

Project title and code

A cognitive architecture for social groups: Further development and validation (CNCS – UEFISCDI code PN-II-ID-PCE-2011-3-0482, contract No: 234/05.10.2011).

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Abstract

The decisions and actions of social groups have important and long-lasting social implications. Groups might find the cure for cancer, or might change the world forever with mindless decisions. It is therefore highly relevant to fully understand the factors that impact on information processing in small groups. Although the literature on group cognition proliferated in the last decades, no systematic attempts are made to uncover the invariable information processing mechanisms in groups. This research proposal builds on previous integrative models of information processing in groups and aims to revise and validate this unified theory of information processing in groups by empirically testing the interplay between the communication network structure developed in the group on the complexity of the emerging cognitive representation as well as on group rationality; exploring the role cognitive artifacts play in information processing in groups and ultimately exploring in simulation studies the theoretical propositions of the cognitive architecture.

Aim

To explore information processing mechanisms in groups as socio-cognitive systems and publish 10-12 papers in ISI-listed journals that explore cognitive emergence in small groups and the cultural artifacts as knowledge repositories in small communities.

Research directions

1. The exploration of cognitive emergence in small groups – the main aim of this research direction is to further extend scientific insights into the emergence of collective cognitive competencies and structures in small group settings
2. The exploration of cultural artifacts as knowledge repositories in small communities – this research direction focuses on extending the thesis of the cultural artifacts as repositories of collective knowledge structures that emerge through social interactions and shape the dynamics of social groups

Researchers

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Research output

[Synthetic scientific report for PN-II-ID-PCE-2011-3-0482 \(2011-2016\)](#)

[Raport științific integrativ privind implementarea proiectului PN-II-ID-PCE-2011-3-0482 in perioada 2011-2016](#)

[Activitățile și rezultatele științifice corelate cu etapele de implementare a proiectului PN-II-ID-PCE-2011-3-0482 in perioada 2011-2016](#)

[Synthetic scientific report in English 2011-2015](#)

[Raport științific sintetic 2015](#)

[Raport științific sintetic 2014](#)

[Raport științific sintetic 2011-2013](#)

Papers published in ISI listed journals

1. CURȘEU, P. L. & SCHRUIJER, S. G. L. (2012). „Decision styles and rationality: An analysis of the predictive validity of the General Decision-Making Style Inventory” **Educational and Psychological Measurement**, 72, 6, 1053 – 1062, DOI:10.1177/0013164412448066. (web link: <http://epm.sagepub.com/content/72/6/1053.short>)

Summary

The aim of this study was to test a comprehensive method for evaluating rationality (in its classical sense) as the

extent to which individual choices are aligned with a normative ideal. In particular, this study investigates the relationship between the five decision-making styles evaluated by GDMSI (Scott & Bruce, 1995), indecisiveness and rationality in decision-making. Using a sample of 102 middle level managers, the results show that the rational style positively predicts rationality in decision-making and negatively predicts indecisiveness, while the avoidant style positively predicts indecisiveness. The method used to evaluate rationality can be successfully used to evaluate individual rationality as well as group rationality as an emergent collective competence.

2. CURŞEU, P. L. (2013). „Demographic diversity, communication and learning behaviour in health care groups” *International Journal of Health Planning and Management*, DOI: 10.1002/hpm.2130. (web link: <http://onlinelibrary.wiley.com/doi/10.1002/hpm.2130/full>)

Summary

An integrative model of group learning was tested in a sample of 40 healthcare groups (434 respondents), and the results show that age diversity reduces the frequency of face-to-face communication whereas educational diversity reduces the frequency of virtual communication in healthcare groups. Frequency of communication (both face-to-face and virtual), in turn, positively impacts on the emergence of trust and psychological safety, which are essential drivers of learning behaviours in healthcare groups. Additional results show that average educational achievement within groups is conducive for communication frequency (both face-to-face and virtual), whereas mean age within groups has a negative association with the use of virtual communication in healthcare groups.

