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# Interactive effects of management controls, cognitive appraisals, and emotional responses on affective commitment

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## Abstract

**Objective:** This study's objective was to analyze the effects of management controls (MC) on affective commitment through cognitive appraisals and emotional responses. Management controls are represented in this study by four types of control: result, action, personnel, and cultural controls.

**Method:** This quasi-experiment was conducted among 252 undergraduate students from the management field. Four scenarios simulating the adoption of management controls were presented. A quantitative approach was adopted, and structural equation modeling with Partial Least Squares (PLS-SEM) was used for data analysis.

**Results:** The study provides evidence that employees perceive each type of management control differently; cultural and personnel controls are more positively perceived than result and action controls. Additionally, when the individuals positively perceived and assessed controls, the impact on affective commitment was significantly greater. On the other hand, affective commitment was significantly decreased when the individuals assessed and perceived that controls represented a threat.

**Contribution:** This study contributes to the literature by showing that individuals respond differently to the adoption of result, action, personnel, and cultural controls. It brings up a discussion that, even though management controls are important to influence behavior, there is a need to advance understanding of the effect of each type of control.

**Keywords:** Management controls; Cognitive Appraisals; Emotional Responses; Affective Commitment.

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## 1. Introduction

Management controls (MCs) are important to influence employees' behavior (Cugueró-Escofet & Rosanas, 2013; Goebel & Weißenberger, 2017). Studies published in the last two decades have shown that MCs can align individual objectives to organizational objectives (Otley, 1999; Merchant & Van der Stede, 2007; Chenhall & Moers, 2015). Hence, organizations need to direct the behavior of employees to ensure their commitment (Goebel & Weißenberger, 2017) to attain organizational goals.

Despite the vast literature on the subject, little is known about the psychological effects the various types of management control cause on employees. Traditionally, MCs are thought to influence behavior; however, MCs can be classified into different types, and employees' responses may vary.

On the one hand, responses may be positive, such as workers being satisfied and engaged with work (Kenis, 1979; Basnet, 2018), improving cooperation and teamwork (Karia & Assari, 2006; Christ, Sedatole, Towry & Thomas, 2008). These positive effects impact employees' perceived trust (Walton, 1985; Christ et al., 2008) and affective commitment (Goebel & Weißenberger, 2017), which improve work performance (Christ, Summers & Wood, 2012; Christ, Emett, Tayler & Wood, 2016). However, the adoption of management controls may also negatively impact employees, to the extent that these are perceived as a threat or something that will restrict their work autonomy (Christ et al., 2008), generating negative emotional responses, such as frustration, stress, and tension (Basch & Fisher, 1998). Therefore, it is likely that negative responses interfere with the organization's performance.

Few studies address the effects of employees' emotional and cognitive responses to management controls. Goebel and Weißenberger (2017) indicate that psychological factors may indirectly affect the relationship between management controls and employee performance. Hence, studies found it difficult to explain how employees behave when interacting with the various types of management controls, such as result, action, personnel, and cultural controls (Merchant & Van der Stede, 2007). This study is intended to fill in a gap concerning the different effects of result, action, personnel, and cultural controls on employees' affective commitment. More specifically, it is intended to identify the effect of each control on people's cognitive appraisals and emotional responses, and consequently on affective commitment.

Thus, this study analyzes the behavior of employees based on the literature addressing emotions from the perspective of the Affective Events Theory (AET). Weiss and Cropanzano (1996) propose that work-related events cause emotional responses in individuals, influencing their attitudes later. Weiss and Cropanzano (1996, p. 12) consider that "the consequences of affective experience are both attitudinal and behavioral." From this theoretical perspective, positive affect at work influences organizational spontaneity (George & Brief, 1992), organizational citizenship behavior (Ilies, Scott, & Judge, 2006; Spence, Ferris, Brown & Heller, 2011), and lower absenteeism rates (George, 1989), whereas negative affect is associated with counterproductive behaviors such as aggression and sabotage (Ashkanasy & Humphrey, 2011).

Therefore, the assessments made by individuals regarding the different types of management controls are particularly relevant because they determine how employees respond and whether they will commit to the organizational objectives. From the perspective adopted in this study, an employee's behavior results from an internal process (*intra corpus)* composed of cognitive, emotional, and attitudinal aspects. Consequently, the various types of management controls have an emotional impact on employees depending on individual interpretations of organizational situations. Therefore, one should consider that each employee responds differently to result, action, personnel, and cultural controls and present different emotional and attitudinal responses. Hence, **this study's objective was to analyze the effects of different types of management controls on the employees' affective commitment using cognitive assessments and emotional responses.**

A quasi-experiment was conducted in this study. First, students were presented with scenarios simulating each type of management control. Next, their cognitive appraisals and emotional responses that determined their levels of affective commitment were collected. Hence, this study contributes to behavioral research in management accounting, presenting the relationships between management variables and emotional aspects. More specifically, it shows that cultural and personnel controls are more positively perceived (challenge) than result and action controls. Therefore, this study presents evidence that employees are affected differently and perceive types of controls differently.

Therefore, this study advances knowledge regarding emotions and decisions made within the working environment (Birnberg & Ganguly, 2012) by analyzing the effect of management controls on employees' responses. This knowledge can improve the efficiency of management control systems and consequently direct employees' commitment toward attaining organizational goals. It also shows that managers should be prudent when adopting certain types of control, such as action and result controls, to avoid adverse effects for the organization.

## 2. Literature review and hypotheses development

### 2.1 Affective Events Theory (AET)

The study of affect in the workplace emerged in the USA in the 1930s, presenting a diversity of ideas and methods, seeking to understand the workers' feelings (Fisher & Hanna, 1931; Kornhauser & Sharp, 1932; Hersey, 1932; Hoppock, 1935; Roethlisberger & Dickson, 1939). Diversity from the 1930s was replaced by a line of research that predominantly focused on job satisfaction, using empirical observations to identify its antecedents (Weiss & Cropanzano, 1996). At the time, instruments were developed to measure work attitudes, which conferred reliability and validity to studies (Brief & Weiss, 2002).

