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TEAM LEARNING IN ORGANIZATIONS: THE MEDIATING EFFECT OF INTERNAL SOCIAL CAPITAL ON PSYCHOLOGICAL SAFETY AND CONTINUED IMPROVEMENT SEEKING

Master's thesis

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I declare that I have compiled the paper independently

and all works, important standpoints and data by other authors

have been properly referenced and the same paper

has not been previously presented for grading.

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ABSTRACT

A team member's ability to learn and continuously improve is a crucial component of today's organizations. A company's ability to stay agile and innovative can be what sets it apart from others in a highly competitive market. The purpose of the present study is to explore how a psychologically safe work environment can allow team member's to engage in continuous improvement seeking. In doing so, the author assesses the role of internal social capital of the teams in such relationship. A questionnaire was distributed to several companies throughout Finland, Estonia and Sweden, with a sample of 83 respondents. The results of the study indicated that a full mediation occurred, meaning that the presence of a psychologically safe environment within a team unit allows the relationships amongst the workers to develop to a deeper level, which in turn fosters an atmosphere of continuous improvement seeking, which might allow team member's to learn more efficiently and effectively. The theoretical and practical implications of such are outlined within.

Keywords: *Psychological Safety; Internal Social Capital; Continuous Improvement Seeking; Team Learning; Learning By Failure.*

INTRODUCTION

In the modern day working organization the focus has shifted from the individual to the team. Individuals are now regularly working with others and becoming far more inter-reliant. Therefore, it is paramount that groups or teams 'learn to learn'. This will lead to teams moving and progressing with both the rapid change of the company and the fluctuating external environment. Edmondson (1999) considered team learning to be "an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results and discussing errors". With rapid technological developments and globalization many thriving companies are looking to adapt and experiment as much as possible in order to stay up to date with the current trends (McDougall, Beattie 1995; Uhl-Bien, Marion, McKelvey 2007). The obvious method of which would be to look at what the team has already learnt and experienced. If a team aims to learn from their collective experiences and take notice of what is working and what is not they must engage in this type of reflective behavior on a regular basis (Senge 1990). They need to devote time to self-assessment and an honest analysis of any mistakes or failures, no matter how small (Tucker 2003). That way they will learn quicker and be less likely to make the same mistakes again and again, as time has been allowed to ensure the whole team understands what went wrong and why. They are also ensuring that each member of the team learns from the mistake, meaning each member does not have to experience the mistake themselves in order to learn, they are simply using the collective experience of the group to speed up the learning process (Dechant, Marsick 1993). This action results in an organization that is less likely to fail.

One such way to ensure team learning occurs would be the concept of 'continued improvement seeking'. With teams that are looking to continuously improve comes the ability to adapt quicker and organizations to become more flexible and resilient. These types of teams can be constantly seeking new ways to improve their current processes and procedures, without ever becoming complacent.

However, whereas continued improvement seeking (CIS) is an important concept, it has traditionally been under researched. Accordingly, there is a need to assess its antecedents to find out how this behavior can be implemented in more organizations. What is it that team members need to ensure they engage in CIS?
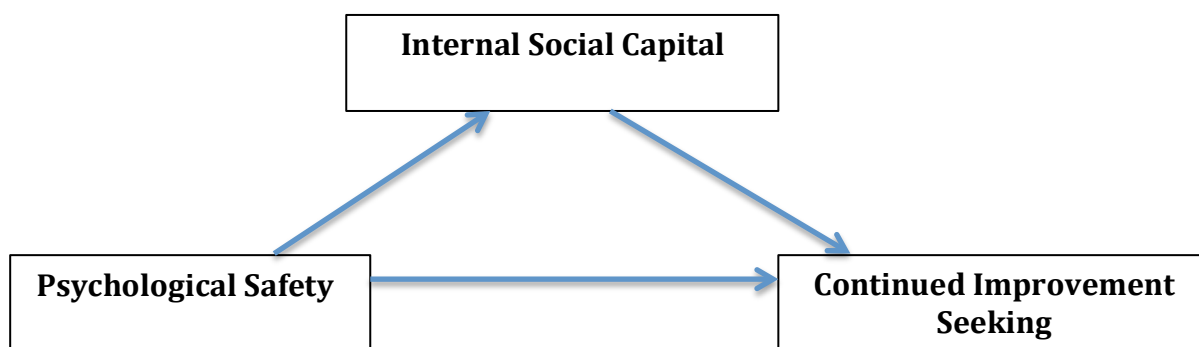
Fig. 1. Hypothesized paths between the variables.

One important aspect to consider as a trigger is Psychological Safety (PS). It is thought that in order for the team member's to learn, they need to engage one another openly and honestly, challenging each other's assumptions and offering up different opinions. However, in order for this not to cause embarrassment or be too disruptive there must exist an atmosphere of psychological safety. For such reason, our aim is to test the relationship between PS and CIS, as well as to explore the path (mediation) of such relationship (Figure 1)

1. THEORETICAL BACKGROUND

1.1. Continued Improvement Seeking (CIS)

The concept of continued improvement seeking is defined as: a teams' ability to learn from mistakes and these mistakes are seen as a chance for everyone to learn and move forward. The mistake itself is critically analyzed in order to ensure it doesn't happen again, without the attribution of guilt (Breso *et al*. 2008). The collective discussion and analyses allows gaps in knowledge or understanding to be uncovered much quicker and then they can be addressed.

This idea of team learning (Boud, Garrick 1999; Gilley, Maycunich 2000; Kim 1993) where actions are taken, then later assessed and modified, could be understood to be a result of CIS, hence its relevance in the present study. The concept of a collective attempt to develop both the individual and team is rooted heavily in said team's ability to continuously improve.

CIS's vital importance is highlighted in a number of studies, in a variety of industries. An organization's willingness and ability to learn from its mistakes has proven to increase its reliability (Weick, Sutcliffe 2001), decrease its accident rates (Haunschild, Sullivan 2002) and minimize its risk of failure (Baum, Ingram 1998). If the mistake is discussed without the attribution of guilt there is less reason for team members to feel fear. They will not be too scared to inform everyone of their mistake, as the focus will not be on the individual and what they did wrong personally, but rather on the mistake itself and how it can be avoided in the future.