3. CURŞEU, P. L. & SARI, K. (in press). „*The effects of gender variety and power disparity on group cognitive complexity in collaborative learning groups*” **Interactive Learning Environments**, DOI:10.1080/10494820.2013.788029 (web link: <http://www.tandfonline.com/doi/abs/10.1080/10494820.2013.788029#.UaN4ptga61A>)

Summary

This study contributes to the literature on emergent cognition in group as it sets up to test the extent to which gender variety moderates the impact of power disparity on group cognitive complexity (GCC) and satisfaction with the group in a collaborative learning setting. GCC indicates the degree of sophistication for emergent collective cognitive representations. Using insights from gender differences in perceptions, orientations, and conflict handling behavior in negotiation, as well as gender differences in exerting social influence in small group settings we hypothesize that gender variety alleviates the negative impact of power disparity on GCC and satisfaction. We test this hypothesis in a sample of 110 student groups and our results show that for high gender variety, power disparity has a small positive effect on GCC, while for low gender variety power disparity has a negative effect on GCC. In a similar vein we show that in gender homogeneous groups, power disparity has a negative association with satisfaction, while for mixed gender groups the association between the two is not significant. The paper discusses (1) the implications of these results for the management of diversity in educational and organizational settings and (2) the use of cognitive mapping as a comprehensive evaluation tool for collaborative learning effectiveness. The paper concludes with a comprehensive framework that integrates the mechanisms pertaining to social influence processes, conflict management and social categorization process as they influence the interplay between gender diversity and power differences in groups.

4. POP- CURŞEU, I. (2012). „*Représentations sociales, peurs et règlements de conflits : les Roumains dans les chasses aux sorcières de Transylvanie (XVIe-XVIIIe siècles)*”, **Transilvanian Review**, Vol. XXI (Supplement), No 4, pp. 85-105, (web link: <http://www.centruldestudiiitransilvane.ro/detaliu.aspx?elD=642&t=Review%202009-2014>)

Summary

This paper entitled Social Representations, Fears and Conflict Regulations: The Romanians in the Witch Hunts of Transylvania (16th-18th centuries) aims to illustrate the complexity of the Romanians' implications in the witch hunts of Transylvania, during the 16th-18th centuries, particularly as victims, but also as accusers or experts. Their laws against witchcraft were not very severe, but they had to interact, in a multicultural environment, with several others legal systems and religious beliefs, more inclined to condemn magical practices and heresies. This paper discusses briefly the Transylvanian cultural context of the witch craze, presents then some trials in which the Romanians were involved, trying eventually to find some explanations for the mechanisms of xenophobic projections. Feared as strangers, source of fascination and repulsion, the Romanians, principally the women, offered a perfect scheme on which to build social representations meant to comfort the dominant ethnic groups from Transylvania (Germans, Hungarians) in their positions of power and authority. As such the paper contributes to the debate on the use of

cultural artifacts in order to better understand the dynamics of social representations in particular (rural) communities.

5. IEDERAN O.C, CURȘEU, P. L., VERMEULEN P.A. M., GEURTS, J. L. A. (2013). Antecedents of strategic orientations in Romanian SMEs: An institutional framing perspective – paper accepted for publication in **Journal for East European Management Studies**

Summary

This paper builds on threat rigidity hypothesis and explores the way in which decision-makers' representations impact on their strategic choices and strategic orientations. Using data from 325 Romanian SMEs, we test the joint effect of perceived opportunities and threats in a situation of macro institutional change on strategic orientations. Our findings show that perceived threats moderate the impact of perceived opportunities on SMEs strategic orientation in such a way that perceived threats increase the positive association between perceived opportunities and the prospector strategic orientation, as well as the negative association between perceived opportunities and the defender strategic orientation. Implications of current findings for the framing perspective in institutional theory are also discussed and directions for future research are drawn. As such, the paper opens the venue for meaningful explorations on how environmental events with both threatening and opportunity like components shape decision processes in individuals and groups. A particular area of further research inspired from this paper refers to the way in which collective representations of threats and opportunities emerge from social interactions in entrepreneurial groups.

6. MESLEC, M. N., CURȘEU, P. L., MEEUS, M. T. H. & IEDERAN FODOR, O. C. (2014). "When none of us perform better than all of us together: The role of analogical decision rules in groups" **PLoS ONE**, 9(1): e85232. doi:10.1371/journal.pone. 0085232.

