Emotional Intelligence in Agile Information Systems Development

Short Paper

Sheida Soltani
The University of Queensland
UQ Business School
Brisbane, Australia
s.soltani@business.uq.edu.au

Sabine Matook
The University of Queensland
UQ Business School
Brisbane, Australia
s.matook@business.uq.edu.au

Likoebe M. Maruping
Georgia State University
J. Mack Robinson College of Business
Atlanta, GA U.S.A
lmaruping@gsu.edu

Abstract

Agile information systems development (ISD) is a socio-technical process where customer requirements are satisfied through the interplay of the social and technical system. Research on social systems has primarily focused on observable behaviors in ISD, however, little attention has been paid to cognitive aspects. We draw on emotional intelligence as an important dimension of cognition and seek to develop theoretical understanding of the mechanisms for managing emotions in agile ISD. To achieve this objective, we conducted a qualitative study of agile ISD teams in two organizations. This research-in-progress presents initial results on the concept of emotional intelligence and its effects in agile ISD. Our research contributes to the literature first by providing a deeper conceptualization of emotional intelligence in agile ISD. Second, it theoretically and empirically demonstrates work outcomes of emotional intelligence.

Keywords: Agile information system development, emotional intelligence, socio-technical system

Introduction

Agile information system development (ISD) is a socio-technical process where customer requirements are translated into working software (Hoda et al. 2013). This development process "*is made up of two jointly independent, but correlative interacting systems - the social and the technical*" (Bostrom and Heinen 1977, p. 17). The technical system is concerned with methodologies, tools, and infrastructure that are required to create outputs (e.g., software product) (Cataldo et al. 2008). In contrast, the social system involves behavioral and cognitive aspects of an ISD team, such as attitudes, values, abilities, emotions, and interpersonal relationships (Bostrom and Heinen 1977; Lyytinen and Newman 2008; McLeod and Doolin 2012). Prior research has demonstrated the function and outcomes of the technical system in agile ISD (Fruhling and Vreede 2006). Scholars have also studied the social system with a focus on observable behaviors, for example, examining the importance of self-organizing behaviors for creating a high quality software (Matook et al. 2016). However, the social system also includes cognitive aspects and an exclusive focus on behavioral aspects does not capture the social system comprehensively.

The key cognition in a social system is social intelligence (Sternberg 2000). This concept manifests in multiple facets, among which emotional intelligence is critical to better understand the social system in

work settings (Law et al. 2004; Salovey and Mayer 1990). Emotional intelligence is a type of intelligence that is focused on efforts to "*validly reason with emotions and to use emotions to enhance thought*" (Mayer 2004, p. 1). The dominant view in the literature conceptualizes emotional intelligence as an *"ability to manage emotion in self and others*" (Troth et al. 2017, p. 5). The ability view on emotional intelligence needs to be differentiated from research that suggests personality characteristics being its defining element or even suggesting emotional intelligence as being a combination of an ability and personality trait (Tett et al. 2005). Various scholars posit that these other views on emotional intelligence (i.e., not the ability view) introduce ambiguity as they mix intelligence with personality that rather predicts intelligent behaviors than cognition and the personality-related factors are not directly related to either emotion or intelligence (Mayer et al. 2000).

When adopting the ability view, the literature has demonstrated that individuals high in emotional intelligence achieve higher task performance because it strengthens social interactions and interpersonal relationships among people (Law et al. 2004; Lopes et al. 2005). Additionally, the literature broadly argued that this ability is critical in dynamic business environments. The reason behind this argument is that an emotionally intelligent workforce responds to the work demands through adaptability to change, flexibility, collective problem solving, and innovation (e.g., Melita Prati et al. 2003; Rezvani et al. 2016).

Agile ISD is a unique socio-technical process in a dynamic environment. From a social perspective, this process needs strong interpersonal relationships in the team setting to accomplish tasks (Madsen and Matook 2010). However, the emergence of such relationships greatly hinges on the emotional mind-set of ISD team members (Dyba and Dingsoyr 2009). From a technical perspective, this endeavor is made under challenging conditions because of complex technical problems which are further increased by changing customer requirements, non-routine solutions, task uncertainty, and volatile project constraints (Cao et al. 2013; Lee and Xia 2010). These work conditions can adversely impact the emotions of a team member, occupying them with negative emotions and resulting in lower task performance (Venkatesh et al. 2018; Windeler et al. 2017). Individuals need to manage their own and others' emotions in a way that mitigates any negative effects (Zheng et al. 2011). At the same time, any positive emotions need to be managed such that their emergence is actively stimulated. Having mechanisms in place to develop such emotional intelligence enables greater agility and performance (Zheng et al. 2011). Lack of emotional intelligence could derail achievement of these two vital elements in ISD projects.