In the past, quality experts deemed the little every day failures within an organization to be irrelevant and the emphasis should be placed on fixing the bigger issues (Deming 1986; Juran *et al*. 1999). However, Tucker (2003) looked at a group of nurses and found that contrary to standard practice those little failures slowly eroded the collective performances, further highlighting the need for all mistakes to be assessed and analyzed, big or small, on a continuous basis. By analyzing all mistakes, no matter the size or who is to blame, allows the removal of ambiguity around the situation. There is no need to assess whether the failure is big enough to be brought forward. This instills a culture amongst the team that any mistake should be brought

forward for analysis in case there is an opportunity to learn, or possibly avoid a resulting bigger failure to come.

There has been an increase in research on learning by failure in recent years (Carmeli, Gittel 2009; Chen *et al.* 2017). Mulqueen (2005) found that successful leaders promoted learning through failure and assessed their own failures by allowing time for reflection, emphasizing continual learning and using all failures as opportunities. Mulqueen (2005) found that by allowing time for errors to be properly assessed and for discussions to be had revolving around some recent mistakes contributed to a number of positive outcomes. These include increased profits, productivity and enhanced organizational communication.

Breso *et al*. (2008) developed and validated a questionnaire to assess team learning. They define team learning as 'the set of behaviours and activities carried out by a team on a regular basis that enhance the acquisition and development of competencies (e.g., knowledge, skills, attitudes) and a better functioning over time.' In the process of developing the questionnaire they included the dimension of CIS. Therefore emphasizing the crucial significance CIS plays in the development of team progress.

As highlighted by Chen *et al.* (2017) there can be problems and difficulties when groups attempt to learn from mistakes. Too much focus on failure can have negative consequences and affect team member confidence. This is where the crucial difference involved with CIS comes into play. It allows the focus of the learning to be on all experiences, success or failure, taking all experiences possible as an opportunity to learn and improve. Therefore it should be considered a core value of team member learning, as it allows learning to take place in all scenarios. By not relying on team member's to make mistakes to allow opportunities to learn CIS is increasing the likelihood of team learning as a whole to occur more frequently.

Another dimension of the model outlined by Breso *et al*. (2008) was 'dialogue promotion and open communication'. Therefore another key aspect to team learning success (Edmondson 2002) is how much the team talks to each other, openly and honestly. A strong team needs to have developed a good network of working relationships revolving around an element of interdependence. The way in which organizations have changed over the years has moved much more heavily towards the use of teamwork. There is an increase in the need for strong teams to work together and pool their resources to deal with rapid change and unpredictability. This

interdependence is clearly present in modern organizations and there is an increase in supporting and developing teamwork from managers and CEO's. The awareness of the importance of interdependence has likely given rise to the trend of team bonding events, a common occurrence in many currently thriving knowledge-based organizations. Large amounts of money are being spent on luxury incentive trips with the hope that the teams will bond and become closer. Eventually meaning they will work together more cohesively and thrive as strong efficient team units. This interdependent relationship between people or co-workers is known as social capital.

As the focus is on how social capital is observed on an organizational level the present study will be emphasizing the concept of internal social capital. Adler and Kwon (2002) described internal social capital as the relationships among actors (i.e. individuals or groups) within a social collective, such as an organization. Fukuyama (1995) defines internal social capital as: the ability of people to work together for common purposes in groups and organizations. The team units within organizations are relying on individuals to work together and co-operate to achieve the common goals of the company. Therefore their ability to communicate and build good relationships is vital and is something many organizations should be looking to instill within their work groups.

Corpening (2003) found that the vast majority of the team learning that occurred in a group of nurses was through processes. The team learning processes variable measured the extent to which team members modify their thoughts and behaviors based on information learned from other team members, highlighting the need for strong internal social capital. This means that through interaction, members of the team can all learn from one individual's experience. The collective experience of a team will always be greater that of an individual, therefore if the team can merge all their experiences, failures or successes, then they can use these to modify their approach much more regularly, i.e. they can continuously improve.

Based on the aforementioned arguments, there is support to suggest that continued improvement might be influenced by the internal social capital present within the group of which the member belongs.

1.2. Psychological Safety (PS) and Continuous Improvement Seeking (CIS)

In recent years there has been a growing trend and increased acknowledgement in the importance of developing a safe, blame free work environment. This enables the workers to experiment, take risks, offer up ideas and develop their own creative opinions. Lately this term has been dubbed 'Psychological Safety' (Edmondson 1999). This is considered as an environment in which employees feel safe to speak up, voice ideas, willingly seek feedback, provide honest feedback, collaborate, take risks, experiment and contribute to individual and organizational learning (Edmondson 1999).

Team units with which there is no psychological safety can often carry a risk to the individual (Edmondson *et al*. 2001). The voicing of new ideas could challenge the established way of doing things and go against the vested interests of other members of the organization (Detert, Burris 2007). The individual could also fail, leading the lack of success to be a mark on the individual's repertoire (Van Dyne, LePine 1998). Therefore, there is growing evidence to indicate that such risks may lead employees not to speak up and add to the collective learning processes, thereby preventing both individual and organizational learning (Detert, Burris 2007).

A modern creative organization needs to attempt new things and explore new ideas to remain competitive in the current market. On the road to developing good successful ideas comes many failures, mistakes or bad ideas. In other words, these companies need to develop a learning behaviour. If these ideas, good and bad, are to be put forward on a regular basis there needs to exist a psychologically safe environment. An organization willing and able to learn from its mistakes or failures is one that is commonly seen as an organization that will be able to develop faster and react quicker to changes in the wider business market or current political climate. Recently, Google's 'People Analytics Unit', found psychological safety to be the number one characteristic of successful high-performing teams (Bergmann, Schaeppi 2016). Just as found by Edmondson (1999), those teams that are successful are not making fewer mistakes, if anything they are making more, however they lack the fear of making the mistake, and feel free to raise the issue with the group and attempt to learn and move on. Psychological safety allows the willing contribution of ideas to a common cause without fear of retribution (Collins, Smith 2006). The offering up of ideas and sharing of knowledge (Siemsen *et al*. 2009) is vital to the modern day, knowledge based industry. These types of companies thrive on direct, open and

efficient exchanges of knowledge or information between co-workers, helping to foster innovative environments in which the collective can learn quickly and efficiently from the pool of experience and ideas.