Summary

During social interactions, groups develop collective competencies that (ideally) should assist groups to outperform average standalone individual members (weak cognitive synergy) or the best performing member in the group (strong cognitive synergy). In two experimental studies we manipulate the type of decision rule used in group decision-making (identify the best vs. collaborative), and the way in which the decision rules are induced (direct vs. analogical) and we test the effect of these two manipulations on the emergence of strong and weak cognitive synergy. Our most important results indicate that an analogically induced decision rule (imitate-the-successful heuristic) in which groups have to identify the best member and build on his/her performance (take-the-best heuristic) is the most conducive for strong cognitive synergy. Our studies bring evidence for the role of analogy-making in groups as well as the role of fast-and-frugal heuristics for group decision-making. Moreover, our results extend research documenting the role of interpersonal interactions (as guided by the use of various decision rules in groups) on the emergence of collective cognition in groups.

7. CURȘEU, P. L., KREHEL, O., EVERS, J.H.M. & MUNTEAN, A. (2014). "Cognitive distance, absorptive capacity and group rationality: A simulation study" **PLOS One** 9(10): e109359. doi:10.1371/journal.pone.0109359.

Summary

This study reports the results of a simulation study in which we explore the joint effect of group absorptive capacity (as the average individual rationality of the group members) and cognitive distance (as the distance between the most rational group member and the rest of the group) on the emergence of collective rationality in groups. We start from empirical results reported in the literature on group rationality as collective group level competence and use data on real-life groups of four and five to validate a mathematical model. We then use this mathematical model to predict group level scores from a variety of possible group configurations (varying both in cognitive distance and average individual rationality). Our results show that both group competence and cognitive distance are necessary conditions for emergent group rationality. Group configurations, in which the groups become more rational than the most rational group member, are groups scoring low on cognitive distance and scoring high on absorptive capacity. This simulation study extends empirical research on the emergence of collective competencies in group in two important ways. First, it uses a computational experiment to extrapolate the relationship between cognitive distance and strong group synergy in group configurations, difficult to obtain in real life groups. Second, it clarifies the interplay between absorptive capacity and cognitive distance in a simulated environment and shows that emergent group rationality depends on both average rationality of the group members and the distance between the most rational group member and the rest of the group.

8. VÎRGĂ, D., CURȘEU, P. L., MARICUȚOIU, L., SAVA, A. F., MACSINGA, I., MĂGUREAN S. (2014) "Personality, relationship conflict, and teamwork-related mental models" **PLOS One**, 9(11): e110223, doi:

10.1371/journal.pone.0110223.

Summary

An important component of group cognition are the shared perceptions of teamwork. Teamwork related mental models are evaluative individual cognitions that capture the workings and intricacies of social interactions in groups. This study seeks to explore whether neuroticism, agreeableness, and conscientiousness moderate the influence of relationship conflict experienced in groups on changes in group members' evaluative cognitions related to teamwork quality (teamwork-related mental models). Data from 216 students, nested in 48 groups were analyzed using a multilevel modeling approach. Our results show that the experience of relationship conflict leads to a negative shift from the pre-task to the post-task teamwork-related mental models. Moreover, the results indicate that conscientiousness buffered the negative association between relationship conflict and the change in teamwork-related mental models. Our results did not support the hypothesized moderating effect of agreeableness and show that the detrimental effect of relationship conflict on the shift in teamwork-related mental models is accentuated for group members scoring low rather than high on neuroticism. These findings open new research venues for exploring the association between personality, coping styles and change in teamwork-related mental models and further extend insights into the teamwork related mental models as important elements of group cognition.

9. POP- CURȘEU, I. (2014). „The gypsy-witch: Social-cultural representations, fascination and fears”, **Revista de etnografie si folclor (Journal of Ethnography and Folklore)**, Vol. 1-2, pp. 23-45.

Summary

Social representations are often encapsulated in cultural artifacts and are reservoirs of social knowledge shared within communities. This article aims to investigate a fundamental stereotype in the European mindset that of the Gypsy-witch, with data from the Romanian culture as a starting point. The methods used come from the field of cultural anthropology, history of social representations and comparative literature. The variety of methodologies aims to decrypt the complex way in which certain Roma identity formulas were created. The first part presents a few Gypsy-witch portraits in Romanian literature (Ion Budai-Deleanu, Matei Millo, Vasile Voiculescu), trying to understand how the writers' fascination with the magical universe of the Roma operates. The second section expands the investigation framework and shows how very old xenophobic social representations are at the origin of the fascination games in art and literature. Finally, the concluding part of the text addresses how the Gypsy-witch has adapted to the mass media era and how she has managed to survive centuries of persecution and xenophobia.

