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Social Representations as Cognitive-Emotional Processes: Examining Individual Tensions

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We tested key predictions of a recent theoretical model positing social representations (SRs) as cognitive-emotional processes. The model aims to examine the impact of emotions on the dynamics of SRs. The present research investigates the first two phases of the model from the central core theory (CCT). The study of the impact of emotional experience on the dynamics of SRs could be a way to provide some support to the original assumption in Social Representations Theory (SRT) that SRs are dynamic objects of social change. This attempt seems crucial as SRs are essential to the construction of social knowledge. One hundred and thirty management students had to recall highly positive and negative emotions immediately after participating in a three-day teamwork situation. Having previously identified students' (gendered) SRs of teamwork, the study examines individual tensions following emotional experience, that is, the cognitive impact of the nature (positive or negative) of emotion on the internal dynamics of the SR object. Highlighting the fundamental role of the meaning-generative function of SRs, the results showed variations of SR components of teamwork depending on the valence of emotion, the status of SR components, and gender as a sociocultural variable. We interpret gender differences on the variations of SR components of teamwork following emotional experience as reflecting social positioning vis-à-vis the meaning

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of this object as a shared cultural reality. Our findings are discussed considering the support they offer to the model, how the nature of emotions can produce contrasting SRs dynamics and suggested theoretical implications about the place that should be given to emotions in SRT.

Keywords: Social Representations, Emotions, Construction of Social Knowledge, Central Core Theory, Teamwork.

Defined as organized systems of ideas, opinions, attitudes, knowledge, and beliefs about an object in the environment that are shared within a social group, grounded on social communication and interactions (Rateau et al., 2011), SRs are symbolic forms of knowledge about the world with a practical purpose. However, this utility function is continually challenged over time due to the unstable nature of the world (external variability) and of individuals (internal variability). Recently, grounded on a socio-constructivist as well as a dialogical perspective using the metaphor of the psychosocial triad (Moscovici, 1984a; Zittoun et al., 2007), the cognitive-emotional process integrative model (CEPIM) was proposed (Bouriche, 2022) positing SRs as cognitive-emotional processes (Marková & Wilkie, 1987). By paying particular attention to the role of tension (de-Graft Aikins, 2012; Howarth, 2006; Kalampalikis & Apostolidis, 2021) in the interobjective and intersubjective spaces of mediation of the psychosocial triad, the CEPIM aims to clarify the functions of emotions in the dynamics of SRs as objects of social knowledge and adaptation to reality. According to Bouriche, unfolding in a world which is common, intersubjective, and mediated by language, emotions are not only detectors of the relevance of our private relationship with our environment but above all 'the disclosers of our identity, our systems of thought, and our worldviews constituting the social and cultural system that governs our conditions of existence' (Bouriche, 2022, p. 2.17).

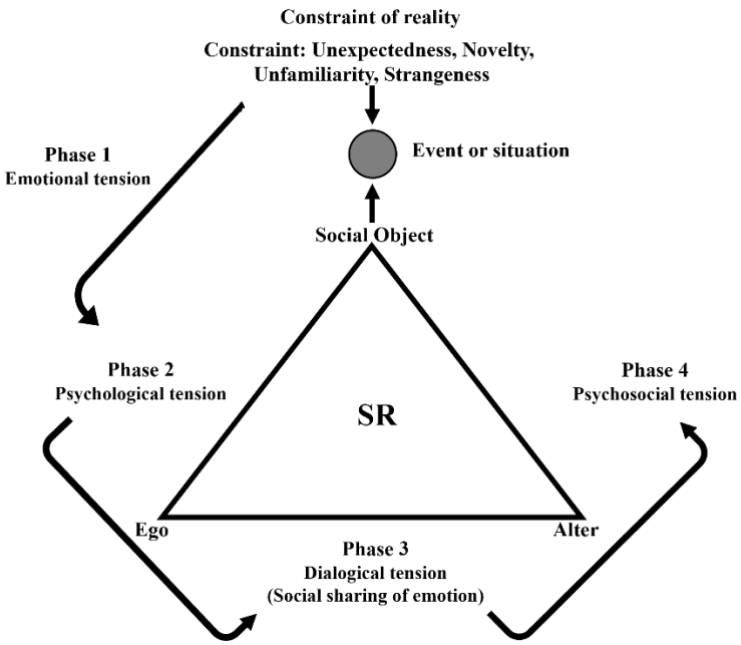
An emotional experience always constitutes an identity event (Rimé, 2005): one is no longer the same as before. Because knowing individuals' emotional outcomes can be of great importance to others, emotional experience is frequently shared socially (Duprez et al., 2014). A shared emotional experience reveals the identity of the individual who has lived it: his/her characteristics, history, social status, and, in short, his/her capacity as a social actor. Moreover,

referring to social reality, the social sharing of emotion can be considered a situation of updating shared knowledge, that is, a specific situation of adaptation and transformation of SRs. Therefore, in the CEPIM, the need for otherness at the heart of the dialogical approach (Marková, 2003, 2023) plays a decisive role. The four-phase process depicting the diffusion of an emotion-driven tension through the psychosocial triad will exclusively depend on the presence and role of the Alter (Figure 1). Emotional tension (phase 1) refers to the tension of the Ego-Object relationship related to the appraisal process. This process provides knowledge about the object(s) involved in an emotional experience, and emotional valence (Tcherkassof & Frijda, 2014). The tension generated by emotional experience is signaling variations in the Ego-Object relationship regarding its relevance to knowledge frameworks, goals, or plans, that is, a flaw or violation of the expectations system (Carver & Scheier, 1990; Festinger, 1957; Frijda, 1986; Weick, 1995) which could lead to an Ego-Object dissonance. Psychological tension (phase 2) relates to the need to evaluate and cope with the Ego-Object dissonance. This tension could potentially question the meaning and practice systems related to the object and motivate a cognitive revision of the object at an individual level. Dialogical tension (phase 3) arises from the asymmetry of knowledge about an SR object between the members of the community and one of them who has experienced emotion-driven psychological tension.

This tension prepares the Ego-Alter communication related to the experienced emotions, that is, a situation of social sharing of emotion (Rimé, 2005, 2007, 2009). The dialogical tension starts when the individual seeks social contact with the community that shares his/her world, not only for socio-affective needs but also to associate with others in the evaluation and clarification of his/her emotional experience of the SR object. The dialogical specificity of the social sharing of emotion is what will make the psychological tension evolve, through communication processes, into psychosocial tension (phase 4). The potential referential revision of an SR object during the social sharing of emotion is largely subject to the social and cultural insertions of individuals, thus defining zones of psychosocial tension. Conceptually, the CEPIM generally echoes the psychodynamic, semiotic, and dialogical model (Salvatore & Freda, 2011), focusing on the role of affect in sensemaking. The CEPIM specifically addresses the issue of the processes involved in the dynamics with SRT as a particularly suited framework to study the role of emotion in the construction of social knowledge.