This research-in-progress aims to provide a comprehensive understanding of emotional intelligence in agile ISD. More specifically, our research question is: *How and why do emotional intelligence mechanisms equip individuals with the ability to manage emotions in agile ISD?* To answer this question, we conduct a qualitative study of agile ISD teams in two organizations. This study contributes to the literature by providing insight on emotional intelligence by elicitating two types of emotions and how they impact ISD processes and software outcomes. From a practical point of view, the results are valuable for ISD teams and management because they provide actionable knowledge on how to boost emotional intelligence in ISD.

Theoretical Background

Agile Information System Development

Agile ISD is a prominent approach in practice to "*produce a high-quality software in a cost effective and timely manner which meets the changing needs of its stakeholders*" (Laanti et al. 2013, p. 6). To facilitate this objective, agile ISD embraces a range of dynamic and interactive social principles such as collaboration, self-organization, and courage (Balijepally et al. 2009; Matook and Maruping 2014), but also technical principles for instance simple design, pair programming, and testing (Dawande et al. 2008). In fact, technical principles inform the team of technical activities, whereas social principles inform the team about correct behaviors that support technical activities. Agile ISD is an intensive social activity that requires close collaboration between agile team members to satisfy user requirements. To implement requirements, the team uses a set of tools and practices and works intensely together to complete their development tasks (Matook et al. 2016). During the development, team members should build positive cognition in order to create social interpersonal relationships (Dyba and Dingsoyr 2009; Laanti et al. 2013). Such relationships pave the way for technical problem solving (Madsen and Matook 2010) and collective decision making on challenges during analysis, design, coding, and testing (Nidumolu and Subramani 2003). Taken together,

due to the existence of an interplay between social and technical principles, agile ISD is known as a "socio-technical" process (Hoda et al. 2013).

A great deal of ISD research into social systems has studied types of observable behaviors and their impacts on ISD outcomes. For example, the relevant literature captures observable team behaviors in form of developers participation (Zhang et al. 2013), self-organizing behaviors (Lee and Xia 2010; Vidgen and Wang 2009), collaboration (Balijepally et al. 2009), in/ extra role behaviors (Ang and Slaughter 2001), interpersonal conflicts (Barki and Hartwick 2001), and cooperation and problem-solving (Cooper 2000). These behaviors result in a range of outcome, such as agility (Vidgen and Wang 2009) and efficiency in addressing changing customer requirements (Lee and Xia 2010).

A small emerging stream of ISD research also exists about cognitive aspects of social systems. This literature has recognized emotion as a key dimension of cognition and examines a limited number of cognition-based emotions: trust, satisfaction, and stress. For example, trust was linked to creative IT requirement design, team effectiveness, and collaboration among distributed ISD teams (Cooper 2000; Stewart and Gosain 2006). It has been found that a higher level of agile practice use facilitates greater job satisfaction (Tripp et al. 2016) and satisfaction of an individual's needs reinforces the impact of their motivation on task effort in open source software development (Ke and Zhang 2010). Few studies focusing on stress found that empowering leadership reduces developer's stress (Windeler et al. 2017), and in turn, stress decreases a developer performance (Chilton et al. 2005), whereas technical IS project risks also impact an individual's performance and stress (Venkatesh et al. 2018).

A detailed review of prior research studies reveals three insights. First, prior studies examined the significance of individuals' emotions by directly linking them to performance (Chilton et al. 2005), but no attention has been paid to other outcomes, especially in the context of agile ISD. Second, these studies focused on a few specific emotions and showed how they emerge (e.g., Tripp et al. 2016), yet no concerted exploration has been conducted into identifying the variety of emotions that may exist in agile ISD settings. Third, these studies focused on how to alleviate negative emotions, specifically stress, but neither looked at any other effects of negative emotions nor examined positive emotions related to emotional intelligence. Consequently, research has yet to provide a comprehensive understanding on: 1) different types of emotions (i.e., negative versus positive), 2) how individuals manage their own and others' emotions, and 3) how emotion management impacts ISD outcomes.

