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A Step Forward Towards Understanding Emotional Intelligence for Effective Virtual Teams

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INTRODUCTION

In modern times, as diversity of work styles keeps changing and evolving to cater to the needs of the society and workforce, an increasing number of companies and organizations are considering setting up and/or already operating multifunctional virtual teams. A virtual team is a team formation in which geographically distributed team members work together to achieve a common ultimate goal while communicating and interacting through virtual means with the use of Internet networking systems and electronic devices (Klitmøller & Lauring, 2013; Mattarelli, Tagliaventi, Carli & Gupta, 2017; Oertig & Buergi, 2006). The virtual format of such distributed teams makes it difficult to share and discuss information in person among team members due to differences in physical working locations among various members and time-difference constraints (Ryssen & Godar, 2000; Stolovitsky, 2012).

The aforementioned challenges may be amplified due to language barriers and cultural differences of the members involved in the virtual team making the effective management and operation of such teams extremely complex. An increasing trend in modern virtual teams is the formation of teams from multiple independent organizations and companies, which bring in various and unique set of skills that one organization alone does not possess through strategic alliances and/or mergers and acquisitions. To make matters worse, such virtual teams are especially formed for short-term high-end projects with a restricted timeline, where the members do not have the liberty or the degree of freedom for adequate icebreaking opportunities and personal-relationship development. When this happens, the management and operation of virtual teams become further complicated due to the differences in business practices, project process models, and mental models of highly-specialized expert sub-teams without the groundwork required for the successful operation of any team. Therefore, effectively managing virtual teams and continuously contributing towards the goal, as valuable members, requires a high degree of empathy and collaborative skills than when working together in regular teams (Cramton & Hinds, 2014; Hinds, Neeley & Cramton, 2014; Morrison-Smith & Ruiz, 2020; Polzer, Crisp, Jarvenpaa & Kim, 2006). It is safe to say, therefore, that virtual team members need to possess higher degrees of special personal traits, skills, and attitudes tailored for virtual collaboration than is required when working in a localized long-term team.

For effective and joyful collaboration among team members based on empathy and the limited facilitating information at hand in virtual teams, each member must understand the needs

of the others at a particular instance of time and choose their actions or inactions accordingly. In order to do this effectively, each member must be ready to catch and make effort to understand the true emotions of the other members who send out certain information cues, which may be limited verbal and/or visual information expressed within a short time interval. It is pertinent that each member possesses the attitude and the set of emotional skills to think in the shoes of the other to a higher degree while promoting the interests of the team in achieving the goal. Sometimes doing so may be in conflict with the interests of the team as a whole, requiring a proper balance and a broader view of the team as well as a deep understanding of the individuals. In facilitating this pivotal and complex task effectively and smoothly, it is crucial that each member fully demonstrates his or her own emotional intelligence (Carte, Chidambaram & Becker, 2006; Jordan & Troth, 2004; Mayor, 2004: Mayer, Caruso & Salovey, 1999).

However, as virtual teams are a relatively new group-type that has emerged in the last couple of decades, and caught the interest of organizations and companies of all sorts due to innovations in information science and technology as well as the recent pandemic, there have not been as many studies on virtual team management as there are on managing conventional team types. Specially, works on emotional intelligence in virtual teams and its effects on management strategies are scarce. Given the recent surge in virtual teams and the ever-increasing interest of executives and top-level managers, it is highly important that this scarcely explored area be pioneered.

In addressing this, we present an overview of past research on emotional intelligence and its applications to various contexts in both small and large groups, such as families and organizations, respectively. Next, we discuss the areas in need of further development based on comprehensive research on emotional intelligence, especially in effective virtual-team management and successful operation. We further aim to provide a roadmap for the field to follow in this endeavor to understanding emotional intelligence in the virtual workplace, and lay the basic groundwork for initiating ideas and suggestions for establishing and managing successful virtual teams, which is essential now and in the future as organizations continuously rethink and restructure the workplace through virtual means with internationalization, the aftermath of the pandemic, and a noble idea towards a borderless society that promotes flexibility, work-life balance, and wellbeing for everyone.