Figure 1

The Cognitive-Emotional Process Integrative Model of Social Representations (Bouriche, 2022).



By placing tension at the heart of the representational dynamics, thus supporting Moscovici's hypothesis on tension as a driver of SRs (Moscovici, 1984b, 1988), the CEPIM invites us to consider SRs as both cognitive and emotional processes. In this regard, Bouriche (2022) pointed out that each of the four phases must be considered in the context of the whole triad. The elements of the psychosocial triad Ego-Alter-Object form an indivisible relation and make sense only in relation to one another. The most important feature in the triad is its dynamics. It involves not only individual cognitive processes but relationships and interactions in the meaning-making process. The CEPIM therefore requires a double investigation in the study of the dynamics of SRs. On the one hand, it must capture the individual dynamics of meaning-making (phase 1: emotional tension, and phase 2: psychological tension). On the other hand, it must also highlight the interactional (phase 3: dialogical tension) and shared genesis of meaning (phase 4: psychosocial tension).

THE FUNDAMENTAL ROLE OF THE MEANING-GENERATIVE FUNCTION AT THE HEART OF THE CENTRAL CORE THEORY

Conceptualizing SRs as cognitive-emotional processes amounts to studying the role of emotions on the dynamics of an SR and thereby their contribution to the construction of social

knowledge. The meaning-generative function essential to the central core theory (CCT; Abric, 1993; Moliner & Abric, 2015) will play a decisive role in this dynamic. The meaning-generative function relates to the role of the status of the representational components in the meaning given by individuals to an SR object. The status of the representational components refers to a constituent of SRs, the consensus dimension. Not all components of an SR play the same role in the production of meaning It is only through an analysis of the meaning-generative function that the dynamics of an SR could be studied. In this regard, the central core theory based on the concept of consensus will be of great help in examining SRs as cognitive-emotional processes. According to the CCT, an SR object consists of central (highly consensual) and peripheral (poorly consensual) components (Abric, 1993) that have specific but complementary roles. Homogeneity, insensitivity to the immediate context, and stability are characteristics of central components (CC). As such, they constitute the locus of both group consistency (Bonetto & Lo Monaco, 2018) and the definition of the system of anticipations and expectations regarding the object (Abric, 1993). Peripheral components (PC) relate to aspects sensitive to the immediate context and reflect the heterogeneity of the group. CCT will be useful in identifying the consensual status of SR components and their role in individual and collective position-taking toward the tension-related object. The reasons for resorting to the methodological framework of CCT were twofold. Firstly, more specifically oriented toward the examination of the process of objectification, the CCT allowed the consensual status (high-central/low-peripheral) of the components of the SR field to be identified before associating it with the nature of emotional experience. Secondly, the identification of the status of SR components was needed for analyzing the internal dynamics of the SR object following emotional experience. This analysis focuses on the study of the impact of an emotional experience on the representational field of an SR object. This impact will result in more or less significant variations of SR components. These variations are to be interpreted based on the context of change and evolution of SRs within the CCT.

In this perspective, Flament (1994) presented a model of SRs dynamics based on the principle of cognitive economy. He argued that individuals cannot afford to question an SR object at the slightest dissonance or inadequacy. According to Flament, peripheral components play an essential role in the dynamics of SRs. Peripheral components place conditionality in representational systems. A dissonance or inadequacy, even if it constitutes a questioning of the SR object, will first be dealt with under a conditionality principle and will not systematically entail a change. In situations faced with conditionality, modulations will first be carried out on

peripheral components to integrate the dissonance, thus illustrating the importance of their defensive role in the preservation of the symbolic meaning of an SR conveyed by central components. However, if the dissonance were permanent, an SR object would undergo wide transformations that would sooner or later result in a change also involving central components. Thus, the structural status of SR components involved in the internal dynamics of an SR object related to emotions could constitute a relevant operational variable to identify tension zones, in particular from two of them creating the context and the evolution of the meaning-making of SR objects by individuals: one linked to the status of SR objects in the social, cultural and subjective sphere, and the second related to the constituted and constituting nature of SRs (Kalampalikis & Apostolidis, 2021).

Moreover, if one wants to establish theoretical bridges between emotions and SRs, and to specify the status of the components in the study of SRs as cognitive-emotional processes, taking into account the evaluative dimension of the two concepts is essential. Indeed, an individual needs to be able to analyze and evaluate reality, whether he/she does so through his/her own experience (emotions) and/or a common vision conveyed within his/her group belongingness (SRs). Research carried out in the appraisal theory of emotion has given a central place to the evaluative nature of emotion (Arnold, 1960; Frijda, 1986; Lazarus, 1991; Scherer, 2001). The appraisal process provides, on the one hand, knowledge about the object involved in an emotional experience, and, on the other hand, emotional valence. Bridging SRs and emotions therefore leads us to include the study of the valence of SR components in CCT. The valence of SR components can have a crucial role in the meaning-making process related to the emotional experience of the SR object. Indeed, an SR object can be characterized (a) by positive central components, or (b) by negative central components added by positive or negative peripheral components. Thus, relying on Bouriche's approach of emotional tension as signaling dissonance with expectations carried by central components of an SR object (Bouriche, 2022), a positive emotion could be produced by a reality more than favorable to positive central components or unfavourable to negative central components of an SR object. In contrast, a negative emotion could be produced by a context unfavourable to positive central components or more than favorable to negative central components of an SR object. Emotions will result from this significant dissonance. This phenomenal experience of a significant Ego-Object dissonance, that is, a flaw or violation of the expectation system, can be illustrated with the concrete example of teamwork as an SR object. This object can be characterized by a positive central component such as 'efficiency' or by a negative one such as 'conflicts'.

According to CCT, these two opposite central components will give rise to two different SRs of teamwork, and therefore two different expectation systems: one expects to be efficient for the first and to face conflicts for the second. A positive emotion could thus be produced by a teamwork situation that was more effective or less conflictual than expected. Conversely, a negative emotion could be produced by a teamwork context that was less effective or more conflictual than expected. This leads to the general hypothesis that the dissonant nature (positive or negative) of emotional tension will put the Ego-Object relationship under a positive or negative tension which could drive contrasted internal dynamics of an SR object depending on the status (structure and valence) of its components prevailing before the emotional experience of the object. This general hypothesis is in line with some studies directly related to the role of emotions in the internal dynamics of SRs (for a review, see Piermattéo, 2021). In the study of SRs as cognitive-emotional processes, we suggest calling the differences in results related to the status of SR components the 'Appraised-Structural-Effect'. The Appraised-Structural-Effect refers to the 'SR Structure-Effect' (Skandrani-Marzouki et al., 2015) distinguishing central and peripheral components supplemented by their valence.