The Affective Events Theory (AET) proposed by Weiss and Cropanzano (1996), highlights the role of emotions at the workplace and considers that certain events cause emotional responses, influencing the individuals' attitudes and behaviors within the organization. These events are called 'affective events'. According to EAT, affect is a variable that mediates the relationship between organizational and affective factors (Ashkanasy, Härtel & Daus, 2002).

Affective events are assessed in a cognitive process that involves an event's importance and relevance for one's wellbeing. The initial appraisal is followed by a more specific assessment that focuses on dimensions such as coping potential and the event's consequences. These assessments result in emotions such as joy (positive) or anger (negative). Regarding how affect influences attitudes and behavior, Weiss and Cropanzano (1996) argue that attitudes comprise both an affective and a cognitive judgment element.

Cognitive appraisal refers to perceptions regarding the relevance of an event for one's wellbeing, determining the intensity and quality of feelings, action tendencies, physiological responses, and behavior (Roseman, Spindel & Jose, 1990; Lazarus, 1991a; Clore & Ortony, 2000; Frijda, 2004). Employee appraisals of organizational change are crucial as these define how employees react to change (Fugate, Harrison & Kinicki, 2011).

A challenge cognitive appraisal (facilitation of objectives) leads to pleasant emotional states (Weiss & Cropanzano, 1996), while a threat cognitive appraisal indicates potential loss in the future and lack of trust in managers; thus, it represents the employees' concern with the future. Cognitive appraisals enable managers to be proactive and heed the employees' concerns, mitigating undesirable responses such as losing valuable employees (Biggane, 2016).

Emotions may be understood as internal states involving interactions between a subject and an object, such as feelings, wellbeing, or a given motor pattern (Frijda, 2004). Emotional responses generally initiate with an appraisal regarding an event (Plutchik, 1994). These responses can be understood from two independent dimensions that represent valences: positive affect and negative affect. Positive affect reflects the extent to which an individual feels enthusiastic, active, or alert, whereas negative affect concerns the extent to which an individual experiences anger, contempt, disgust, fear, or nervousness (Watson, Clark & Tellegen, 1984).

The research model proposed in this study is based on AET (Weiss & Cropanzano, 1996), in which "emotional reactions" are an important variable to understand how events at the workplace affect work results (affective commitment). Because this study focuses on the adoption of management controls, which represent specific events in the workplace, emotional responses were operationalized as emotional states (positive affect and negative affect). Additionally, cognitive appraisals are also included because, as noted by Weiss and Cropanzano (1996, p. 37), the experience of affect is intrinsically linked to the appraisal of an event. Therefore, we assumed that people are constantly assessing interactions with the environment and how these affect their wellbeing. Thus, such assessments are essential to understand the effect of MCs on individuals and work as a filter between a stimulus and responses that result from it (Lazarus, 1991b).

## 2.2 Management control and cognitive assessment

Management control comprises all the ways and systems managers use to ensure that their employees' behaviors and decisions align with organizational objectives and strategies. Merchant and Van der Stede (2007) propose four types of MCs that emphasize social and behavioral dimensions. These are explained in detail here because they constitute the theoretical basis adopted to operationalize this study. From this theoretical perspective, there are the following types of controls: (i) result controls, (ii) action controls, (iii) personnel controls, and (iv) cultural controls.

Result controls focus on changing employees' behaviors and emphasizing their motivation by providing incentives or implementing punishment systems (Herath, 2007). The emphasis of result controls is on efficiency, conformity, and achieving objectives, working on the behavioral aspects of operations (Hopwood, 1972). When adopting result controls, employees are expected to feel professionally empowered and control their actions, promoting meritocracy and rewarding good results. These controls are usually adopted to influence the behavior of employees in situations in which results can be controlled (Merchant & Van der Stede, 2007).

Action controls are intended to motivate employees to become involved with their work (Long, 2018) and can be characterized as direct behavioral controls because they act entirely on individuals by supervising, directing, or restricting their actions. The role of action controls is to ensure that everyone knows what actions are expected and benefit the organization. Organizations adopt action controls and monitor the implementation of standards to ensure their employees use the methods appropriate to conclude tasks (Van Maanen & Schein, 1977).

Personnel controls are intended to promote positive interpersonal relationships (Long, 2018) and are adopted to promote the employees' skills and competencies, as well as socialization to ensure employees are adapted and aligned with the organization's objectives (Van Maanen & Schein, 1977). Cultural controls can be represented by an organization's beliefs and culture and are expressed on the organization's mission, vision, and values, enabling employees to mutually monitor each other (Merchant & Van der Stede, 2007). Codes of ethics are an example of how these controls are formalized.

Personnel and cultural controls can promote individual autonomy and establish a working environment based on an understanding of the importance of organizational objectives. In addition, mutual understanding is an important factor influencing an employee's commitment, reinforcing a sense of organizational purpose (Hernandez, 2008). Therefore, personnel and cultural controls promote "high commitment as a result internalized values" (Ouchi, 1979, p. 841).

An organization's adoption of a given type of management control (i.e., result, action, personnel, or cultural) can be understood as an event that encourages individuals to assign meaning, leading them to question the relevance of the event itself (Liu & Perrewé, 2005). Hence, the adoption of MCs may positively influence employees' behaviors when individual interests are aligned to those of the organization, or negatively, when the organization's objectives clash with individual interests, causing emotional reactions that lead to undesirable behaviors.

The adoption of an MC may cause employees to doubt their future, leading them to experience fear and anxiety (Sutton & Kahn, 1987). When, however, employees perceive a management control to be primarily a challenge, they perceive a higher level of congruence between objectives and believe that changes are more likely to succeed, which influences their overall assessment of the change proposed (Liu & Perrewé, 2002). When employees positively perceive the adoption of MCs, they have a greater sense of perceived control (Cobb, Wooten & Folger, 1995). In this case, change brings hope, and employees become emotionally excited, which raises their expectations about future success (Dutton, Ashford, O'neill, Hayes & Wierba 1997; Huy, 2002).

