what characteristics constitute an effective monitor, however, the authors stress that the influence of social dynamics on effective monitoring remains largely unclear (Hambrick et al., 2015). In this context, persuasiveness is a potential fifth ‘interpersonal’ attribute determining effective monitoring.

Persuasiveness can be instrumental to adequate monitoring, as independent directors are charged with the challenging task of convincing (i.e., or persuading) others to provide information, express opinions, and take action. Jena and Pradhan (2018) pose that an “important managerial skill for people in supervisory, managerial or leadership positions is the ability to influence people (...)”. Along the same lines, Hambrick et al. (2015) argue that “effective monitoring means that if directors sense a problem, they ask about it; if not satisfied, they ask about it again and ask fellow directors what they think; if concern still continues, they explicitly ask for the board’s pointed consideration of the issue; and then if the board concludes that a problem exists, they take some action”. In short, the capacity of an independent director to persuade others can be seen as an important driver of effective monitoring.

Although Hambrick et al. (2015) state that a director who possesses the four qualities of independence, expertise, bandwidth, and motivation will be able to “exert minority influence (...), prompting fellow directors to reconsider their own views and possibly add their own expressions of concern”, it should be noted that persuasiveness is not an evident consequence of being a ‘quad-qualified’ director, but should be considered a separate ability (Côté & Hideg, 2011). The parallel between the dynamics of persuasion, that is the exertion of influence to cause a change in the mental state of the recipient (described in further detail below), and the dynamics of monitoring relationships, that is exertion of influence over top managers to align managerial action and shareholder interests, constitutes the basis for conceptualisation of monitoring relationships as persuasion settings.

2.2 Persuasiveness

Persuasion is a common form of social influence used in professional and personal context, as it provides a nonviolent and unstrained means of changing the mental state of others (Albarracín & Johnson, 2018; Smith, 1982; O’Keefe, 2016). The ability to cause such change is referred to as persuasiveness (Cambridge Dictionary, 2021). Most definitions of persuasiveness assume the elements of a sending party (also referred to as ‘source’) conveying a message to a receiving party (also referred to as ‘recipient’), with the intention of effectuating a certain change at the level of the recipient (Nilsen, 1974; Bettinghaus & Cody, 1987; O’Keefe, 2016). Some scholars refer to a change in attitude, belief, or behaviour (Bettinghaus & Cody, 1987), while others allude to an activity performed by the recipient (Nilsen, 1974). Following the model of Albarracín and Johnson (2018) displayed in Appendix 1, the current research assumes that the constructs of belief and attitude are susceptible to change through persuasion. The following

focuses on attitudes in particular, as attitudes may lead to intentions which, in turn, can determine behaviour (Albarracín & Johnson, 2018).

The question remains what mechanisms cause a change in a recipient's attitude. Various models have been proposed to explain the cognitive processes that come into effect in response to (persuasive) communication. The *heuristic-systematic model* by Chaiken (1980) distinguishes two routes of attitude change. The first route, systematic processing, involves attitude formation based on time-consuming and careful consideration of the arguments contained in the message. In the alternative route, heuristic processing, attitude formation is a product of a brief consideration of heuristics, or rules of thumb, such as 'experts tell the truth'. The latter involves increased reliance on 'non-content cues' such as credibility or emotional manifestation of the source (Chaiken, 1980).

A similar dual processing theory is the *elaboration likelihood model* introduced by Cacioppo and Petty (1984). Processing via the 'central route' suggests that a change in attitude is based on a consideration of the information (e.g., facts and arguments) incorporated in the message. In contrast, when the 'peripheral route' applies, external factors and heuristics determine attitude. Both cognitive processes referred to above may occur in a subliminal or explicit manner. Put differently, a change in attitude through persuasion can result from, but does not require, a conscious process at the level of the recipient (Albarracín & Vargas, 2010). The recipient may be unaware of the stimulus, the process, and the outcome of persuasion (Albarracín & Vargas, 2010).

As discussed above, engagement of the heuristic or peripheral route emphasizes the importance of non-content cues like source effects, i.e., persuasiveness inducing characteristics of individuals or groups (Albarracín & Vargas, 2010). Source effects that have been found to enhance persuasiveness are apparent expertise, likeability, physical attractiveness, and trustworthiness (Albarracín & Vargas, 2010; Pornpitakpan, 2004; Wilson & Sherrell, 1993). Along the same lines, Conger (1998) identifies four steps to successful persuasion: demonstration of credibility, framing of shared benefits (i.e., emphasizing mutual benefits of the intended outcome), fortifying with compelling evidence, and connecting emotionally. The last step, emotional connectivity, includes the display of emotions through facial expression, a potential source effect that will be discussed below.

2.3 Persuasion through facial expression

2.3.1 Facial expression of emotions in general

Nonverbal communication is defined as the conveying of thoughts and feelings in a non-linguistic manner (Burgoon, Guerrero, & Manusov, 2011; Ambady & Weisbuch, 2010). This paragraph focuses on facial kinesics, a subcategory of nonverbal communication referring to affect displayed through facial expression (Ekman & Friesen, 1969; Burgoon et al., 2011; Bonaccio, O'Reilly, O'Sullivan, & Chiocchio, 2016; Ambady & Weisbuch, 2010). Affect includes moods and emotions (Forgas & George, 2001). Moods are considered to be more gradual and less cause-related compared to emotions, which are more intense and usually the result of a more specific cause (Forgas & George, 2001).

Central to this thesis are emotions, as research on the movement of the human body by Ekman and Friesen (1967) led to the insight that stationary positions communicate more generic affects (i.e., moods), as opposed to movements – including facial expression – that convey more intense and specific affects (i.e., emotions). Moreover, the face is considered to be the ‘primary physical medium for emotional displays’ (Bonaccio et al., 2016). Research by Ekman and colleagues provide evidence for six universal emotional states displayed through facial expressions: anger, fear, sadness, enjoyment, disgust, and surprise (Ekman & Friesen, 1971, 1969; Ekman, Sorenson, & Friesen 1969). A seventh universal emotional state expressed through facial mimicry added later to the list is contempt (Ekman & Heider, 1988).

Multivariate analyses have repeatedly shown that the variance in emotion can be explained by two main factors: valence and arousal (e.g., Smith & Ellsworth, 1985; Bradley, Codispoti, Cuthbert, & Lang, 2001). Arousal – ranging from high to low – refers to the degree of motivational activation, or ‘autonomic activation measurable by changes in skin conductance, heart rate, or brain waves’ (Albarracín & Vargas, 2010; Bradley et al., 2001). Valence – ranging from negative to positive – refers to pleasantness (Bradley et al., 2001). The aforementioned universal emotional states will be viewed in conjunction to interpret valence. Following the example of prior research, positive valence is represented by enjoyment, while negative valence is considered to be composed of anger, fear, sadness, disgust, and contempt (Smith & Ellsworth, 1985; Wong, Tschan, Messerli, & Semmer, 2013).

2.3.2 The persuasive impact of facial expression

Communication of emotions through facial expression can trigger responses from others, thereby inducing interpersonal effects (Hwang & Matsumoto, 2016). Especially in organizational context, fostering intended responses through emotional expression during interactions can be instrumental to goal attainment (Wong et al., 2013). The ability to influence others through facial expression has even been conceptualized as a novel dimension of emotional intelligence, which is considered to be most effective within the context of organizations (Côté & Hideg, 2011).

In a broader sense, research in various domains such as negotiation, leadership, parent-child interaction, and conflict has recently shifted to a more interpersonal view of emotions, providing evidence that the display of emotions can affect the behaviour of the recipient in various ways (Van Kleef, Homan, Beersma, Van Knippenberg, Van Knippenberg, & Damen, 2009). Across these domains, facial expression is found to directly influence the attitude of the recipient, thereby indirectly causing a change in intention and subsequent behaviour (Albarracín & Johnson, 2018; Wong et al., 2013).

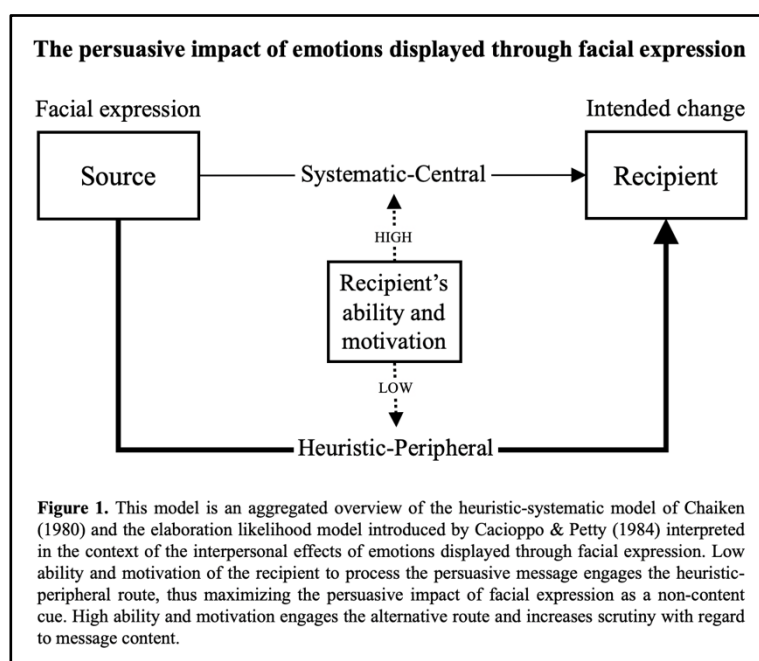
To explain how facial expression of emotions is a means of persuasion, I refer to the heuristic-systematic model by Chaiken (1980) and the elaboration likelihood model by Cacioppo and Petty (1984) mentioned in § 2.2. These mechanisms share a similar distinction between two persuasion routes: a ‘systematic-central’ route through which the recipient devotes profound cognitive resources to assess message content, and an alternative ‘heuristic-peripheral’ route through which the recipient applies quick rules of thumb to assess external factors (Chaiken, 1980; Cacioppo & Petty, 1984). In the heuristic route, ‘rather than processing argumentation, recipients may rely on (typically) more accessible information such as the source’s identity or other non-content cues in deciding to accept a message’s conclusion’ (Chaiken, 1980). In short, source characteristics – including emotional manifestation through facial expression – gain persuasive impact when the heuristic-peripheral route is engaged. These mechanisms are illustrated in Figure 1.

The question arises of what exactly triggers the heuristic-peripheral route. Profound consideration of message content – a characteristic of the alternative systematic-central route – requires sufficient time, effort, and issue-relevant knowledge (Hewstone, Stroebe, & Jonas, 2016). In contrast, when a recipient’s ability and motivation to assort the message decrease, the

heuristic-peripheral route is more likely to take effect. Ability and motivation depend on “topic factors, such as relevance to one’s own life, person factors, such as need for cognition, and situation factors, such as distraction” (Albarracín & Johnson, 2018). When the recipient is hardly involved with the issue – which is the case, for example, when the message bears no consequences for the recipient – the heuristic-peripheral route predominates (Chaiken, 1980). Following this reasoning, ability and motivation are conceptualized as moderators determining the relative weight of the alternative routes (Figure 1).