Thus, the meaning-generative function of SRs leads us to take a close look at the role of SR components regarding their status (structure and valence) in the cognitive-emotional process. How do the internal dynamics of an SR object operate according to the status of its components (structure and valence) and the dissonant nature (positive or negative) of emotional tension?

After identifying the content and structure of an existing SR object (pre-phase), this empirical contribution aims to advance the CEPIM by examining individual tensions of phase 1 (emotional tension) and phase 2 (psychological tension) described in the model. Three hypotheses have been considered regarding, on the one hand, the dissonant nature (positive or negative) of emotional tension (H1) and, on the other hand, its impacts on the internal dynamics of an existing SR object (H2.1, H2.2).

The basic hypothesis assumes that emotional tension corresponds to a significant Ego-Object dissonance signaling a flaw or a violation of expectations when facing the reality of an existing SR object. Positive and negative emotional tensions are expected to reflect respectively positive and negative dissonance with expectations (H1). The dissonant nature (positive or negative) of emotional tension will be likely to affect differentially the internal dynamics of an SR object regarding the status of its components. An emotional Appraised-Structural-Effect highlighting the moderating effect of the status of SR components is predicted (H2.1). For an

SR object characterized by positive central components (case a), a positive emotional tension will result in dynamics strengthening or stabilizing central components and weakening or stabilizing peripheral ones. A negative emotional tension will result in dynamics weakening central components and strengthening peripheral ones. For an SR object containing negative central components (case b), a negative emotional tension will result in dynamics strengthening or stabilizing central components and weakening peripheral ones. A positive emotional tension will produce dynamics that weaken central components and strengthen peripheral ones. Because any existing SR object is a place of social investment (Jodelet, 2015) or "will be a stake, an issue, or a concern for some sets of individuals whose activity or interests are involved with this object" (Lahlou, 2001, p. 137), this emotional Appraised-Structural-Effect on the internal dynamics of the SR object will be regulated by social membership of individuals. Given the symbolic intergroup relations, a social regulation of the internal dynamics of the SR object is expected, but only in the case of social dissension regarding the valence of SR components (H2.2).

At a psychological level, this social regulation in the representational dynamics following emotional experience will reflect the individual's positioning and his/her level of adherence to the SR object, that is, a psychological anchoring process. The latter refers to the strictly semantic aspect of anchoring (Buschini & Doise, 2008) related to the association between representations and experiences of the object and conceived as an imputation or integration of meaning into something already thought (Jodelet, 2004). If no social dissension on the valence of SR components is observed, emotional tension will lead to a similar social dynamic.

METHOD

Teamwork as a controversial SR object

The present research focused on the study of the cognitive-emotional process related to the SRs of teamwork. Situated at the crossroads of personal and collective processes, teamwork is ubiquitous, a typical object of social practices that is marked by societal issues (Driskell et al., 2018). As an object of social practices, subject to instability and tensions, teamwork has the specific characteristics constituent of an SR object (Moliner, 1993). Regarding its *specificities*, grasping this object seems to be important for individuals due to its ubiquity in the work organizational context. Frequently discussed in direct or indirect communications between members of a group, this object leads to considering the *characteristics of the group*. It also

carries deep social and economic *stakes* disclosed during intergroup interactions that create various *social dynamics*. Finally, the processes at work in the representational genesis of this object do not seem to originate from an *orthodox control system* of meaning-making.

In the workplace context, practices regarding gender in teamwork can have a significant influence on the representations of this object, both positively and negatively. Indeed, men seem to be more likely to adopt competitive behaviors that can yield negative teamwork experiences (Gonzalez-Mulé et al., 2013; Matos et al., 2018). Women, on the other hand, tend to prefer a more collaborative and harmonic setting (Chua & Jin, 2020; Hassan & Ayub, 2019). Given its place in the symbolic intergroup relations regarding gender roles in the organisation of work (Badura et al., 2018; Fenech et al., 2022; Lee et al., 2018; Myaskovsky et al., 2005), teamwork could constitute a controversial SR object, particularly when related to emotional experience. Therefore, gender identity was selected in the present research as the variable of social membership.

Participants

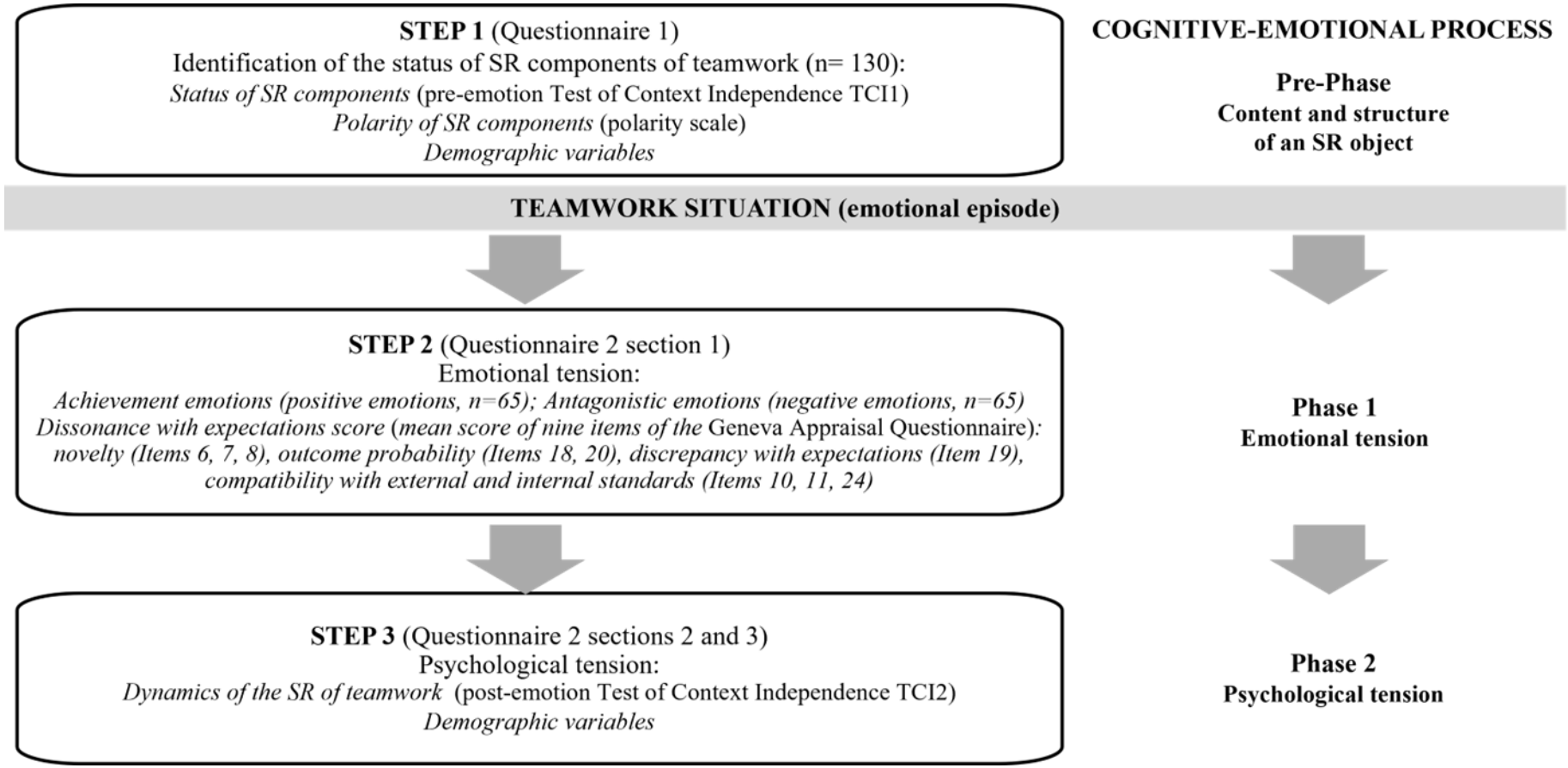
The participants in this study were 130 French university students from a management program (53.1% females; M_{age} = 20.5, SD = 1.65).