In events such as when adopting an MC, employees' attitudes tend to be based on their emotional state, which presents various positive or negative affect resulting from individual appraisals. Hence, adopting a (result, action, personnel, or cultural) MC will have a different effect on cognitive appraisals. For example, an individual may positively perceive the adoption of a given type of control as a challenge or perceive it negatively and consider it a threat. Nevertheless, more than that, it is argued that each type of MC cause different levels of cognitive appraisals (challenge or threat), and therefore, the first hypotheses are proposed here:

**H1(a-b-c-d): Perceptions regarding the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control are positively related to challenging cognitive appraisals.**

**H2(a-b-c-d): Perceptions regarding the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control are negatively related to threat cognitive appraisals.**

## 2.3 Cognitive appraisals and emotional reactions

An individual's cognitive appraisal regarding a given event is based on the event's relevance for his/her wellbeing and is intrinsically linked to this individual's objective and values (Frijda, 1993). Perceived harm or benefits depend on one's commitment to his/her own objectives, which are frustrated or facilitated by the environment (Lazarus, 1991a). Therefore, an initial appraisal involves judging the relevance and congruence of an objective, whether this event is related to some personnel desire or concern. Ortoni, Clore, and Collins (1990) argue that there are relatively independent categories or families of emotions based on common appraisal processes such as the final product of a cognitive appraisal process.

Additionally, the authors argue that an objective's relevance is essential for one's emotional responses, such as the adoption of an MC, and the intensity of emotions is directly correlated to the importance or convenience of an objective. It means that the employees' emotional responses directly depend on their cognitive appraisals of MCs. The reason is that people have a large variety of objectives that affect their emotional responses (Weiss & Cropanzano, 1996). Emotion theorists agree that specific emotional states exist and are triggered by the action of cognitive appraisals (Plutchik, 1994).

These emotional states result from a two-stage appraisal process that involves a perception of whether an event represents a challenge or a threat (Frijda, 1986; Lazarus, 1991a). Perceiving an event as a challenge leads to positive emotional responses, whereas perceiving it as a threat leads to negative emotional responses. Thus, whether an event is considered a challenge or a threat is related to an individual's hedonic tone (pleasure/satisfaction) (Weiss & Cropanzano, 1996).

Trivellas, Reklitis, and Platis (2013) report evidence from a hospital setting that a positive cognitive appraisal is related to positive affect that may result in the intention to remain in the job. Regarding negative cognitive appraisals, Fugate, Harrison, and Kinicki (2011) empirically confirmed the relationship between negative appraisals and negative affect on the adoption of MCs. Considering that challenge cognitive appraisals of MCs (result, action, personnel, cultural) generate positive affect, and that threat cognitive appraisal leads to negative affect, the following hypotheses are proposed:

**H3(a-b-c-d): If the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control is perceived as a challenge, a challenge cognitive appraisal will increase positive affect.**

**H4(a-b-c-d): If the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control is perceived as a threat, a threat cognitive appraisal will increase negative affect.**

## 2.4 Emotional reactions and affective commitment

Emotions make people ready to respond to particular stimuli with specific actions. This conception allows us to infer that emotions increase readiness to perform several different actions, depending on the stimulus conditions (Roseman, Wiest & Swartz, 1994). Therefore, emotional responses to a threat or challenge may influence affective commitment. Affective commitment is the degree to which an employee feels emotionally connected, identified with, and involved with an organization (Meyer & Allen, 1997).

Russell and Carroll (1999) report that positive and negative affect are independent states instead of bipolar opposites. High or low levels of negative affect may accompany positive affect, while some level of positive affect may accompany a negative affect. Such independence suggests that positive affect may compensate for the harmful effects of low job satisfaction indicators, thus, broadening and developing the individuals' thought-action repertoires (Fredrickson, 1998).

Even though Lazarus (1991b) notes that positive emotional responses do not present clear individual action tendencies, we argue that these responses influence individual actions to the extent that they promote people's strengths (Fredrickson, 1998). Joy, for instance, promotes individual creativity, broadens mentality, and strengthens social ties. Happy and proud employees are more resilient to overcome problems (Fredrickson, 1998). A new situation may encourage interest and exploration and increase the likelihood of obtaining new knowledge and competencies. Hence, positive emotional responses positively influence employee retention and commitment with organizations (Ashkanasy & Daus, 2002).

A central proposition in the Affective Events Theory is that the employees' attitudes are influenced by events at work. More specifically, AET states that affective responses mediate the relationship between events and attitudes at work. The wellbeing maintenance argument holds that positive emotions promote a desire to maintain and prolong the current state (Weiss & Cropanzano, 1996). Thus, the employees' attitudes and behaviors reflect their personnel perceptions and expectations, reciprocating the treatment they receive from the organization.

MCs that lead to challenging cognitive appraisals and positive affect promote affective commitment. Empirical evidence shows that when leaders adopt ethical behavior, they increase their employees' affective commitment because they are proud of working in the organization, share the same concern for the future and share the same values (Matela, 2016). Neubert, Carlson, Kacmar, Roberts, and Chonko (2009) argue that ethical leadership should promote a moral atmosphere in the organization that encourages professional satisfaction and affective commitment. Goebel and Weißenberger (2017) reinforce this understanding, confirming the hypotheses that personnel and cultural controls positively influence commitment. With this evidence in mind, it is conjectured that positive affect increases affective commitment, whereas negative affect decreases it. Hence, the following hypotheses are proposed:

**H5(a-b-c-d): Positive affect that results from an MC a) result control, b) action control, c) personnel controls, or d) cultural controls increase affective commitment.**

**H6(a-b-c-d): Negative affect that results from an MC a) result control, b) action control, c) personnel controls, or d) cultural controls decrease affective commitment.**

This study's theoretical model is represented in Figure 1, in which the type of control will cause a cognitive appraisal, represented by H1 and H2. According to the Affective Event Theory, cognitive appraisals can be challenging and/or threatening to some extent. An employee's cognitive appraisal will determine whether s/he will present more positive (positive affect) or negative (negative affect) emotional responses, expressed in H3 and H4. In addition, these responses will determine the employees' affective commitment toward the tasks established in management controls (H5 and H6).