In short, an overall increase in ability and motivation (e.g., the recipient is an expert or the issue is considered important) increases the significance of the systematic-central route; a decrease in ability or motivation (e.g., the issue is trivial, time is limited, or knowledge is insufficient) increases the likelihood of attitude formation through the heuristic-peripheral route which, in turn, enhances the persuasive impact of facial expression (Hewstone et al., 2016).

Figure 1



A similar mechanism can be found in other research domains. Research on leadership, for instance, suggests that when a team experiences time pressure and fatigue (indicators of low ability and motivation), attitudes within these teams are more susceptible to change as a result of emotions expressed by the leader, compared to the content of the message conveyed by the leader (Van Kleef et al., 2009).

The aforementioned addressed the cognitive mechanisms operating at the level of the recipient. The cognitive processes at play at the opposite side of the interaction – the level of the source – are of importance as well. Expression of emotions is usually involuntary (Bonaccio et al., 2016). However, individuals often intentionally produce fabricated facial expressions with the aim of influencing recipients, also referred to as ‘emotional gaming’ (Ekman, 1993; Andrade & Ho, 2009). This holds especially for members of organizations (Côté et al., 2013). In this context, the internal experience of emotions and the external expression thereof may diverge to varying degrees. The ‘baseline’ – no divergence at all – can be considered ‘authentic’: felt emotions are expressed without efforts to exaggerate, play down or alter. Divergence, or emotional dissonance, may occur through endeavours to regulate emotions (Grandey, 2000).

Regulation of emotions can be categorized into antecedent-focused, and response-focused (Gross, 1998). Antecedent-focused emotion regulation occurs early in the emotion formation process and refers to efforts to manipulate both the emotion and the expression thereof (e.g., watching something enjoyable prior to an interaction to feel better and appear happier). In this case, the authenticity of the response stays relatively intact (Côté & Hideg, 2011). Response-focused emotion regulation occurs late in the emotion formation process – when response tendencies have started forming – leaving little room to alter the emotion itself, but still providing sufficient room to manipulate the expression thereof (e.g, acting happy when feeling sad). The latter type of emotion regulation may cause significant emotional dissonance, thereby reducing authenticity (Côté & Hideg, 2011).

In conclusion, facial expression of emotions (either authentic or feigned) can be considered a predominantly ‘heuristic-peripheral’ source effect. The persuasive impact of this source effect is dependent on the recipient’s motivation and ability to process the persuasive message. How valence (as an essential dimension of emotional manifestation) may be related to persuasiveness and how this relationship unfolds within a monitoring setting are discussed next.

2.4 Valence

Drawing upon persuasion literature specifically and, if not available, adjacent literature in the domain of negotiation, leadership, and conflict, this section addresses the influence of pleasantness (i.e., valence) of displayed emotions – ranging from negative to positive – on persuasiveness.

2.4.1 Positive valence

The expression of positive emotions is instrumental to eliciting intended behaviours in the workplace (Staw, Sutton, & Pelled, 1994). This is consistent with the findings of Wong et al. (2013), suggesting that prosocial, helping, support, and solution-oriented behaviours can be induced by positively valenced emotions. In addition, smiles and facial pleasantness have been considered determinants of persuasiveness (Mehrabian, 1970; Mehrabian & Williams, 1969).

Display of positive emotions is associated with likeability, trustworthiness, and competence (Clark, Pataki, & Carver, 1996). Therefore, display of positive emotions can also have an indirect persuasive impact by contributing to other source effects that increase the tendency to concede (e.g., likeability, competence, and trustworthiness) (Albarracín & Vargas, 2010; Pornpitakpan, 2004; Wilson & Sherrell, 1993; Cialdini & Goldstein, 2004). An example of this kind of influence in monitoring relationships would occur when a board member evokes a liking reaction with a member of the top management team, inducing the latter to apply the heuristic rule of ‘people generally agree with people they like’ (Chaiken, 1980). Along the same lines, research conducted by Oreg and Sverdlik (2013) reveals that perceived source sympathy is related to persuasion, on the basis that a sympathetic persuader “elicits a positive response from their surroundings, enhancing others’ willingness to listen to and consider their perspective” (Oreg & Sverdlik, 2013, p. 252).

Part of the persuasive impact of positive emotions conveyed through facial expression can be explained by emotional contagion, a psychological phenomenon indicating that recipients tend to experience and display the same emotions as displayed by the source (Hatfield, Cacioppo, Rapson, Manstead, & Oatley, 1994; Barger & Grandey, 2006). Following this principle, positively valenced emotions, displayed by boards of directors, lead to the experience of similar pleasant emotions at the level of top management teams. A person experiencing positive emotions may be ‘highly susceptible to social influence’ (Staw et al., 1994). Various studies on persuasion show that recipients in a positive emotional state pay less attention to argument

quality (i.e., message content) (Mackie & Worth, 1991; Kuykendall & Keating, 1990). This argument, in conjunction with Figure 1, implies a self-reinforcing mechanism when the expressed emotions have positive valence. Figure 1 shows that processing through the heuristic-peripheral route amplifies the persuasive impact of positive (and negative) facial expressions. Moreover, positively valenced facial expressions themselves may decrease a recipient's attention to argument quality through the mechanisms of emotional contagion, thus reducing systematic-central processing and further reinforcing the heuristic-peripheral route.

Engagement of this self-reinforcing mechanism is based on the assumption that positive emotions displayed by the source, i.e., the board of directors, have initially gained traction on the recipient, i.e., the top management team. Put differently, a manager with less issue-specific knowledge, or little time to make a decision (i.e., low ability and motivation to process the persuasive message), is bound to focus on non-content factors like positive emotions displayed by board directors which, in turn, further increases reliance on these emotions (and decreases susceptibility to content factors like argument quality). Through these mechanisms, managers may be equally susceptible to messages with strong arguments versus poorly substantiated messages (Staw et al., 1994; O'Keefe, 2016).

Finally, the mere display of positive emotions can be regarded as a favour, implying the tendency for a favour in return from the receipt according to reciprocity theories (e.g., Gouldner, 1960). This favour-in-return tendency can contribute to increased willingness for managers to concede.

Based on the literature set out above, it is expected that an increase in average positive emotions displayed by a board of directors during the discussion of an agenda item, increases persuasiveness with regard to that agenda item.

H₁: The board of directors' average facial expression of positive emotions is positively related to its persuasiveness in monitoring relationships.

2.4.2 Negative valence

Although negotiation and persuasion are not interchangeable, useful insights can be drawn from negotiation literature. The common ground of these phenomena is the importance of inducing willingness to concede. Some scholars emphasize a positive relationship between negotiators displaying negative emotions and concessions made by the other party (Sinaceur & Tiedens, 2006; Van Kleef, De Dreu, & Manstead, 2004). The suggestion that negative emotions foster favourable negotiation outcomes can be explained by self-regulation theory, stating that people tend to prolong positive feelings and, conversely, shorten negative feelings (Baumeister, Leith, Muraven, & Bratslavsky, 1998). Following this reasoning, Kopelman et al. (2006) point out that negative emotions displayed by the source create a situation in which the recipient may choose a quick exit of the situation through larger concessions over a thorough consideration of alternatives and efforts to realize those. This is in congruence with the finding that observance of anger displayed through facial expression invokes avoidance behaviour (Marsh, Ambady, & Kleck 2005).

However, the research mentioned above mainly focuses on non-recurring or hardly repetitive interactions. In contrast, monitoring relationships are characterised by durability and repetitive interactions. Research on negotiation found that negative emotions decrease the willingness to interact and make concessions again (Allred, Mallozzi, Matsui, & Raia, 1997; Van Kleef et al., 2004). In this context, Wong et al. (2013) found the expression of negative emotions to be negatively related to goal attainment in sustainable relationships within the work environment. In addition, negative emotions can be greeted with retaliation, competition, and exclusion from coalitions (Van Kleef & Côté, 2007; Van Beest, Van Kleef, & Van Dijk, 2008). Finally, and unsurprisingly, display of anger leads to decreased likeability, indirectly reducing persuasiveness (Clark et al., 1996).

The psychological phenomenon of emotional contagion, discussed in § 4.2.1, provides additional insight into the relationship between display of negative emotions and persuasiveness (Hatfield et al., 1994). This mechanism suggests that display of negative emotions by board members evokes similar negative emotions with top management. This, in turn, increases the importance of the systematic-central route, given that a recipient experiencing negative emotions is more likely to be persuaded by message arguments (Mackie & Worth, 1991). Through these mechanisms, negative emotions conveyed by board directors put their arguments

in persuasive messages under increased scrutiny, lowering the likelihood of a change in the belief or attitude of top managers.

Based on the literature set out above, it is expected that an increase in average negative emotions displayed by a board of directors during the discussion of an agenda item, diminishes persuasiveness with regard to that agenda item.

H₂: The board of directors' average facial expression of negative emotions is negatively related to its persuasiveness in monitoring relationships.

2.5 Meeting duration

Board meetings are a platform for exchange of emotions between board directors and top managers through the 'primary physical medium for emotional displays', the face (Bonaccio et al., 2016). The effect of emotions conveyed by the board of directors through facial expression on persuasiveness is expected to increase as the meeting progresses.

This moderation effect is hinged on the ability and motivation of top managers to process persuasive messages. As mentioned in § 2.3.2, time limitation, fatigue, and issues that are perceived as trivial – aspects that are more likely to occur at the end of a meeting – cause a decrease in ability or motivation (Hewstone et al., 2016; Van Kleef et al., 2009). Presumably, every now and then a CEO, despite appreciating the board's function, wants to "get the meeting finished so the organization can get on with its business" (Kesner et al., 1986). As depicted in Figure 1, ability and motivation determine the relative importance of alternative processing routes, i.e., systematic-central versus heuristic-peripheral (Chaiken, 1980; Cacioppo & Petty, 1984).

An overall decrease in ability and motivation increases the likelihood of attitude formation through the heuristic-peripheral route. In that case, the recipient (i.e., top management team) tends to judge the persuasive message using quick rules of thumb based on peripheral information, e.g., facial expression of emotions by the board of directors, rather than message content (Albarracín & Johnson, 2018). In this context, scrutiny of managers with regard to the content of the persuasive message deteriorates as the meeting progresses due to possible time pressure to cover all agenda items, loss of concentration, and increased overall disregard, thereby increasing the persuasive impact of peripheral cues like display of emotions.