EMOTIONAL INTELLIGENCE

The trajectory of the Emotional Intelligence Research

Research on human emotional intelligence has a long history of parallel development with research in psychology and cognitive science. There is a rich body of research on emotional intelligence demonstrated among traditional groups or teams such as family members, schoolmates, and colleagues at the workplace (Bhatia, 2012; Lenaghan, Buda & Eisner, 2007; Sharma, Dhar & Tyagi, 2016). The germination of the study of abilities related to emotions was first seen in the 1950s in the fields of psychotherapy and child psychology, where they were introduced as abilities in areas that could not be fully explained by previous intelligence, such as the intelligence quotient (abbreviated as IQ, hereafter) (Beldock, 1964; Dhani & Sharma, 2016; Gardner, 1983; Leuner, 1966). Through these early studies, the idea was introduced that people have both the ability to comprehend the intentions and emotions of others and the ability to understand, analyze, and compare their own motives and emotions. Up until the 1980s, emotional competence had been referred

to as *Emotional Intelligence* or *Emotional Quotient* (Beasley, 1987). However, the term *Emotional Intelligence* came to be widely used and known in general when a book published by Howard Goleman using the term became a best-seller (Goleman, 1995). Later, when other researchers started investigating and proposing models to explain emotional intelligence and its working in human behavior and interactions (Greenspan, 1989; Salovey & Mayer, 1990), academic research on emotional intelligence further advanced and made great progress.

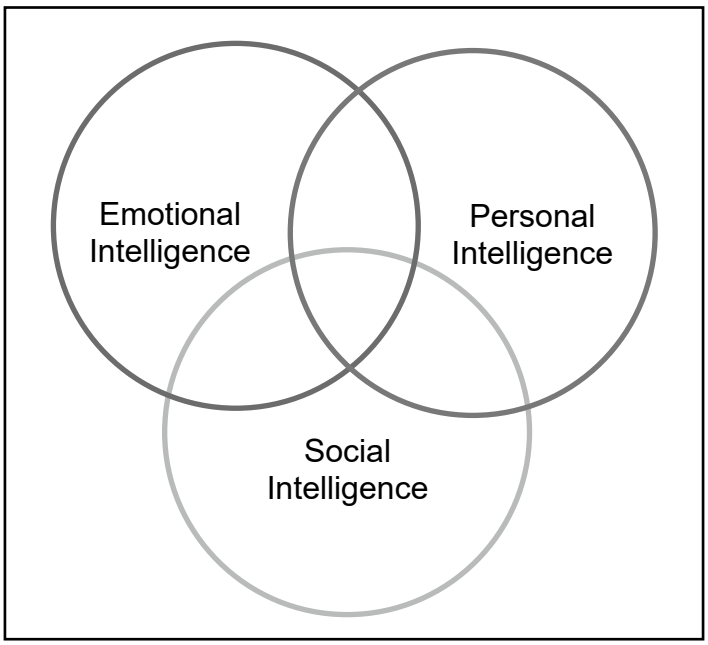
Salovey and Mayer, who first investigated *Emotional Intelligence* (abbreviated as EI, hereafter), defined EI as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and use this information to guide one's thinking and actions" (Salovey & Mayer, 1990). According to their definition, every individual fundamentally possesses an ability to utilize emotions to optimize his or her thinking and behavior. Later, Mayer and his colleagues adjusted their definition of EI, stating that EI is an intelligence that influences the person's other intelligence and develops with age and experience (Mayer, 2004; Mayer, Caruso & Salovey, 1999; Mayer, Salovey, Caruso & Sitarenios, 2003). As understood by this revised definition, EI is intertwined with a person's other intelligence and intellectual capacities, and keeps advancing and evolving through its use in daily life. Its development does not become stagnant, but has the capacity to positively develop, refine, and advance with its use and interactions in the family and social arenas as iron sharpens iron, so to speak.