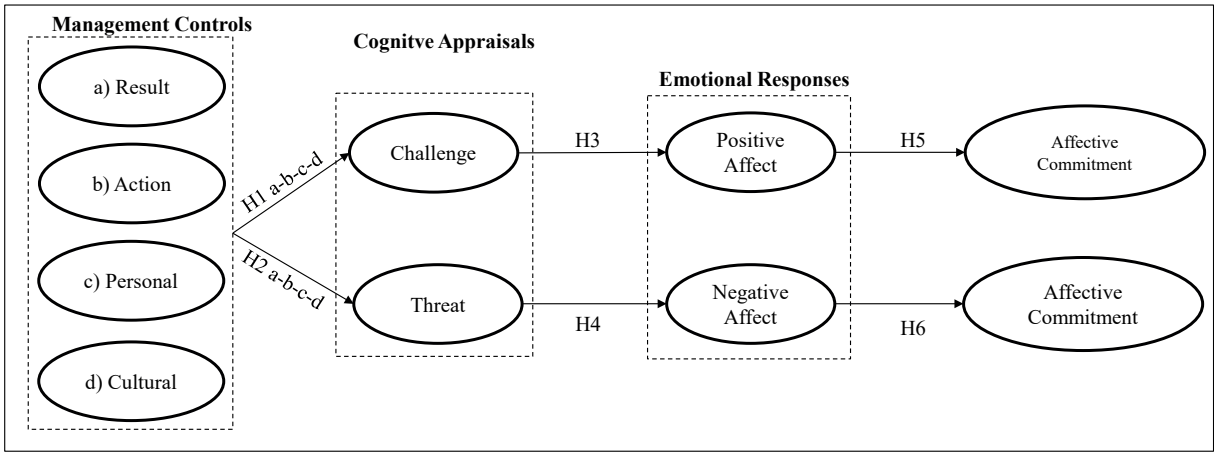


**Figure 1.** Theoretical Model

## 3. Methodological procedures

### 3.1 Experimental design

The study design involves applying experimental tests to analyze individual effects by simulating events (*pitches*). These pitches are intended to manipulate the adoption of result, action, personnel, and cultural controls for the participants to identify the effects of management control on affective commitment.

Since this is a "within-subject" study without a control group, the participants were not randomly assigned to the experimental conditions. According to Charness, Gneezy, and Khun (2012), a within-subject experimental design does not depend on random assignment to improve its internal validity. Additionally, these are more aligned with theoretical positions where an individual responds to a stimulus. In this sense, this study is classified as a quasi-experiment (Shadish, Cook & Campbell, 2002)

The pitches were developed according to Kleine and Weißenberger (2014), Goebel and Weißenberger (2017), and Long (2018), as shown in Figure 2.

| Constructs | Constructs | Study's instrument | References |
|---|---|---|---|
| Management Control (MC) | Result controls (RC) | Scenario 1 | Kleine and Weißenberger (2014); Goebel and Weißenberger (2017) |
| | Action Controls (AC) | Scenario 2 | |
| | Controls (PC) | Scenario 3 | |
| | Cultural Controls (CC) | Scenario 4 | |
| Cognitive Appraisal | Threat (THRE) | Cognitive assessment scale | Gomes, Faria and Gonçalves (2013) |
| | Challenge (CHA) | | |
| Emotional Responses | Positive Affect (PA) | PANAS-VRP | Galinha, Pereira and Esteves (2014) |
| | Negative Affect (NA) | | |
| Affective commitment | Affective Commitment (AFC) | Affective Commitment to Change Scale | Herscovitch and Meyer (2002) |

**Figure 2.** Constructs and operationalization of the study's objectives

Pitches were short videos sent by email containing communications from the board of directors concerning the adoption of management controls: result, action, personnel, and cultural controls. Four videos were developed; each represented one type of control. After watching each of the videos, the participants answered a five-part questionnaire to identify their perceptions regarding controls, challenge and threat cognitive appraisals, positive and negative emotional responses, and affective commitment. Figure 2 presents the constructs used in the study and the operationalization of each.

Four scenarios simulated the presentation of MCs (results, action, personnel, and culture). Scenario 1 addresses result controls and involve communication regarding the adoption of performance goals. Employees who achieved individual results would receive a bonus, and those with the best results would be promoted, while those not able to achieve any goals would have to justify. Scenario 2 (action control) involves communication concerning access to the company's computers. Employees would have to use a personnel password, with their access to the Internet restricted according to each manager's needs. Managers would have access to the activities performed on each computer and monitor the use of WhatsApp during working hours. Scenario 3 concerned personnel control and involved communication regarding training provided every two Saturdays to promote interactions and broaden the employees' capabilities. Finally, scenario 4 (cultural control) involves communicating a code of ethics based on safety, people, excellence, focus on results, and sustainability. Employees should act according to the guidelines provided in this code of ethics. The items, scales, and videos used in the study are available at: https://drive.google.com/drive/folders/1zBkzxlrHQinAbunmJD4624Njual3DtqD

After each video was presented, a questionnaire containing the following parts was applied:

