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Changing Digital Age in the Wake of COVID-19:

How Does Humility Impact on Virtual Leaderless Teams?

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ABSTRACT

Virtual teams play a crucial role in today's knowledge-based organisation for overcoming challenges in our dynamic world, especially in the current situation of the COVID-19 pandemic. Teams play a key role in today's knowledge-based organization for overcoming challenges in our dynamic world. Drawing on social information processing theory, this study explores the effect of members' humility and team environment within a leaderless team mainly based on virtual platforms. Their impacts on shared leadership, relationship conflict, and team and individual performance were investigated. Surveying 219 students forming 61 virtual leaderless teams, the findings showed that a high level of humility and a positive team environment can help to improve shared leadership within a team, which contributes to team performance. Moreover, both humility and team environment have a negative relationship with relationship conflict, which depressed both team and individual performance. The analysis also indicated that humility positively interacts with team environment on shared leadership.

KEYWORDS

Humility, Leaderless Team, Relationship Conflict, Shared Leadership, Team Environment, Virtual Team

1. INTRODUCTION

The coronavirus diseases (COVID-19) has spread across the world and caused unprecedented challenges to global economic (Anthony Jnr & Abbas Petersen, 2020; García-Vidal, 2020). Due to the government-enforced lockdowns for preventive measures, people need to stay at home and shift their working environment from face-to-face to virtual (Waizenegger et al., 2020; Feitosa & Salas, 2020). In order to deal with turbulent and competitive environments of COVID-19 situation, organisations are more predominantly relying on a virtual team rather than physical teams to solve complicated business problems. Along with this trend, Bekirogullari and Thambusamy (2020) investigated the

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challenges and possibilities of virtual leadership in small businesses during the COVID-19 pandemic. This study further steps ahead on a virtual team setting for better team and individual performance.

For the dynamics between a leader and his/her team members, on the one hand, Weick (2001), Morris et al. (2005), Vera and Rodriguez-Lopez (2004) proposed that it is essential for the leader to be humble who manifest in the willingness to listen, openness to feedback, collaborate, ability to learn, appreciation of others, admitting mistakes with sincere. Humility is also a trait to predict how likely a leader will not take all the credit from the team and respect team success. This will foster a good team climate, generate goodwill, create trust, and win respect. Forbes Human Resources Council (2016) also listed humility as one of the five key traits that should be prioritised when hiring executive-level staffs. On the other hand, team members who express humility can better respond to today's knowledge-based, creative, and complex work environment. In general, humility raise insights to the organisation due to openness to the new idea, which stimulate thinking and foster innovative solutions to problems that help companies navigate the change and manipulate even in times of turbulence. According to a New York Times' interview to Laszlo Bock (2014), the Senior Vice President of People Operations at Google, humility was one of the key traits that Google is looking for their new recruitment.

Humility is recognised as an essential self-based trait (Tangney, 2002; Peterson and Seligman, 2004). Baumeister's (1998) proposed that humble individuals who experience through (1) reflexive consciousness, which is related to willingness to see one's limitations, (2) appreciating others' strengths and contributions, and (3) teachability, which refers to one's openness to learning and receptive to others' feedback. These three dimensions form a comprehensive domain of humility. Humility in past studies mainly associated with leadership behaviors (e.g. Morris, Brotheridge, and Urbanski, 2005; Hackett and Wang, 2012) and was focused on traditional face-to-face context. Here this study investigates humility among members.

The pervasive usage of network access and advent of new technology has facilitated the rapid growth of virtual teams with activities ranging from business, social and educational context. Virtual teams are defined as "groups of geographically and/or organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish a variety of critical tasks" (Townsend, DeMarie, & Hendrickson, 1998). Based on a study by the Society for Human Resource Management, 66% of multinational organisations use virtual teams. In 2015, 37% of U.S. workers were telecommuting compared to 9% in the 1990s according to the Gallup organisation. Experts estimate that more than 1.3 billion people will work virtually within the next few years. Nowadays, many sizable firms bank on virtual teams to a certain degree (e.g., Breuer & Hüffmeier, 2016). This study looks into the performance of virtual teams' setting.

In addition, leaderless teams have become gradually prevalent in massive contemporary firms, especially in technological firms. Team members self-manage or self-organise their work collectively and independently without a formal leader in a team (Vine, Holmes, Marra, Pfeifer & Jackson, 2008). A par extent of leadership role and duties are shared among various team members. All team members are accountable for the productive outcome in recurring meetings. This echoes on the proactive employee behaviour with a better leader-member and team-member exchange, as suggested by Al-Tit (2020). This study focuses on the leaderless team, and team-members' exchanges are exploring.

There is a rising phenomenon that crossed department / organisation professional-based leaderless teams are formed and collaborated to tackle specific issues, especially in the recent situation of COVID-19 pandemic. Since the team usually consist of multifunctional professional, it is important for members to learn and accept others' contribution. Intuitively speaking, humility is the key element for such a process to be a success.

Despite the fact that pioneer researcher - Owens have numbers of research (Owens & Hekman, 2012: Owens et al., 2013: Owens et al., 2015; Owens & Hekman, 2016; Chiu et al., 2015) on humility, none of them are focused on computer-mediated communication (CMC) through a virtual community. Due to the lack of nonverbal communication cues and different evaluation process on CMC (Walther,

1992), the existing literature of expressed humility cannot fully explain the current phenomenon of professional-based virtual community communication.

In this regard, we propose a theoretical framework of expressed humility in a virtual leaderless team to explain the phenomenon of virtual team communications successfully. This study explores the effect of members' humility within a leaderless team mainly based on virtual community communication. In particular, the relationships among humility, team environment, shared leadership, relationship conflict and team and individual performance will be investigated.

In order to conduct the analysis, we collected data from 219 students out of 61 teams in seven business courses in a Hong Kong university. Due to the COVID-19 pandemic, all group projects are conducted via virtual platforms like MS team or blackboard collaborate ultra. Since these are related to student group projects, there is no assigned leader in each team. We evaluated team members' humility, leadership, team environment, relationship conflict and team performance through all members' self-evaluation reports and their peer-evaluation reports. Individual performance is measured by the individual performance ratings according to their individual assignment submitted to the subject lecturer. The group project resembles the business environment for a virtual team to overcome a challenge. The performance of the team members will be evaluated by the CEO of the company. The role of the subject lecturer is similar to the CEO of the company who guides through the processes in the project.

In self-evaluation questionnaires, participants evaluated 1) the internal team environment, 2) relationship conflict, which may damage trust and communication within a team, and 3) team performance. Besides, respondents were asked to evaluate whether the other team members are humble and whether the others are shared leaders in the team. Apart from the individual performance, all measurements are based on individual perception, and the unit of analysis of this study is at the individual level.