Mayer and Salovey's 1997 paper introduced four essential and distinctive abilities related to emotions as components of EI. This was termed *the Four-Branch model* and it described EI with the following four branches that are related and affect each other: (1) perception of emotions, which is the ability to identify emotions in self and others through facial expressions, tone of voice, and other external cognitive information, (2) use of emotions to facilitate thinking, which is the ability to understand and maintain optimal emotional states to achieve target outcomes, (3) understanding of emotions, which is the ability to understand the various factors and causes that gave rise to a particular emotion and the connections between them, and (4) management of emotions in self and others, which is the ability to accept a variety of emotions, recognize the value of feeling of a particular emotion in a particular situation, and understand/execute the most optimized strategies for regulating that emotion. Mayer and his colleagues later considered a set of principles that guided their thinking about EI and concluded that EI is likely to be partially distinct from both personal and social intelligence (Mayer, Caruso, & Salovey, 2016). They suggested that emotional, personal, and social intelligences can be considered as a set but simultaneously distinctive and overlapped as illustrated through the Venn diagram shown in Figure 1.

Development of a Set of EI Evaluation Measurements and its Practices

After some decades of zealous research, EI came to be recognized as distinct from other intelligences, and as such, EI should be a measurable intelligence like IQ. Therefore, in parallel with the conceptualization research on EI, there has been much research on the construction of a scale to guage and quantify EI (e.g., Cogliser, Gardner, Gavin & Broberg, 2012; Curci, Lanciano, Soleti, Zammuner & Salovey, 2013; Jordan, Ashkanasy, Härtel & Hooper, 2002; Palmer, Gignac, Manocha & Stough, 2005; Rossen, Kranzler & Algina, 2008), the administration of tests using that scale (e.g., Fan, Jackson, Yang, Tang & Zhang, 2010; Lanciano & Curci, 2015; Salcido-Cibriána, Ramosb, Jiménezb & Blancab, 2019), and evaluating the validity of the mea-

Figure 1. Emotional, personal, and social intelligences considered as a set but simultaneously distinctive and overlapped.



surements obtained through such scales (e.g., Roberts, Schulze, O'Brien, MacCann, Reid & Maul, 2006; Rossen & Kranzler, 2009).

Mayer and colleagues, who have defined and conceptualized EI, have also made significant contributions to research on the development of EI measurements. They constructed and validated a set of instruments to measure EI, called the *Mayer–Salovey–Caruso Emotional Intelligence Test*, abbreviated MSCEIT. Mayer et al. (2003) found that their four-branch model scale was a significantly better fit than other models in measuring EI of individuals, as emotion experts converged on the correct answers on the MSCEIT with higher reliability than the general sample. Brackket and Salovey (2006) similarly showed that EI can be measured reliably on the MSCEIT and that the test has content and structural validity. They also reviewed evidence that the MSCEIT provides valid discrimination in relation to other cognitive abilities and personality traits, and that it has incremental validity in predicting outcomes important to the individual and society.

On the other hand, there are some critiques of MSCEIT. For instance, Rossen and Kranzler (2009) critiqued that the MSCEIT may not measure all the constructs that are necessary to be measured in precisely evaluating EI because it is unclear how each construct's lower-order factors are defined and derived. Such critiques have caused the interpretation of the scale scores on the MSCEIT to remain questionable in the minds of some researchers. Rossen and Kranzler concluded that until the issue of the structural fidelity of the MSCEIT is resolved, only examination of the incremental validity of the overall EI appeared to be warranted. Maul (2012) also expressed skepticism about the utility and credibility of the MSCEIT, noting that the comprehensive range of competencies included in the MSCEIT makes it challenging to

measure each competency separately because they may be related to each other for measurement purposes. This criticisms of MSCEIT is understandable as competencies described in EI can generally be viewed as intertwined with each other, where an attempt to measure one may trigger another inadvertently. This may cause a chain reaction between various competencies, and may perhaps change the measured quantity of the competency of interest. In a way, this is somewhat analogous to the well-known "measurement problem" in the realm of quantum mechanics, which in essence is unavoidable in the microscopic and macroscopic realms (Einstein, Podolsky & Rosen, 1935; Jammer M., 1974). Maul (2012) pointed out that to utilize the MSCEIT, it is first essential to establish a secure method to measure clearly defined specific competencies, and it is necessary to empirically examine the relationship between each of the competencies.