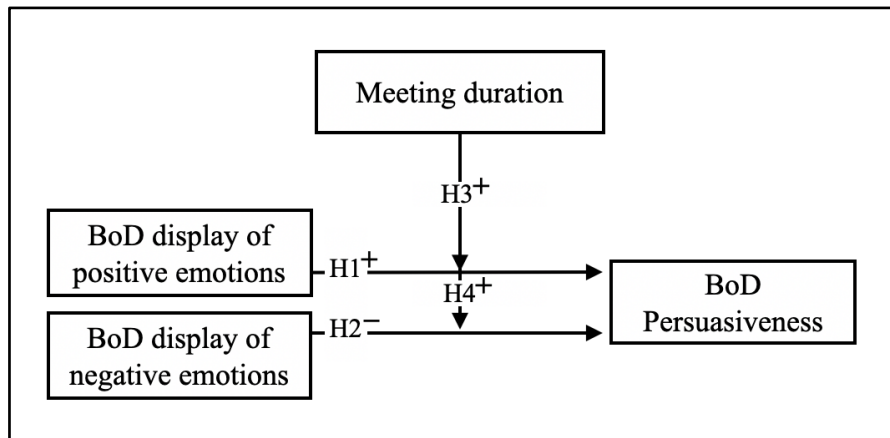
H₃: The effect of a board of directors' average facial expression of positive emotions on persuasiveness increases as meeting duration increases.

H₄: The effect of a board of directors' average facial expression of negative emotions on persuasiveness increases as meeting duration increases.

3. Conceptual Model

The independent variables are the average positive and negative emotions displayed by the board of directors through facial expression. As mentioned, the board of directors as a monitoring body is regarded as 'source', referring to its role as a transmitter of persuasive messages. The dependent variable is the persuasiveness of the board of directors. These direct relationships are expected to be moderated by meeting duration.

Figure 2



4. Methodology

This section contains a description of the quantitative methodology used to test the hypotheses. First, the empirical context, sample, and data sources are discussed. Thereafter, the measurement of the dependent, independent, moderator, and control variables will be explained. Finally, the data analysis method and research ethics are discussed.

4.1 Empirical context

Considering that 26% of the Netherlands is below sea level and 55% is susceptible to flooding, it is not hard to imagine that water management has been a decisive factor in the Dutch government structure to the present day (*Correctie formulering over overstromingsrisico Nederland in IPCC-rapport*, 2013). Water management in The Netherlands is not only a crucial theme at the level of the state but plays an important role at a decentralized level as well. A total of 21 local Dutch Water Authorities are responsible for managing the amount and quality of water using flood defences, various types of waterways, and purification systems (Havekes et al., 2017). The board of any of these Water Authorities consists of: a governing board, an executive committee, and a chairperson belonging to the executive committee.

Dutch Water Authorities levy tax on companies and individuals within the region in which they operate. These taxpayers have (indirect) influence on water management through elections (*Waterschappen*, z.d.). Once every four years, the members of the governing board are elected. Members of the executive committee, except for the chairperson, are appointed by, and from, the governing board. Governing board members have the ability to dismiss executive committee members, with the exception of the chairperson, if the relationship of trust has been broken (art. 41 Waterschapswet). The chairperson is appointed for six years by Royal Decree, i.e., a decision of the central government (art. 46 Waterschapswet). The governing board consists of multiple regional stakeholders with either general interests (e.g., residential) or specific interests (e.g., business-related sectors) (art. 10-12 Waterschapswet). The executive committee consists of at least one member of the specific categories designated by law: owners, possessors, or holders of a restricted right with regard to agricultural property, commercial property, or designated nature areas (art. 40 jo. art. 12 Waterschapswet).

The governing board is charged with establishing policies and monitoring the preparation and implementation of these policies by the executive committee. Accordingly, the executive

committee is legally accountable to the governing board (art. 89 Waterschapswet). This monitoring relationship between the executive committee and the governing board can be found in a similar fashion in municipalities and provinces (Havekes et al., 2017). A unique feature of Dutch Water Authorities as public entities is a monistic administrative model: the members of the executive committee – with the exception of the chairman – retain their membership of the governing board (Havekes et al., 2017). The executive committee is therefore allowed to vote and is simultaneously subject to accountability and control. A similar relationship can be found in private entities, between executive and non-executive directors of a one-tier board. Based on the similarities between these organisational forms, the executive committee – charged with day-to-day business – is conceptualized as top management team, and the governing board – charged with monitoring – is conceptualized as a board of directors. In comparison, a two-tier board structure is further removed from the empirical context of this study, in the sense that those charged with monitoring are appointed in a separate body (i.e., a supervisory board). The relationship between different types of private entities and the public empirical context is further discussed in chapter 7.

Data was gathered through desk research, involving the collection of publicly available footage from meetings of governing boards belonging to the Water Authorities of Amstel Gooi & Vecht, Friesland, Zuiderzeeland, and De Stichtse Rijnlanden. These meetings constitute a forum for exchange of facial expressions, as executive committee members and the members of the governing board interact face-to-face (either digitally or while being in the same room).

4.2 Sample and data sources

The initial sample is a database composed by other students, containing 102 board meetings of the aforementioned Water Authorities. The video footage processed in the initial database stems from meetings that took place between 2014 and 2019. In the present research, this database was again extended for the Water Authority of Amstel Gooi & Vecht for the year 2020, comprising 18 hours of footage from 6 meetings. With the addition of several other meetings analysed by other students this year, the total dataset contains 111 meetings with 600 agenda items ($N = 600$), 199 of which have missing data for the variables in the conceptual model. The type of missing data is the same across these cases, i.e., omission of emotion scores for the board of directors. There are several reasons for these missing values. Occasionally, the nature of the agenda item causes the chairperson to be the only speaker, as is the case with the opening

(41) and closing (27) of the meeting, announcements (21), and appointments of members (3). The remainder of missing values contains various (sometimes substantive) agenda items in which either board members did not enter into discussion, or suitable footage of these discussions was not available.

To gain insight into the various Water Authorities and to be able to make comparisons between them, the individual websites, as well as overarching company comparisons, were reviewed (*Bedrijfsvergelijkingen*, z.d.). These company comparisons are based on performance-related data provided by the Water Authorities themselves. Other relevant information such as demographics, tenure, board size, and meeting frequency was derived from the websites of the Water Authorities, and central government. The decision lists, with information about the most important decisions of a meeting, were consulted to collect data for the dependent variable.

4.3 Dependent variable

Persuasiveness was operationalized using the number of promises made by the executive committee with regard to a certain agenda item. The number of promises within a given agenda item was derived from the corresponding decision list drawn up by the secretariat at the end of the meeting.

Literature on persuasion suggests that changes in various constructs (e.g., belief, attitude, intention, or behaviour) can be measured to infer the consequences of persuasiveness (O’Keefe, 2016; Smith, 1982; Bettinghaus & Cody, 1987). Briñol and Petty (2009) point out that the success of a persuasive attempt depends on “whether the attitudes of the recipients are modified in the desired direction, with special attention to whether these attitudes in turn influence people’s subsequent behaviour” (Briñol & Petty, 2009). This suggests that the connection between attitude change and behavioural change of top management can be used to determine the effect of persuasive endeavours by the board of directors.

The relationship between attitude and behaviour is mediated by intentions, according to the model of Albarracín and Johnson (2018) displayed in Appendix 1. An intention can be seen as “a willingness to perform a behaviour” (Albarracín & Johnson, 2018). Observable changes in intention can therefore be used as indicators of persuasiveness. Barring exceptions such as sarcasm and mendacity, a promise involves the expression of an intention as it involves “a

declaration that one will do or refrain from doing something specified” (Merriam-Webster’s online Dictionary, 2021). Presumably, a promise generally expresses an intention that is favourable to the other party. Therefore, in the context of monitoring, a promise made by a member of the executive committee with regard to a certain agenda item is considered an expression of a change in the mental state of the top management team in the desired direction.

4.4 Independent variables

The independent variables – average display of positive and negative emotions by the board of directors – were calculated using emotion scores of the individual board members. These individual facial expression scores were extracted from the video footage using a facial recognition algorithm, and represent the degree to which the emotions identified by Ekman and colleagues – anger, fear, sadness, enjoyment, disgust, surprise, and contempt – are expressed at a given moment (Ekman & Friesen, 1969, 1971; Ekman et al., 1969; Ekman & Heider, 1988).

Following the example of prior research, a categorization of the aforementioned emotional states was used to infer valence (Zhang, Tjondronegoro, & Chandran, 2014). Positive valence is represented by happiness, while negative valence is composed of anger, fear, sadness, disgust, and contempt. The remaining emotion of surprise is not necessarily an expression of positive or negative valence; therefore, this score does not contribute to the dimension of valence. The scores assigned to emotions represent deviations from the standard facial expression of the individual. However, ‘standard’ facial expressions are also indicated, using a ‘neutral’ score. Neutral is a relative concept in this context since every individual has a unique ‘neutral’ expression (e.g., person A’s neutral might appear angrier than person B’s neutral, however, they have the same ‘neutral’ and ‘angry’ score).

Facial expression scores were obtained using a method derived from Choudhury et al. (2019), who utilized Microsoft’s Face application programming interface (API). Before applying the API, the footage was prepared according to the following steps. First, the raw footage – of both physical and digital meetings – was transformed into separate images (one per second) using VLC media player. During the extraction process, images were sorted to keep track of the order of speakers and agenda items and to exclude frames with insufficient visibility of the face of the speaker. An overview of this process is provided in Appendix 2. To preserve the obtained

chronological order, images were batch-renamed according to the following template: WaterAuthority-Date-No.Agendaitem-No.Speaker-NameSpeaker-Framecount.

The remaining frames were cropped using Adobe Lightroom, preserving the face of the speaker and excluding any information that could mislead the algorithm (e.g., faces of others). For specific batches, brightness, contrast, and sharpness were adjusted. Even with these treatments, a significant number of frames (26.893) was deemed unusable and excluded from the analysis to lower the change of an algorithm failure per image, given that the free Microsoft Azure account that was created allowed for a limited number of frames to be processed. Finally, some specific sections of meetings (i.e., vote counts and attendance checks) were excluded as these provided no footage of a speaker (due to the rapid alternation of speakers). The remainder of the images (38.123) was sent to the API using a code written in Python (Appendix 3), to obtain the scores for the individual frames in JSON format. These formats were then converted to a CSV file per meeting (using the code displayed in Appendix 4) and added to the main dataset.

The aggregated score of the various emotions (or ‘total emotion score’) displayed by a person at a given moment is 1. As mentioned, positive valence is determined by measuring the emotion of happiness, and negative valence is calculated by adding the scores of anger, fear, sadness, disgust, and contempt (Zhang et al., 2014). It is important to stress that the *display* of emotions is measured using this method, which, in the case of emotional dissonance, is not the same as experienced emotions (Grandey, 2000; Gross, 1998). Confidence in the validity of the obtained emotion scores is derived from Choudhury et al. (2019), who found that Face API-coded expressions showed considerable overlap with human-coded expressions.