- **Part 1 (MC):** Management control was divided into four types (result, action, personnel, and cultural). Each type of control was composed of 5 questions based on Goebel and Weißenberger (2017). Each question was rated on a 7-point Likert scale (1: totally disagree to 7: totally agree).
- **Part 2 (Cognitive appraisal**): Cognitive appraisal was divided into threat and challenge. The respondents rated the items on a 7-point Likert scale (1: not at all to 7: very much) to depict their personnel perceptions (disturbing, threatening, negative, stimulating, exciting, and challenging) regarding the situation presented (result, action, personnel, and cultural controls) (Gomes, Faria & Gonçalves, 2013).
- **Part 3 (Emotional Responses):** The emotional responses were classified into positive affect and negative affect. This construct is measured on a 10-item scale in which 1 means Very slightly or Not at all and 5 means extremely. The objective is to measure the participants' feelings toward the control presented (e.g., interested, nervous, enthusiastic, afraid, inspired, alert, jittery, guilty, determined, or distressed). The Positive and Negative Affect Schedule (PANAS) measures are widely used in the literature (Galinha et al., 2014).
- **Part 4 (Affective Commitment):** Affective commitment can be conceived as a psychological state characterized by an individual's emotional attachment to an organization. (Meyer & Allen, 1997). A 5-point Likert scale (1: not at all to 5:extremely) was used to measure the individuals' affective commitment to changes (Herscovitch & Meyer, 2002).
- **Part 5 (Control variables)**: the last part addressed data concerning sex, age, undergraduate program, academic year, marital status, and professional experience.

## 3.2 Experimental validity protocol

First, pretests were applied to six professors to adjust the instrument used in the quasi-experiment: four professors were from the Management Accounting field, one from Organizational Psychology, and one from Information Technology. Pretests were also conducted with three students and four professionals in the market. Next, the videos simulating each scenario and the questionnaire were adjusted to improve understanding.

To ensure that respondents understood the management controls, they were asked whether the questions were clear and easily understood. Finally, the protocol suggested by Kim (2009) was used to validate the instrument (Figure 3).

| Stage | | Objectives | Technique used |
|---|---|---|---|
| 1 | Content validity | To verify how comprehensively the items represent the construct | Expert panel |
| 2 | Pretest | To communicate to the respondents what the instrument is intended to convey and to analyze the operationalization of the elements involved using a preliminary test | Personal approach (interview + questionnaire) |
| | Pilot test | To determine whether the instrument effectively measures the study's objective. Using a preliminary test in a convenient sample similar to the target population enables the researchers to anticipate the study's results | Preliminary test using a convenient sample |
| | Manipulation validity | To verify causal relationships between the independent variables showing that the treatment of manipulations is related to "direct" measures of the projected constructs | Manipulation checks |
| 3 | Reliability | To show the consistency of the items and correlation between the measures of the same construct. Without this stage, data are unreliable and do not allow researchers to state whether non-significant correlations are due to low reliability or poor correlations between the constructs | Internal consistency; item reliability |
| | Construct validity | To determine whether the items measure the concept under analysis through correspondence between an observable construct and its supposed measure | Convergent and discriminant validity |

**Figure 3.** Experimental validity protocol

## 3.3 Data collection

Data were collected among students attending the Accounting and Administration programs of a Higher Education Institution (HEI). Undergraduate students were chosen for the experimental setting because this model does not foresee changes in the dependent variable due to differences in the participants' profiles. Additionally, in general, students present homogeneous characteristics, which decreases the estimation error effect of the independent variable on the dependent variable, contributing to a greater exploratory power of the results and greater statistical validity (Aguiar, 2017).

The instrument was applied in classrooms previously prepared with audiovisual equipment, tested by the researcher and assistant to ensure the videos were clearly understood. Before presenting the scenarios, the participants were instructed to imagine themselves as an employee recently hired by a company. After the students were asked whether they had any doubts, some aspects were reinforced before the videos were presented: "You are about to take part in an experimental study addressing the effects of management controls systems on individuals. Try the best you can to put yourself in the place of an employee facing the situation presented here. There are no right or wrong answers. The objective is to identify your perception and feelings toward the situation presented."

After presenting each management control, the participants completed the instrument specifically designed for this study. After all the participants completed the first questionnaire, the researcher answered questions and clarified doubts, after which the other three simulations were presented. The sessions lasted 40 minutes on average and were held from November 7th to 9th 2018. A total of 252 answers were considered in the analysis. Table 1 presents the participants' profiles.

Table 1
**Profile of the study's participants**

| Gender | N | % | Marital Status | N | % |
|---|---|---|---|---|---|
| Female | 141 | 56.00 | Single | 216 | 85.70 |
| Male | 111 | 44.00 | Married | 36 | 14.30 |
| Total | 252 | 100.00 | Total | 252 | 100.00 |
| **Academic year** | **N** | **%** | **Descriptive Statistics** | **Age** | **Experience (years)** |
| 1st year | 63 | 25.00 | Minimum | 17 | 0 |
| 2nd year | 94 | 37.30 | Maximum | 45 | 28 |
| 3rd year | 86 | 34.13 | Mean | 23.7 | 4.0 |
| 4th year | 9 | 3.57 | Median | 22.0 | 2.3 |
| Total | 252 | 100.00 | Standard deviation | 5.497 | 4.449 |

To minimize potential fatigue and maturation effects, the order in which the scenarios were presented to each group was randomized. Thus, all the scenarios were presented in all the orders possible (e.g., Exp. 1 – result control was the first to be presented to group 1 and the last to be presented to group 2. It was the third scenario presented to group 3 and the second to group 4), as shown in Figure 4.

| Group | Participants | Order in which the scenarios were presented |
|---|---|---|
| Group 1 | 90 | Scenario 1; Scenario 2; Scenario 3; Scenario 4 |
| Group 2 | 62 | Scenario 2; Scenario 3; Scenario 4; Scenario 1 |
| Group 3 | 66 | Scenario 3; Scenario 4; Scenario 1; Scenario 2 |
| Group 4 | 34 | Scenario 4; Scenario 1; Scenario 2; Scenario 3 |

**Figure 4.** Order in which the scenarios were presented to the groups

Next, non-parametric tests were applied to verify whether there were any differences between the four groups, which showed that the way data were collected, did not influence the analysis because they were independent samples (Field, 2009). Finally, the Mann-Whitney U test was used because it is indicated for categorical and ordinal variables, which is the case here (Fávero, Silva, Belfiore & Chan, 2009).