Prior ISD research examined agile practices and aspects of emotions. For instance, pair programming creates positive emotions in developers, however this practice can develop negative emotion in developers if their counterpart lacks experience (Ford and Parnin 2015). Agile ISD recommends short iteration cycles that create time pressure for the team members to deliver output frequently. Such work conditions can develop frustration and unhappiness in developers (Ford and Parnin 2015; Graziotin et al. 2017). Furthermore, constantly changing customer requirements that require ongoing adaptations by each team member regarding their tasks frustrate developers (Ford and Parnin 2015). However, not every developer can mentally and emotionally let go of things and may have developed some kind of attachment and ownership to the development task that makes it difficult to abruptly move on. A development process that engenders high degrees of change can result in the emergence of negative emotions in developers (Ford and Parnin 2015).

Emotional Intelligence

Emotional intelligence is a "*cooperative combination of intelligence and emotion*" (Mayer et al. 2004, p. 197). Emotions are a cognitive state that manifests in response to a person's interpersonal relationships in private settings and work environments (Salovey et al. 2007; Salovey and Mayer 1990). In contrast, intelligence captures the ability of an "*individual to act purposefully, to think rationally, and to deal effectively with his environment*" (Salovey and Mayer 1990, p. 186). Emotional intelligence enables individuals to use emotions to enhance cognitive activities, facilitate reasoning, and develop intelligent thoughts (Brackett et al. 2006; George 2000) and to use reasoning about emotions and their management (George 2000). Hence, emotional intelligence is defined "*as the capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth*" (Mayer et al. 2004, p.

197). The key element of this definition is emotion management (Mayer et al. 2004) because it rehabilitates negative emotions (i.e., disturbing experiences) rapidly and effectively (Mayer and Salovey 1993).

In the management field, prior research highlights the importance of the emotional intelligence concept by connecting it to working behaviors and outcomes. Overall, the literature demonstrates that possessing emotional intelligence improves various organizational factors, including decision-making, learning capabilities, collaboration, effective problem solving, and task performance. For example, prior studies show that emotional intelligence results in higher task performance because it improves individuals' cognitive abilities and encourages them to share their knowledge with others (Xiang et al. 2016). Another outcome of emotional intelligence is effective problem solving because emotionally intelligent people spontaneously brainstorm diverse ideas and seek effective solutions without feeling threatened by the potential for failure (Jordan and Troth 2004). Similarly, learning capabilities are improved when individuals posses emotional intelligence because such individuals actively participate in group thinking, thereby seeking harmonious working relationships without conflict (Ghosh et al. 2012; Melita Prati et al. 2003). This also facilitates collaboration because people recognize strengths of others, develop positive mindsets in challenging work conditions, and search for new ways to complete tasks (Cole et al. 2016).

Drawing on prior literature, three competing views on how to conceptualize emotional intelligence exist. These views are the ability view, the personality traits view, and a mixed model combining ability and personality into a single view (Petrides and Furnham 2001). The fundamental assumption of the ability view is the notion that emotional intelligence is a mental ability to manage. In contrast, the personality-traits view broadens the conceptualization of emotional intelligence and includes personality characteristics, motivation, prosocial behaviors, and other individual differences (e.g., Côté et al. 2010; Müller and Turner 2007). Emotional intelligence from a traits perspective means to use behavioral dispositions and ability to process and manage emotions (Petrides et al. 2004). Finally, the mixed models view introduces ambiguities into the concept of emotional intelligence because not all of their factors relate to intelligence or emotions (Côté et al. 2010). For instance, it is well documented that personality traits are known as "*dispositions*" which are entirely distinct from intelligence (Petrides and Furnham 2001).

In the IS field, there are two research streams of emotional intelligence. The first stream addresses the importance of positive emotions of team members in ISD. For example, pair programming evokes developers' confidence in their performance (Balijepally et al. 2009). Furthermore, a sense of partnership among ISD team members facilitates knowledge contribution in the team setting (Chang et al. 2013). Moreover, team members' feelings of working together increases ISD project performance (Aladwani 2002). Examining this stream closer, we believe that members' abilities to create and maintain their positive emotions helps to develop high performing agile ISD teams by improving team processes.