Procedure

In this contribution, the internal dynamics of the SR of teamwork were examined from the pre-phase to phase 2 of the CEPIM (Figure 2): identification of the status of SR components, emotional tension, and psychological tension. Data were collected using two anonymous self-administered questionnaires (Q1 and Q2). Q1 was related to the pre-phase (identification of the status of SR components). Q2 referred to phase 1 (emotional tension) and phase 2 (psychological tension) and was administered two weeks after Q1.

Figure 2

Methodological approach (Pre-Phase, Phase 1, and Phase 2).



The pre-phase was related to the study of existing SRs of teamwork. This phase examined the status (content, structure, and valence) of an SR field object before associating it with an emotional experience. Identifying the status of an SR field object was therefore a preliminary phase in the study of the cognitive-emotional process. The pre-phase followed Jodelet's recommendation that we should not neglect that the process "is upstream and downstream of the product and that only by taking into account the contents can the process be systematically studied" (Jodelet, 2015, p. 24).

Phase 1 (emotional tension) and phase 2 (psychological tension) took place two weeks after the pre-phase. They consisted of a business simulation selected to create a teamwork context and to produce emotional events. The simulation was designed to integrate group decision-making across several business functions (production, sales, marketing, supply, and human resources). In the simulation, students managed company teams for three days in a competitive environment and separate rooms. The business simulation consisted of ten periods of group decision-making processes. For each period, the cycle of the team-working processes was the same: analysis of the situation of the company, decision-making, and results reporting. No student had any managerial experience. Teams were composed of seven to nine female and male participants. There were no designated leaders. The team was self-managed, with each member acting as a board of directors of the company during the business simulation. Teams remained the same during the entire simulation period. Before the business simulation, teams defined their strategy and goals to guide decision-making. Each decision period lasted between 1½ and 2 hours. Participants made strategic, tactical, and operational decisions during each period. These decisions were recorded on a sheet of paper and handed to the instructor, who then centralized all the data on a separate computer. Before each new decision period, teams received a report like that of a real company, containing all the useful production, commercial, financial, and social statements. The exercise was very relevant to the participants as they had to present a social and economic report. During the business simulation, several unexpected events, fortuitously (strategies of competing companies, sudden absence of a team member, technical problems) or induced by organizers (strikes, legal proceedings, incidents in the supply chain), were likely to produce dissonance with team members' expectations regarding strategy and goals. According to Weick (1995), these kinds of events potentially generate dissonance with expectations and therefore emotions. Phase 1 related to a specific constraint of reality on the SR of teamwork causing emotional tension: unexpectedness. It consisted of assessing the

dissonance with expectations of emotions related to teamwork experiences. Phase 2 aimed at analyzing the impact of emotional tension on the internal dynamics of the SR of teamwork.

Materials and Designs

Pre-phase: identification of the status of SR components of teamwork

In the pre-phase, participants were asked to answer the first questionnaire (Q1). Q1 contained three sections.

Structural Status of SR components of teamwork (TCI 1)

The first section of Q1 consisted of a first administration of the Test of Context Independence (TCI; Lo Monaco et al., 2008) before the emotional episode (TCI 1). Completed before potentially experiencing emotions, the test included eighteen items composing the SR field of teamwork (Bouriche, 2014). The TCI is used to validate the structural status – central or peripheral – of the components of the SR field. The TCI is based on the property of insensitivity to context variations and provides centrality estimates based on the non-negotiable, salient, and consensual characteristics of central components. To conclude whether a component was central or peripheral, for example, ‘efficiency’, the question was asked as follows: ‘For you, is teamwork always, in all cases, an activity that requires efficiency?’ Subjects responded on a four-point Likert scale: ‘definitely not’ (value '0'), ‘rather not’ (value '1'), ‘rather yes’ (value '2'), ‘definitely yes’ (value '3'). The last two points (that is, ‘rather yes’ and ‘definitely yes’) referring to insensitivity to context variations were coded with the binary value '1', thus allowing the central components to be identified. To analyze the structural status – central or peripheral – of the components of the SR field, an assertion rate (from 0 to 100%) was calculated from the frequency of the binary value '1' to the TCI. The closer the rate was to 100% (highly consensual) the more a component was considered a central component of the SR object. To limit an ordering effect, TCI 1 was used with a presentation of SR components in four random orders.

Valence of SR components of teamwork

The second section of Q1 included a polarity scale of the SR object components. At this step, after completing TCI 1, subjects were also asked to assess the valence – positive (rated '+1'), negative ('-1'), or neutral ('0') – of each component of the SR field of teamwork. This procedure allowed us to identify participants’ positioning on the valence (negative or positive) of SR components and to choose the orientation of hypotheses (case a or b). To examine participants’

positioning on the valence of SR components, valence scores according to their structural status were computed. Mean valence scores of central and peripheral components were computed. The closer the mean valence was to '1', the more consensually positive the component, and the closer the mean was to '-1', the more consensually negative the component.