4.5 Moderator and control variables

The moderation effect of meeting duration – formulated in hypotheses 3 and 4 – captures temporal aspects of persuasiveness, i.e., the timing of promises made by executive committee members. Dutch Water Authorities register these promises for every agenda item in a given meeting. The position of promises in time is determined by utilizing chronological information about agenda items derived from footage databases. Using the starting point and duration, a variable is created which captures the time surpassed halfway each agenda item. An agenda item occurring at 00:52:30, with a duration of 00:30:30 is given a score of 67,75 ($52,5 + 30,50 / 2$).

Diversity

Diversity may interfere with the results in various ways. Diversity among directors has been linked to positive, as well as negative firm outcomes (Boivie et al., 2016). Specifically, gender may play an important role in determining persuasiveness in monitoring relationships. For example, Adams and Ferreira (2009) found that gender-diverse boards allocate more resources to monitoring activities. The categorical variable of gender is transformed into a continuous variable using Blau's (1997) diversity index, representing the likelihood that two randomly selected members belong to different categories (Harrison & Klein, 2007). For a variable with two categories, Blau's index ranges from zero (indicating no diversity at all) to 0.5 (indicating equal spread of members across the categories).

In line with the empirical context of this research (a public organisation) political diversity is included as a control variable to capture the influence of job-related, or functional, diversity. Job-related diversity (Carpenter & Westphal, 2001; Boivie et al., 2016) includes functional background and beliefs. It is possible that the more politically fragmented the board of directors is, the more internal struggle and the less collective persuasion it portrays. Political diversity is also measured using Blau's (1997) diversity index. For a variable with twenty-two categories (the number of political parties), Blau's index ranges from zero (indicating no diversity at all) to 0.95 (indicating equal spread of members across the categories).

Tenure

Presumably, shared tenure between colleagues has a positive effect on familiarity. Familiarity between source and recipient, in turn, may be of influence on persuasiveness (Mehrabian, 1970). In addition, source tenure can lead to perceived expertise, experience, or authority, thus increasing persuasiveness (O'Keefe, 2016). Tenure is measured in months.

Board size

The magnitude of a board can influence monitoring performance. Larger boards tend to be less likely to initiate change and have a higher need for coordination, possibly at the expense of adequate execution of monitoring duties (Boivie et al., 2016).

Meeting frequency

Meeting frequency presumably increases familiarity between the board of directors and top management. As already mentioned, familiarity is found to be related to persuasiveness

(Mehrabian, 1970). Therefore, meeting frequency is included as a control variable. Moreover, if boards meet infrequently, this may hinder the development of a ‘cohesive decisionmaking body’ (Boivie et al., 2016). Meeting frequency is measured per year.

Number of talking individuals

A higher number of talking individuals may create a higher pressure to concede for top managers. This variable is calculated by adding the number of people talking per agenda item.

Miscellaneous agenda items

Some agenda items are deemed less suitable for investigating the effect of emotional display, due to the short duration, the formal nature, or the lack of possible discussion between the board of directors and the top management team. These agenda items are labelled miscellaneous and are included as a control variable.

The emotion of top managers

To account for the instances in which emotions displayed by top managers influence the likelihood of a promise, average scores of displayed positive and negative emotions by the top management team are included as control variables.

4.6 Data analysis method

The dependent variable is operationalized using a low-frequency event count, i.e., the number of promises made by the executive committee with regard to a given agenda item. The dominant score for the dependent variable is zero and the likelihood of a positive score is expected to decrease as the score increases. The relationship between a low-frequency dependent count variable, and two metrically scaled independent variables, can be adequately evaluated using Poisson regression (Osborne, 2017). This method allows for an estimation of the probability of a promise made by the top management team as a function of two independent variables: display of negative and positive emotions by the board of directors. Moreover, Poisson regression allows for investigation of a moderation effect. Additionally, in search for the best possible fit, a negative binomial model is applied to account for overdispersion and a zero-inflated model is utilized to prevent misestimation due to excessive zero scores. The Poisson and negative binomial regression were conducted using IBM SPSS Statistics, the zero-inflated regression was carried out with R (studio).

4.7 Research ethics

Although the risk of misuse of research findings is not particularly high in this case, prevention thereof is an important obligation incumbent upon the researcher. Most information used in this research is publicly available, however, the findings could reveal emotional manifestations or tendencies of certain individuals. It is mainly with regard to this aspect that discretion is exercised.

5. Results

The variable resembling the number of promises per agenda item fits the character of an infrequent count variable with an average of 0.26, a standard deviation of 0.894, and a range from 0 to 9. The impression that meetings are generally more pleasant than tense is reflected in the data as boards of directors display nearly twice as much positive emotions per agenda item (0.085) compared to negative emotions (0.045). This can be explained by the fact that monitoring relationships are durable and therefore require benevolent attitudes. Positive emotions have a standard deviation of 0.119 and negative emotions a standard deviation of 0.036. Meeting duration ranges from the opening of the meeting (with a minimum score of 0.01 minutes) to agenda items reaching their halfway point 5 hours, 41 minutes, and 18 seconds into the meeting (with a score of 341.3 minutes). There are 199 agenda items with missing emotion scores for the board of directors.

Table 1

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>Min</i>	<i>Max</i>	<i>Variance</i>
1. Number of promises by TMT	600	0.260	0.894	0.000	9.000	0.799
2. BoD positive emotions	401	0.085	0.119	0.000	0.883	0.014
3. BoD negative emotions	401	0.045	0.036	0.001	0.251	0.001
4. Political diversity	600	0.876	0.022	0.814	0.907	0.000
5. Gender diversity	600	0.365	0.061	0.153	0.469	0.004
6. Tenure	600	41.005	12.446	22.000	64.000	154.903
7. Board size	600	29.680	1.314	25.000	31.000	1.727
8. Meeting frequency	600	9.950	3.331	4.000	14.000	11.093
9. Number of speaking board members	600	4.600	4.399	1.000	23.000	19.350
10. Miscellaneous topics	600	0.410	0.492	0.000	1.000	0.242
11. TMT positive emotions	557	0.077	0.100	0.000	0.863	0.010
12. TMT negative emotions	557	0.024	0.028	0.000	0.191	0.001
13. Meeting duration	600	66.866	76.533	0.010	341.300	5857.311

Notes: BoD = board of directors. TMT = top management team

The relationship between the independent variables (facial expression of negative and positive emotions by the board of directors) and the dependent variable (no. promises made by top managers) is non-linear given the nature of the dependent variable as a low-frequency count variable. Assessment of the individual variables in the conceptual model reveals a few important characteristics: the variables have a positively skewed and leptokurtic distribution due to zero inflation, i.e., high frequency of zero scores (Appendix 5). This holds especially for the dependent variable, which indicates that a Poisson regression may indeed be an adequate

way of predicting the dependent variable (Cohen, Cohen, West & Aiken, 2003). The assumption of independence of observations is met since the count value of a certain agenda item is not related to any other agenda item.

5.1 Poisson regression

The results of the Poisson regression models are presented in Table 2. All models are a significant improvement over the base model, i.e, the intercept model without any predictors (given the significance of the omnibus test for all models). However, given the insignificance of the independent variables and interaction effects across all models, hypotheses 1, 2, 3, and 4 must be rejected based on the Poisson regression. Several control variables – political diversity, number of talking individuals, and meeting duration – have a significant effect on promises across almost all models. For instance, in model 2, every additional speaker increases the expected amount of promises per agenda item by 1.2 provided that the other regression coefficients remain the same (this value is calculated by exponentiating the regression coefficient which represents the expected log. count, in this case: $e^{0.190}$). The control variable of total board size is only significant in model 1, indicating that attendance of an extra board member decreases the expected amount of promises per agenda item by 0.86 ($e^{-0.151}$).

Table 2

<i>POISSON</i>													
<i>Variables</i>		<i>Number of promises by TMT</i>											
		<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>		<i>Model 4</i>		<i>Model 5</i>		<i>Model 6</i>	
		<i>Coef.</i>	<i>a</i>	<i>Coef.</i>	<i>a</i>	<i>Coef.</i>	<i>a</i>	<i>Coef.</i>	<i>a</i>	<i>Coef.</i>	<i>a</i>	<i>Coef.</i>	<i>a</i>
Independent	BoD pos.			0.327	0.744			0.151	0.910			-0.049	0.971
	BoD neg.					-2.088	0.411			-2.922	0.388	-2.959	0.389
Interaction	Meeting duration							0.003	0.835			0.004	0.785
	BoD neg. X									0.014	0.698	0.017	0.654
	Meeting duration												
Control	Political diversity	17.991	0.000	18.560	0.000	18.778	0.000	18.530	0.000	18.678	0.000	18.555	0.000
	Gender diversity	-2.144	0.329	-1.800	0.432	-1.971	0.389	-1.777	0.438	-1.944	0.396	-1.883	0.412
	Tenure	0.004	0.672	0.003	0.790	0.003	0.808	0.003	0.781	0.002	0.833	0.003	0.814
	Board size	-0.151	0.028	-0.118	0.091	-0.124	0.076	-0.118	0.090	-0.124	0.076	-0.125	0.074
	Meeting frequency	-0.040	0.195	-0.026	0.408	-0.028	0.377	-0.026	0.408	-0.028	0.378	-0.027	0.382
	No. Talking individuals	0.199	0.000	0.190	0.000	0.192	0.000	0.190	0.000	0.191	0.000	0.191	0.000
	Miscellaneous	0.085	0.722	0.343	0.144	0.338	0.150	0.342	0.145	0.330	0.161	0.326	0.168
	TMT pos.	0.824	0.466	1.420	0.243	1.560	0.187	1.402	0.250	1.561	0.188	1.484	0.224
	TMT Neg.	1.388	0.604	0.595	0.828	0.702	0.797	0.599	0.827	0.729	0.790	0.705	0.797
	Meeting duration	-0.005	0.002	-0.005	0.001	-0.005	0.002	-0.005	0.011	-0.006	0.028	-0.006	0.058
	χ^2/df		1.551		1.752		1.731		1.757		1.744		1.754
	AIC		658.751		595.128		594.522		597.086		596.375		600.271

BoD = board of directors, TMT = top management team

Although all Poisson models in the table above meet the (relatively low) threshold of improvement over the intercept model, the suitability of the Poisson model is questionable. The One-Sample Kolmogorov-Smirnov test yields a significant result, thereby rejecting the null hypothesis that the dependent variable follows a Poisson distribution. The assertion that the distribution of the dependent variable does not follow a Poisson distribution is perpetuated by the difference between the mean of the number of promises per agenda item (0.26) and the variance (0.799) in Table 1, violating the assumption of equidispersion, or equality of mean and variance (Osborne, 2017; Cox, West, & Aiken, 2009).

A closer look at the Pearson Chi-Square/degrees of freedom ratios in Table 2 reveals presumably detrimental overdispersion across the models given that all values surpass the threshold of 1 (Payne, Gebregziabher, Hardin, Ramakrishnan, & Egede, 2017). The *degree* of overdispersion can be used as an indicator for the need to apply a different (e.g., negative binomial) model. Some scholars recommend statistical intervention to account for overdispersion if the quotient of the Pearson χ^2 value and the degrees of freedom exceeds a threshold of 2 (Cameron & Trivedi, 1990; Field, 2018). However, a more conservative threshold proposed by Payne et al. (2017) is used, indicating a lower level of overdispersion (1.2) at which intervention is required. The magnitude of overdispersion in all Poisson models surpasses this threshold, therefore a negative binomial regression is conducted.