In contrast, the second stream argues that ISD project conditions trigger negative emotions of team members. For example, Chilton et al. (2005) pointed out that software development is a stressful activity. Similarly, Windeler et al. (2017) maintained that ever changing requirements force developers to put extra effort to their tasks, resulting in feelings of the work overload and stress in developers. This negative emotion decreases individual and team performance (Venkatesh et al. 2018; Windeler et al. 2017). Furthermore, Zheng et al. (2011) argue that task uncertainty, external pressures, and budget limitations develop anxiety in individuals. They also found that the capability to handle anxiety enables agility. This stream implicitly reveals that individuals' ability to manage their own and teammate's negative emotions facilitates agility in ISD projects.

Research Methodology

We used the inductive theory building approach of a case study to better understand emotional intelligence in agile ISD (Eisenhardt 1989). A case study is a preferred method when exploring social processes, with an underlying focus on "*people's thoughts, values, expectations, motives, opinions, experiences, attitudes and behaviors*" (Swanborn 2010, p. 25). We use multiple case studies because they "*enable building more robust, generalizable, and parsimonious theory than single cases*" (Hallen and Eisenhardt 2012, p. 38).

In this study, we followed the suggested theory building process for qualitative studies (Eisenhardt 1989; Sarker et al. 2013). First, our cases were selected based on similarity and variety among them. We selected similar cases by choosing leading ISD companies in Australia where agile methodologies are the dominant ISD approach. Whereas, variety was sought based on organizational history and industry of the companies.

Second, we collected data through interviews and observation. We approached and selected our informants by following the process enacted by Sarker and Sarker (2009). After initial communication with the company's gatekeepers, we were introduced to various informants in each case company. Up to now, we conducted semi-structured, face-to-face interviews with six informants from the two case studies. At case site 1, informants included a project manager, an iteration manager and a business analyst. Informants at case site 2 included a project manager, an iteration manager and a solution architect. However, the data collection process is still ongoing and we plan to collect data by conducting further interviews from selected teams and another two teams in the same organizations until we reach theoretical saturation (Eisenhardt 1989).

Data analysis applied a looping process of contextualization and de-contextualization of the data using multiple coding techniques (Tesch 1990). Through contextualization, we decomposed the data into meaningful text. To codify each data segment, we relied on a pre-defined coding list of potential emotions (Saldaña 2015). In fact, "*emotion codes label emotions recalled and/or experienced by participants or inferred by the research about the participant*" (p. 91). In addition, we coded for the actions and efforts undertaken by informants or observed by the researcher while developing the software. After completing the detailed data coding, we used re-contextualization to aggregate data segments into the relevant categories of emotions, mechanisms, and effects.

We used several approaches to ensure the trustworthiness of our data. First, we triangulated data by using observation and interview as two main data sources, and interviewing multiple members of each team (Hallen and Eisenhardt 2012). Second, participating in the interviews is voluntary, and the demographic information of the informants and their organizations is treated as anonymous data (Hallen and Eisenhardt 2012). This practice encourages honesty in informants' responses (Shenton 2004). Third, we used iterative and probing techniques in our questioning to gain deep insights of each response and detect falsehoods in answers given (Shenton 2004).

Results

Emotions in Agile ISD

Our data shows that in agile ISD, team members experience a number of negative emotions, but also positive emotions. Recalled negative emotional experiences occurred toward agile methodologies, way of working, and software delivery. Across these experiences, the various negative emotions were 'sadness', 'stress', 'anxious', 'feeling pain', 'frustration', 'worry', 'fear', 'disrespect', 'distrust', 'isolated". For instance, a team member expressed the feeling of pain: "*…it comes down to the pain the teams feel, so if they're feeling pain in terms of something is breaking or they're not meeting their expectations or whatever it might be, then teams are more likely to actually want to do something about it*" (Case B).

We also found a range of positive emotions when analyzing the data. The expressed positive emotions were 'satisfaction', 'happiness', 'empathetic', 'feeling of interest', 'enjoyment', 'trust', 'commitment', 'enthusiastic', 'comfortable', 'respect', 'engagement feeling', and 'confident'. For example, happiness emerged when the customer representative gave fast customer acceptance, as team leader 1 commented: "*as a team leader and a team member, I become very happy when the product owner says it's ok, and he accepts our delivery, and I think the whole team becomes happy because we all work closely together to deliver and it's a teamwork delivery*" (Case A). He also explained emotions toward the agile way of working: "*I'm comfortable in this way of working and the team [members] trust each other, they are comfortable to give each other good feedback and bad feedback [on each delivery]*".