Gender

The third section of Q1 elicited participants' demographic variables: age (in years) and gender (1: *woman*, 2: *man*, 3: *nonbinary*, 4: *do not want to answer*).

To identify the status of the eighteen components characterizing the SR field of teamwork, the assertion rates from the TCI1 were submitted to the Dmax test of Kolmogorov-Smirnov {[1 – (1,36/√n)] 100} (Kanji, 2006). Due to the consensual nature of the central components, only components not significantly from the theoretical rate of 100% could be considered central components (high-consensus components) with certainty. Components that did not meet this condition were considered peripheral.

To analyze gender positioning on the valence of SR components, a one-way analysis of variance was planned with gender as a between-subjects factor and the mean valence scores of central and peripheral components as dependent variables.

Phase 1: dissonant nature of emotional tension and teamwork experience

Administered after the business simulation and two weeks after Q1, the second questionnaire (Q2) also comprised three sections. The first section of Q2 contained the Geneva Appraisal Questionnaire (GAQ version 3, Scherer, 2001) assessing the nature of the emotional tension experienced (phase 1: emotional tension). The second section of Q2 aimed to examine the impact of emotional tension on the dynamics of the SR object (phase 2: psychological tension) from a second administration of the TCI after the emotional report (TCI 2). The third section of Q2 elicited again the demographic variables.

Positive and negative emotional tensions

The first section of Q2 was carried out based on the component process model of emotion (CPM; Scherer, 2009). Immediately after participating in the business simulation, participants were asked to recall two significant emotional events that occurred during the simulation, a positive and a negative one. The recall of positive and negative emotional episodes will allow us to analyze, according to the CEPIM, the impact of contrasting relationships to reality, one

positive and the other negative, on the SR object dynamics (in this paper, at a psychological level). For this purpose, the GAQ was used. The GAQ was developed by the Geneva Emotion Research Group based on Scherer's component process model of emotion. Its purpose was to assess as much as possible – through their recall and their verbal report – the results of individuals' appraisal process in the case of a specific emotional event. To do so, the instrument contained questions that draw on the appraisal criteria suggested by Scherer's model (i.e., the stimulus evaluation checks SECs: novelty, intrinsic pleasantness, task–goal relevance, goal conduciveness, coping potential, compatibility with internal and external norms or standards, intensity). The order of recall of the two emotional events was balanced.

Directly taken from the CPM, the concept of 'modal classes of emotions' (Scherer, 1994) defines similar and recurring patterns or prototypical evaluations of emotion. In this study, because of their opposite relations with goal conduciveness and dissonance with expectations checks, achievement and antagonistic emotions were selected to define respectively dissonant positive and negative emotional tensions. Achievement emotions (e.g., pride, joy, or satisfaction) are characterized by the experience of a high goal conduciveness event and are indicative of a relationship of positive dissonance due to an event more than favorable to expectations. Antagonistic emotions (e.g., hate, disgust, or anger) refer to an experience of a low goal conduciveness event and reflect a negative dissonance related to an event unfavorable to expectations and leading to a negative emotional tension of frustration. Only events relating to achievement and antagonistic emotions were retained because these classes of emotions refer to contrasting realities. Indeed, according to Scherer (1994), they are characterized by opposite relationships with intrinsic pleasantness (valence), goals conduciveness and dissonance with expectations checks (goals and expectations have been satisfied for the former, but they are compromised for the latter). From the 330 emotional events collected (165 positives, 165 negatives), sixty-five events related to achievement emotions and sixty-five associated with antagonistic emotions were randomly selected, corresponding to 130 participants. Achievement emotions included 44.6% of reported emotional events related to 'pride', 30.8% to 'satisfaction', and 24.6% to 'joy'. Antagonistic emotions were composed of 38.5% to 'disgust', 35.4% of emotional events related to 'anger', 16.9% to 'hate', and 9.2% to 'contempt'.

Dissonance with expectations

Following Weick's proposition considering emotions as signals of dissonance with expectations, a dissonance with expectations mean score was used to test H1 of emotional

tension as a signal of dissonance with expectations. Nine items of the GAQ specifically related to anticipations and expectations were analyzed. These nine items, evaluated on a five-point scale (‘not at all’: value '0', ‘extremely’: value '4'), concerned three stimulus evaluation checks: novelty (items 6, 7, and 8), goal/need significance (outcome probability: items 18 and 20, discrepancy with expectations: item 19), and compatibility with external and internal standards (items 10, 11, and 24). To perform the analysis of internal consistency reliability, the score of items 6, 11, and 24 were reversed. Given their high reliability in this study (Cronbach’s $\alpha = .90$), a dissonance with expectations score, ranging from ‘-2: extremely negatively dissonant’ to ‘+2: extremely positively dissonant’, was obtained by calculating the mean of the responses to the nine items.

To study emotional tension as a signal of dissonance with expectations, a 2 (dissonant nature of emotional tension: positive *vs* negative) x 2 (gender) analysis of variance was designed with the two variables as between-subjects factors and dissonance with expectations scores calculated from the nine items of the GAQ as the dependent variable.

Phase 2: psychological tension and internal dynamics of the SR of teamwork

The second section of Q2 intended to analyze phase 2 (psychological tension) examining the cognitive-emotional process related to the impacts of the nature (positive or negative) of the reported emotion on the internal dynamics of the SR of teamwork.

Differential TCI scores

The internal dynamics of the SR of teamwork were measured using the TCI as a post-test. After the GAQ was completed, participants were asked again to answer the TCI (TCI 2). Mean Differential TCI scores from the four-point Likert scale of TCI 1 and 2 were calculated regarding the structural status of SR components of teamwork to estimate the internal dynamics of the SR object (H2.1, H2.2). The closer the differential TCI score was to 0 the lower the dynamics of SR components (stabilising effect). The closer the differential TCI score was to +3, the strengthened the SR components (strengthening effect). The closer the differential TCI score was to -3, the weakened the SR components (weakening effect). To limit an ordering effect, TCI 2 was used with a presentation of SR components in four random orders.