5.2 Negative binomial regression

Table 3 contains the results of a custom negative binomial regression model with a log link function and estimation of the parameter value. Application of the model decreases the χ^2/df value, indicating reduced dispersion values in comparison to the previous Poisson regression model. The χ^2/df values centre around 0.9 which, in line with Payne et al. (2017), is interpreted as slight, non-detrimental, overdispersion. Similar to the Poisson model, the negative binomial regression contains several significant control variables across all models: political diversity and the number of talking individuals. The control variable of meeting duration (which is also included in the interaction effect) is significant in models 2 and 3.

Table 3

NEGATIVE BINOMIAL

Variables		Number of promises by TMT											
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		Coef.	α	Coef.	α	Coef.	α	Coef.	α	Coef.	α	Coef.	α
Independent	BoD pos.			0.185	0.904			-0.143	0.947			-0.539	0.803
	BoD neg.					-3.993	0.300			-6.258	0.226	-6.448	0.217
Interaction	BoD pos. X Meeting duration							0.005	0.819			0.008	0.741
	BoD neg. X Meeting duration									0.033	0.501	0.036	0.468
	Political diversity	20.820	0.003	21.253	0.003	21.979	0.003	21.168	0.004	21.888	0.003	21.745	0.003
	Gender diversity	-1.080	0.753	-0.731	0.839	-1.166	0.746	-0.706	0.844	-1.205	0.738	-1.175	0.746
Control	Tenure	0.014	0.369	0.011	0.521	0.010	0.536	0.011	0.517	0.009	0.570	0.010	0.568
	Board size	-0.157	0.116	-0.123	0.222	-0.139	0.175	-0.124	0.218	-0.138	0.180	-0.139	0.178
	Meeting frequency	-0.057	0.164	-0.041	0.333	-0.046	0.281	-0.041	0.331	-0.045	0.291	-0.045	0.291
	No. Talking individuals	0.246	0.000	0.236	0.000	0.239	0.000	0.236	0.000	0.240	0.000	0.240	0.000
	Miscellaneous	0.060	0.861	0.393	0.275	0.337	0.357	0.393	0.274	0.315	0.393	0.314	0.393
	TMT pos.	-0.571	0.744	0.513	0.781	0.683	0.706	0.497	0.788	0.696	0.703	0.680	0.713
	TMT Neg.	-3.865	0.438	-4.409	0.372	-3.884	0.430	-4.323	0.382	-3.975	0.420	-3.850	0.438
	Meeting duration	-0.004	0.064	-0.005	0.038	-0.004	0.045	-0.005	0.087	-0.006	0.079	-0.007	0.114
	χ^2/df		0.919		0.896		0.880		0.900		0.888		0.899
	AIC		570.937		518.779		517.706		520.728		519.249		523.143

BoD = board of directors, TMT = top management team

To compare the regression methods in terms of predictive fit, Akaike's Information Criterion (AIC) is utilized (Akaike, 1974). All models in the negative binomial regression have lower AIC values compared to the Poisson regression in Table 2, therefore the predictive power increases with the application of negative binomial regression (Hair & Black, 2018). However, the independent variables and interaction effects are still insignificant across all models, leading to the same conclusion that hypotheses 1, 2, 3, and 4 have to be rejected.

The *cause* of overdispersion (which was most apparent in the results of the Poisson model) was left unaddressed in the previous models. As depicted in Appendix 5, the overdispersion is presumably caused by zero inflation, given the frequent occurrence of zero scores for the dependent variable. Therefore, an additional zero-inflated negative binomial regression model is fitted.

5.3 Zero-inflated negative binomial regression

A zero-inflated negative binomial model is applied, composed of a binary logit model and a subsequent negative-binomial model (Kassahun et al., 2014). The logit model distinguishes between two types of zeros: structural zeros (i.e., 'certain' zeros) and random zeros (i.e., 'happen to be' zeros due to sampling variability) and predicts the likelihood of an observation belonging to the structural zero group (Tang, He, Wang, & Chen, 2017). This first model 'sorts'

the data so that only the random zero category is included in the subsequent negative binomial regression model (this process is also done by hand to potentially refine the model as a robustness check in § 5.4.2).

Table 4

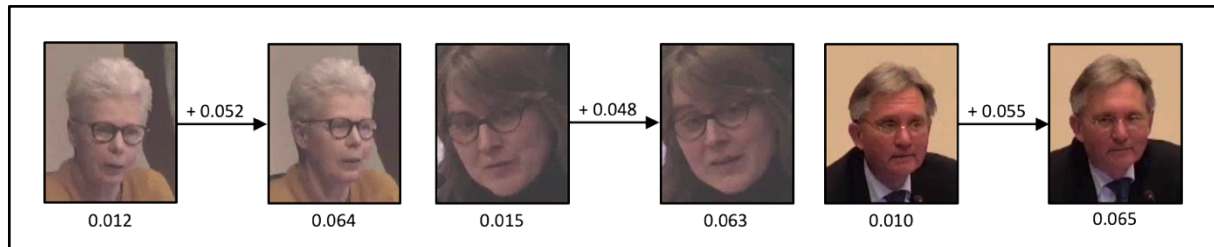
ZERO INFLATED NEGATIVE BINOMIAL													
Variables		Number of promises by TMT											
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		Estimate	a	Estimate	a	Estimate	a	Estimate	a	Estimate	a	Estimate	a
Independent	BoD pos.			3.506	0.045			10.160	0.004			12.165	0.002
	BoD neg.					-1.372	0.766			-9.301	0.065	-5.883	0.231
Interaction	BoD pos. X Meeting duration							-0.060	0.079			-0.074	0.034
	BoD neg. X Meeting duration									0.091	0.083	0.022	0.648
Control	Political diversity	10.976	0.169	14.901	0.030	20.032	0.007	22.722	0.001	21.487	0.002	23.666	0.001
	Gender diversity	-6.585	0.100	3.930	0.270	3.167	0.455	6.420	0.111	1.025	0.783	-2.092	0.584
	Tenure	0.018	0.297	-0.025	0.101	-0.030	0.108	-0.010	0.544	-0.031	0.060	0.007	0.673
	Board size	-0.012	0.907	-0.031	0.742	-0.047	0.660	-0.068	0.500	-0.064	0.521	-0.062	0.544
	Meeting frequency	0.003	0.943	-0.031	0.440	-0.013	0.754	0.001	0.974	-0.015	0.708	0.007	0.873
	No. Talking individuals	0.158	0.000	0.275	0.000	0.274	0.000	0.246	0.000	0.277	0.000	0.113	0.001
	Miscellaneous	-0.020	0.957	0.716	0.039	0.575	0.122	0.450	0.181	0.440	0.208	0.088	0.821
	TMT pos.	4.824	0.049	0.602	0.746	-1.988	0.293	-2.596	0.133	-1.813	0.330	4.877	0.029
	TMT Neg.	6.053	0.280	-6.093	0.191	-8.816	0.068	-11.021	0.021	-9.271	0.055	-4.583	0.327
Meeting duration	-0.006	0.003	-0.003	0.098	-0.004	0.098	-0.003	0.401	-0.008	0.033	-0.002	0.693	
χ^2/df													
AIC		556.350		481.270		502.465		495.363		486.571		499.863	
BoD = board of directors. TMT = top management team													

BoD = board of directors, TMT = top management team

Table 4 depicts the results of the count model for the zero-inflated negative binomial regression. The decrease in AIC values for all models indicates an improvement in predictive fit over the previous regression methods. Model 1, with only control variables included, yields significant results for the number of talking individuals ($P = 0.000$), the average positive emotions displayed by the top management team ($P = 0.049$), and the meeting duration ($P = 0.003$). The second model tests the hypothesis that the board of directors' average facial expression of positive emotions is positively related to its persuasiveness in monitoring relationships (hypothesis 1). With the inclusion of the control variables, the regression coefficient of the independent variable resembling average positive emotions of the board of directors is moderately significant ($P = 0.045$), therefore, hypothesis 1 is accepted based on model 2. This result implies that every unit increase in the average display of positive emotions by the board of directors causes an increase in the expected promises made by the top management team of 33.31 ($e^{3.506}$). However, a one-unit increase would represent an unrealistic increase in positive emotions of 100% given that the measurement of the independent variables ranges from 0 to 1. A more common increase of 0,05 would lead to an expected increase of 1.67 promises. Since

emotion scores are not an intuitive representation of reality, the data samples in Figure 3 below depict facial expression alterations per increment of approximately 0.05 for the average display of positive emotions.

Figure 3



Model 3 tests the hypothesis that the board of directors' average facial expression of negative emotions is negatively related to its persuasiveness in monitoring relationships (hypothesis 2). This hypothesis is rejected as the model does provide support ($P = 0.766$). The moderation effect of meeting duration is tested in models 4 and 5. Both interaction effects representing the moderation relationships are insignificant ($P = 0.079$, $P = 0.083$). Therefore, the hypotheses that the effect of a board of directors' average facial expression of positive (H3) or negative (H4) emotions on persuasiveness increases as meeting duration increases are rejected. It is worth noting that, in model 6, the interaction effect of the average display of positive emotions and meeting duration is significant with a negative estimate. This indicates that the moderation effect of meeting duration reverses the effect of positive emotions on persuasiveness ($P = 0.034$).

Across all models, the control variable resembling the number of talking individuals was significant. Political diversity as a control variable was significant in models 2, 3, 4, 5, and 6. Average positive emotions displayed by top managers had a significant effect on the number of promises in models 1 and 6. A significant effect of negative emotions displayed by top managers was found in model 4. The last control variable, meeting duration, was significant in models 1 and 5.

5.4 Robustness checks

5.4.1. *Revaluation of outliers*

There are a few observations that, although valid, can be considered ‘wild shots’ or ‘outliers’. The process of winsorizing involves replacement of these values by the “nearest value of an observation not seriously suspect” of being an outlier (Tukey, 1962). The data contains two outlier observations of 9 promises per agenda item. These values were replaced by the nearest ‘non suspect’ value of 6. This process revealed that the significant effect of display of positive emotions by the board of directors (hypothesis 1) relies heavily on the aforementioned outliers, since replacement of the original dependent variable with the winsorized dependent variable pushes the significance level to $P = 0.077$ (Appendix 6). Consequently, hypothesis 1 is rejected based on the winsorized regression. The effect of average display of positive emotions in the original zero-inflated model is therefore significant but not robust. This indicates that the results cannot be generalized.