When humans who are gifted with emotions and have the ability to express and adjust their emotions through free will must work together to achieve a specific and common goal, it is essential that those who work together have the ability to control their emotions and express or refrain from expressing their emotions to the fullest extent as required by differing situations especially because conflicts and mismatches between ideas and individuals are unavoidable. This is accomplished through EI possessed, refined, and cultivated by individuals through use and time. Therefore, clearly defining EI, understanding branches or competencies of EI required under different scenarios, and being able to accurately measure EI to the extent possible are important research directions in areas endeavoring to understand human behavior and the management of teams and organizations. However, to date, EI has not been comprehensively described in its entirety to the extent that it is sufficient to precisely measure and evaluate EI of individuals and to set advanced research goals. As such, further development of research on EI will require continued effort on elucidating emotions targeting diverse groups and the development of tailored metrics that can gauge associated EI competencies. The results of such studies should be reflected in the continuous improvement of the measurement indices.

APPLICATIONS OF EI TO VIRTUAL ACTIVITIES

The study by Salcido-Cibriána et al. (2019) investigated the validity of online learning, using the Mindfulness and Emotional Intelligence Program (PINEP) in a virtual setting. PINEP has traditionally only been implemented in a face-to-face setting, and Salcido-Cibriána et al. studied the effectiveness of this program in a virtual environment in a virtual learning platform Moodle (Modular Object-Oriented Dynamic Learning Environment). In the study, participants were divided into an experimental group (virtual participation) or a control group (in-person participation). They analyzed their behavioral factors after they received training in Mindfulness throughout a 90-minute session. The results of the experiment using the Analysis of Covariance method showed that the experimental groups scored higher on "observation" and "description." Regarding empathy, there was also a statistically significant trend in the experimental groups with regards to the reduction of discomfort when exposed to the negative experiences of others. This indicates that, at least in certain cases, learning in a virtual environment is more effective and has more notable outcomes. Negative emotions can be mitigated when exposed to unpleasant information or situation during an activity.

In terms of the application of EI to virtual-team management, the study by Pitts, Wright and Harkabus (2012), for instance, investigated the role of EI as a driver of virtual

team effectiveness and the relationship between the quality of team communication and EI in virtual teams. The results of a multilevel mediation analysis on the samples of 228 undergraduate students who worked in 57 virtual teams showed a significant relationship between EI and team validity, supporting that EI can predict team validity. A significant relationship between EI and team communication was also justified. In the same study, EI was no longer a significant predictor of team validity when team communication factors were added to the validation model. This indicated a significant indirect effect of EI on team validity via team communication, supporting that the quality of team communication fully mediates the relationship between EI and team validity.

In the studies examining the effects of communication on emotions among virtual team members, Ayoko, Konard, and Boyle (2012), based on the analysis of samples of 45 university students from eight virtual teams in total, found that when virtual team members experience conflicts, they actively communicate their negative feelings. Ayoko et al. also mentioned that although frustration and anger were predominant emotions in the early stages of virtual team deployment, in the final stages of the project, more positive emotions such as humor, joy, and happiness were shared. The target students were able to manage conflicts during the project through communication such as mediation, apologies, explanations, positive reinforcement, and feedback requests as well. It is safe to say at this point that although communication is vital for the successful operation of any group, communication and EI seem to go hand-in-hand, especially in virtual settings, EI playing an important role because of the restricted nature of communication present within virtual teams. However, it is quite early to clearly dictate which one definitely plays a mediating role, as it is only rational to assume that both play evolving cyclic roles in the successful operation of a virtual team.

In general, when discussing participant performance and outcomes during any learning activity or collaboration, it is often assumed that face-to-face implementation is more effective than online formats or virtual environments, and in many cases, this is true (Cramton & Hinds, 2014; Hinds et al., 2014; Morrison-Smith & Ruiz, 2020; Polzer et al., 2006; Ryssen & Godar, 2000; Stolovitsky, 2012). However, as Salcido-Cibriána et al. (2019) show, there are cases where learning in a specific environment or for a designated purpose, virtual settings may be more effective with respect to emotional control. Hence, it would be meaningful to consider the most effective implementation method (i.e., online or in-person) in accord with the goal and objective of the activity before launching and deciding strategies for managing the team. In addition, as the studies by Pitts et al. and Ayoko et al. show, enhancing and retaining performance by virtual teams requires team composition with high EI members as well as the ability to use EI to communicate appropriate emotions. Those suggestions indicate that successful team collaboration in a virtual environment requires that each member not only mitigate negative emotions and enhance individual learning, but also share controlled emotions with others in an appropriate and timely manner. Although these play important roles in the successful operation of any group, it is noted that EI exercised in a timely manner is of paramount importance in virtual settings due to the very virtual and restricted nature of the group. Showing the appropriate emotion at the right time or not may determine the formation of strong companionship or breaking bridges because by the time the involved parties meet again to have a virtual meeting, a lot may have progressed behind the scenes, unrecognized by many. Therefore, it can be said

that virtual-team members need to possess strong EI characteristics, and the acuteness and desire for action or inaction more so than other forms of collaboration or activity.