The fear of speaking up and owning up to mistakes is deeply rooted within the classic structure of organizations. Organizations themselves are built around the concept of splitting up tasks and areas of focus. Most companies are split into departments, each with levels of hierarchy enabling a line of accountability. Therefore each person or group is responsible for a given task and if they fail, it is easier, although non-conducive, to trace the blame. This system has provoked the fear and halted the potential for many organizations to learn from their mistakes (March, Simon 1958). The focus has been on a team member's ability to not make mistakes and ensure that their department stays clear of blame when things go wrong. This classic hierarchical structure is nowadays less common, making it harder to trace the accountability. This along with the increased understanding that the notion of having someone to blame is unnecessary may be why the concept of PS is becoming increasingly important.

Further research has found psychological safety can influence a number of desirable attributes for a successful team unit. It gives room for suggesting improvements (Detert, Burris 2007; Liang *et al*. 2012) as well as increased initiative taking (Baer, Frese 2003). Both of which could be deemed crucial for the success of a creative organization. Research has shown that a strong organizational learning behaviour is positively influenced by psychological safety at both the individual (Liu *et al*. 2014) and team levels (Bstieler, Hemmert 2010; Ortega *et al*. 2010; Roberto 2002; Stalmeijer *et al*. 2007; Van den Bossche *et al*. 2006; Wong *et al*. 2010). Highlighting its importance not just for how each person perceives psychological safety within the group, but how they perceive the psychological safety of the whole group.

The ever-popular interest in work engagement has also been linked with the construct of psychological safety. The argument being that those workers who feel safe to make mistakes and challenge the status quo are more likely to feel engaged and at ease in said group setting (Kahn 1990). They are more willing to express themselves in their performance and feel at ease getting on with their work and what they are trying to achieve, rather than focusing on defending themselves and their actions. This links with the findings of Kark and Carmeli (2009), who examined the affective components of psychological safety and argued that it induces feelings of vitality, which impact on an individual's involvement in creative work, hence providing further

support for the construct's heightened necessity in the modern business landscape in which creativity and innovation is becoming increasingly important.

Schein and Bennis (1965) first realized the concept similar to what is now known as psychological safety when assessing the importance of interpersonal relationships within teams and groups inside organizations. They found that the feeling of risk-free interpersonal discussions allowed for more open and honest transactions to take place. Schein (1993) found that when people have no need to focus on self-preservation in a blame-free environment they could focus on the collective goals of the team. Less time is wasted on ensuring they personally avoid blame or save face. Allowing more frank and honest exchanges between members of the group, in the interest of the collective aim. This finding underlines the need for PS to exist in order for the interpersonal relationships between team members (ISC) to flourish and develop.

Internal social capital concerns the network of social relationships work unit members establish among themselves (Pennar 1997), and through these relationships workers learn, acquire and share knowledge. These interpersonal connections also have a strong reliance on psychological safety. As Edmondson (1999) has previously stated, there is only a need for psychological safety in those environments in which there is an element of uncertainty and 'interdependence'. If these do not exist, psychological safety is largely irrelevant. Most modern organizations in this turbulent global business landscape have elements of uncertainty and many modern work teams are high in interdependence and thus the need for psychological safety to underline the strong social relationships amongst the workers.

Gong *et al*. (2012) discovered that with psychological safety comes an increase in proactive behavior. Employees seek out interactions with other co-workers with a lack of fear in making a mistake when doing so. Which in turn, increased the quality of interactions. This increase in internal social capital further fosters yet more psychological safety within the team unit. The more the workers exchanged information, the more it fostered trusting relationships, aligning team members to the same goal (Gong *et al.* 2012). This finding highlights not just how crucial PS is in the development of ISC within a team unit, but also how an increase in ISC can develop yet more PS. However, the PS must first exist in order for the ISC to develop. There must be a climate of trust to allow free exchanges to occur between workers (Collins, Smith 2006). Without the environment in which workers can feel psychologically safe, there is no chance for the social interactions between the workers to be as open and frank as is necessary for ISC to

flourish. These arguments lead us to think that the presence of psychological safety is positively associated with the presence of internal social capital.

1.3. Psychological Safety, Internal Social Capital and Continued Improvement Seeking

Carmeli and Gittel (2009) found that most organizations take measures to learn or continuously improve, but the learning in organizations is often primarily single-loop. This means that errors are detected and corrected, but the underlying causes are not explored or challenged, i.e. the root cause is not found. The problem is many organizations know that digging deeper requires extra time, and could require extra resources and a lot of change (Carroll *et al.* 2002). Quite often managers may have to accept some wrongdoing and this could impact on how they're seen by their superiors, or even the public (Ritter 2015). In order to dig deeper and perhaps address the organizations norms, policies and objectives (Argyris, Schön 1978) there must exist a blame-free environment – psychological safety. This is particularly important when the stakes are high (Edmondson, Moingeon, 1999) and a quick fix is not enough.

Tucker (2003) found that there was a reliance and expectance that the front line workers will document their own mistakes, which was not the case. Management did not devote any time to discussing the errors and nobody wanted to be the one to speak up in a quiet environment. Workers were not willingly voicing their concerns as they felt nobody was listening and it was easier to keep quiet get on with their work. Without the presence of psychological safety, CIS could not occur.

Carmeli and Gittel (2009) found that learning from failures at work (CIS) occurred more frequently with the presence of high-quality relationships, with PS mediating this link. The forms of high-quality relationships found in relational coordination, such as shared goals, shared knowledge, and mutual respect appeared to be conducive to the development of PS, however as previously mentioned, unlikely to have occurred without the pre-existence of a psychologically safe environment, further supporting the current study's model. These conditions of high quality relationships bare a close resemblance to the facets of ISC.

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On an individual level, research has shown PS affects both the relationships between co-workers and the development of highly desirable attributes such as motivation and engagement (Carmeli, Gittell 2009; Carmeli *et al*. 2009; May *et al*. 2004). Whilst at the team level, social support and social resources (social capital) affects and is affected by the level of existing PS, stimulating team learning, innovation and performance. Therefore in the development of team learning, social capital could play a key role. For example, Roberto (2002) found a team's PS was directly affected by the quality and quantity of team interaction. Highlighting the reciprocal relationship between the two constructs. Brueller and Carmeli (2011) provided further evidence highlighting the importance of high quality relationships between team members and external parties in service organizations.