5.4.2. *Accounting for structural zeros*

The difference between structural zeros and random zeros may cause biased estimates when ignored (Tang et al., 2017). In this case, in addition to performing zero-inflated negative binomial regression, there is theoretical reason to sort zero values by hand and run a regular negative binomial model based on a subsample of the non-miscellaneous agenda items, as the miscellaneous agenda items presumably gather in the ‘structural zero’ group. The opening and closing of a meeting, as well as announcements and appointments of members are rarely, if ever, a situation in which a promise is enforced or made. A closer look at the data reveals that indeed none of the miscellaneous agenda items contain a single promise, perpetuating the presumption that these zero scores are structural instead of based on sampling variability. Within the subsample of random zeros, promises have equal opportunity to occur per agenda item, therefore, there is no need for an additional offset or exposure parameter in the model. The exclusion of miscellaneous topics from the negative binomial regression did not yield any significant results, except for the number of talking individuals across all models (Appendix 7). Finally, the inclusion of miscellaneous agenda items as an offset variable in a zero-inflated negative binomial regression *instead* of sorting zeros by hand did not yield any significant results.

6. Discussion and Implications

Although a great body of research has been conducted to identify antecedents of adequate monitoring, an improved understanding of interactive aspects of monitoring is a high priority (Hambrick et al., 2015). To advance theory in this context, the current research proposes a novel perspective on monitoring, by conceptualizing monitoring relationships as persuasion settings and focusing specifically on the persuasive power of facial expression of emotions. Simultaneously, the empirical setting of this research may contribute to the literature on persuasiveness by examining source behaviour in a non-manipulated setting (Oreg & Sverdluk, 2013). To fulfil these research objectives, the following research question was formulated:

“What is the influence of emotions conveyed through facial expression by a board of directors on persuasiveness in monitoring relationships, and how does meeting duration moderate this relationship?”

The implications of the zero-inflated negative binomial regression (Table 4) for the hypothesized relationships and control variables will be discussed below.

Hypothesis 1

Moderate support was found for the hypothesis that display of positive emotions by a board of directors is positively related to its persuasiveness in monitoring relationships. The results indicate that the number of promises made by top managers is positively affected by the display of positive emotions by the board of directors ($P = 0.045$). Every increase in average positive emotions of 0.05 is associated with an expected increase in promises of 1.67 (see Figure 3 for a visual representation of the corresponding change in facial expression). It is important to stress that this relationship is only slightly significant and not robust, given that the revaluation of outliers and exclusion of structural zeros revealed that the effect may not be generalized.

The positive relationship between average facial expression of positive emotions and persuasiveness in monitoring relationships is, although not robust, in congruence with research suggesting that expression of positive emotions is instrumental to goal attainment (Wong et al., 2013; Andrade & Ho, 2009). Desired behaviours, such as promises, can be elicited through either genuine emotional manifestation or emotional gaming (Andrade & Ho, 2009). However, board members should not pursue goal attainment through emotional gaming to any extent, as

the positive effect on persuasiveness is bounded by authenticity and source credibility (Westphal, Park, McDonald, & Hayward, 2012; Westphal & Zajac, 2013). Positive emotions have to be perceived as authentic and coming from a credible source in order to invoke the desired effect. Large discrepancies between experienced and expressed emotions cause emotional dissonance which, in turn, reduces authenticity and credibility (Côté & Hideg, 2011; Grandey et al., 2005).

Hypothesis 2

This research does not provide evidence for the hypothesis that display of negative emotions by the board of directors is negatively related to its persuasiveness in monitoring relationships. According to literature on social psychology, the effect of negative emotions on persuasiveness is complex and highly context-dependent. For instance, in negotiation settings, negative emotions are regularly associated with a counterparty's willingness to concede (Sinaceur & Tiedens, 2006; Van Kleef et al., 2004; Baumeister et al., 1998; Kopelman et al., 2006; Marsh et al., 2005), whereas the opposite effect is more likely to be found in recurring or lasting relationships (Wong et al., 2013; Van Kleef & Côté, 2007; Van Beest et al., 2008; Clark et al., 1996). Given that the effects of facial expression of negative emotions on persuasiveness are relevant in various specific and complex settings, existing literature may fall short and appear contradictory at times. Therefore, we must rely on empirical research into new settings to map the effect of negative emotions on persuasiveness. In this context, the current research draws a theoretical boundary by suggesting that facial expression of negative emotions by board members when monitoring top management (specifically in the case of a one-tier board belonging to a public organization) is not detrimental to persuasiveness.

The absence of the hypothesized effect of negative emotions in this context may be due to the professionalism of parties, in particular top managers. A negative relationship between negative emotions and promises made by top managers would suggest that top management teams behave less benevolently (less lenient in making promises) in response to negative facial expression by the board of directors. However, professionals are presumably well able to let constructive attitudes prevail over uncooperative attitudes provoked by negativity, leaving a marginal or even negligible role for processes like negative emotional contagion. Prevalence of constructive attitudes might also be the result of specific characteristics of public organizations, in which serving the public interest and carrying out a personal electoral mandate are paramount and open to the public. Such reasoning also explains why in this particular context, at the same

time, facial expression of positive emotions can foster persuasiveness (hypothesis 1), given the constructive nature of this interaction.

A final explanation for the absence of the effect of negative emotions can be inferred from the research design. Meta-analytic research by Elfenbein and Ambady (2002) suggests that anger (as a contributor to the construct of negative valence in this study) can be detected more precisely through voice cues, compared to facial cues. For other emotions, such as happiness (as the only contributor to the construct of positive valence in this study), face cues are the most adequate method of measurement (Elfenbein & Ambady, 2002). This may explain the insignificant effect of negative emotions in the present research, and argues for simultaneous analysis of different cues for different emotions in future research (provided that researchers aim to draw emotion-wide inferences).

In conclusion, neither genuine expression of negative emotions nor strategies like emotional gaming to imitate these expressions have a negative effect on persuasiveness. Therefore, this study provides no grounds to influence persuasiveness via regulation of negative facial expression.

Hypotheses 3 and 4

The results did not provide support for the moderation effects of meeting duration. Hypothesis 3 stated that the effect of a board of directors' average facial expression of positive emotions on persuasiveness increases as meeting duration increases. This moderation effect is based on the expectation of deteriorating ability and motivation of top managers to process persuasive messages over time, thereby increasing the likelihood of attitude formation through the heuristic-peripheral route. In contrast, moderate support (although not robust, as the effect disappears in both robustness checks) was found for the opposite moderation effect, denoting that inclusion of meeting duration reverses the positive relationship between positive emotions and persuasiveness ($P = 0.034$). The direct effect of meeting duration is significant in models 1 and 5 with a counterintuitive negative estimate coefficient, indicating that as the meeting progresses, the likelihood of a promise decreases.

The absence of the hypothesized moderation effects can be partially contributed to context-specific elements like the above-mentioned professionalism, public interest, and electoral mandate, preventing a significant decrease in ability and motivation. However, there may be

other mechanisms at play, given that meeting duration is negatively related to persuasiveness in various models and reverses the positive effect of positive emotions on persuasiveness. A possible explanation is that controversial items are given priority so that they are discussed earlier in the meeting. All in all, the results provide no argument to provoke promises earlier or later in the meeting with the use of emotional manifestation, as the persuasive impact of facial expression is not significantly and reliably moderated by meeting duration.

Control variables

Most zero-inflated binomial regression models revealed that there is some positive relationship between the number of talking individuals and the number of promises made by top managers. A higher number of talking individuals suggests an increased magnitude of opposition by the board of directors, which may lead to increased pressure to concede for top managers. However, this relationship is presumably influenced by other variables, for instance, the controversiality of the agenda item. As controversiality of agenda items increases, board members could be more interested in expressing opinions and exerting influence. At the same time, promises made by top managers are more likely to occur if opinions differ and influence is exerted. This could also explain the significant effect of the control variable of political diversity in most zero-inflated models. Political parties (in particular smaller parties) are presumably more eager to be represented in meetings when controversial agenda items are discussed and open to voting, thus increasing political diversity.

The effect of positive emotions conveyed by top managers was significant in models 1 and 6. Given that these significant estimates have positive values, there is reason to suspect a positive relationship between positive emotions displayed by top managers and promises made by top managers. The opposite holds for negative emotions conveyed by top managers, which showed significant results with negative estimates in models 3, 4, 5, and 6 of the winsorized zero-inflated negative binomial regression (Appendix 6). These results imply a negative relationship between negative emotions displayed by top managers and promises made. The significant effects mentioned above indicate that the emotional manifestation within a group of top managers is related to the extent to which they are receptive to persuasive messages. Therefore, investigation of the influence of facial expression of top management teams on their receptiveness to persuasive efforts may be an interesting area for future research.

Although hypothesis 1 is not generalizable and hypotheses 2, 3, and 4 were rejected, this study contributes to an important field of research. Various elements of persuasion are intertwined with extant monitoring literature, but the conceptualization of monitoring relationships as persuasion settings is a novel angle of approach. The focus on the effect of emotional manifestation in this context may be valuable as nonverbal communication of emotions in the workplace has been an underexplored territory by management scholars (Bonaccio et al., 2016; Côté & Hideg, 2011) and has been largely overlooked in the literature on persuasion according to Fennis and Stel (2011). In the current research, literature on social dynamic aspects of monitoring was expanded and delineated through the perspective of the behavioural theory of boards (Van Ees et al., 2009), with a focus on decision-making by means of heuristics and bounded rationality. Finally, this research provided the opportunity to explore source behaviour in a real-life, non-manipulated persuasion setting.

7. Limitations and Directions for Future Research

The results of this study should be interpreted in light of several limitations, listed below. First, it is important to acknowledge that most literature on monitoring is based on corporate governance, while the data at hand is based on a public organization. This implies a cautious approach to the classic corporate governance theories, taking into account the fundamental difference, that is legal entity. Moreover, generalization of findings derived from monitoring relationships within public organizations to privately-owned companies can be problematic as aspects like organizational composition, appointment mechanisms, and culture can differ significantly. It is therefore important to distinguish between different types of monitoring.

In this context, literature on monitoring lacks a clear overarching definition of the concept of monitoring. It is not always clear what is exactly meant by ‘monitoring’, even though monitoring occurs in several forms that are worth distinguishing from each other. Monitoring relationships can take different shapes as they occur both *between* bodies (e.g., a two-tier board) and *within* bodies (e.g., a one-tier board) of both public and private entities. Especially with regard to a behavioural theory of boards, these different types of monitoring presumably bring about different social dynamics, and thus, inferences with regard to the one may not be simply projected onto the other. Future research should take note of these differences to allow for more specific inferences, and could focus on refining theory with regard to the concept of monitoring.