Because it involves research with human subjects, the study project was submitted to and approved by the Institutional Review Board and followed guidelines concerning: (i) absolute confidentiality of data; (ii) no risk is presented to the participants as they are asked about their opinions regarding a hypothetical situation; (iii) the participants were free to withdraw from the study at any time; and (iv) estimated time of participation was 35 minutes.

### 3.4. Data analysis

Exploratory multivariate analysis, Partial Least Squares Structural Equation Modeling (PLS-SEM), a variance-based structural equation modeling technique, was adopted to analyze the models (Hair Jr., Hult, Ringle & Sarstedt, 2016). Among the advantages of using PLS-SEM, the following stand out: (i) it is considered the second generation of multivariate analysis and has been increasingly proposed to overcome limitations of the traditional techniques of statistical analysis, due to its advanced characteristics (Fornell, 1985); (ii) it is flexible to test psychological models (with latent variables), and enables using multiple predictors and criterion variables, model measurement errors for observed variables and test mediation and moderation relationships in a single model (Fornell, 1985; Hair Jr. et al., 2016); (iii) simultaneous estimation of multiple dependent and inter-related relationships between variables and the use of measures of latent constructs (Nitzl, 2016); (iv) it is becoming increasingly popular in mainstream management accounting journals (Nitzl, 2016); (v) it is preferred in research fields with broad theoretical foundations (Henseler, Ringle, & Sinkovics, 2009), which is a generalized characteristic of current research of management control systems (Malmi & Brown, 2008); (vi) does not assume normal data distribution (Henseler et al., 2009; Hair Jr. et al., 2016).

As proposed by Hair Jr. et al. (2016), the analyses were performed in two stages to evaluate the results. First, the measurement model was analyzed to ensure the model's internal reliability using the following procedures: (i) model's composite reliability; (ii) item indicator reliability); (iii) average variance extracted (AVE), which shows the extent to which each construct's measures are convergent; (iv) discriminant validity with the indication of the differences represented for each construct in the model (Hair Jr. et al., 2016).

Next, the structural model was analyzed with the following procedures: (i) construct collinearity problems; (ii) path coefficients - β); (iii) Levels of significance (p-value); and (iv) coefficients of determination ($r^2$) for the explained variances of the endogenous constructs (Henseler et al., 2009).

## 4. Results and discussions

To analyze the results, the model was assessed based on the events created for each type of control individually. This way, we verify the individual effect of the result, action, personnel, and cultural controls on affective commitment. First, as indicated by Hair *Jr. et al.* (2016), the reliability of the theoretical model was analyzed for the four types of control.

## 4.1 Internal reliability

Good internal reliability, with satisfactory CR, AVE, and VD were found for the experimental scenarios for the four types of management controls, as shown in Table 2. For the analysis of discriminant validity, the Fornell-Larcker criterion was used and presented results above 0.8, ruling out multicollinearity problems.

Table 2
**Theoretical model's internal reliability**

| CONSTRUCTS | Alpha | CR | AVE | VD |
|---|---|---|---|---|
| Result control | 0.82 | 0.87 | 0.57 | Yes |
| Challenge | 0.79 | 0.88 | 0.70 | Yes |
| Threat | 0.82 | 0.89 | 0.73 | Yes |
| Positive Affect | 0.87 | 0.91 | 0.67 | Yes |
| Negative Affect | 0.86 | 0.90 | 0.65 | Yes |
| Affective Commitment | 0.83 | 0.91 | 0.63 | Yes |
| Action control | 0.81 | 0.87 | 0.57 | Yes |
| Challenge | 0.77 | 0.87 | 0.69 | Yes |
| Threat | 0.87 | 0.93 | 0.82 | Yes |
| Positive Affect | 0.89 | 0.92 | 0.69 | Yes |
| Negative Affect | 0.86 | 0.90 | 0.64 | Yes |
| Affective Commitment | 0.89 | 0.92 | 0.65 | Yes |
| Personnel Control | 0.87 | 0.90 | 0.65 | Yes |
| Challenge | 0.81 | 0.88 | 0.72 | Yes |
| Threat | 0.88 | 0.92 | 0.80 | Yes |
| Positive Affect | 0.94 | 0.95 | 0.80 | Yes |
| Negative Affect | 0.82 | 0.88 | 0.59 | Yes |
| Affective Commitment | 0.89 | 0.91 | 0.64 | Yes |
| Cultural Control | 0.83 | 0.88 | 0.61 | Yes |
| Challenge | 0.79 | 0.87 | 0.70 | Yes |
| Threat | 0.91 | 0.95 | 0.85 | Yes |
| Positive Affect | 0.92 | 0.94 | 0.75 | Yes |
| Negative Affect | 0.87 | 0.90 | 0.66 | Yes |
| Affective Commitment | 0.82 | 0.87 | 0.54 | Yes |

After confirming the model's reliability, the significance of relations was verified by performing Complete Bootstrapping. As suggested by Hair Jr. et al. (2016), a total of 5,000 interactions were used without changing the sign for a two-tailed test.

## 4.2 Structural model

In this stage, the results are presented to analyze all the controls within MCs and compare the management controls in each stage of the model. Additionally, a structural model is presented to show the effects of four controls together considering the study's participants answered to four simulations, as shown in Figure 5.