Previous research seems to suggest a somewhat bi-lateral relationship between PS and ISC; they positively affect and increase each other. However the present study is attempting to suggest that one precedes the other initially. It is PS that allows the positive social exchange or ISC to occur (Edmondson *et al*. 2001), without PS already present within a team environment, the ISC would never truly develop to the point where the relationships can be strong enough to stimulate a continuously improving team behavior.

The need for interdependence and social capital relates strongly to the ready established 'social learning theory' (Elkjaer 2003), which highlights the need for social interaction in order for learning to occur. Bogenrieder (2002) introduced the socio-cognitive theory of learning and suggested that a social design is a prerequisite for organizational learning, indicating that it is not merely through cognitive diversity, but also through social relationships that learning is enabled and fostered. This lends heavily to the notion that the internal social capital of a group is influential in its ability to learn and develop.

Despite the growing understanding of the importance of team learning and the ability of a group to learn from its mistakes, there is still evidence suggesting organizations are not learning as much as they could be (Tucker, Edmondson 2003). This highlights the need for more research to be implemented on the area to help with the application of psychologically safe work environments, that will increase the communication and learning-by-failure that could become the norm in a wide variety of industries today.

With an increase in PS comes the decrease in self-preservation. As Schein (1993) found, there was less time is devoted to 'saving face', this finding was strengthened by Pastoriza *et al*. (2008), who found that with an increase in altruistic motives comes an increase in ISC. A higher ISC allows the team members to gain more empathy for one another; they begin to see things more often from one another's perspective, which in turn builds the affective relationships within the group. This increase in empathy can allow team members to engage in more meaningful discussions, they can bring up issues easier and more frequently. This means that problems can be addressed more often and more directly. Dweck and Leggett (1988) found that if a larger incentive is based on the good of the team and not on the self, more emphasis could be put on solution strategies. This means team members can trust that there is a collectivistic attitude towards work challenges and carry the attitude of 'we are all in this together', allowing them to feel their own goals are aligned with those of the organization. They then feel closer to the team and will be more willing to own up to their mistakes, as they will not be their personal mistake, but the team's mistake and therefore something they can all learn from.

As the modern day work team needs to innovate and learn as much as possible it seems these teams would strive for this type of continuous improvement seeking behavior. In order to get a team to act in this way it would be feasible, based on past research, to suggest a psychologically safe working environment would be the way to go. However, as previous research has outlined, learning behaviours have been affected by the group's social capital. Jain *et al.* (2016) carried out research demonstrating how psychological safety is a critical starting ingredient for effective communication and teamwork, in this case with cancer care teams. They discovered that the key element of the process was with management and if they allowed or developed a psychologically safe environment where practitioners felt free to question and openly communicate with the management and their peers, this then improved quality communication, allowing the patients to receive the best possible care. They also expanded the research to interactions between the care providers and the patients, and found that an open environment allowed patients to raise questions and concerns about their own care, free from the feeling of guilty for questioning their care takers judgment and the worry that the care provider might respond negatively to being questioned. This highlights how a psychologically safe environment breeds ISC, which allows CIS to occur.

Simonet *et al*. (2015) found psychological safety had an indirect effect on empowerment, most commonly through social mechanisms. This strengthens the present studies argument that PS can

positively affect development via the working relationships of the team unit (ISC). The indirect relationship they found emphasizes how PS alone is not enough to increase a desirable outcome, it needs the social mechanisms in place, suggesting that ISC must be present in order for PS to positively affect CIS.

Therefore the two hypotheses are formed:

Hypothesis I: The presence of psychological safety is positively associated with the presence of internal social capital.

Hypothesis II: Internal social capital mediates the relationship between psychological safety and continued improvement seeking.

2. METHOD

2.1 Participants and Procedure

A total of 83 responses were gathered from six different organizations. The study looked at companies from both the knowledge-based sector and the service sector, based in a variety of countries across the Baltics and Scandinavia, including Sweden, Finland and Estonia. The analyses of two different sectors allowed a possible difference to be found in those team units that prioritize more the innovative/creative aspects and those that must follow a more set procedure in their work. Possibly even elements of innovative suggestions with regards to updating or improving current procedures.

The demographic variables are as follows: Gender was distributed - 63% Male, 37% Female. Age was distributed – 64.4% were between 18 and 35 years old; 30.1% were between 35 and 50 years old; and 5.5% were over 50 years old. The respondents were asked to state their level of experience in similar positions. This was distributed as follows: 34.2% were less than 3 years; 37% were between 3 and 6 years experience; 16.4 % were between 7 and 12 years experience; and 12.3% had over 12 years experience. Finally the participants were also asked to state the highest academic level they had completed or were completing. This was distributed as follows: 33.3% were high school graduates; 47% had a bachelor's degree; and 19.7% had a master's degree.

The companies were contacted by email at first and informed about the aim and the ambition of the study. Some of these companies were known contacts of the researcher and some were randomly chosen and contacted. Participants were sought from all levels of the organizations in an attempt to get a spread in the dynamics of those in managerial and non-managerial positions. Participants were either given a link to an online survey for them to complete or received a physical paper version of the same questionnaire depending on whether the company preferred to use one platform or the other. The survey took around 20 minutes to complete. The variables analyzed in this study were part of a broader battery of questionnaires looking at the various aspects of resilience and adaptiveness in organizations. The survey link or the paper surveys were either sent to the HR department and distributed from there, or in the case with smaller

companies without an existent HR department, sent to the personal contact within the company and distributed from there.

All questionnaires were available in English, Finnish and Estonian languages and participants were free to choose which language they preferred. Translating professionals carried out the translations and both versions were done by a bi-lingual of either Finnish-English or Estonian-English, i.e. both taking the English version as the core version. This helps the validity of the questionnaire, as all the scales used in the battery are of original English language content.

At the beginning and the end of the survey all participants were reminded that the completion of the questionnaire was voluntary, that their anonymity was guaranteed and all responses will remain entirely confidential.