To analyze the impact of the dissonant nature of emotional tension on the internal dynamics of the SR of teamwork (H2.1, H2.2), differential TCI scores of central and peripheral components were computed. To test H2.1 and H2.2, a 2 (dissonant nature of emotional tension: positive *vs* negative) x 2 (gender) analysis of variance was carried out with the dissonant nature

of emotional tension and gender as between-subjects factors, and the mean differential TCI scores of central and peripheral components of the SR of teamwork as dependent variables. This analysis helped to examine how the internal dynamics of the SR of teamwork have operated (stabilizing, strengthening, or weakening effect) according to the structural status of its components, the dissonant nature of emotional tension, and gender group membership.

Participants' consent was obtained to use survey data, questionnaire responses were treated anonymously. Participants were thanked for their participation and debriefed during one of their group management classes during which the purpose and rationale of the study were discussed considering current research about SRs/emotions relationships. The Statistical Package for the Social Sciences (SPSS) version 27 was used for data entry and analysis.

RESULTS

Pre-Phase: Identification of the Status of SR Components of Teamwork

Given the results obtained on TCI 1 (Table 1), five of the eighteen components characterizing the SR field of teamwork could claim the status of central components (assertion rates (AR) > Dmax 88.1%, n = 130): ‘sharing information’ (AR: 97.7%), ‘common decisions’ (AR: 96.9%), ‘mutual assistance’ (AR: 96.2%), ‘efficiency’ (AR: 93.1%), and ‘common goals’ (AR: 91.5%). Each of these five components achieved assertion rates that were not significantly different from the theoretical rate of 100%. The high consensus meaning constituted by these five components conveyed a communal vision of teamwork. However, they do not respect the criterion of non-negotiability of central components, and this would lead to questioning the issue of consensus. Boolean analysis (Flament, 1996) and the nucleus’ gathering function of matrix nucleus theory (Moliner, 2016) can provide an answer to this issue. After a conventional analysis, based on the use of the Kolmogorov-Smirnov test, participants who consider at least one component as central by the group are counted. Flament demonstrated that such a way of proceeding allows us to obtain a rate of 100% of subjects considering at least one component as central. In our sample, 100% of participants considered at least three of the five components of the communal vision of teamwork as central. This common matrix thus allows every group member to “possess a consensus-generating and individual-difference-integrating conceptual framework. In fact, if knowing all the words of a given language is unnecessary to use it, likewise, it is not necessary for all members of a given group to agree with every core element of a SR” (Moliner, 2016, p. 3.9). This common matrix defined clear anticipations and expectations about a teamwork context. To express these anticipations and expectations, one

could say that participants anticipated and expected to 'work efficiently', 'have common goals', 'make common decisions', 'share information', and 'afford each other mutual assistance'. All other thirteen components had the status of peripheral components referring to a socio-technical vision of teamwork.

Table 1

Status (TCI 1) and polarity rates of SR components of teamwork (pre-phase).

"For you, is teamwork always, in all cases, an activity:	Assertion Rate (%)	Valence[b]
1. that requires information sharing	97.7 [a]	.82
2. in which members make common decisions	96.9 [a]	.65
3. that requires mutual assistance	96.2 [a]	.92
4. that requires efficiency	93.1 [a]	.82
5. in which members have common goals	91.5 [a]	.81
6. that requires work planning	86.2	.73
7. that requires conflict management	85.4	-.07
8. that requires skills management	83.8	.72
9. that requires mutual recognition	82.3	.59
10. that requires dividing roles and assignments	81.5	.74
11. that requires working methods	80.0	.74
12. that requires norms and rules application	75.4	.43
13. that requires material organizing	74.6	.53
14. in which members are dependent on each other	46.9	-.52
15. in which members share common values	32.3	.49
16. that requires hierarchy	26.9	-.12
17. that requires exerting power	25.4	-.22
18. in which members share the same ideas and opinions	22.3	.05

Note: N = 130. [a]SR components determined as central components achieving an assertion rate > Dmax (88.1%) based on the Kolmogorov-Smirnov test. [b] Valence ranges from -1 to 1.

Female participants ($M_{FemaleCC}$ = .78, *SD* = .31) and male participants (M_{MaleCC} = .83, *SD* = .21) rated the valence of central components conveying the communal vision of teamwork in

the same positive way, $F(1, 128) = 1.14$, *ns*, 90% CI [.000, .127][1], while they disagreed in assessing the valence of peripheral components referring to the socio-technical vision of teamwork. Male participants (M_{MalePC} = .48, *SD* = .25) rated peripheral components significantly more positively than female participants ($M_{FemalePC}$ = .17, *SD* = .28), $F(1, 128) = 44.48$, $p < .001$, $\eta_p^2 = .258$, 90% CI [.235, .390]. The results showed a large gender consensus of positioning on the valence of central components and some gender dissension of positioning on the valence of peripheral ones. The dissension of positioning on the valence of peripheral components of the SR of teamwork referred, in our opinion, to the gender stereotype in the workplace context. The gender positioning observed on the valence of SR components of teamwork allowed us to consider focalization and inference pressure phenomena (Rateau et al., 2011) in the internal dynamics related to the emotional tension associated with this SR object. It led us to specify H2.1 regarding the case (a) of an SR object characterized by positive central components; and H2.2 regarding the cases of, on the one hand, similar SR dynamics for central components of the SR of teamwork between female and male participants, and, on the other hand, contrasting gender SR dynamics for peripheral ones.

Phase 1: Dissonant Nature of Emotional Tension and Teamwork Experience

Confirming H1, a main effect of emotional tension was observed on the reported dissonance with expectations, $F(1, 126) = 254.80$, $p < .001$, $\eta_p^2 = .669$, 90% CI [1.433, 1.778]. Emotional tension resulted in significant dissonance. As expected, the results indicated that positive emotional tension was related to positive dissonance with expectations ($M_+ = 0.98$, *SD* = 0.41), while negative emotional tension reflected negative dissonance with expectations ($M_- = -0.62$, *SD* = 0.70). There was no interaction effect between gender and the nature of emotional tension, $F(1, 126) = .59$. Regarding dissonance with expectations, female participants, $F(1, 126) = 123.04$, $p < .001$, $\eta_p^2 = .494$, 90% CI [1.304, 1.762], and male participants, $F(1, 126) = 131.81$, $p < .001$, $\eta_p^2 = .511$, 90% CI [1.444, 1.932], rated emotional tension in the same way. Female and male participants related positive emotional tension to positive dissonance with expectations ($M_{Female+} = 0.98$, *SD* = 0.42, $M_{Male+} = 0.99$, *SD* = 0.41) and negative emotional

[1] The reported CIs of η_p^2 estimates follow current recommendations (Lakens, 2014). Unlike effect size estimates like Cohen's d or Hedges' g, squared estimates like η_p^2 cannot take on negative values. As the point estimates cannot be negative, the lower limits of CIs cannot, either. Additionally, 95% CIs could include zero even in the presence of a statistically significant result and start at 0 even when the result is n.s. Thus, CIs for η_p^2 estimates of n.s results are reported as 90% [.000; upper limit].

tension to negative dissonance with expectations ($M_{Female-}$ = -0.56, *SD* = 0.69, M_{Male-} = -0.70, *SD* = 0.71). This difference in dissonance with expectations related to the nature (positive or negative) of emotional tension could potentially trigger psychological tensions leading to contrasting SR dynamics of the tension-related object. This will be addressed in the study of the second phase of the cognitive-emotional process.