10. CURȘEU, P. L., MESLEC, N., PLUUT, H. & LUCAS, G. (2015). “Cognitive synergy in groups and group-to-individual transfer of decision-making competencies”, **Frontiers in Psychology**, 6:1375. DOI: 10.3389/fpsyg.2015.01375.

Summary

Literature to date mostly focused in exploring the antecedents of group level cognition and cognitive competencies and little to no attention is shown to the way in which group cognition influence the development of individual level cognitive competencies. In a field study (148 participants organized in 38 groups) we tested the effect of group synergy and one's position in relation to the collaborative zone of proximal development (CZPD) on the change of individual decision-making competencies. We used two parallel sets of decision tasks reported in previous research to test rationality and we evaluated individual decision-making competencies in the pre-group and post-group conditions as well as group rationality (as emergent group level phenomenon). We used multilevel modeling to analyze the data and the results showed that members of synergetic groups had a higher cognitive gain as compared to members of non-synergetic groups, while highly rational members (members above the CZPD) had lower cognitive gains compared to less rational group members (members situated below the CZPD). These insights extend the literature on group-to-individual transfer of learning and have important practical implications as they show that group dynamics influence the development of individual decision-making competencies.

11. MESLEC, M. N. & CURȘEU, P. L. (2015). Are balanced groups better? Belbin roles in collaborative learning groups. **Learning and Individual Differences**, 39, 81-88 10.1016/j.lindif.2015.03.030.

Summary

Emergent roles have received substantial attention in the literature and are defined as tendencies of adopting specific patterns of behaviors in interpersonal interactions during groups debates. In particular, Belbin roles have been associated with individual personality traits and argued to have an influence on the quality of teamwork and group effectiveness in general. Balanced group configurations with respect to individual roles are argued to be essential

drivers of effectiveness in teams. In a sample of 459 students organized in 84 groups this study tests the impact of group role balance on teamwork quality and three performance indicators in collaborative learning groups (group cognitive complexity, perceived performance and objective performance). The results show that group role balance positively predicts group performance in preliminary phases of the group project but not in later phases. Moreover, group role balance positively predicts group cognitive complexity and is negatively related to teamwork quality. The results hold only when role balance is conceptualized as a configural property of groups instead of a sum of individual roles. The findings of the study have implications for the design of collaborative learning groups in order to engage in effective information processing.

12. POP-CURȘEU, I. (2015). Social representations of religiosity in the two Săpânța cemeteries. **Revista de etnografie și folclor (Journal of Ethnography and Folklore)**, Vol. 1-2, 131-149.

Summary

The Merry Cemetery of Săpânța (Maramureș, Romania) is a collection of cultural artefacts that illustrate the dynamics of the community and can be considered a reservoir of social representations. This paper analyses the signification of popular religiosity in the epitaphs preserved in the two existing cemeteries. The cemeteries, fruit of the artistic vision of Ioan Stan Pătraș (1908–1977), contain many ranks of richly decorated blue crosses showing, in verses and images, episodes of the villagers' lives. First, through iconographical analysis, the paper criticizes the idea spread by communist propaganda that Pătraș leaves behind the tradition of religious art in favour of a laic and profane approach to death and the sacred. Then, the paper proposes an interpretation of religious characters painted on the crosses of Pătraș and of his disciples: Christ, the Virgin, angels, death, white doves, Saint Elias. Before the conclusions, I try to understand why the universe of religious practices is seen in the rural community of Săpânța (but also in other social groups) as a mainly feminine one. The analysis of this rich cultural heritage provides a good understanding of how the community operates as a large socio-cognitive system.

13. MESLEC, M. N., AGGARWAL, I. & CURȘEU, P. L. (2016). The insensitive ruins it all: Compositional and compilational influences of social sensitivity on collective intelligence in groups. **Frontiers in Psychology**, 7:676, doi: 10.3389/fpsyg.2016.00676.