2.2 Measures

2.2.1 Psychological Safety

PS was measured using Edmondson's (1999) 7-item scale. Answered on a 7-point Likert scale on 'how much they agree to the following statements', starting from 1 – Completely disagree to 7 – Completely agree. This scale was used as it has very strong support and has been validated more than any other measure of psychological safety. As the original scale was already designed to assess psychological safety at a group level there was no need to adapt the original scale, helping to sustain the scales integrity. Examples of the items include, 'if you make a mistake in this group, it is often held against you,' 'people on this unit sometimes reject others for being different' and 'it is difficult to ask other members of this unit for help.' The Cronbach's alpha obtained was .81. See the questionnaire in **Appendix 1**.

2.2.2 Internal Social Capital

ISC was measured using Pastoriza and Arino's (2013) 16-item scale. Answered on a 5-point Likert scale on 'how much they agree with the following statements,' starting from 1 –

Completely disagree to 5 – Completely agree. This scale was developed by Pastoriza and Arino and used in their study in 2013 using a collection of measures they felt combined together to exclusively measure internal social capital. They say internal social capital is to be split into three core dimensions developed by Nahapiet and Ghoshal (1998), of which was inspired by the study of Leana and Buren (1999) and Leana and Pil (2006). The dimensions were: structural, relational and cognitive dimensions. The structural dimension was made up of four items. Examples include, 'in my organization employees share and accept constructive criticisms without making it personal' and 'employees at this organization keep each other informed at all times'. The relational dimension was made up of six items. Examples include, 'I can rely on the employees I work with in this organization' and 'employees have confidence in one another in this organization.' The cognitive dimension was also made up of six items. Examples include 'employees share the same ambitions and vision for the organization' and 'employees view themselves as partners in charting the organization direction.' The Cronbach's alpha obtained was .91. See the questionnaire in **Appendix 2**.

2.2.3 Continued improvement seeking

CIS was measured using the questionnaire on team learning validated by Breso *et al*. (2008). CIS made up one of the four constructs they felt contributed to team learning behaviours. This is a 5-item scale. It was initially a 7-item scale, but 2 were later removed by Breso *et al.* due to a low Chronbach's alpha. Each response was answered on a 5-point Likert scale, starting from 1 – Never or almost never to 5 – Always or almost always. Examples of the items included are, 'mistakes are openly discussed in order to learn from them,' 'the lessons learned are made available to all members' and 'when a problem occurs, there is a search for someone to blame instead of "lessons to be learned".' The Cronbach's alpha obtained was .87. See the questionnaire in **Appendix 3**.

3. RESULTS

In order to test the hypotheses a regression analysis was conducted using PROCESS SPSS (Hayes 2013). It was done using a 5000 sample bootstrapping method with bias-corrected confidence estimates. Bootstrap data resampling procedures establish confidence intervals (CIs) set to 95% for testing the statistical significance of indirect effects. Psychological Safety was entered as the independent variable (X); Continued improvement seeking was entered as the dependent variable (Y) and the mediator (M) was Internal Social Capital.

First it was found that psychological safety was positively associated to continued improvement seeking (B = .219, t (81) = 2.183, p = .032). It was also found that psychological safety was positively associated to internal social capital (B = .290, t (81) = 2.622, p = .010). Lastly, results indicated that internal social capital was positively related to continued improvement seeking (B = .435, t (80) = 5.619, p < .000). Results of the mediation analyses (conditional indirect effects) confirmed the mediating role of internal social capital in the relationship between psychological safety and continued improvement seeking (B = .126, CI = .033 to .246). In addition, results indicated that the direct effect of psychological safety on continued improvement seeking became non-significant (B = .092, t (80) = .043, p = .351) when controlling for internal social capital, thus suggesting full mediation. **Figure 2** displays the results.
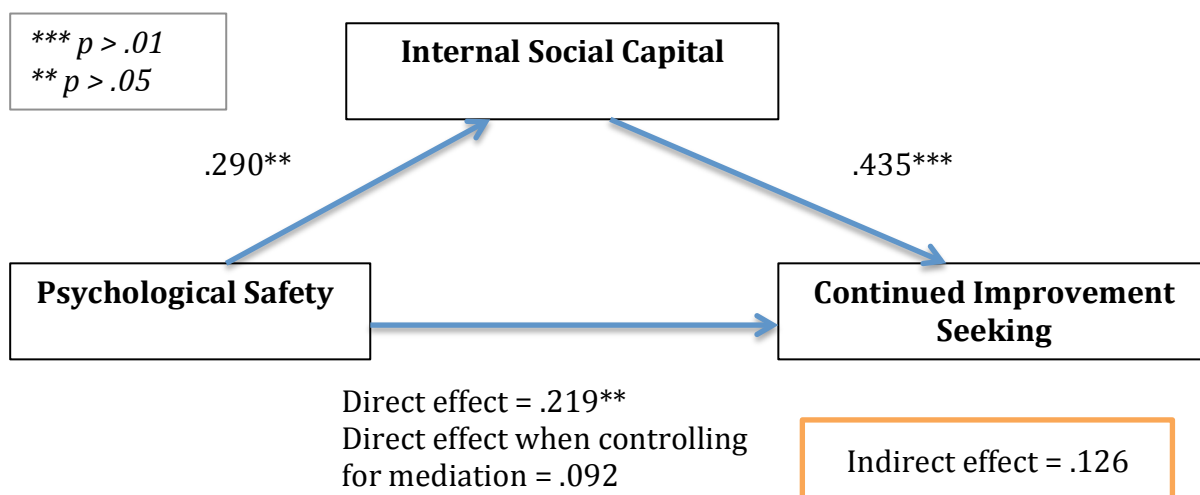

Fig. 2. Paths between the variables showing the coefficients and their significant relationships.

Results indicated show a clear support for both hypotheses. There is a clear positive impact of psychological safety on internal social capital (**hypothesis I**) and internal social capital is fully mediating the relationship between psychological safety and continued improvement seeking (**Hypothesis II**).

4. DISCUSSION

This study was designed to try and further the field of team learning. Whilst the importance of team learning and its benefits to the modern day organization has increased significantly in recent years, the antecedents required to fulfill a team-learning environment have been overlooked. The present study's main aim was to attempt to address this issue and look at the relationship between PS and CIS, and the mediating relationship between the two variables.