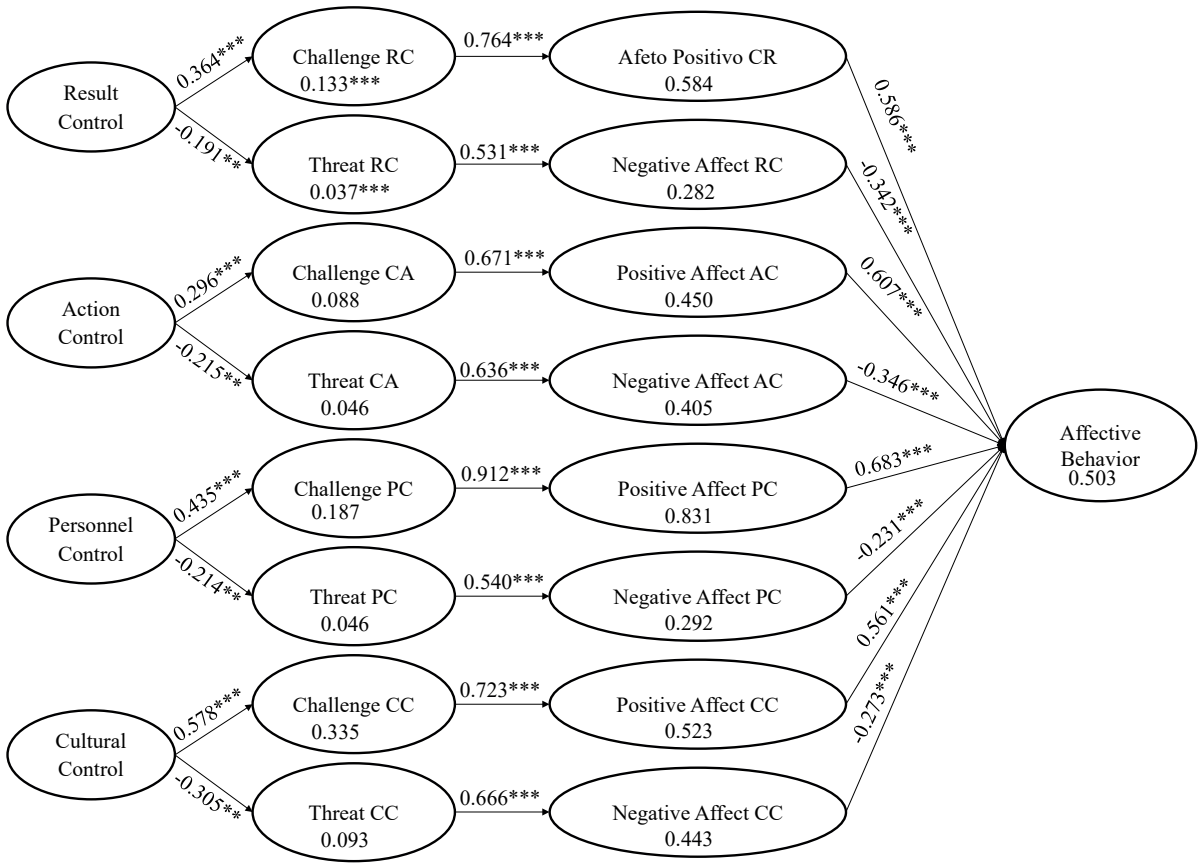


**Figure 5.** Structural model for MC

Regarding positive cognitive appraisals (challenge), the cultural and personnel controls were perceived with greater intensity than the result and action controls. On the other hand, action control resulted in a lower effect on positive cognitive appraisals, that is, lower motivation and enthusiasm. The results are in line with the literature addressing management controls (Hutzschenreuter, 2009; Goebel & Weißenberger, 2017), which predict more positive effects for cultural and personnel controls than result and action controls. Therefore, we infer that organizations can attain higher and more intense positive cognitive results by adopting these two types of controls. The secondary hypotheses for cognitive appraisal are presented in Table 3.

Table 3

**Hypotheses for cognitive appraisal of management controls**

| Hypothesis | Direction | Relationship | Result | Coefficient | r2 |
|---|---|---|---|---|---|
| H1a | (+) | RC→CHA | Failed to reject | 0.364*** | 0.133 |
| H1b | (+) | AC→CHA | Failed to reject | 0.296*** | 0.088 |
| H1c | (+) | PC→CHA | Failed to reject | 0.435*** | 0.190 |
| H1d | (+) | CC→CHA | Failed to reject | 0.578*** | 0.335 |
| H2a | (-) | RC→THRE | Failed to reject | -0.191** | 0.037 |
| H2b | (-) | AC→THRE | Failed to reject | -0.215** | 0.046 |
| H2c | (-) | PC→THRE | Failed to reject | -0.214** | 0.046 |
| H2d | (-) | CC→THRE | Failed to reject | -0.305** | 0.093 |

*** Significance at 1% ** Significance at 5%

On the other hand, threat appraisals indicate a negative relationship with a given MC; that is, management controls decreased the sense of threat from the management control scenarios. In this sense, cultural control presents the most intense effect in this relationship. Even though all the relationships were significant, the scenarios were more strongly perceived as positive than negative.

Regarding emotional responses, an increase in positive affect is expected among the participants who assessed the management controls positively (challenge). The results for the four controls are aligned. Conversely, the level of negative affect is expected to increase among individuals who considered the adoption of management controls to be a threat. This relationship stood out for the personnel and action controls, though all the controls presented similar levels of intensity.

Table 4
**Hypotheses concerning emotional responses**

| Hypothesis | Control | Direction | Relationship | Result | Coefficient | r2 |
|---|---|---|---|---|---|---|
| H3a | RC | (+) | CHA→PA | Failed to reject | 0.764*** | 0.583 |
| H3b | AC | (+) | CHA→PA | Failed to reject | 0.670*** | 0.449 |
| H3c | PC | (+) | CHA→PA | Failed to reject | 0.762*** | 0.581 |
| H3d | CC | (+) | CHA→PA | Failed to reject | 0.723*** | 0.522 |
| H4a | RC | (+) | THRE→NA | Failed to reject | 0.532*** | 0.283 |
| H4b | AC | (+) | THRE→NA | Failed to reject | 0.640*** | 0.409 |
| H4c | PC | (+) | THRE→NA | Failed to reject | 0.545*** | 0.297 |
| H4d | CC | (+) | THRE→NA | Failed to reject | 0.666*** | 0.444 |

*** Significance at 1% ** Significance at 5%

In general, MCs cause emotional impacts on individuals, showing it is relevant in investigating individual effects of management controls. These results corroborate the findings reported by Trivellas, Reklitis, and Platis (2013) that positive cognitive appraisals are related to positive affect. These results are also in line with Fugate, Harrison, and Kinicki (2011), who report a relationship between threat cognitive appraisals of MCs and negative affect. The results are presented in Table 4.