Summary

Small groups integrate the cognitive competencies of their members to generate group level cognitive competencies and collective intelligence is an illustrative example. A group's collective intelligence reflects its capacity to perform well across a variety of cognitive tasks and it transcends the individual intelligence of its members. Previous research shows that group members' social sensitivity is a potential antecedent of collective intelligence, yet it is still unclear whether individual or group-level indices are responsible for the positive association between social sensitivity and collective intelligence. In a comprehensive manner, we test the extent to which both compositional (lowest and highest individual score) and compilational aspects (emergent group level) of social sensitivity are associated with collective intelligence. This study has implications for research that explores groups as information processors, and for group design as it indicates how a group should be composed with respect to social sensitivity if the group is to reach high levels of collective intelligence. Our empirical results indicate that collectively intelligent groups are those in which the least socially sensitive group member has a rather high score on social sensitivity. Differently stated, (socially sensitive) group members cannot compensate for the lack of social sensitivity of the other group members.

Link to the paper: <http://journal.frontiersin.org/article/10.3389/fpsyg.2016.00676/full>

14. CURȘEU, P. L., SCHRUIJER, S. G. L. & FODOR, O. C. (2016). Decision rules, escalation of commitment and sensitivity to framing in group decision-making: An experimental investigation. **Management Decision**, 54, 7, 1649 – 1668, doi: 10.1108/MD-06-2015-0253.

Summary

Groups are central decision-makers in organizations, yet little to no attention is devoted to understand groups' sensitivity to decision-making heuristics and biases. Because decision rules have been shown to influence knowledge integration in groups and the rationality of collective choices, the main aim of this paper is to test the influence of collaborative and consultative decision rules on groups' sensitivity to framing effect (EF) and escalation of commitment (EOC). In an experimental study (using a sample of 233 professionals with extensive project management experience), we tested the effects of collaborative and consultative decision rules on groups' sensitivity to EOC and FE. We use four decision-making tasks to evaluate decision consistency across gain/loss framed decision situations and we use six decision tasks to evaluate escalation of commitment for money as well as time as

resources previously invested in the initial decisions. Our results show that the collaborative decision rule increases sensitivity to EOC when financial resources are involved and decreases sensitivity to EOC when time is of essence. Moreover, we show that the collaborative decision rule decreases sensitivity to FE in group decision making. Our results have important implications for group rationality as an emergent group level competence by extending the insights concerning the impact of decision rules on emergent group level cognitive competencies. Due to the experimental nature of our design, we can probe the causal relations between the investigated variables, yet we cannot generalize our results to other settings. Managers can use the insights of this study in order to optimize the functioning of decision-making groups and to reduce their sensitivity to framing effects and escalation of commitment. Our study extends the research on group rationality and it is one of the few experimental attempts used to understand the role of decision rules on emergent group level rationality.

15. CURŞEU, P. L. & Ten BRINK, T. (2016). "Minority dissent as teamwork related mental model: Implications for willingness to dissent and group creativity". **Thinking Skills and Creativity**, 22, 86-96, doi: 10.1016/j.tsc.2016.09.002.

Summary

Minority dissent is an important driver of information processing in groups. Literature to date shows that minority dissent increases divergent thinking and originality (Nemeth & Kwan, 1985), stimulates extensive information search to validate the alternative viewpoints (Nemeth & Rogers, 1996) and ultimately fosters creativity (Nemeth, 1985), innovation (De Dreu, 2002) and group cognitive complexity (Curşeu, Schreijer & Boros, 2012). As divergent thinking is central to the depth of information processing in groups is important to understand the interplay between divergent thinking and minority dissent in groups as they relate to group cognition, in particular to group creativity. Traditionally, minority influence literature has conceptualized minority dissent (MD) as a driver of divergent thinking (DT) at the individual and group level of analysis. In this paper we argue that DT and MD have a more complex interdependence and DT could in fact be conceptualized as a prerequisite of MD. In an experimental study carried out in two cultural contexts (The Netherlands and China), we tested the effect of an intervention aimed at emphasizing the value of DT on the MD related mental model change, on willingness to engage in MD and ultimately on group creativity. Our results show that members of groups that received the DT manipulation had less negative evaluations of MD compared to members in groups that did not receive the DT manipulation. However, DT triggered group members to engage in MD only in individualistic groups and not collectivistic ones and ultimately led to less creative performance in groups that operated in a collectivistic cultural context. Our study also contributes to the extrapolation of cultural differences in creative performance from individual to the group level of analysis and shows that groups operating in collectivistic cultures have a lower creativity in a divergent thinking task as compared to groups operating in an individualistic culture.