One such way for team learning to occur is to develop an organizational learning culture within the work group. As highlighted by Edmondson (1999), in order for this to transpire the individuals within the group must feel psychologically safe. If there is a blame free approach to mistakes, more workers will be willing to 'stick their neck out' and challenge the status quo. The present study highlights the crucial significance psychological safety plays in the development of such a culture. Once a psychologically safe work environment is established there is the possibility not just for people to avoid the blame in mistakes, but also critically analyze the mistake as a group and extract a lesson. This type of continuous improvement seeking behavior is something most organizations should be striving for today.

The present study also highlights the more intangible aspects of work groups, the interdependence these groups have and how they socialize with each other (internal social capital) can have a highly significant effect on the dynamics of the group. A psychologically safe environment fosters a stronger sense of social interaction and social capital (**hypothesis I**). Furthermore, the social interactions of the group have a significant effect on the development of psychological safety and continuous improvement seeking (**hypothesis II**).

The full mediation found in this study shows PS alone is not enough for CIS to exist. The PS needs to foster an environment in which the workers build up personal relationships with one another and interact regularly to create deep connections as a group (ISC). The social capital of the group, along with a safe environment, allows the team members to speak up and question the status quo, therefore creating a resilient and adaptive group dynamic, one which could be better suited to survive the turbulent business world of today.

This study helps to further the research required to better understand the nature of CIS. It has received little previous attention despite its unquestionable importance for both the development of team learning (Breso *et al*. 2008) and minimizing an organization's risk of failure (Baum, Ingram 1998). With the current climate being highly competitive, an organization's risk of failure is arguably higher than ever, hence its ability to continuously improve is of vital importance.

The findings of this study could have prominent implications for the field of organizational learning. Finding's such as Tucker's (2003) show how failure based learning is crucial in the sense that companies need to look at all mistakes, no matter how small, in order to improve and learn from them. However there is little emphasis put upon how this can be done. Just as Tucker (2003) found, there was an expectation from the organizations that the front line workers would document and address their own mistakes, but this was not the case. Without the existence of PS the environment was not safe enough for people to speak up and share their mistakes, therefore no CIS took place. People were too scared of the fear of blame and instead focused on 'saving face'.

There has been significant research on the field of psychological safety and some studies have assessed its effect on learning processes. However, the present study helps identify the question of how. It allows a clearer understanding of just how PS influences team learning. If PS is simply creating an environment there still needs something to occur within the environment for proactive measures to take place. This is where the current study's inclusion of ISC is key. This step shows how the relational aspect amongst the team members is required to take the step from a safe environment to a learning environment.

Carmeli and Gittel (2009) proposed that high quality relationships fostered an environment of psychological safety, i.e. they proposed a reverse relationship than the one suggested in the present study (**hypothesis I**). However, the findings in this study show how ISC fully mediates the relationship between PS and CIS (**hypothesis II**). As proposed by Gong *et al*. (2012) there were elements of a bi-lateral relationship between PS and ISC, with the increase of ISC in turn developing yet more PS. However it was theorized that there must first initially exist an environment of PS. This is what will allow the relationships to develop and improve, eventually turning into a strong ISC. A core facet of social capital is the idea of a degree of trust between team members. It is feasible to suggest a psychologically safe environment is in fact what is

needed for such trust to grow. When workers within a team trust one another, they will feel more comfortable in trusting their judgment and respecting their opinions. More open and honest exchanges are bound to occur in teams that have a high level of trust in one another. The full mediation found in this study shows how PS alone is not enough to cause CIS, but with the development of the relationships and the trust (ISC) there is room for CIS to grow.

The previous research on internal social capital is rather sparse. Its presence in team units is likely to be somewhat expected. Many organizational leaders may expect everyone within their team to be interacting, building relationships and collectively aiming towards the team's goals. However, this could perhaps not be the case. Whilst there will inevitably be some interdependence, there is no guarantee that the relationships between the co-workers is at a level where the information exchange and knowledge sharing is open and free flowing. Carmeli and Gittel (2009) found that the shared knowledge and goals allowed the teams to better co-ordinate, this in turn increased the mutual respect amongst workers, within that came the ease of beginning to learn from mistakes. Once the relationships were of a high enough level that the interdependence was very high and the knowledge was shared regularly, the respect of one another allowed mistakes to be shared and discussed more freely. This combines strongly with the understanding of the present study's findings that the building of ISC and the building of respect will allow CIS to occur.

A large volume of the existing research in this field revolves around the importance of learning from failure and how the analysis of the mistakes can allow companies to engage in CIS. However the present research refined the focus further by stressing the value of CIS alone. If the emphasis is on continuous improvement, despite the existence of failures or mistakes occurring, perhaps the failures need not occur in the first place. If team members are continuously reassessing how they do things and they learn as a team on a constant basis then they will inevitably perform better and achieve the same positive outcomes found in the learning by failure research. This way the teams need not endure as much failure on the road to success, especially as some failure may sometimes be highly costly and more difficult to overcome. This allows the present study to further the current research field, but also allows the findings to be possibly more practical and more widespread, with its avoidance of the need for failures or mistakes to be present. It also could be a more popular focus, as many organizations and their leaders find it difficult or negative to focus so much on failure (Ritter 2015). The present study's findings allow a more positive approach to the same concept.

The practical implications of the present study's findings can be particularly relevant for many knowledge based, flat structured, modern organizations. Many organizations nowadays have a heavy reliance on teamwork and the co-operation of individuals within a team structure. They need to attempt to find ways the teams can improve their communication and develop a completely open and honest stream of communication amongst the workers. They also need to ensure they are continuously improving as an overall organization, ensuring they adapt and innovate as the needs of the business change, along with technology and the needs of customers or other businesses.

Whilst many organizations will understand the importance of trying to develop a team learning culture, they may be unsure on how to do this exactly. The findings of this study allow these organizations to realize they must first ensure there is a psychologically safe work environment within their company. This must initially be implemented from the top down, with management getting on board with the idea of allowing everyone to ask questions, speak up if they don't understand or disagree with the current system and are encouraged to question and challenge as much as possible. With this will eventually come the building of a strong internal social capital. Team members will develop stronger relationships with one another and interact on a deeper level. This process can be developed with other organizational tools such as 'team bonding' events or incentive programs, aimed at rewarding and strengthening the team's internal relationships. Whilst there must be an understanding that this does not occur overnight and the relationships need time to develop. Eventually the strong relationships amongst team members will lead to an environment in which people are openly discussing their own mistakes, everyone is ignoring the attribution of guilt and instead focusing on addressing the failures and attempting to learn from them.