Based on the above, it is important to stress that the present research is based on monitoring within a public entity with a one-tier board. Any inferences drawn from this inquiry should not be generalized across legal entities without due consideration of the differences in monitoring relationships. Executive committees and governing boards of Water Authorities were conceptualized as top management teams and boards of directors. The latter terms are particularly central to research focusing on private entities. The question thus arises to what extent the results derived from monitoring relationships within a (public) empirical context, as used in this study, *could* be translated to monitoring relationships within private entities. A one-tier board of a private entity bears resemblance to the empirical context in that executives are charged with day-to-day business and non-executives are charged with monitoring while belonging to the same organizational body. The case of a two-tier board is further removed from the empirical context in this study, in the sense that those charged with monitoring are appointed in a separate body (i.e., a supervisory board). The fact that a two-tier monitoring relationship consists of multiple organizational bodies can drastically alter social dynamic aspects. Despite these differences, each of these monitoring structures will bring forth meetings between auditor (e.g., independent directors, supervisory board members, or governing board member) and auditee (e.g., dependent directors, executive board members, or executive committee members). These face-to-face encounters across monitoring relationships provide a common ground for cautious interpretation of results across different entities, provided that the social dynamics that are potentially the result of unique characteristics of a public organization are taken into consideration (e.g., serving public interest, carrying out a personal electoral mandate, openness of administration and cultural differences).

Measurement of facial expression of emotions based on the dimension of valence poses a limitation with regard to the operationalization of the independent variables. Based on numerous multivariate analyses, the variance in emotion is explained by two predominant factors: valence and arousal (e.g., Smith & Ellsworth, 1985; Bradley et al., 2001). Future research can achieve a more accurate measurement of facial expression of emotions by considering both dimensions. In addition, the process of capturing multiple emotions can be improved by examining voice cues as well as facial cues, as some emotions are primarily expressed through the voice (Elfenbein & Ambady, 2002).

The operationalization of the independent variables poses another limitation. The hypothesized causal relationship between a promise and the facial expression displayed during the

corresponding persuasive effort to provoke that promise was captured as specifically as possible by measuring the average emotion scores of the board of directors for the agenda item in which the promise was made. However, in this specific research, boards of directors consist of a wide variety of individuals that will not always act in unison, as they belong to different political parties. Not every expression of a board member will therefore be aimed at convincing top managers. In fact, directors may argue to defend the position of the top management team or directors may attempt to persuade each other. Still, facial expression of emotions was operationalized using the average score of the board of directors as a whole, possibly cluttering the causal interaction between a promise and the associated specific endeavour to provoke it. Future research could isolate this causal relationship further by controlling for interactions not directly targeting a promise from top managers.

Another limitation that could potentially obscure the causal link between emotional expression and persuasiveness concerns the theories by Chaiken (1980), Cacioppo and Petty (1984) used in § 2.3.2, which suggested that whether the systematic-central or heuristic-peripheral process is activated depends on the recipient's ability and motivation to assort the persuasive message (Albarracín & Johnson, 2018). The difference between these routes then determines whether the recipient prioritizes either the content of the message or peripheral matters such as the emotional expression of the source. The present research does not control for message content, which complicates the distinction between change in the recipient's intention as a result of message content and change in the recipient's intention as a result of peripheral factors like facial expression of emotions. In a real-life persuasion setting, controlling for message content is difficult, but future research may benefit from exploring this option.

The variable that determines the timing of promises, i.e., meeting duration, is measured at the agenda item level and therefore only reflects the timing of the agenda item in which a promise was made (the time elapsed halfway the agenda item). However, the point in time of a promise within the span of an agenda item remains unclear. Future research could include a more accurate variable to capture temporal aspects of persuasiveness.

Furthermore, the use of Microsoft's face IPA recognition algorithm to measure the emotional expression of talking individuals cannot be considered an unflawed method. Once in a while, outlier scores were assigned to facial expressions as a result of intonation rather than expression of emotions (Appendix 8). I argue that the method, despite this limitation, is sufficiently valid

given that a number of invalid outlier scores were excluded, and inferences were based on average scores. Moreover, Choudhury et al. (2019) found that human coded expressions showed sufficient overlap with API-coded expressions. Future research into facial expression of emotions conducted with the use of facial recognition algorithms should take into account outliers due to intonation mimicry. In addition, the fact that several meetings took place online due to COVID-19 restrictions posed a few limitations, as certain individuals were less represented in the dataset due to poor face detection. Bad camera quality or internet connection prevented a large number of frames from being included in the analysis (Appendix 2). This can be problematic because these individuals may have a tendency to display certain facial expressions that strongly determine the dynamics of a meeting.

Finally, the interpretation of the control variables revealed a limitation that is worth taking into consideration. The finding that the number of talking individuals and the degree of political diversity are positively related to promises made by top managers might be based on a spurious relationship, with a third variable that is controversiality of the agenda item. It may be that such a variable underlies existing or future relationships in the field of social dynamic aspects of monitoring. Further research into this variable could improve monitoring theory.

8. Conclusion

In an attempt to provide insight into the underexposed social dynamic aspects of monitoring (Hambrick et al., 2015), the current research examines the role of persuasiveness when performing face-to-face monitoring duties, since monitoring activities consist largely of nudging others into adopting intended views or performing intended behaviour (Jena & Pradhan, 2018; Hambrick et al., 2015). Persuasiveness – as an important dimension of effective monitoring – was investigated as a potential consequence of emotions conveyed through facial expression by the monitor (i.e., the board of directors).

The hypothesized effects of facial expression on persuasiveness, with the moderation effect of meeting duration, were grounded in a behavioural theory of boards (Van Ees et al., 2009), with an emphasis on decision-making by means of heuristics and bounded rationality. The results provided moderate – but not robust – support for a positive relationship between the board of directors' average facial expression of positive emotions and its persuasiveness in monitoring

relationships. The other hypotheses were rejected, disproving both a negative relationship between facial expression of negative emotions and persuasiveness and the moderating effect of meeting duration. The influence of emotions conveyed through facial expression by a board of directors on persuasiveness was examined through video analysis of the monitoring relationship between governing boards and executive committees of Dutch Water Authorities, thereby answered a call for the investigation of persuasiveness in a non-manipulated setting (Oreg & Sverdlik, 2013).

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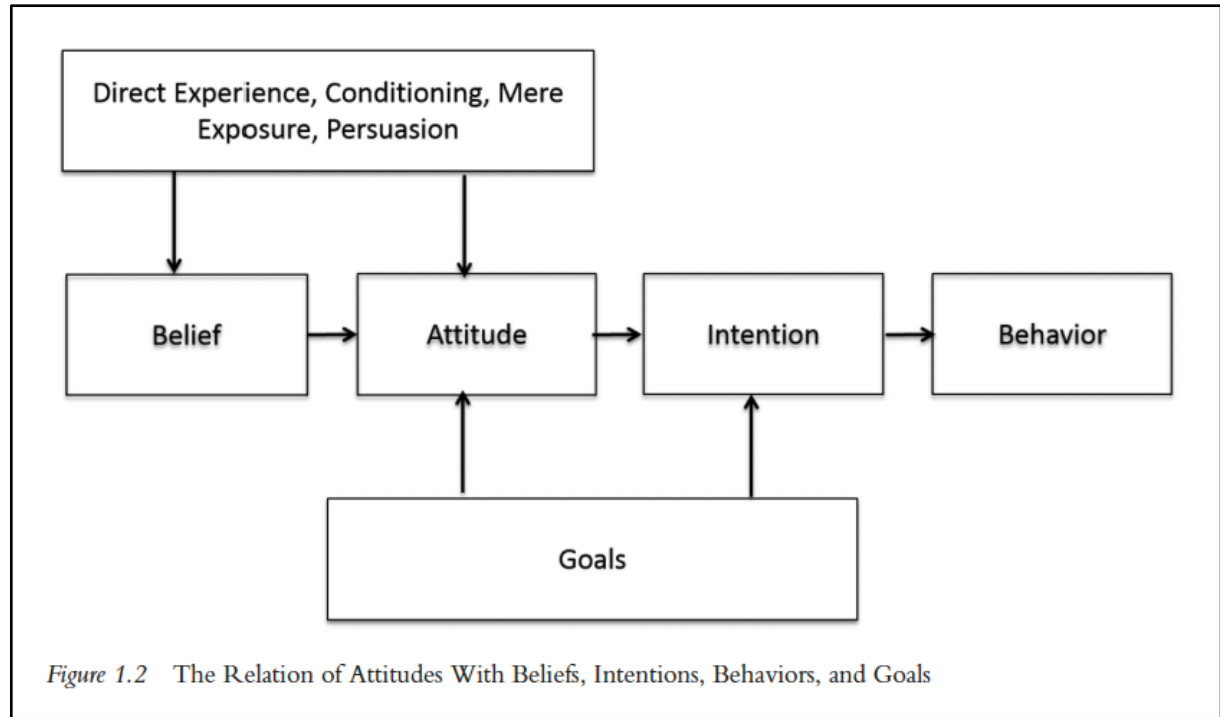
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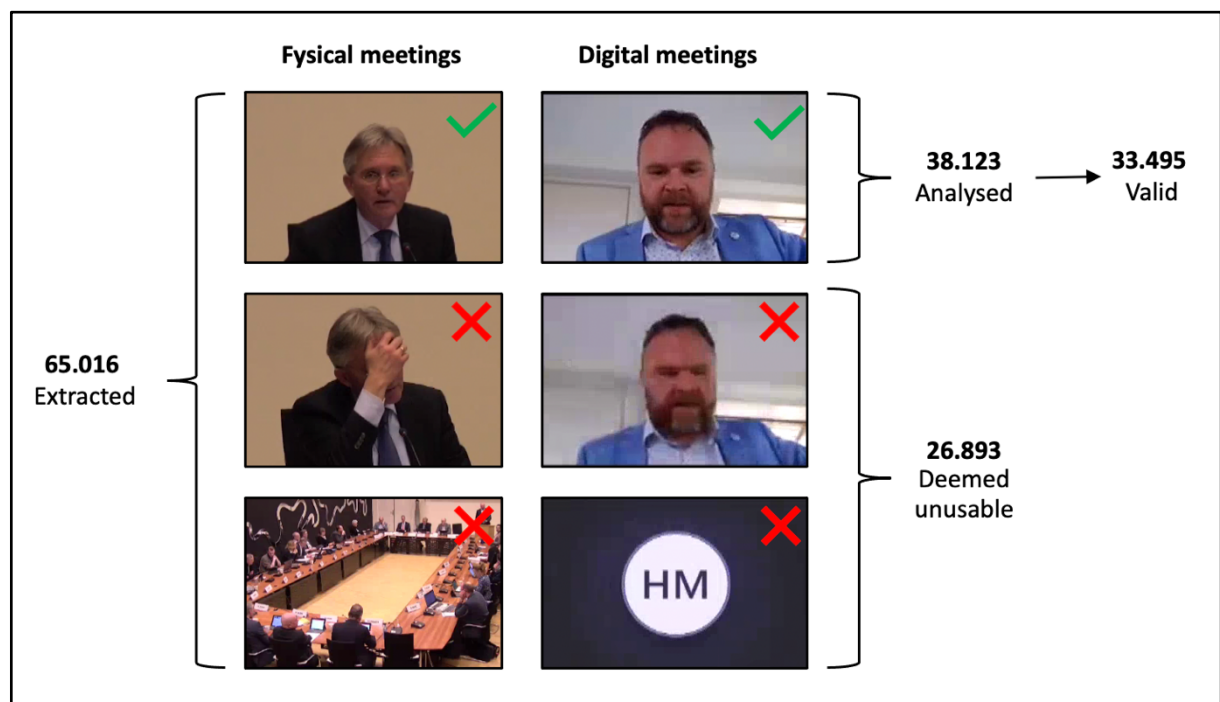
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Appendices