Mechanisms of Emotional Intelligence

Our data informs us that emotional intelligence captures the management of emotions (increasing positive emotions and decreasing negative ones) through a set of mechanisms. The first mechanism is 'observation and questioning' (M1). Our informants worked in 'open space' where they can constantly observe each other in order to calm negative emotions, as team leader from Case A commented: "*[I] Look at them [my team members] to see they are enjoying what they're doing, and they've got satisfaction in what they do day-to-day? if not, then try to relieve feeling pain"*. The second mechanism is 'organizing team events' (M2) where team members socialize to reduce the feeling of being isolated: *"…[we] might organize team*

events…to do a team event or we might have little things like that to try and help reduce the feeling of isolated" (Team leader from Case A). The third mechanism is 'questioning and giving help' (M3). Team members suppress negative emotions and increase positive emotions in each other through questioning their temper and giving help, as team leader from Case A commented: "*We measure it [team temperature]…team temperature is how each individual is feeling…we often discuss it in each stand up…we always, like you know what's your temperature today and then if we find out something is bothering them, we try to help out and make them happy"*. The fourth mechanism is 'coaching' (M4) such that team members coach each other on agile way of working, as team leader from case B explained:*" if we have people that are not agile enthusiasm and we have to coach them [and] make them agile enthusiasm*".

Effects of Emotional Intelligence

Our data shows that emotional intelligence has varying effects in agile ISD. Our informants emphasized its importance in daily stand-ups and retrospectives where team members discuss the work status, blockers, and suggest improvements. There, managing emotions facilitates improvements in various ISD aspects, and results in enhanced decision-making, taking ownership, and involvement.

Improvements in software outcomes and ISD processes are one of the outcomes of emotion management. For example, the team leader from Case A pointed out a process improvement through using the 'questioning and helping mechanism' (M3): "*I think all of us [team members] have a kind of great or let's say enjoyment in what we are doing and our working environment, because of coaching, we coach each other on the agile way of working, providing and seeking help on let's say to get the story done…when you are enjoying and support each other through helping or coaching, you'd say let's get involved in those team discussions, meetings, stand ups, and agile ceremonies…[where] share your ideas on how we should continue, how to improve our working processes, give feedback on the errors, or questioning how to respond to the customer's needs"*.

In addition, informants hinted at an effect regarding decision making by using the 'coaching' mechanism (M4). They explicitly explained that they make decisions on 'sprint objectives', 'what to do in each iteration', 'how to solve problems', 'testing criteria'. They pointed that emotion management in the form of increasing positive emotions accelerates decision making. For example, the team leader from Case B commented: "*…we talked about defer and commitment as well. So, you know, by building strong and long-term commitment, people in the team don't leave the decision until the last minute where you really need to apply that decision where it's going to add the most impact and the most benefit…the other way is to encourage them [other team members] to be committed, like coaching…coaching is a practice we use to tell them [team members] you can have an input in all discussions and meetings, and encourage them to give inputs"*.

Moreover, the emotional intelligence mechanisms, in particular the 'helping' mechanism (M3) and 'observation and questioning' mechanism (M1), result in taking problem ownership. For instance, the team leader from Case A pointed out*: "Just building empathy can be enough to take [problem] ownership and get a really high performing team"*. He also explained that*: "senior and junior developer need to have mutual respect for each other's work, otherwise they cannot do pair programming to get it [user story] done, and they have to fight all the time…I think they can build mutual respect or do pair programming by teaching each other on for example coding, if necessary, asking each other to take the ownership of that part code or fixing errors or checking codes*".

A final effect is the creation of involvement through the 'organizing team events' mechanism (M2). The team leader from Case A commented on this impact: "*to get a fully functional productive and highly performing team, we need to have care and empathy towards other members no matter what level we're at…I'm very very empathetic towards them [members]…the win from greater empathy is that we get engagement; the win from getting engagement is that we get high quality in work and the win from getting engagement, high quality in work and high velocity…we can build it [empathy] simply by those [teams] events where they talk about their worries, share their concerns with others, and the win from them [team events] is getting more engagement in the work because they communicate about the work and possibly the best way to do "*.

Discussion and Conclusion

The main objective of this study was to provide a better understanding of emotional intelligence in agile ISD. In particular, this study aimed to show what emotions emerged, identify the mechanisms that ISD team members use to manage emotions, and identify effects of emotion management in agile ISD.