The concept of learning by failure is something that needs to be encouraged and supported in many modern day companies. The idea that 'mistakes are bad' is an outdated approach. Failure is an inevitable component of business. Ideas must be heard, discussed and endeavored to see if they work. With each failed attempt, success is one step closer. A simple trial and error is much more likely to lead to successful approaches than simply playing it safe and making no attempt to learn or improve. Many organizations have failed to innovate and change over time and have paid the price for their stagnation. Most successful businesses and business people have gone through some period of failure, but they have taken the experience as an opportunity to learn and

move forward. The present study highlights the value of continuous improvement, which could be the thing that takes a team from performing adequately, to being highly successfully.

Many organizations today understand the value of team learning, however the error detection and correction is only single-looped (Carmeli, Gittel 2009) and further work needs to be done in exploring the root causes of problems, perhaps the addressing of organizational norms and policies (Argyris, Schön 1978). The present study helps highlight the methods that can be taken by organizations. The establishing of a psychologically safe environment can allow the error detection to occur more freely and more regularly, feeding a consistent discussion of the errors, resulting in a team that is continuously seeking improvement. Team member's that follow this pattern of behavior will undoubtedly conduct more in-depth analyses of the root causes of problems, as there is no stigma attached to this approach, it is in fact encouraged.

The present study could go deeper in addressing a crucial understanding of what a manager or leader would deem to be an ideal worker. Many managers feel the perfect worker quietly gets on with their work, never raising any issues or problems, never challenges the status quo and essentially never gives the managers any reason for concern. Whilst this can of course be understood, if a manager is not hearing or seeing any problems they may feel there aren't any. However the present study highlights how this is not the case. The perfect worker is a myth. No one worker can have all the answers, the value of someone who has the strength to admit they do not know and wishes to discuss the issue with the whole team is priceless. Many managers need to understand the value of an employee that challenges them. A 'noisy complainer' (Tucker, Edmondson 2003), one who is constantly questioning things, bringing up problems with management and testing new methods and new approaches, which can eventually lead to improvements. If a manager comes across such an employee, they must attempt to give them time and attention and hear what they have to say. If this continues, fellow team members will see this attitude being supported and encouraged and eventually they will do the same. It is something that is not easy to accomplish and in some cases involves a complete re-evaluation of an organizations culture, however this is essentially what is required to help the development of a psychologically safe work environment.

As observed by March and Simon (1958) the classic structure of hierarchical organizations contributes to the fear of speaking up and therefore stops the team learning process. The present study's results show how team learning can occur with the use of open and honest

communication, therefore the very structure of the organization may need reassessing. Any organizations that are currently going through changes and are still taking shape, i.e. a start-up company, could take note of the benefits of a flatter structure. Whilst the presence of managers engaging in psychological safety is key, multiple levels of hierarchy and multiple managers will create an environment of blame and inevitably when things go wrong there will be an attribution of guilt and less speaking will occur. There will undoubtedly be less of a focus on the issue itself but on which department was to blame.

Pastoriza *et al.* (2008) highlighted how ISC can cause an increase in empathy amongst team members. These relationships then develop into more affective and profound connections. This can be further highlighted by the present study on how it leads to more continuous improvement seeking. The team are continuously engaging on a deeper level, the everyday interactions amongst the team members are much more meaningful and discussions can be more frequent, more relevant and effectively more contributive to the organization's overall goals.

Continuous improvement seeking is also vital to the concept of innovation. Many companies realize the value of innovation and understand that teams need to be creative and try new things in order to innovate and stay ahead of the competition (Kark, Carmeli 2009). The present study highlights how organizations looking to enhance their creative approach need to ensure the team is operating in a highly psychologically safe environment and the team members have strong relationships and are all working towards the same shared goal. The PS present in the team will also allow for more knowledge sharing Siemsen *et al.* (2009), which is also vital for creativity and innovation.

There are some limitations to the present study that must be considered for future lines of research. Firstly, the sample needs to be greater to see the effects on a larger scale, perhaps the inclusion of several large technology based firms could shed more light on the effects witnessed in companies where teamwork is even more vitally significant and prevalent, as well as companies that have a greater focus on innovation and creativity. Secondly, further studies could benefit significantly with the inclusion of leadership in the equation. Leadership is a vital component to the successful implementation of a psychologically safe workplace. If the leaders are not on-board, there will not be a 'loop back': when the team looks at the errors and attempts to learn from them. Simply a safe environment, allowing an innovative culture is not enough on its own without the loop back and genuine attempts to learn from the mistakes that will

inevitably occur. Tucker and Edmondson (2003) found that managers who increased their visible accessibility significantly increased the likelihood of them being made aware of problems and errors. The more managers spent time with the front-line workers, the more they could assist in creating a team-learning atmosphere. Leadership was also significantly important in the action of CIS. Mulqueen (2005) found CIS could only occur if leaders allowed time for the mistakes to be discussed and analysed with the group, further improving productivity and communication within the teams. Third, the current study was based on self-report measure, meaning the results obtained may have been exaggerated due to the respondents need to answer consistently. Fourth, the nature of the study was cross-sectional; this 'snapshot' in time does not allow us to see the interaction of the variables in action over time. Future lines of study could benefit from a longitudinal analysis, to see if the same positive outcomes are found when continuous improvement and the systematic addressing of failure is done on a long-term scale. There is reason to suggest many organizations would find this difficult to do, a constant analysis of failures seems to go against the general idea of successful managers, especially in large companies, who are much more likely to blame larger failures on aspects that are both idiosyncratic and out of the organizations control.

CONCLUSION

The aim of the current study was to assess how a psychologically safe work environment can allow team members to engage in continuous improvement seeking, thereby creating an atmosphere in which team learning can occur.

The results of the study found that the both hypotheses were supported. A clear positive impact of psychological safety was found on internal social capital (**hypothesis I**) and internal social capital was found to fully mediate the relationship between psychological safety and continued improvement seeking (**hypothesis II**). The full mediation highlights the need for internal social capital to be present in order for the psychologically safe environment to affect the continuous improvement seeking action of the group. This was attributed to the relationships that were formed within a psychologically safe environment. The team members developed deep and profound connections within one another, allowing both the mention and detection of errors to occur more naturally, frequently and effectively.