Past studies mainly focus on the effect of humility under a traditional working context with an assigned leader. Previous literature indicates that humility might be an essential factor regarding shared leadership, relationship conflict and team and individual performance. Little or none studied the effects of humility on team outcomes guided by shared leadership and relationship conflict in a virtual leaderless team. To address the gap in the literature on teams in a virtual platform without an assigned leader, we draw on the notion that team members humility can facilitate workgroup relationship and contribute to shared leadership, which influence both individual and organisation performance. What's more, we aim to take a further step by investigating the idea that individual team members who express humility within a team can facilitate a team environment and contribute to shared leadership.

In other words, this study would provide some works to address the following questions: What is the influence of humility on shared leadership in a virtual leaderless team? What effects would humility have on relationship conflict? How is humility related to individual and team performance with the guidance of shared leadership and relationship conflict?

2. LITERATURE REVIEW

Shared leadership refers to the mutual influence and shared responsibility among all members of a team, whereby members lead each other dynamically, interactively, internally and informally toward goal achievement (Carson, Tesluk, & Marrone, 2007; Hoch & Kozlowski, 2014; Pearce & Conger, 2003). With the presence of shared leadership, team members experience higher commitment and are expected to provide more significant personal and organisational resources that benefit complex tasks. According to some researchers, as an important intangible resource for teams, shared leadership would also enhance team performance on complex tasks (Day, Gronn, & Salas, 2004; Marks, Mathieu, & Zaccaro, 2001).

Past studies found that internal team environment in a traditional face-to-face setting is an essential factor that has impacts on shared leadership. Carson et al. (2007) suggested that an excellent internal team environment consists of shared purpose, social support, and voice, all of which contribute to the shared leadership within a team. The shared purpose has been linked to empowerment, motivation, commitment (Carson et al., 2007) and increased willingness to share leadership responsibilities within the team (Avolio, Jung, Murry, & Sivasubramaniam, 1996). According to Kirkman and Rosen (1999), high social support team members are more willing to cooperate, through which they develop a sense of shared responsibility to accomplish common goals. What's more, voice can foster a shared understanding and interpersonal support, which increases team members' commitment and involvement in goal achievement, thereby enhancing the likelihood that team members will engage in shared leadership.

Besides the team environment, humility was also an important factor for shared leadership in a team. Humility refers to an interpersonal characteristic that emerges in social contexts that connotes (a) a manifested willingness to view oneself accurately, (b) a displayed appreciation of others' strengths and contributions, and (c) teachability (Owens et al. 2013). In the literature, humility was mainly associated with shared leadership behaviours in the traditional face-to-face context (Morris et al., 2005; Owens & Hekman, 2012, 2016; Owens, Hackett, & Wang, 2012; Owens, Johnson, & Mitchell, 2013; Wallace & Waldman, 2015). That is, team members who express humility in the team contribute shared leadership and drive the team project.

Under the teamwork in the form of shared leadership, relationship conflict among team members was also related to team environment and humility. De Dreu and Weingart (2003) considered team conflict as a shared team property. Team members are free and responsible to contribute their opinions and challenge others during a participative decision-making process, which may lead to internal team conflict. Some researchers argued that team relationship conflict can diminish team members' commitment to team decisions and may damage trust as well as communication with teams (Janssen, Van de Vliert, & Veenstra, 1999). Also, De Dreu and Weingart (2003) found in their meta-analysis that relationship conflict was negatively associated with team performance. Relationship conflict, including member disagreement regarding emotional and personal issues, would engender negative behavioural manifestations within a team and impact decision quality and performance (Jehn, 1995; Mooney, Holahan, & Amason, 2007; Simons & Peterson, 2000).

3. THEORETICAL FRAMEWORK

To begin with, we intend to investigate the theoretical implication of expressed humility in virtual teams, especially on the dynamic professional-based context that formal leader might not be assigned. Our theoretical framework mainly relies on social information processing theory, which suggests that individuals' processing of social information influences how they make meaning of and come to understand their work environment in ways that shape their work-related attitudes and behaviors (Salancik & Pfeffer, 1978). As a virtual team is formed, members of it would start to formulate their working attitudes based on their collective perceptions about their working environment.

Current forms of teamwork that emphasise knowledge-based work rely on employees who have high levels of expertise and seek autonomy in how they apply their knowledge and skills (DeNisi, Hitt, & Jackson, 2003; Morris & Venkatesh, 2010). Therefore, no single leader is assigned and team members desire greater opportunity to shape and participate in the leadership functions for their teams, which leads to shared leadership. We define shared leadership in terms of the mutual influence and shared responsibility among team members, whereby they lead each other dynamically, interactively, internally and informally toward goal achievement (Carson, Tesluk, & Marrone, 2007; Hoch & Kozlowski, 2014: Pearce & Conger, 2003). This study gives rise to the trend of shared leadership in a virtual team, a kind of current and future forms of teamwork.

From a social integration perspective, humble people value others and excel at listening, which conveys confidence and enables innovation as people seek, accept and appreciate others input. Humility can support this collective behavior by emphasising the importance of whole team interest instead of oneself to create more interaction with other team members to achieve a common goal.

Past studies mainly focus on the effect of humility under a physical working context. Little or none has studied the effects of humility to team outcomes in a virtual team by shared leadership, which can be our future working style. Clearly, the key success in operating a virtual leaderless team is the supply of knowledge, willingness to share knowledge with other team members. We bring forward the idea and argue that individual team members who express humility in a virtual team can facilitate a team environment and contribute to shared leadership.

Carson and colleagues' footprint suggested that a good internal team environment consists of shared purpose, social support, and voice would contribute to shared leadership movement within the team (Carson el at, 2007). Based on social information processing theory, we propose those team members, who understand the objectives of their projects, are willing to share their responsibilities to achieve the collective goals. The social support and voice of each team member to another would also promote the sharing of responsibilities. In sum, Figure 1 depicts our theoretical framework.