Appendix 1 – Antecedents of behaviour



Appendix 2 – Frame extraction, selection and analysis process



Appendix 3 – Face script

```
import requests
import time
import json
import os
import csv
import pandas as pd
from pandas.io.json import json_normalize

# set to your own subscription key value
subscription_key = ''
assert subscription_key

# replace <My Endpoint String> with the string from your endpoint URL
face_api_url = 'https://westeurope.api.cognitive.microsoft.com/face/v1.0/detect'

# replace C:/Test/ with the directory in which the photos are
files_dir = '/Users/ijsbrandreinke/Desktop/Map-HDSR-201118 (2)'
files = sorted(os.listdir(files_dir))

# the following lines create JSON files out of each image
for f in files:
    time.sleep(3)
    if f.lower().endswith(('.png', '.jpg', '.jpeg')):
        image_path = files_dir + '/' + f
        image_data = open(image_path, "rb").read()
        headers = {'Ocp-Apim-Subscription-Key': subscription_key, 'Content-Type': 'application/octet-stream'}
        params = {
            'returnFaceId': 'true',
            'returnFaceLandmarks': 'false',
            'returnFaceAttributes': 'emotion',
        }
        response = requests.post(face_api_url, params=params, headers=headers, data=image_data)
        analysis = response.json()
        print(analysis)
        with open(files_dir + '/' + f + '.json', 'w', encoding = "utf-8") as f:
            json.dump(response.json(), f)
```

Appendix 4 – Conversion to CSV script

```
import requests
import json
import os
import csv
import pandas as pd
from pandas import json_normalize

# replace C:/Test/ with the directory in which the photos are
files_dir = '/Users/ijsbrandreinke/Desktop/Map-HDSR-201118'
files = os.listdir(files_dir)

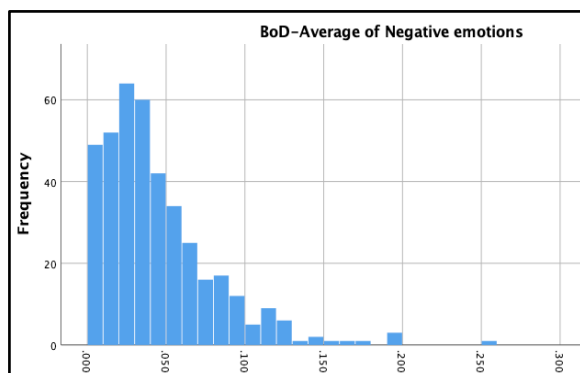
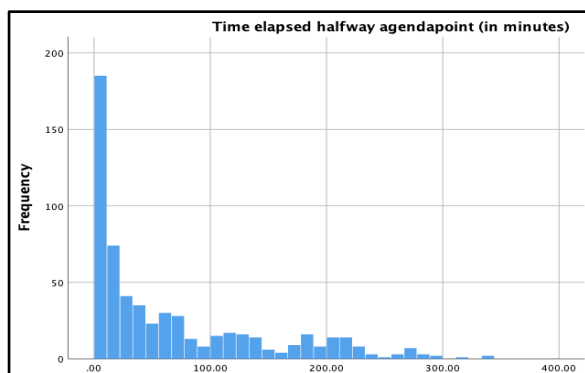
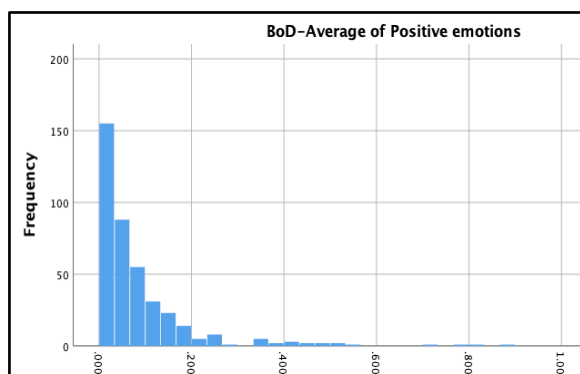
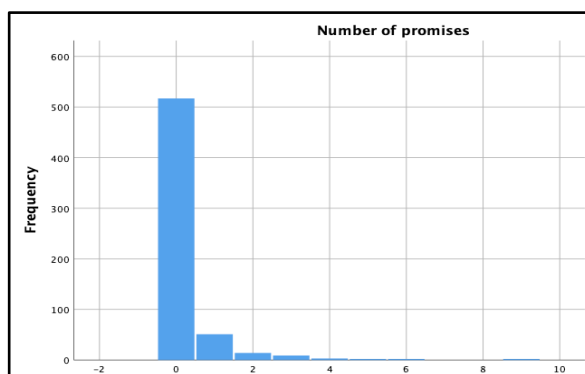
# the following lines transform the JSONs to a CSV
for g in files:
    print(g)
    if g.lower().endswith(('.json')):
        print(g)
        with open(files_dir + '/' + g) as h:
            data = json.load(h)
            df = json_normalize(data).assign(filename=g)
            print(df)
# replace C:\Test\output_u.csv with the filename you want to have
df.to_csv('/Users/ijsbrandreinke/Desktop/Map-HDSR-201118 (2)/HDSR 20.11.18 output.csv', index=True, mode='a')
```

Appendix 5 – Normality of variables

All variables in the model are significantly positively skewed, as the median is smaller than the mean and the skewness exceeds zero. The kurtosis scores indicate heavy tailed, or leptokurtic, distributions. Based on the above, non-normality can be assumed.

		Number of promises	BoD-Average of Positive emotions	BoD-Average of Negative emotions	Time elapsed halfway agendapoint (in minutes)
N	Valid	600	401	401	600
	Missing	0	199	199	0
Mean		.26	.084655238	.044975696	66.8659
Median		.00	.046927052	.035643885	33.2833
Std. Deviation		.894	.118726192	.036125197	76.53307
Skewness		5.513	3.389	1.727	1.265
Std. Error of Skewness		.100	.122	.122	.100
Kurtosis		39.441	14.872	4.500	.656
Std. Error of Kurtosis		.199	.243	.243	.199

The histograms below show that the cause of the skewness and kurtosis is zero inflation.



Appendix 6 – Winsorized zero-inflated negative binomial regression

ZERO INFLATED NEGATIVE BINOMIAL (winsorized)

Variables		Number of promises by TMT											
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		Estimate	α	Estimate	α	Estimate	α	Estimate	α	Estimate	α	Estimate	α
Independent	BoD pos.			3.038	0.077			9.599	0.006			8.600	0.010
	BoD neg.					-0.175	0.973			-9.159	0.059	-11.137	0.020
Interaction	BoD pos. X Meeting duration							-0.058	0.086			-0.044	0.188
	BoD neg. X Meeting duration									0.095	0.066	0.121	0.022
Control	Political diversity	14.555	0.028	13.877	0.035	17.750	0.051	22.103	0.001	19.602	0.003	23.778	0.000
	Gender diversity	1.545	0.639	3.193	0.355	3.237	0.440	5.961	0.226	1.460	0.703	5.110	0.197
	Tenure	-0.010	0.496	-0.027	0.065	-0.033	0.085	-0.011	0.500	-0.032	0.050	-0.027	0.156
	Board size	-0.120	0.203	-0.049	0.593	-0.064	0.551	-0.095	0.328	-0.084	0.400	-0.063	0.565
	Meeting frequency	-0.051	0.205	-0.039	0.319	-0.017	0.686	-0.009	0.825	-0.021	0.613	-0.008	0.848
	No. Talking individuals	0.289	0.000	0.263	0.000	0.261	0.000	0.238	0.000	0.264	0.000	0.250	0.000
	Miscellaneous	0.489	0.144	0.718	0.032	0.633	0.183	0.459	0.158	0.448	0.184	0.395	0.229
	TMT pos.	-1.014	0.551	0.850	0.631	-0.1977	0.285	-2.451	0.147	-1.891	0.313	-2.225	0.187
	TMT Neg.	-5.958	0.199	-6.273	0.168	-9.755	0.043	-11.055	0.019	-9.841	0.041	-12.786	0.009
	Meeting duration	-0.003	0.115	-0.003	0.088	-0.004	0.081	-0.003	0.390	-0.008	0.028	-0.009	0.046
χ^2/df													
AIC		546.687		474.013		495.305		488.387		481.823		486.864	

BoD = board of directors, TMT = top management team

Appendix 7 – Negative binomial regression excluding miscellaneous agenda items

NEGATIVE BINOMIAL (excluding miscellaneous agenda items)

Variables		Number of promises by TMT											
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		Estimate	α	Estimate	α	Estimate	α	Estimate	α	Estimate	α	Estimate	α
Independent	BoD pos.			1.859	0.272			2.885	0.279			3.489	0.197
	BoD neg.					3.299	0.471			3.733	0.545	5.487	0.382
Interaction	BoD pos. X Meeting duration							-0.014	0.627			-0.015	0.605
	BoD neg. X Meeting duration									-0.005	0.916	-0.005	0.918
Control	Political diversity	7.747	0.289	9.347	0.222	8.504	0.277	9.464	0.216	8.409	0.286	7.261	0.356
	Gender diversity	0.474	0.904	0.664	0.874	0.551	0.896	0.457	0.913	0.571	0.892	1.245	0.770
	Tenure	0.021	0.253	0.017	0.384	0.016	0.406	0.015	0.435	0.017	0.402	0.018	0.364
	Board size	-0.176	0.124	-0.164	0.156	-0.148	0.204	-0.166	0.153	-0.148	0.203	-0.154	0.183
	Meeting frequency	-0.022	0.626	-0.017	0.727	-0.014	0.764	-0.018	0.712	-0.014	0.763	-0.009	0.847
	No. Talking individuals	0.203	0.000	0.210	0.000	0.206	0.000	0.205	0.000	0.204	0.000	0.200	0.000
	Miscellaneous												
	TMT pos.	-0.261	0.900	0.496	0.817	0.474	0.833	0.596	0.781	0.475	0.832	0.255	0.908
	TMT Neg.	-1.795	0.733	-2.645	0.622	-3.017	0.575	-2.891	0.592	-3.006	0.576	-3.604	0.507
	Meeting duration	-0.003	0.261	-0.003	0.196	-0.003	0.180	-0.002	0.505	-0.003	0.446	-0.002	0.650
χ^2/df		0.932		0.889		0.898		0.879		0.900		0.892	
AIC		425.032		388.877		389.471		390.613		391.460		393.454	

BoD = board of directors, TMT = top management team

Appendix 8 – Invalid outliers