DISCUSSION:

EI RESEARCH FOR FUTURE VIRTUAL-TEAM MANAGEMENT

Until now, research on human interaction in virtual environments has been conducted mainly in the context of online education at universities and other educational institutions, and there has not been much research in companies and other organizations (Cheng, Fu, Han & Zarifis, 2017; Ferreira-Lopes & Bartels, 2020: Noteborn, Carbonell, Dailey-Hebert, & Gijselaers, 2012; Vinagre & Esteban, 2018). This may be because it is easier to introduce online methods in the context of higher education, which promotes education and is more likely to achieve its objectives through one-way communication, than in organizations such as companies, where people's continuous interactions and exchange of ideas play important roles in a successful outcome. Another potential reason is the difficulty securing subjects from companies and other organizations of interest when conducting project-based simulation experiments and studies.

Nevertheless, EI research on corporate virtual teams could smoothly be reached from research in other related areas. While not directly studying practitioners' EI, some previous studies have observed virtual teams in companies from aspects closely related to EI, such as communication and trust formation (Bstieler, 2006; Cole, Cox & Stavros, 2016; Mayer et al., 1999; Mayer et al., 2003; Mayer et al., 2016; McKnight, Cummings & Cherv, 1998; Papadopoulou, Andreou, Kanellis & Martakos, 2000; Quisenberry, 2018; Yamagishi, Cook & Watabe, 1998). For example, a survey conducted by Quisenberry (2018) of 31 practitioners working as members of virtual teams found that to be a valuable virtual team member, they should be self-motivated and self-directed, and possess good written and verbal communication skills. However, Quisenberry (2018) failed to clarify what kind of person can be deemed as self-motivated, self-directed, and demonstrate specialized communication skills. Self-motivation and self-direction being characteristics applicable to any setting, needs clearer indications regarding to what degree, and especially, investigations of the deep-rooted underlying traits that drives an individual to exercise these rather easily distinguishable characteristics. In addition, since Quisenberry (2018)'s subjects were all university employees, it is difficult to say whether the results of the study and the observed behavior is readily extensible to practitioners in a general working environment in companies. Similarly, Bstieler (2006), which dealt with the formation of trust among virtual team members concluded that trust relationships affect virtual team performance but failed to offer segmented factors that promote trust formation, especially in a setting restricted to a virtual environment with strict time constraints for interaction.

In order to delve deeper into EI required for virtual team members to successfully function in an ever-changing work environment in the future, a thorough review of prior research in the following three directions is likely adequate. Namely, (1) research on EI exhibited by members of conventional teams functioning in firms, (2) research on EI exhibited by members of virtual teams composed of (dis)interested parties, and (3) research on EI exhibited by virtual teams composed of higher education students (who are likely to soon enter the work environment). (1), combined with the results of the analyses of corporate virtual teams, helps to further clarify the relationships among the virtual-nature, EI, and its degree. This, together with an understanding of (2), allows for a deeper

consideration of aspects of EI needed precisely for the employment environment, especially for roles in virtual settings. In addition, it is assumed that an understanding of (3) will significantly contribute to the design of educational content for undergraduate or graduate students in drastically changing the content of skills-development courses for students who wish to enter the corporate job market. Each of these three directions should detail how EI is demonstrated according to its traditional definition. Long-term iterations of empirical research and authentic detailing should also improve the robustness of EI evaluation methods such as MSCEIT, which has yet to become commonplace.