4. RESEARCH METHODOLOGY

Hypotheses Development

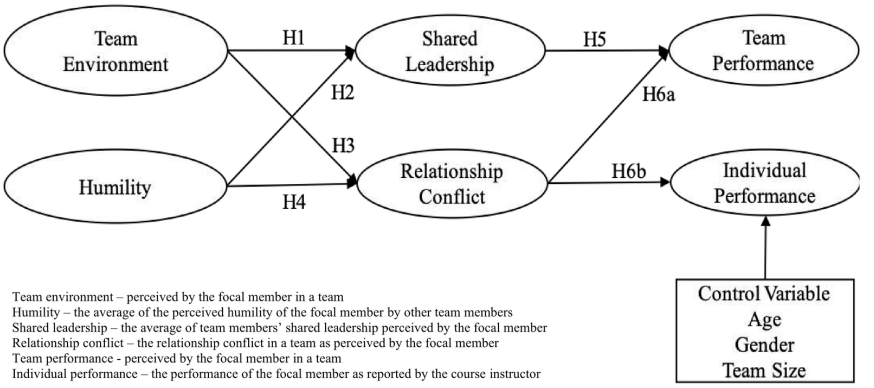
Shared purpose, the first dimension of the internal team environment, arises when team members have similar understandings of their team objectives and focus on the accomplishment of the collective goals. The shared purpose has been previously associated with heightened levels of empowerment, motivation, and commitment (Carson et al., 2007) and an increased willingness to share the responsibilities of a team (Avolio, Jung, Murry, & Sivasubramaniam, 1996).

Social support, the second dimension of an internal team environment, refers to team members' efforts to provide emotional and psychological support to one another through encouragements and recognition of individual and team contributions and accomplishments. Kirkman and Rosen (1999) have suggested that, under a high social support condition, team members are more likely to cooperate and develop a sense of shared responsibility for accomplishing collective goals.

Voice is the last dimension of internal team environment and is associated with "interaction facilitation/participative" behaviours in teams (Seers, 1996). These types of behaviours can result in higher levels of social influence among team members through increased engagement and involvement. In addition, voice has been associated with participation in decision making and constructive discussion and debate around alternative approaches to team goals, tasks, and procedures (De Dreu & West, 2001; Simons, Pelled, & Smith, 1999), which can improve the amount of collective influence, involvement, and commitment. Thus, the presence of high levels of voice in a team should create an environment where people engage in mutual leadership by being committed to and becoming proactively involved in. This would constructively challenge each other in pursuit of team goals. Under a high level of voice, team members should engage in shared leadership.

These three dimensions are mutually reinforcing and complementary. When team members can speak up and get involved (voice), the likelihood that many of them will exercise leadership increases greatly. The opportunity for voice also facilitates shared leadership by strengthening both a common sense of direction and the potential for positive interpersonal support in a team. When teams are focused on collective goals (shared purpose), there is a greater sense of meaning, and increased motivation for team members to both speak up and invest themselves in providing leadership to the team and to respond to the leadership of others. An encouraging and supportive climate can also reinforce the motivation to participate and provide input toward achieving common goals. When team members feel recognised and supported within their team (social support), they are more willing to share responsibility, cooperate, and commit to the team's collective goals. Thus, these three dimensions

Figure 1. Theoretical Framework



work together to create an internal team environment that is characterised by a shared understanding about purpose and goals, a sense of recognition and importance, and high levels of involvement, challenge, and cooperation. In this regard, we propose the following hypothesis:

Hypothesis 1: Team environment has a positive influence on shared leadership.

With the reasoning from social information processing theory, the behaviour of team members (e.g., expressed humility) in dyadic interactions accrues to shape team's collective perceptions about their working environment and guides their social interactions. Manifested willingness to see the self accurately being the ðrst component of expressed humility captures a desire to engage in an ongoing process of achieving accurate self-awareness through interactions with others. Nielsen et al. (2010) suggested that "people with humility are actively engaged in utilising information gathered in interactions with others, not only to make sense of but also, when necessary, to modify the self.

Therefore, we propose expressed humility encourage a more objective appraisal of personal strengths and limitations. This is manifested by transparent disclosure of personal limits, acknowledging mistakes, and seeking realistic feedback about the self. Each team member would know about how to focus and accomplish his/her collective goals, when to take action and when to learn more about an issue. Each team member should endeavour what he/she is capable of handling competently and rely on others for those tasks he/she is lack of experience. This fosters higher-quality and more transparent interpersonal interactions among team members. As a result, the level of shared leadership becomes elevated.

Appreciation of others' strengths and contributions, which is the second component of expressed humility, reñects attitudes that are other-enhancing rather than self-enhancing (Morris et al. 2005). This leads one to acknowledge and show that he/she values others' strengths (Tangney 2002). Expressed humility entails the behavioural manifestation of this positive view of others, which individual will be able to more readily identify and value the unique abilities and strengths of those with whom they work. By doing so, team members expressed humility are more readily able to identify in others valuable resources for social modelling and learning through providing both emotional and psychological support, which enhance the shared leadership.

Teachability is the third component of expressed humility, which is manifested by showing openness to learn, a displayed receptiveness to others' feedback, advice and ideas and even the willingness to ask for help. Humble individuals foster greater trust with others and drive a sense of shared responsibility (Cropanzano et al. 2007).

Therefore, we propose humility encourage self-appraisal of personal strengths and weakness. It is manifested by disclosure of personal constraints, acknowledging mistakes, and seeking realistic feedback about the self. It fosters high-quality interpersonal interactions between peers and goes together for solving difficulties in a complementary manner. As a result, the level of shared leadership is elevated. Thus, we hypothesise:

Hypothesis 2: Team member's humility has a positive influence on shared leadership.

Relationship conflict refers to the argument of member opinions and preferences related to personal feeling, personal disagreement with damages communication, and mistrust among team members (Janssen et al., 1999). Under a good team environment with a good indication of shared purpose, social support and voice, team members would hold similar beliefs and attitude, which build trust and enforce communication (Glaman, Jones, & Rozelle, 1996; Tsui & O'Reilly, 1989). Members will also have the team identity, which results in relationship closeness (Cox et al., 2003; Hobman, Bordia, & Gallois, 2004). Therefore, we posit:

Hypothesis 3: Team environment has a negative influence on relationship conflict.

Humble team members are less likely to trigger relationship conflicts as they listen and respect to others' ideas, without interrupting or making any cynical judgments and comments. Even if they have critique the ideas, they challenge others' presumptions but not their intelligence (Tjosvold, 1993; Jehn, 1995). Under such a harmonious working context, team members are closely related and have less relationship conflict. Thus, we predict:

Hypothesis 4: Team member's humility has a negative influence on relationship conflict.

With shared leadership in a team, team members are willing to take part to share the responsibility, and the other fellow members will accept them with trust and respect as reciprocal feedback. When team members offer their leadership to others in order to achieve the mission of their team, they should experience higher commitment, bring greater personal and organisational resources to bear on complex tasks, and share more information. Moreover, trust and respect due to shared leadership among team members would become an additional resource for improving team process and performance (Day et al., 2004; Marks et al., 2001).