By examining the pathways that cause effects on the employees' affective commitment, an increase in the affective commitment is expected among individuals who reported positive affect. This relationship was more intense for personnel control and confirmed the results of the antecedent constructs in the model. Therefore, individuals felt a more intense positive impact when the organization proposed integrating employees, offering training to develop skills, and promoting a favorable interpersonal climate. These findings partially corroborate the results presented by Goebel and Weißenberger (2017) when they report that personnel and cultural controls positively influence commitment. The remaining controls also indicate a positive, however, less intense impact, as shown in Table 5.

Table 5

**Hypotheses regarding effects on affective commitment**

| Hypothesis | Control | Direction | Relationship | Results | Coefficient | r2 |
|---|---|---|---|---|---|---|
| H5a | CR | (+) | PA→AFC | Failed to reject | 0.586*** | 0.502 |
| H5b | CA | (+) | PA→AFC | Failed to reject | 0.607*** | 0.490 |
| H5c | CP | (+) | PA→AFC | Failed to reject | 0.683*** | 0.560 |
| H5d | CC | (+) | PA→AFC | Failed to reject | 0.561*** | 0.380 |
| H6a | CR | (-) | NA→AFC | Failed to reject | -0.342*** | 0.502 |
| H6b | CA | (-) | NA→AFC | Failed to reject | -0.346*** | 0.490 |
| H6c | CP | (-) | NA→AFC | Failed to reject | -0.231*** | 0.560 |
| H6d | CC | (-) | NA→AFC | Failed to reject | -0.273*** | 0.380 |

*** Significance at 1% ** Significance at 5%

Finally, decreased commitment was expected among the individuals who perceived the adoption of MC to be a threat and experienced negative affect. This relationship was more intense for the result and action controls; i.e., when these controls are negatively perceived, they may restrict affective commitment. Note that the effects on affective commitment were always positive when the individuals' perceptions were positive. On the other hand, those who perceived the controls to be a threat and experienced negative affect revealed decreased affective commitment, though less intensively than the positive affect.

In addition to the hypotheses tests, structural models were developed using the participants' demographic variables to separate the sample. This procedure was used to verify potential influences and individual differences that could indicate alternative paths and refine the results. In general, the analyses separated according to control variables (i.e., gender, age, marital status, and professional experience) confirmed the relationships and directions expected in the hypotheses, not indicating differences based on the participants' demographic characteristics.

This study broadens understanding of the cognitive, affective, and behavioral (attitudes) complexity involved in employees' experiences regarding the adoption of MCs. It also provides elements to unveil the role of emotions at the workplace and their underlying psychological processes. These findings provide important information for theory and practice concerning the design of MCs in organizations, as it contributes to the development of management control theories that consider the psychological factors of individuals involved in the adoption of MCs.

In practical terms, these findings show how managers can implement and manage the adoption of MCs, considering the different psychological paths when implementing different types of management controls. Furthermore, the results enable identifying how employees make cognitive appraisals and are emotionally affected by them. Hence, it is important to assess the risks and benefits of the design and use of MCs.

This study's results also suggest that organizations benefit from controls that are positively perceived and assessed. Therefore, managers need to frame changes positively and communicate the benefits of changes for the organization and individuals affected. In addition, involving employees in the adoption of controls will make them feel more informed and allow them to control the impact of changes, decreasing negative appraisals and any potentially harmful results to the organization.

## 5. Conclusions

This study's objective was to analyze the effects of management controls on employees' affective commitment through cognitive appraisals and emotional responses. This study was conducted by applying four scenarios among 252 undergraduate students from the management field.

The results show that (result, action, personnel, and cultural) controls positively impacted the employees' emotional process, leading to positive behaviors in organizations. Additionally, these impacts did not present the same intensity, showing that management controls should be designed to focus on the individuals' behavioral factors, which facilitate aligning individual and organizational objectives.

The joint analysis of management controls provides evidence that these are important elements to promote the desired behaviors among employees. Organizations tend to benefit from directing the focus of controls to indirect controls (personnel and cultural), which indicate more intense positive cognitive, emotional, and attitudinal results. Hence, MCs should be considered an important organizational aspect that affects the employees' behaviors and commitment to tasks. In this sense, MCs direct individual attitudes represented in this study as affective commitment.

Despite the careful implementation of procedures, some limitations need to be acknowledged. The first refers to the individuals' cognitive appraisals. As suggested by social psychology, even though a sample represents a set of individual opinions, we need to acknowledge that a group influences individual opinion, and that effect could not be captured in this study.

Another limitation refers to the methodological option of using students to model corporate scenarios. Even though it enables greater control of the experimental setting, it decreases the quasi-experiment external reliability, and therefore, there is a higher risk when generalizing results to the real world. Shadish et al. (2002) note that external validity involves knowing whether a causal relationship found in a study holds for people in the real world.

Equation modeling is subject to limitations concerning the variance-based analysis. Hence, procedures were conducted to validate and ensure the reliability of the items and constructs under study. Pretests were applied with volunteers and experts, and a pilot test was applied to a convenient sample. In this sense, this study's results indicate the path for future field studies rather than definitive conclusions.

We suggest conducting empirical studies within organizations to compare and expand this study's results. The results and discussions raised here indicate that each type of control elicits a different response from individuals. Therefore, understanding that an MC influences behavior without having more profound knowledge about this influence may explain the inconsistent results reported by studies based on Contingency Theory.

Regarding the development of this line of research, this is the first diagnostic study analyzing the relationships and how emotional and psychological factors can be considered in studies addressing MCs. Hence, the fact that management controls cause a variation in emotional components and affective commitment, which can determine the performance of employees and organizations, seems to be consistent. The role of management controls in the individuals' behaviors is essential to promote congruence and the attainment of personal and organizational objectives. They seem to help organizations promote positive feelings in employees (Goebel & Weiβenberger, 2017).

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