Our results provide unique insights regarding the concept of emotional intelligence developed in psychology and management. We found at a more granular level that emotional intelligence in agile ISD means decreasing negative emotions or increasing positive through a set of four mechanisms. Second, emotional intelligence has effects on how the team works. It matters for improvements in various ISD aspects, decision-making, taking ownership, and involvement.

We will extend this research with the aim of building a process theory on emotional intelligence in agile ISD. A process theory reflects a "*model that lays out a set of mechanisms explaining events and outcomes*" (Cornelissen 2017, p. 3). Our process theory will provide knowledge on: what and why specific emotions are generated; how these emotions are managed through cognitive mechanisms that individuals use; how the combination of emergent emotions and regulation mechanisms generate specific outcomes.

References

Aladwani, A. M. 2002. "An Empirical Examination of the Role of Social Integration in System Development Projects," *Information Systems Journal* (12:4), pp. 339-353.

Ang, S., and Slaughter, S. A. 2001. "Work Outcomes and Job Design for Contract Versus Permanent Information Systems Professionals on Software Development Teams," *MISQ* (25:3), pp. 321-350.

Balijepally, V., Mahapatra, R., Nerur, S., and Price, K. H. 2009. "Are Two Heads Better Than One for Software Development? The Productivity Paradox of Pair Programming," *MISQ* (33:1), pp. 91-118.

Barki, H., and Hartwick, J. 2001. "Interpersonal Conflict and Its Management in Information System Development," *MIS Quarterly* (25:2), pp. 195-228.

Bostrom, R., and Heinen, J. 1977. "Mis Problems and Failures: A Socio-Technical Perspective Part 1: The Causes," *MIS Quarterly* (1:1), pp. 17-32.

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., and Salovey, P. 2006. "Relating Emotional Abilities to Social Functioning: A Comparison of Self-Report and Performance Measures of Emotional Intelligence," *Journal of Personality and Social Psychology* (91:4), pp. 780-795.

Cao, L., Mohan, K., Ramesh, B., and Sarkar, S. 2013. "Adapting Funding Processes for Agile It Projects: An Empirical Investigation," *European Journal of Information Systems* (22:2), pp. 191-205.

Cataldo, M., Herbsleb, J. D., and Carley, K. M. 2008. "Socio-Technical Congruence: A Framework for Assessing the Impact of Technical and Work Dependencies on Software Development Productivity," *Proceedings of the Second ACM-IEEE international symposium on Empirical software engineering and measurement*: ACM, pp. 2-11.

Chang, K.-c., Yen, H.-W., Chiang, C.-C., and Parolia, N. 2013. "Knowledge Contribution in Information System Development Teams: An Empirical Research from a Social Cognitive Perspective," *International Journal of Project Management* (31:2), pp. 252-263.

Chilton, M. A., Hardgrave, B. C., and Armstrong, D. J. 2005. "Person-Job Cognitive Style Fit for Software Developers: The Effect on Strain and Performance," *Journal of Management Information Systems* (22:2), pp. 193-226.

Cole, M. L., Cox, J. D., and Stavros, J. M. 2016. "Building Collaboration in Teams through Emotional Intelligence: Mediation by Soar (Strengths, Opportunities, Aspirations, and Results) " *Journal of Management & Organization*), pp. 1-21.

Cooper, R. B. 2000. "Information Technology Development Creativity: A Case Study of Attempted Radical Change," *MISQ* (24:2), pp. 245-276.

Cornelissen, J. 2017. "Editor's Comments: Developing Propositions, a Process Model, or a Typology? Addressing the Challenges of Writing Theory without a Boilerplate," *Academy of Management Review* (42:1), pp. 1-9.

Côté, S., Lopes, P. N., Salovey, P., and Miners, C. T. 2010. "Emotional Intelligence and Leadership Emergence in Small Groups," *The Leadership Quarterly* (21:3), pp. 496-508.

Dawande, M., Johar, M., Kumar, S., and Mookerjee, V. S. 2008. "A Comparison of Pair Versus Solo Programming under Different Objectives: An Analytical Approach," *Information Systems Research* (19:1), pp. 71-92.

Dyba, T., and Dingsoyr, T. 2009. "What Do We Know About Agile Software Development?," *IEEE software* (26:5), pp. 6-9.

Eisenhardt, K. M. 1989. "Building Theories from Case Study Research," *Academy of Management Review* (14:4), pp. 532-550.