Shared leadership act as an essential intangible resource available to teams, and therefore it should enhance team performance on complex tasks (Day et al., 2004). This intangible resource, which is derived from the network relationships within the team, results in more significant effort, coordination, and efficiency (Nahapiet & Ghoshal, 1998). Moreover, shared leadership can strengthen social inclusion and contribute to team cohesion, which can facilitate team effectiveness. It becomes an extra resource to improve team effectiveness and performance (Day et al., 2004; Marks et al., 2001). Hence, we propose:

Hypothesis 5: Shared leadership has a positive influence on team performance.

Relationship conñict is most typically counterproductive, given that its focus is on people rather than ideas (Jehn, 1995). That is, disagreements become personalised that damages trust and

communication among team members (Janssen et al., 1999). Literature has generally concurred that relationship conñict is negative (De Dreu and Weingart, 2003). Once relationship conñict is sparked, a self-managed group may not be well equipped for containing conñict (Langfred, 2007). This is especially valid for a leaderless team, where there is no formally assigned leader to interfere in a conñict among group members. As a result, relationship conflict will lead to cooperation problem between team members and is negatively related to team performance (De Dreu and Weingart, 2003).

According to Carnevale & Probs (1998), the cognitive processing view of the conflict, which stated that individual who perceives less conflict would have a better circumstance perspective that leads to more work productivity and better performance. Hence, relationship conñict is negatively associated with an individual's satisfaction (Jehn, 1995) and well-being (Dijkstra, Dierendonck, Evers, De Dreu, 2005). Accordingly, we hypothesise that:

Hypothesis 6a: Relationship conflict has a negative influence on team performance.
Hypothesis 6b: Relationship conflict has a negative influence on individual performance.

Data Collection

In order to examine the theoretical model with a reliable and systematic data collection method, we surveyed with three rounds of an online questionnaire in seven business courses with 4 courses in the postgraduate level and 3 courses in the undergraduate level from a Hong Kong university. Students are randomly assigned to group project teams of 3 to 6 members (total 61 teams with 33 teams from the postgraduate courses and 28 teams from the undergraduate courses), who communicate mainly via telecommunications such as blackboard collaborate ultra or MS teams due to COVID-19 pandemic. There was no assigned leader for those teams. Participants were recruited via online classes. All of them received three 7-10 minutes online questionnaire via email. A total of 219 valid student responses were collected. From the data, there are 87 male respondents (39.72%) and 132 female respondents (60.27%). The statistics show that the age of respondents is generally from 21 to 35 (71.69%). Table 1 summarises the profile statistics of the respondents.

Table 1. Descriptive statistics of the respondents

Gender	**Male**	**87 (39.72%)**
	Female	132 (60.28%)
Age	Below 21	3 (1.37%)
	21-25	65 (29.68%)
	26-30	57 (26.03%)
	31-35	35 (15.98%)
	36-40	20 (9.13%)
	41-45	35 (15.98%)
	46 or above	4 (1.83%)
Team size	3	9 (14.75%)
	4	14 (22.95%)
	5	15 (24.59%)
	6	23 (37.70%)

The first online questionnaire is the evaluation of internal team environment and collection of demographic data. Once after all participants finished the first questionnaire, we sent the second questionnaire to them by email under the condition that they all submitted their group project and reported in order not to affect the peer evaluation process conducted in the second questionnaire.

The second online questionnaire is peer evaluation on humility and leadership role. Participants were asked to evaluate each team member concerning his/her humility and leadership role. Should the team consist of six members; each member of this team would receive five emails accordingly to evaluate his/her five teammates.

After finished the second questionnaire, the third online questionnaire regarding team effectiveness and performance would be sent. Participants were asked to evaluate their feeling on relationship conflict and team performance. The individual performance is captured from the individual assignment of the student.

Due to the self-report method, several sources of common method bias might affect the present study, such as social desirability and consistency motif (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To control the common method bias, we conducted our measurement in three waves within a semester. This temporal separation would reduce the salience of the linkage between the predictors and criterion variables (Podsakoff et al. 2003; Feldman and Lynch, 1988). During each stage, participants would be reminded if no response was received in order to ensure the completeness of data collection.

We will also apply the Marker Variable Technique to examine the effect of common method variance on structural relationships (Williams et al., 2010; Malhotra et al., 2006). In this regard, four unrelated items such as "I enjoy playing sports" will be included in the surveys. Consequently, we will use structural equation modelling to evaluate the difference between the path coefficients with and without the marker.

Construct Measurements

Humility will be measured by using nine items adopted by Owens et al. (2013). Sample items are "This member actively seeks feedback even if it is critical", "This member admits it when they don't know how to do something", and "This member is open to the advice of others". The evaluation of humility is performed in a round-robin approach. In this regard, each team member rates each other members. For example, if there are four members (A, B, C, D) in a team, the humility of person A would be perceived and evaluated by B, C and D respectively in their response to the second questionnaire. In other words, person A's humility would be the average peer evaluation of A perceived by B, C and D. Similarly, if there are five members in a group, the evaluation of one's humility would be measured based on other four team members' peer evaluation on him/her. Hence, the humility of the focal member is deduced by the humility perceived by his/her team members.

Internal team environment will be rated by the team members using ten items in three dimensions consist of shared purpose, social support, and voice extracted from Carson et al. (2007). Sample items are "The members of my team spent time discussing our team's purpose, goals, and expectations for the project", "The members of my team talk enthusiastically about our team's progress", and "My team supports everyone actively participating in decision making".

Shared leadership will be measured with items adopted from Carson (2005) and Carson et al. (2007). Each team member will be requested to rate every teammate with following items, such as "This member initiates and energises team action in pursuit of its purpose and goals", "This member communicates and reminds the team of its overall purpose" and "This member helps develop specific goals towards achieving team's purpose". Similarly, we intended to use a round-robin approach to calculate a collective team average, which represents the total amount of shared leadership behaviour demonstrated in a team. From A's perspective, the shared leadership would be the average score of other team members' leadership behaviour perceived by A based on A's response to peer-evaluated questionnaires. In our measurement, we will deduce the average of team members' shared leadership perceived by the focal member.

For team performance, there are seven items as adopted from Kahai, Sosik, and Avolio (2003), Bollen and Hoyle's (1990), and Carson et al. (2007). Each team member is requested to rate items such as "I am very satisfied with the amount of support and guidance I received from my team", "I feel a sense of belonging to this team." and "This team is effective in providing a quality presentation of the final deliverables."

Relationship conflict will be measured by three items from Jehn and Mannix (2001), which are "There is a lot of relationship tension in my team", "People in my team often get angry while working" and "There is a lot of relationship conflict in my team".