It is also worthwhile to study EI requirements for virtual team members in international, multicultural, and/or multiorganizational contexts. To begin with, virtual teams are often set up when geographically dispersed team members or subgroups collaborate with each other (Klitmøller & Lauring, 2013; Mattarelli et al., 2017; Oertig & Buergi, 2006). It means, in many cases, the EI required for existing virtual team members can be rephrased as the EI required for communication and collaboration among members from different countries, cultures, or even business practices. Therefore, it would be meaningful to design simulations in which virtual teams formed by members of the same nationality or from similar cultures are used as control teams and virtual teams composed of members from multiple nationalities or cultures are used as experimental teams, and observe and describe the EI demonstrated for the success of the teams in each context. These could even be expanded to multiorganizational settings where members from diverse expertise exercising differing business practices gather together to achieve a common goal. In general, the greater the degree of difference, the more knowledge and ability, and thus intelligence, such as EI, required to understand and joyfully collaborate with each other. In this regard, members of a virtual team composed of people of multinational or multicultural origin may require a higher level of EI than members of a homogenous team (Cramton, 2001; Cramton, 2002; Cramton & Hinds, 2005; Cramton & Hinds, 2014; Cramton & Webber, 2005; Eisenberg & Mattarelli, 2017; Espinosa, Slaughter, Kraut & Herbsleb, 2007). Through testing this hypothesis alone could provide more relevant and practical insight for multinational companies that are increasingly considering the formation of virtual teams.

Based on Mayer et al.'s statement that EI is an intelligence that can be acquired or improved/enhanced, detailing and classifying the EI required by domestic or international virtual team members could provide clear guidelines for human resource development in companies and educational institutions. Thus, research on the EI required by virtual team members should prove to be an important and fruitful research topic for the future, especially in the fields of organizational behavior and human resource management. Human society, behavior, and thinking are constantly changing, and the workplace is also undergoing unprecedented changes accordingly. Envisioning the workplace, a couple of decades into the future has "virtual and borderless" clearly written all over it. Both employers and employees need to rethink, analyze, and restructure the skillset required in preparing for these coming changes. As researchers, we can envision the future and its requirements, and provide support now by researching and building the foundations necessary, rather than conducting investigations after practitioners have already found a workable solution.

CONCLUSION

By retroactively reviewing decades of prior research on EI, this paper summarizes what is

currently known about EI and what needs to be more clearly articulated in the future when dealing with EI in the context of virtual-team collaboration. For further development of this research stream in the future, a research design that allows for a more detailed investigation of the emotions held and required by the research subjects is necessary. In addition, to promote empirical research on virtual teams operating in a real-world environment, it is necessary to conduct simulations with practitioners as subjects actively involved in complex projects in which they actually have a stake. In conducting research with access to virtual teams operating within organizations, it is necessary to convey to practitioners the benefits of initiating virtual-team research and the idea that EI is deeply rooted in the smooth operation of virtual teams, and that disentangling the important characteristics of EI playing a pivotal role in the successful operation of virtual teams requires large-scale surveys, simulations, and experiments through active industry-academia collaboration.

If it is difficult to obtain cooperation from organizations, it may be possible to look for other "work" environments that meet the criteria of "adults with similar educational backgrounds" or "peers involved in a project in which there is a conflict of interest." For example, although somewhat of a leap, the study of Mysirlaki and Paraskeva (2020) focuses on teams that form and collaborate to achieve a common goal in an online gaming environment called *Virtual World Teams* (VWTs) in *Massively Multiplayer Online Games* (MMOGs) and analyzes the EI and communications that members engage in during their missions. In this case, the game players, who are the virtual team members, do not earn income from their participation in the game, unlike the way practitioners do by working. However, they may occasionally have to pay bills to accomplish their missions and thus participate in the game while pursuing efficiency, which can be seen as a kind of conflict of interest. It may be possible to treat this situation as a context similar to the case of a company where teams work together to accomplish tasks as efficiently and smoothly as possible. Another possibility, if participation in activities in virtual environments such as the Metaverse becomes more common in the near future, it may be necessary to organize project events and conduct research on the diverse participants who gather there for a common goal.

Emotions themselves have been universally present in humans since time immemorial. However, the aspect of collaboration in virtual teams is constantly evolving due to changes and innovations in IT, ICT, and digital environments. Therefore, researchers who work with virtual teams will need to constantly update their research methods and seek the best methods to accurately capture the virtual team collaboration of the era and the personal traits and intelligence that may be required for successful operation of such teams.

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