Ford, D., and Parnin, C. 2015. "Exploring Causes of Frustration for Software Developers," *in Proceedings of the Eighth International Workshop on Cooperative and Human Aspects of Software Engineering*: IEEE Press, pp. 115-116.

Fruhling, A., and Vreede, G.-J. D. 2006. "Field Experiences with Extreme Programming: Developing an Emergency Response System," *Journal of Management Information Systems* (22:4), pp. 39-68.

George, J. M. 2000. "Emotions and Leadership: The Role of Emotional Intelligence," *Human Relations* (53:8), pp. 1027-1055.

Ghosh, R., Shuck, B., and Petrosko, J. 2012. "Emotional Intelligence and Organizational Learning in Work Teams," *Journal of Management Development* (31:6), pp. 603-619.

Graziotin, D., Fagerholm, F., Wang, X., and Abrahamsson, P. 2017. "On the Unhappiness of Software Developers," *in Proceedings of the 21st International Conference on Evaluation and Assessment in Software Engineering*: ACM, pp. 324-333.

Hallen, B. L., and Eisenhardt, K. M. 2012. "Catalyzing Strategies and Efficient Tie Formation: How Entrepreneurial Firms Obtain Investment Ties," *Academy of Management Journal* (55:1), pp. 35-70.

Hoda, R., Noble, J., and Marshall, S. 2013. "Self-Organizing Roles on Agile Software Development Teams," *Software Engineering, IEEE Transactions on* (39:3), pp. 422-444.

Jordan, P. J., and Troth, A. C. 2004. "Managing Emotions During Team Problem Solving: Emotional Intelligence and Conflict Resolution," *Human performance* (17:2), pp. 195-218.

Ke, W., and Zhang, P. 2010. "The Effects of Extrinsic Motivations and Satisfaction in Open Source Software Development," *Journal of the Association for Information Systems* (11:12), pp. 784-808.

Laanti, M., Similä, J., and Abrahamsson, P. 2013. "Definitions of Agile Software Development and Agility," in *Systems, Software and Services Process Improvement*. Springer-Verlag Berlin Heidelberg, pp. 247-258.

Law, K. S., Wong, C.-S., and Song, L. J. 2004. "The Construct and Criterion Validity of Emotional Intelligence and Its Potential Utility for Management Studies," *Journal of Applied Psychology* (89:3), pp. 483-496.

Lee, G., and Xia, W. 2010. "Toward Agile: An Integrated Analysis of Quantitative and Qualitative Field Data," *MIS Quarterly* (34:1), pp. 87-114.

Lopes, P. N., Salovey, P., Côté, S., Beers, M., and Petty, R. E. 2005. "Emotion Regulation Abilities and the Quality of Social Interaction," *Emotion* (5:1), pp. 113-118.

Lyytinen, K., and Newman, M. 2008. "Explaining Information Systems Change: A Punctuated Socio-Technical Change Model," *European Journal of Information Systems* (17:6), pp. 589-613.

Madsen, S., and Matook, S. 2010. "Conceptualizing Interpersonal Relationships in Agile Is Development," *in Proceedings of the 31st International Conference on Information Systems*, St. Louis, p. 102.

Matook, S., and Maruping, L. M. 2014. "A Competency Model for Customer Representatives in Agile Software Development Projects," *MIS Quarterly Executive* (13:2), pp. 77-95.

Matook, S., Soltani, S., and Maruping, L. 2016. "Self-Organization in Agile Isd Teams and the Influence on Exploration and Exploitation," *In proceedings of the 37th International Conference on Information Systems*, Dublin.

Mayer, J. D., and Salovey, P. 1993. "The Intelligence of Emotional Intelligence," *Intelligence* (17:4), pp. 433-442.

Mayer, J. D., Salovey, P., and Caruso, D. R. 2004. "Emotional Intelligence: Theory, Findings, and Implications," *Psychological Inquiry* (15:3), pp. 197-215.

McLeod, L., and Doolin, B. 2012. "Information Systems Development as Situated Socio-Technical Change: A Process Approach," *European Journal of Information Systems* (21:2), pp. 176-191.

Melita Prati, L., Douglas, C., Ferris, G. R., Ammeter, A. P., and Buckley, M. R. 2003. "Emotional Intelligence, Leadership Effectiveness, and Team Outcomes," *The International Journal of Organizational Analysis* (11:1), pp. 21-40.

Müller, R., and Turner, J. R. 2007. "Matching the Project Manager's Leadership Style to Project Type," *International journal of project management* (25:1), pp. 21-32.