All the above constructs are measured with a self-reported questionnaire in English using a 7-point Likert scale ranging from 1 = "Strongly disagree" to 7 = "Strongly agree".

Individual performance involves the individual rating of the focal member by the course lecturer in a scale from 1 = "very poor performance" to 7 = very good performance" based on the individual assignment of the focal member.

Descriptive Statistics: Means and Standard Deviations Referring to the standard deviations of all constructs at Table 2, it shows enough variations for the sampled data to represent the population. Table 2 displays the means of the constructs, which indicate the respondents perceived a high level of positive internal team environment (mean = 5.610) and high level of humility (mean = 5.542), which result in a high level of leadership (mean = 5.159), in contrast of a low level of relationship conflict (mean =2.588). Finally, it leads to high levels of team performance with a mean = 5.612. The results imply that those teams are generally in high quality and harmony.

Convergent Validity

To conduct the reliability and validity checking, we follow the guideline as suggested by Morales et al. (2019). The results of the exploratory factor analysis are shown in Table 3. To check convergent validity of the measurement, we evaluated those measurement scales based on (1) all indicator factor loadings should be significant and exceed 0.70 and (2) for each construct, the average variance extracted (AVE) should exceed 0.5 because of measurement errors for that construct should not be larger than 0.5. As shown in Table 3, the factor loadings of all items are higher than 0.7. In addition, the AVEs of these constructs, as shown in Table 4, are larger than 0.5. Therefore, both conditions are fulfilled and convergent validity is acceptable.

Instrument Reliability and Discriminant Validity

Reliability refers to the degree to which a construct is free from errors and provides consistent results. To test the internal consistency of multi-items scales in this study, Cronbach's alpha was measured. In this study, the Cronbach's alpha values of all constructs, as shown in Table 4, were over 0.8, which indicates those sets of items are proved to be reliable. Additionally, we adopted those measure items in the constructs from past studies, which are representable. Hence, the content of these constructs was also valid.

Table 4 demonstrates the correlation matrix of constructs to examine any potentially overlapping of any construct. Fornell and Larcker (1981) defined that discriminant validity of a construct is achieved when the items in a construct do not overlap with other constructs to any significant degree (i.e., the AVE of a construct is higher than its squared inter-item correlations with other constructs). In Table 4, the diagonal data (i.e. the square root of variance between a construct and its measures) are all larger than the correlations between the target constructs. Therefore, all the construct discriminant validity is considered to be acceptable.

Common Method Bias

To test whether it exist any common method bias, we conducted the Harmon one-factor analysis (Podsakoff and Organ, 1986). The Harmon one-factor analysis is performed to ensure all the essential constructs, namely team environment (TE), humility (H), shared leadership (SL), relationship conflict

Table 2. Descriptive Statistics

Variables	Mean	S.D.
Team Environment (TE)	**5.610**	**0.863**
The members of my team spent time discussing our team's purpose, goals, and expectations for the project.	5.580	1.048
The members of my team discuss our team's main tasks and objectives to ensure that we have a fair understanding.	5.630	0.983
The members of my team devise action plans and time schedules that allow for meeting our team's goals.	5.560	1.053
The members of my team talk enthusiastically about our team's progress.	5.440	1.075
The members of my team recognise each other's accomplishments and hard work.	5.610	1.032
The members of my team give encouragement to team members who seem frustrated.	5.420	1.172
People in this team are encouraged to speak up to test assumptions about issues under discussion.	5.520	1.029
As a member of this team, I have a real say in how this team carries out its work.	5.600	0.983
Everyone on this team has a chance to participate and provide input.	5.950	0.908
My team supports everyone actively participating in decision making	5.790	1.135
Humility (H)	**5.542**	**0.722**
This member *actively seeks feedback*, even if it is critical.	5.486	0.822
This member *admits it when they don't know* how to do something.	5.573	0.779
This member *acknowledges when others have more knowledge and skills than him- or herself.*	5.578	0.758
This member *takes notice of others' strengths.*	5.464	0.839
This member *often compliments others on their strengths*.	5.411	0.839
This member *shows appreciation for the unique contributions of others*.	5.572	0.794
This member is *willing to learn from others*.	5.524	0.850
This member is *open to the ideas of others*.	5.656	0.771
This member is *open to the advice of others*.	5.609	0.814
Shared Leadership (SL)	**5.159**	**0.896**
This member initiates and *energises team action in pursuit of its purpose* and goals.	5.294	0.952
This member communicates and *reminds team of its overall purpose*.	5.306	0.944
This member helps *develop specific goals* towards achieving team's purpose.	5.285	0.942
This member *ensures effective communication and collaboration among members*.	5.330	0.938
This member help *develops healthy team norms, team cohesiveness, and promotes active involvement* of ALL team members.	5.258	0.953
This member *facilitates effective conflict resolution* within the team.	5.154	0.990
This member serves *as an advocate for the team and solicits needed outside resources* and help.	4.945	1.023
This member *seeks out and coordinates relationships with client contacts*, faculty, and other external parties.	4.964	1.056
This member sol*icits information and feedback from client contacts and faculty advisor*.	5.025	1.081
This member *manages internal task and workflow dynamics of the team* – Who does What, and When (relevant timelines)?	5.080	0.995
This member *matches tasks with individual strengths and skills* in order to optimise members' individual contributions to the team.	5.118	1.014
This member pushes the team to *clarify roles and responsibilities for individual* team members.	5.109	1.002
Relationship Conflict (RC)	**2.588**	**1.576**
There is a lot of relationship tension in my team.	3.060	1.871
People in my team often get angry while working.	2.280	1.635
There is a lot of relationship conflict in my team.	2.420	1.683
Team Performance (TP)	**5.612**	**0.987**
I am very satisfied with the amount of support and guidance I received from my team.	5.630	1.042

continued on next page

Table 2. Continued

Variables	Mean	S.D.
I am very satisfied with the degree of respect I received from my team.	5.730	1.091
I feel a sense of belonging to this team.	5.360	1.338
I am enthusiastic about being a member of this team.	5.470	1.268
This team is effective in providing a quality presentation of the final deliverables.	5.680	1.040
This team is effective in overall, meeting my needs and goals for this project.	5.630	1.110
This team is effective in meeting my expectations in terms of deadline for project submission.	5.780	1.125

Table 3. Evaluation of the reflective measurement model using exploratory factor analysis