Phase 2: Psychological Tension and Internal Dynamics of the SR of Teamwork

The descriptive statistics can be found in Table 2. Given the case (a) specified by the polarity analysis in the pre-phase of an SR object characterized by positive central components, an emotional Appraised-Structural-Effect highlighting the moderating effect of the status of SR components was predicted (H2.1). For positive emotional tension, dynamics strengthening or stabilizing central components of the SR of teamwork and weakening or stabilizing peripheral ones were expected. For negative emotional tension, dynamics weakening central components and strengthening peripheral ones were predicted. Hypothesis 2.1 of an emotional Appraised-Structural-Effect was confirmed. As predicted, the nature (positive or negative) of emotional tension had a contrasting effect on the internal dynamics of the SR of teamwork regarding the status of its components. A main effect of emotional tension was observed on the dynamics of central components, $F(1, 126) = 3.82$, $p = .05$, $\eta_p^2 = .029$, 90% CI [0.027, 0.322]. As expected, the results indicated that positive emotional tension was related to dynamics stabilizing central components (M_{+CC} = 0.04, *SD* = 0.44), while negative emotional tension resulted in dynamics weakening them (M_{-CC} = -0.14, *SD* = 0.56). A main effect of emotional tension was also observed on the dynamics of peripheral components, $F(1, 126) = 9.33$, $p < .01$, $\eta_p^2 = .069$, 90% CI [0.110, 0.370]. As predicted, the results indicated that positive emotional tension was related to dynamics stabilizing peripheral components (M_{+PC} = -0.01, *SD* = 0.40), while negative emotional tension resulted in dynamics strengthening them (M_{-PC} = 0.24, *SD* = 0.49).

Table 2

Impact of emotional tension on the internal dynamics of the SR of teamwork.

Gender	Emotional Tension	N	Differential TCI Central Components	Differential TCI Peripheral Components
Females	Positive	35	0.07 (0.40)	-0.09 (0.38)
	Negative	34	-0.18 (0.57)	0.24 (0.50)
Males	Positive	30	0.01 (0.49)	0.09 (0.40)
	Negative	31	-0.08 (0.56)	0.24 (0.49)
Total	Positive	65	0.04 (0.44)	-0.01 (0.40)
	Negative	65	-0.14 (0.56)	0.24 (0.49)

Note: mean differential TCI scores range from -3 to +3 (Standard Deviations in Parentheses).

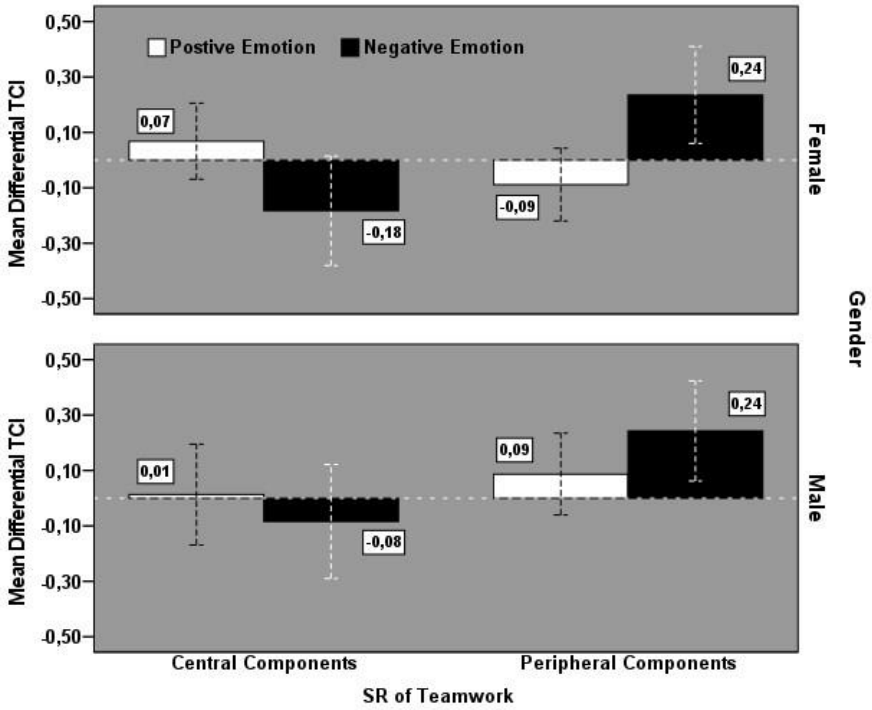
Given the gender consensus observed on the valence of central components of the SR of teamwork and the dissension noticed on the valence of peripheral ones, a social regulation of the emotional Appraised-Structural-Effect was expected (H2.2). This social regulation will result in similar gender representational dynamics for the former and contrasting gender ones for the latter. Hypothesis 2.2 was partially confirmed. On the one hand, there was no interaction effect between gender and the nature of emotional tension on the dynamics of central components of teamwork, $F(1, 126) = .75$, concluding similar gender dynamics of these components. However, the analysis testing the simple effects of emotional tension within female and male participants showed gender differences in the dynamics of central components (Figure 3). Disconfirming our hypothesis, only for female participants, positive emotional tension was related to dynamics stabilizing central components ($M_{+FemalesCC} = 0.07$, $SD = 0.40$), while negative emotional tension resulted in SR dynamics weakening them ($M_{-FemalesCC} = -0.18$, $SD = 0.57$), $F(1, 126) = 4.23$, $p < .05$, $\eta_p^2 = .033$, 90% CI [0.049, 0.453]. For male participants, there was no difference in the dynamics of central components regarding the nature of emotional tension ($M_{+MalesCC} = 0.01$, $SD = 0.49$, $M_{-MalesCC} = -0.08$, $SD = 0.56$), $F(1, 126) = .56$, *ns*, 90% CI [0.000, 0.312].