Nidumolu, S. R., and Subramani, M. R. 2003. "The Matrix of Control: Combining Process and Structure Approaches to Managing Software Development," *Journal of Management Information Systems* (20:3), pp. 159-196.

Petrides, K. V., Frederickson, N., and Furnham, A. 2004. "The Role of Trait Emotional Intelligence in Academic Performance and Deviant Behavior at School," *Personality and Individual Differences* (36:2), pp. 277-293.

Petrides, K. V., and Furnham, A. 2001. "Trait Emotional Intelligence: Psychometric Investigation with Reference to Established Trait Taxonomies," *European journal of personality* (15:6), pp. 425-448.

Rezvani, A., Chang, A., Wiewiora, A., Ashkanasy, N. M., Jordan, P. J., and Zolin, R. 2016. "Manager Emotional Intelligence and Project Success: The Mediating Role of Job Satisfaction and Trust," *International Journal of Project Management* (34:7), pp. 1112-1122.

Saldaña, J. 2015. *The Coding Manual for Qualitative Researchers*. CA: Sage Thousand Oaks.

Salovey, P., Brackett, M. A., and Mayer, J. D. 2007. *Emotional Intelligence: Key Readings on the Mayer and Salovey Model*. New York: Dude Publishing.

Salovey, P., and Mayer, J. D. 1990. "Emotional Intelligence," *Imagination, Cognition and Personality* (9:3), pp. 185-211.

Sarker, S., Xiao, X., and Beaulieu, T. 2013. "Qualitative Studies in Information Systems: A Critical Review and Some Guiding Principles," *MISQ* (37:4), pp. iii-xviii.

Shenton, A. K. 2004. "Strategies for Ensuring Trustworthiness in Qualitative Research Projects," *Education for information* (22:2), pp. 63-75.

Sternberg, R. J. 2000. *Social Intelligence*. Cambridge University Press.

Stewart, K. J., and Gosain, S. 2006. "The Impact of Ideology on Effectiveness in Open Source Software Development Teams," *MISQ* (30:2), pp. 291-314.

Swanborn, P. 2010. *Case Study Research: What, Why and How?* Sage.

Tesch, R. 1990. *Qualitative Analysis: Analysis Types and Software Tools*. UK: Routledge-Falmer, Abingdon

Tett, R. P., Fox, K. E., and Wang, A. 2005. "Development and Validation of a Self-Report Measure of Emotional Intelligence as a Multidimensional Trait Domain," *Personality and Social Psychology Bulletin* (31:7), pp. 859-888.

Tripp, J. F., Riemenschneider, C., and Thatcher, J. B. 2016. "Job Satisfaction in Agile Development Teams: Agile Development as Work Redesign," *Journal of the Association for Information Systems* (17:4), pp. 267-306.

Troth, A. C., Lawrence, S. A., Jordan, P. J., and Ashkanasy, N. M. 2017. "Interpersonal Emotion Regulation in the Workplace: A Conceptual and Operational Review and Future Research Agenda," *International Journal of Management Reviews*), pp. 1-21.

Venkatesh, V., Rai, A., and Maruping, L. M. 2018. "Information Systems Projects and Individual Developer Outcomes: Role of Project Managers and Process Control," *Information Systems Research* (29:1), pp. 127-148.

Vidgen, R., and Wang, X. 2009. "Coevolving Systems and the Organization of Agile Software Development," *Information Systems Research* (20:3).

Windeler, J. B., Maruping, L. M., and Venkatesh, V. 2017. "Systems Development Risk Factors: The Role of Empowering Leadership in Lowering Developers' Stress," *Information Systems Research* (28:4), pp. 775-796.

Xiang, C., Yang, Z., and Zhang, L. 2016. "Improving Is Development Teams' Performance During Requirement Analysis in Project—the Perspectives from Shared Mental Model and Emotional Intelligence," *International Journal of Project Management* (34:7), pp. 1266-1279.

Zhang, C., Hahn, J., and De, P. 2013. "Research Note—Continued Participation in Online Innovation Communities: Does Community Response Matter Equally for Everyone?," *Information Systems Research* (24:4), pp. 1112-1130.

Zheng, Y., Venters, W., and Cornford, T. 2011. "Collective Agility, Paradox and Organizational Improvisation: The Development of a Particle Physics Grid," *Information Systems Journal* (21:4), pp. 303-333.