	1	2	3	4	5
TE1	0.225	**0.807**	-0.077	0.214	-0.036
TE2	0.171	**0.831**	-0.006	0.180	-0.052
TE3	0.272	**0.753**	-0.020	0.201	-0.070
TE4	0.256	**0.744**	-0.019	0.339	-0.054
TE5	0.326	**0.768**	0.113	0.175	-0.035
TE6	0.246	**0.727**	0.100	0.120	-0.085
TE7	0.230	**0.793**	0.109	0.124	-0.126
TE8	0.239	**0.733**	0.099	0.112	-0.108
TE9	0.166	**0.746**	0.084	0.088	-0.212
TE10	0.269	**0.750**	0.042	0.216	-0.145
H1	0.089	0.099	**0.886**	-0.073	-0.056
H2	0.106	0.076	**0.846**	-0.021	-0.012
H3	0.050	0.066	**0.880**	0.039	-0.041
H4	0.087	0.050	**0.903**	0.085	-0.017
H5	0.127	0.049	**0.882**	0.096	-0.011
H6	0.100	0.083	**0.894**	0.074	-0.062
H7	0.095	0.047	**0.901**	0.106	0.011
H8	0.137	-0.017	**0.882**	0.102	-0.042
H9	0.112	-0.039	**0.884**	0.090	-0.045
SL1	**0.825**	0.299	0.065	0.206	-0.081
SL2	**0.843**	0.294	0.094	0.187	-0.109
SL3	**0.836**	0.266	0.115	0.231	-0.045
SL4	**0.829**	0.319	0.122	0.164	-0.087
SL5	**0.833**	0.307	0.149	0.206	-0.117
SL6	**0.770**	0.244	0.131	0.195	-0.011
SL7	**0.856**	0.226	0.133	0.119	0.011
SL8	**0.892**	0.120	0.089	0.113	-0.007
SL9	**0.872**	0.130	0.101	0.148	-0.001

continued on next page

Table 3. Continued

	1	2	3	4	5
SL10	**0.902**	0.207	0.063	0.136	0.019
SL11	**0.873**	0.242	0.124	0.177	-0.012
SL12	**0.878**	0.265	0.084	0.154	-0.027
RC1	-0.046	-0.155	0.033	-0.064	**0.828**
RC2	-0.040	-0.169	-0.126	-0.049	**0.919**
RC3	-0.072	-0.216	-0.108	-0.033	**0.917**
TP1	0.447	0.465	0.170	**0.545**	-0.132
TP2	0.431	0.394	0.211	**0.497**	-0.117
TP3	0.395	0.428	0.132	**0.626**	0.028
TP4	0.387	0.396	0.115	**0.641**	-0.004
TP5	0.412	0.369	0.076	**0.696**	-0.055
TP6	0.367	0.442	0.072	**0.718**	-0.079
TP7	0.324	0.397	0.109	**0.655**	-0.083
Extraction Method: Principal Component Analysis					
Rotation Method: Varimax with Kaiser Normalization					
Rotation converged in six iterations					

(RC), and team performance (TP) are reliable and valid. In result, the one-factor model explained 25.8% of the total variance among 41 items of the five constructs. There was no factor displayed the majority of covariance in the factor analysis, including all variables used in our study. Furthermore, the SEM analysis display different levels of significance for different coefficients, which verify that common method bias is not a big concern in our study.

5. FINDINGS AND DISCUSSIONS

Figure 2 shows the results of the structural equation modelling analysis on the constructs (TE, H, SL, RC, TP and IP). Our findings indicate both team environment (TE) and humility (H) are significant factors to the development of shared leadership (SL). Thus hypotheses 1 and 2 are supported. Comparing their influence, the effect of TE ($\beta = 0.995^{***}$) on shared leadership is stronger than that of humility ($\beta = 0.099^{*}$). In general, individual perceive other team members' willingness to share team responsibilities, appreciate others' contributions with encouragement and interpersonal support, which then enhance their participation in shared leadership.

Concerning the effect on relationship conflict (RC), our findings, as shown in Figure 2, state team environment and humility are significant factors to relationship conflict. According to the results, team environment ($\beta = -0.804^{***}$) and humility ($\beta = -0.595^{***}$) significantly depress the level of relationship conflict. Thus, hypotheses 3 and 4 are supported. Comparing their influence, the team environment has a stronger impact on relationship conflict. It can be interpreted from three dimensions of the team environment. First, members as a team will actively support each other, not only on work but also on a social dimension. Second, everyone focuses on achieving a goal when they have a shared purpose. Third, when a team is encouraging people to voice out their opinions, it facilitates communication among the team, which would lead to less misunderstanding. Although it might raise the task conflicts due to different approach towards to task, members know the conflict is related to the task but not the person. In sum, members will be less likely hostile to each other, and the relationship conflict will be at a low level. Similarly, considering the effect of humility, when

Table 4. Construct reliability and convergent and discriminant validity

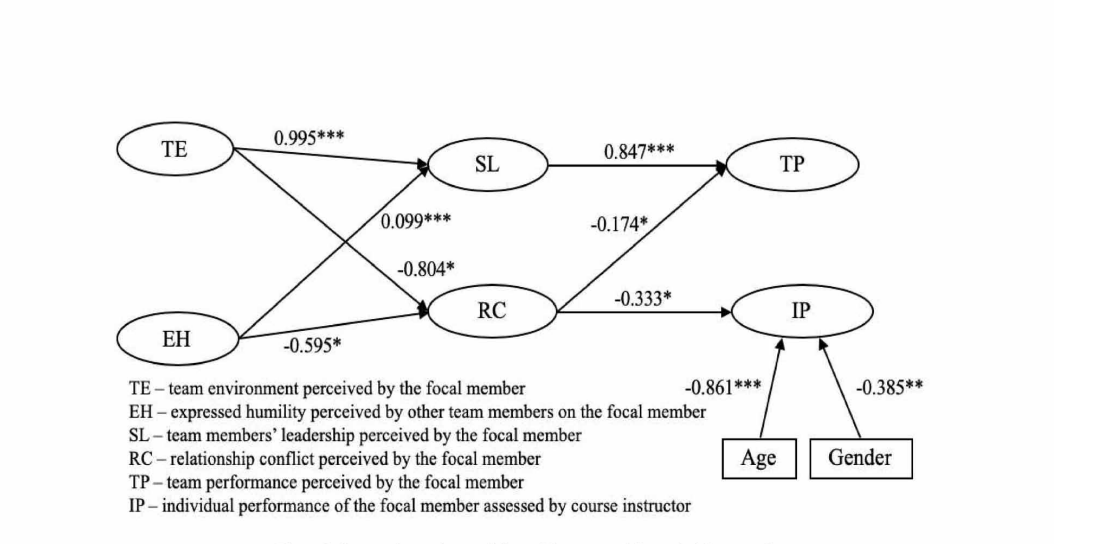
	Composite reliability (Cronbach's alpha)	AVE	1	2	3	4	5
1:TE	0.850	0.587	0.766				
2:H	0.930	0.782	.193**	0.884			
3:SL	0.895	0.725	.568**	.283**	0.851		
4:RC	0.867	0.790	-.321**	-.120	-.169*	0.889	
5:TP	0.838	0.397	.745**	.261**	.707**	-.236**	0.630

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

The diagonal elements report the square root of the average variance extracted (AVE) TE – team environment, H – humility, SL – shared leadership, RC – relationship conflict, TP – team performance

Figure 2. Structural equation modeling of the proposed theoretical framework



other members of the team generally (1) show the willingness to understand themselves accurately, (2) appreciate other's strengths and contributions, (3) and open to learning from others, it is reasonable a humble individual will feel less conflict with members.