The findings of this study help to stress certain critical factors in developing team learning in an organization. If a work team engages in the type of work that is common in a modern day company, which has large volumes of interdependence and each person's role is very fluid and varies with the work, then group's ability to learn will largely depend on their relationships with one another. They need to have formed an element of internal social capital, if this is the case, they will have aligned their goals with the goals of the organization. These strong relationships can therefore lead to the team members discussing and questioning things amongst themselves more often. They will be less afraid to question one another's methods, as they know them well enough to not take it as a challenge on their character. They will be less afraid to make mistakes and inform the team of the mistakes that they have made. The team will then assess the errors and challenge the current protocol. This is continuous improvement seeking, a key feature of a team learning behavior.

The present study applies to several domains in research. Firstly, it helps drive the present research concerning psychological safety's affect on learning processes. The main contribution it makes to this relationship is that it offers an answer to the question of how? The psychologically safe environment only creates a safe environment for learning to occur, but the current study's

inclusion of internal social capital offers an explanation of how the environment fosters strong relationships, which lead to more team member interaction and more questioning and discussing of work methods. Secondly, previous research has highlighted that most managers believe their own front line workers will document and 'own up' to their own mistakes, however this is not the case. The current research highlights the need for management to first ensure they create a psychologically safe environment. They must foster an environment in which the workers feel safe to speak up, if they want the workers to own up and document their own mistakes.

One application of the study in both research terms and in a practical sense is its focus on continuous improvement seeking, rather than learning by failure. Whilst there is existing research supporting the idea that a team's ability to learn from its mistakes has large positive outcomes, in practical terms many teams (or managers) may find it hard to address failure so openly and so often. Therefore the present study's focus on continuous improvement seeking is perhaps a more positive and therefore more practical approach to take. The organizations can instill a behavior of continuously improving, without the need for mistakes or failures to occur, but simply looking to improve the current methods or procedures. This very subtle difference may be enough for the more tentative managers to implement the concept.

Further practical applications of the research were discussed. Firstly and possibly most importantly, it highlights a modern day company's need to adopt the concept of continuous improvement seeking. This action means the teams will be able to adapt quicker to changes in the wider business market and remain competitive in the current volatile environment. It is essential for teams that need to be creative and innovative, which is also much more common in the start-up cultures of today. Secondly, more organizations need to explore the root causes of problems. Many organizations see mistakes as failures and simply solve them as quickly as possible and sweep the issue under the rug. More needs to be done to assess the core of the issue and look at the norms or policies to see if this can truly be prevented from re-occurring, this can only be done by allowing time to sit down and discuss problems with managers and fellow team members. In organizations in which there is continuous improvement this need is addressed as the team will openly and regularly engage in these types of discussions. The team will not see mistakes as a chance to blame, but instead an opportunity to learn as a group. Thirdly, much in line with the previous point, there needs to be a reassessment of what the ideal worker is in the eyes of a manager. Those workers who could be described as noisy complainers should not be discouraged for questioning methods and challenging the status quo, but instead supported, as

they are the ones who allow improvement to occur. If managers encourage this type of worker, the noisy complainer can become a front-runner in developing the psychological safety that is necessary for continuous improvement and team learning to occur.

Further research possibilities include the focus on the longitudinal effects of the relationship. As the present study was cross-sectional by design, the effects could not be witnessed with the variable of time. By researching the ongoing use of continuous improvement seeking the effects could be seen more practically and the benefits or drawbacks of such could be witnessed in real time. Another future line of enquiry would involve the variable of leadership. The effect leaders have on the implementation of a psychologically safe environment; the ability of the team members to freely exchange knowledge and develop relationships; and the development of continuous improvement seeking all depend largely on the attitude and approach of the leaders. It is they who have the ability to nurture or hinder such features. If a leader makes themselves visible, allows time for errors or mistakes to be brought up and discussed, and fosters the blame free environment that is necessary for such actions to occur, then they can be seen as crucial to the practical application of the relationship being investigated in the present study.

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APPENDICES

Appendix 1. Psychological Safety

Psychological Safety Scale (Edmondson 1999)

Please, check to what extent you are agreeing in the following sentences.

1. If you make a mistake in this group, it is often held against you.
2. Members of this unit are able to bring up problems and tough issues.
3. People on this unit sometimes reject others for being different.
4. It is safe to take a risk on this unit.
5. It is difficult to ask other members of this unit for help.
6. No one on this unit would deliberately act in a way that undermines my efforts.
7. Working with members of this unit, my unique skills and talents are utilized and valued.

Appendix 2. Internal Social Capital

Internal Social capital Scale (Pastoriza, Arino 2013)

Please, check to what extent you are agreeing in the following sentences

Structural Dimension

(1) ''In my organization employees engage in open and honest communication with one another''

(2) ''In my organization employees share and accept constructive criticisms without making it personal''

(3) ''In my organization employees willingly share information with one another''

(4) ''Employees at this organization keep each other informed at all times''

Relational Dimension

(1) ''I can rely on the employees I work with in this organization''

(2) ''Employees in this organization are usually considerate of one another's feelings''

(3) ''Employees have confidence in one another in this organization''

(4) ''Employees in this organization show a great deal of integrity''

(5) ''There is no 'team spirit' among employees in this organization''

(6) ''Overall, employees at this organization are trustworthy''

Cognitive Dimension

(1) ''Employees share the same ambitions and vision for the organization''

(2) ''Employees enthusiastically pursue collective goals and mission''

(3) ''There is a commonality of purpose among employees at this organization''

(4) ''Employees at this organization are committed to the goals of the organization''

(5) ''Employees view themselves as partners in charting the organization direction''

(6) ''Everyone is in total agreement on our organization's vision''

Appendix 3. Continued Improvement Seeking

Continued improvement seeking (Breso *et al.* 2008)

a) Mistakes are openly discussed in order to learn from them.
b) Differences between real and expected performance are critically and constructively analysed.
c) The lessons learned are made available to all members.
d) Actions are taken to continuously improve.
e) Even when an error is caught in time, people are still told about it, so it doesn`t happen again.