On the other hand, contrasting gender dynamics of peripheral components of teamwork were expected. Although the interaction between gender and the nature of emotional tension on the dynamics of peripheral components was not significant, $F(1, 126) = 1.14$, concluding similar gender dynamics of these components, the analysis testing the simple effects within female and male participants did show contrasting gender dynamics. As expected, regarding

the nature of emotional tension, the dynamics of peripheral components did not operate in the same way for female and male participants. Only for female participants, positive emotional tension was related to SR dynamics weakening peripheral components of the SR of teamwork ($M_{+FemalesPC}$ = -0.09, *SD* = 0.38), while negative emotional tension resulted in SR dynamics strengthening them ($M_{-FemalesPC}$ = 0.24, *SD* = 0.57), $F(1, 126) = 9.04$, $p < .01$, $\eta_p^2 = .067$, 90% CI [0.145, 0.501]. For male participants, there was no difference in the dynamics of peripheral components regarding the nature of emotional tension ($M_{+MalesPC}$ = 0.09, *SD* = 0.40, $M_{-MalesPC}$ = 0.24, *SD* = 0.49), $F(1, 126) = 1.86$, *ns*, 90% CI [0.000, 0.345].

Figure 3

Emotional tension, gender, and internal dynamics of the SR of teamwork.



DISCUSSION

As predicted, the reported emotional tension was largely related to the level of dissonance with expectations. These results confirm that perceived variations of a teamwork situation, positively or negatively dissonant with expectations, are related to the dissonant nature (positive or negative) of emotional tension. The results on the impact of emotional tension on the internal dynamics of the SR of teamwork also suggested an emotional Appraised-Structural-Effect. As expected, while positive emotional tension produced dynamics stabilizing the SR field of teamwork, negative emotional tension, unfavorable to expectations, led to dynamics weakening

central components conveying the symbolic communal vision of teamwork and strengthening peripheral components referring to the socio-technical vision of teamwork. But unlike what was predicted, this emotional Appraised-Structural-Effect in the internal dynamics of the SR of teamwork was only operated by female participants. For the latter, negative emotional tension led to a process of semantic anchoring resulting, on the one hand, in a weakening effect of central components of the SR conveying the communal vision of teamwork more likely to be associated with the female stereotype (Davcheva & González-Romá, 2022; Post, 2015), and, on the other hand, in a strengthening effect of peripheral components related to the socio-technical dimension of teamwork. These components related to the socio-technical dimension of teamwork reflect agentic attributes more defining characteristics of the male stereotype in the workplace context (Eagly & Wood, 2016; Ellemers, 2018; Heilman, 2012). This last result emphasizes that knowledge about an object is rarely neutral. It is always actively constructed from different positioning of social agents thus highlighting zones of tension about the object. These zones of tension would then reflect teamwork as an object endowed with epistemic and identity stakes (de-Graft Aikins, 2012; Jodelet, 2015; Kalampalikis & Apostolidis, 2021).

The fact that semantic anchoring was only observed after negative emotional tension for female participants, could be interpreted as a clarification against the gender stereotype concerning the organization of work. For female participants, compared to male participants, the experience of a negative emotion related to a teamwork situation led to a representational dynamic calling into question the consensual vision of teamwork, thus constituting a critique of the social order (Howarth, 2006). Through SR dynamics of teamwork triggered by negative emotions, power relations and social positions related to gender are expressed which are governed by strong social normativity. This is why teamwork can be considered, according to the socio-genetic approach, a tensional object. Thus, the results regarding the internal dynamics of the SR object revealed a cognitive-emotional process regulated by the socio-symbolic matrix that governs gender roles and relationships (Kalampalikis & Apostolidis, 2021). Facing a teamwork situation after negative emotional tension, female participants, by weakening central components, seemed to be more inclined than male participants to question the coherence of the SR object. In this respect, at an interobjective level, these contrasting gender SR dynamics related to negative emotional tension were inconsistent with previous studies emphasizing the contextual insensitivity property of central components (central system) of an SR (Skandrani-Marzouki et al., 2015; Wagner et al., 1996).

CONCLUSION

This empirical contribution was aimed at addressing the lack of empirical studies related to the model proposed by Bouriche (2022) in examining the psychological tension of the cognitive-emotional process related to the SR of teamwork. For this purpose, a special emphasis was placed on the cognitive impact of the nature (positive or negative) of emotion. As predicted, the results showed that the cognitive-emotional process at work in the internal dynamics of the SR of teamwork had produced dynamics highlighting an emotional Appraised-Structural-Effect. They clearly showed, through the meaning-generative function of SRs (Abric, 1993; Rateau et al., 2011), the role of SR components, regarding their status, in the psychological tension. This leads us to stress the importance of differentiating the role in the study of SRs as cognitive-emotional processes of SR components according to their structural status (central or peripheral) and the individuals' positioning on their valence. The identification of the status of SR components constitutes therefore a necessary step in the study of SRs as cognitive-emotional processes. Thus, the main contribution of this paper suggests that the structural approach to SRs, and more specifically the Central Core Theory, can provide the theoretical and methodological framework for supporting future research on the construction of social knowledge based on the cognitive-emotional process.

However, some limitations to the present study should be noted. Given the diversity of gender identities, this research focused primarily on the impacts of male-female emotional experience on the internal dynamics of SRs of teamwork. Future research should thus include other gender categories, including non-gendered, in their investigations. This will allow researchers to build a more comprehensive understanding of how emotional experience regarding gender diversity influences SRs of teamwork, and more generally how emotions can contribute to creating a more inclusive teamwork environment. The present research is only an exploratory empirical approach to the CEPIM. While offering some support to the model, these first results need to be replicated and confirmed by examining the cognitive-emotional process from other SR objects as well as with sociocultural variables other than gender. From a methodological point of view, although the main aim of the study was to examine the impact of emotionally contrasting constraints of reality (positive and negative) on SR dynamics, it would have been relevant to add a control group (without emotional experience). Including a control group in the research design would have led us to predict that without emotional tension, we would observe an SR stabilizing effect primarily regarding central components. Future research would also have to address phases 3 and 4 of the model (Figure 2).

Finally, this research more generally highlights the relationship between SRs and everyday life mediated by emotional states, suggesting that emotions are signals for evaluating the relevance of representation systems in their function of anticipating reality (Guimelli & Rimé, 2009). Situating the study of the relationships between SRs and emotions in a conceptual approach to the dynamics of continuity and change (Contarello, 2021), we argue that the fundamental function of emotional experience is to contribute to the social and cultural integration of reality. Accordingly, the study of SRs as cognitive-emotional processes seems to constitute a well-suited ontology from which to develop a social psychology of and for world-making (Jovchelovitch, 2007; Power et al., 2023). This last point has important implications for the place that should be given to emotions in the study of the conditions of the construction of social knowledge.

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