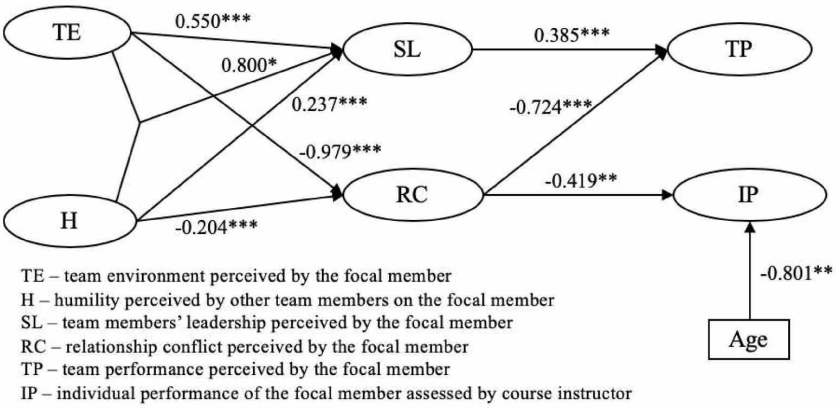
In addition, our findings as shown in Figure 2 indicate that both shared leadership ($\beta = 0.847^{***}$) and relationship conflict ($\beta = -0.174^{**}$) are significant factors for team performance. While shared leadership is found significant in enhancing team performance, relationship conflict has negative impact on it. Hence, the hypotheses 5 and 6a are supported. In general, relationship conflict will cause communication and cooperation problem among team members, which discourage members from working with each other effectively. As a result, team performance will be detrimental. With respect to shared leadership, when team members are open to other fellow members with trust and

respect, shared leadership can strengthen social inclusion. This will have a result of team cohesion, which further facilitates team effectiveness.

For individual performance, relationship conflict would also have a negative impact (β = -0.333**) on it. It may because relationship conflict will cause communication and cooperation problem between team members and make people distracted. This will discourage an individual from working effectively, in a result of detrimental to individual performance.

For the control variables, our findings as shown in Figure 2 state that age of team members (β = -0.861***) has significant effects on the level of individual performance (IP). That is, the younger the students are, the better their individual performance will be. In this study, there are 61 teams with 33 teams from the postgraduate level and 28 teams from the undergraduate level. Their age distribution is shown in Table 1. We suspect that those students from the postgraduate, especially those experienced managers who are very busy on their full-time work may not able to concentrate on their study. Hence, their individual performance is not as good as those full-time undergraduate students who devote their energy to their studies. Besides, gender is also a significant factor showing that, relatively speaking, males are more likely to have good individual performance than females (β = -0.385**). This would be due to the courses in this study are mainly related to the management of technology or information system in an organisation. The technical nature of the courses is more favourable towards the male rather than the female. In this regard, the male may be performing better than the female.

Figure 3. Structural equation modeling for the interaction effect



Interaction Effect of Team Environment and Humility on Shared Leadership

With respect to the interaction effect, our analysis, as shown in Figure 3, indicates that there is a synergy between the team environment and humility to generate a higher level of shared leadership. Since both team environment and humility had a significant direct effect on shared leadership and, as shown in the results, the interaction effects of team environment and humility (β = 0.800***) significantly facilitate the development of shared leadership. The results proved that there is such an interaction effect between the team environment and humility on shared leadership.

To explore the form of the interactions, the relationship between team environment and shared leadership for both high and low levels of humility was plotted. Following the procedure described by Aiken and West (1991), one standard deviation was added to the humility, and then the analysis was performed. The positive relationship between team environment and relationship conflict was not significant when humility was at a low level. Similarly, we examined the slope of the relationship between team environment and shared leadership for high levels of humility by subtracting one standard deviation from humility. We found that the slope was significant when the level of humility was high. Accordingly, the effect of team environment on shared leadership was more substantial when humility was higher. Hence, the moderation effect of humility can shape the relationship between team environment and shared leadership. In summary, Figure 4 illustrates the results in different situations.

Theoretical Implications

Past studies vastly investigated the critical success and failure factors such as shared leadership and relationship conflict for team collaboration. Little or none research has considered the relationship of those essential factors under the context of a virtual leaderless team using social information processing theory to explain different perceptions of human behaviour in organisations. Our framework would make a theoretical impact on current literature as it can work to explain the phenomenon of virtual leaderless teams. The main objective of this study was to examine whether team members' humility can facilitate shared leadership in a team and lessen team relationship conflict.

Our findings suggest that humility has a significant positive impact on shared leadership. This is to promote shared responsibility and role through (a) manifested willingness to see oneself accurately, (b) appreciation of others' contributions and strengths, and (c) teachability. It is consistent with Owens et el. (2016) observation that collective humility promotes collective achievement under a self-regulated team.

Moreover, a high level of shared leadership results in a high level of team performance and contributes to lessening relationship conflict within a virtual leaderless team. It resonates with numerous previous studies in a traditional face-to-face setting (Boies, Lvina, & Martens, 2010; Carson et al., 2007; Pearce & Sims, 2002). Positive team environment can also improve shared leadership and reduce internal relationship conflict. Ultimately, team performance will be positively influenced by shared leadership and negatively influenced by relationship conflict. Individual performance will be negatively influenced by relationship conflict. Our findings also indicate the positive re-enforcement and interaction effect between humility and team environment on shared leadership. This contributes to the literature by identifying the synergy effect between the team environment and humility, which would further strengthen the degree of shared leadership.

Practical Implications

Our findings would provide some suggestion and hints for the business leader on how to make use of the benefit of expressed humility in a virtual leaderless team and how can they acquire such a precious virtue for their organisation. As current literature suggests that humility is greatly beneficial to organisations in the traditional face-to-face setting, our findings would have a real practical impact on the business world in the virtual setting.

Interestingly, decentralised infrastructure with shared leadership has been uncommon in our business settings. Most of the firms have their centralised infrastructure in Hong Kong, China. Project teams are most likely to have leaders in-charging and take full accountabilities of the face-to-face team. Through this research, firms can attempt to decentralise the project teams to achieve the same common goal in the presence of humility and appropriate team environment. Shared leadership can be applied to collaborative project teams without a leader. Management of the firms can consider allocating resources on developing virtual leaderless teams to achieve the same business outcomes.

Given a leaderless team to be adopted to handle partnership collaboration within the firm or outside the boundary with other organisations, this study provides valuable suggestions and insights for business leaders to manage the team effectively.

First, humility is an important element for influencing shared leadership, relationship conflict, and team performance. Companies should take humility as one of the assessed elements in employing talented employees. Employees' humility can spread virtue and collectively develop a tangible value to organisation.

Second, from the perspective of human resource management, organisations should fit humble members who are the best suit for the challenge in the virtual team. For instance, if the team tasks are focused on the accomplishment of excellent quality and creative outcomes, the management is recommended to consider virtual team without a leader. Team leaders probably put too much effort on visions, missions, relationship management and KPI. They always confront team members for new ideas, taking risks and concerns about the needs and wants from various team members in the team, which will eventually upset the performance outcomes.

Third, from the perspective of the team environment, the organisation should plan and establish new policies, and allocate resources for members adapting to the new virtual team environment. This environment allows the team members to a shared understanding of purpose and goals, a sense of recognition and importance, and high levels of involvement, challenge and cooperation.

Practically, organisations should have a new policy to promote the team members to use audio, video conferencing, telephone calls and instant messages. With this new policy, members can share further information, feedback and viewpoints in order to resolve differences and avoid relational conflicts quickly. Eventually, the decisions can be made faster, improving the performance outcome. Also, organisations should help team members to solve technological and logistical concerns. For example, a video conference can overload the internet services which induces high expenditures. Compensation policy should be set up to ensure team members working towards proper communication.

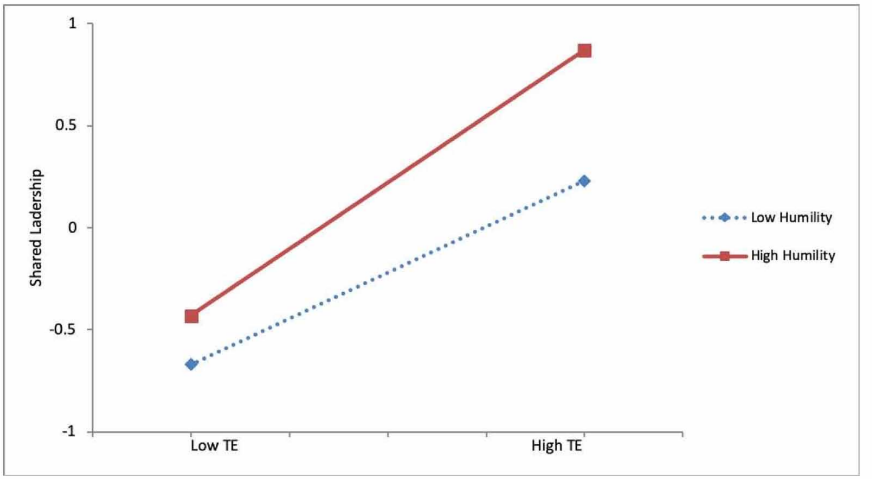
Last, organisations should conduct training programs to promote a good team environment. This can allow team members to avoid negative behaviours, such as dishonest communication, negative feedback and unintentional misinformation, reducing relationship conflicts. For examples, organisation can invest in team building so that members have no common background meet together face-to-face in a kick-off section. Team members can also participate in CSR activities together to train how the common goal can be achieved with shared leadership.

Limitations and Future Development

Due to the self-report method, several sources of common method bias might affect our present study, such as social desirability and consistency motif (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To control common method bias, we conducted our measurement in three waves within a semester. This temporal separation will diminish the distinctive linkage between predictor and criterion variables (Podsakoff et al. 2003; Feldman and Lynch, 1988). But the problem of common method bias may still exist; therefore, future research should conduct a longitudinal study comprised of both quantitative and qualitative data, and multi-methods for the causality and outcome of organisational teams during a different period of team life in order to examine the different emergent facets in teams, such as internal team environment, humility and shared leadership.

Moreover, this research was conducted in Hong Kong, China. The data source might induce generalisation concerns. Most of the informants were Chinese in one of the universities in Hong Kong. The core cultural value and views on humility and team environment might be different from Western cultures. The results might be implicated if this research is conducted in another part of the world due to cultural difference. Further research can be extended to evaluate the influential effects of team environment and humility on performance through shared leadership in various global teams with complex diversity from different geographical areas under an actual business virtual team environment.

Figure 4. Shared Leadership using the two-way interactions between the team environment and humility



Last but not least, trust is another complicated factor in the social process, which has also been excluded from this research. Various research has shown an influential effect of trust on the outcome (e.g. Paul et al., 2016). Fellow members trust each other have a positive effect on performance. They are knowledgeable about each other and sense other members can trust in the virtual team. Trust facilitates information sharing between members and dedication to the common goal. Consequently, members trusting each other in the virtual team perform better than those with low trust between each other (Capiola, Alarcon, Lyons, Ryan & Schneider, 2019). Thus, future research is recommended to consider the roles of trust in a virtual team.

6. CONCLUSION

Due to the impacts of COVID-19 pandemic, people are working from home as the virtual team members to collaborate in organisations. This research represents a theory-driven examination of expressed humility in virtual teams. Shared leadership in a virtual team with no formal leader can be our future working style. Past humility studies are mainly on physical team dynamics with a humble leader (e.g. Morris, Brotheridge, and Urbanski, 2005; Hackett and Wang, 2012). Driven by social information processing theory, our research collaborates the findings of past research and verify the relationship among humility, shared leadership, relationship conflict and performance within a virtual team without a formal leader. Our findings identify the connection between humility and shared leadership, which results in a high level of team performance and suggest how team environment and team members' humility can reduce relationship conflict, which has negative impacts on both team and individual performance. In addition, we also find there is a synergy effect between the team environment and humility to shared leadership. With the impacts of COVID-19 situation, the findings from this study contribute to the understanding of the importance of leadership in virtual team cooperation as a 'new normal', and to achieve business excellence in organisations.

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