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Research Article

Personality and Task Interdependence as Moderators for Task Conflict and Team Effectiveness

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Abstract

Background: Although several scholars found that team effectiveness was damaged as a result of task conflict in organizational settings, the need to recognize the critical attributes to resolve task conflict and get the team back to working effectively is pertinent. In this study, it was assessed how task conflict is related to team effectiveness. Furthermore, it was conceptualized how task interdependence and personality moderates the relationship between task conflicts related to team effectiveness. **Methodology:** The study used stratified random sampling with a sample size of 275 Malaysian university researchers. The Structural Equation Modeling (SEM) analysis was performed. **Results:** The results showed that task interdependence moderated the relationship between task conflicts and team effectiveness. Regarding to the moderating effect of personality traits, the results of this study also suggest that task conflict was less negatively related to team effectiveness with higher levels of personality traits. This study remarks important information on the interactive effect of personal and task interdependence in task-conflict and team effectiveness at higher institutions levels to help to address the issue of conflict task in teams. The results in this study have practical implications for practitioners, who should pay attention to task interdependence and personality traits and well-being of staff. **Conclusion:** It was identified that the most effective individuals across a variety of teams may be those who can accurately assess the expectations of peers and who can adjust their initiating interdependence behavior accordingly. The article is a novel contribution in developing team effectiveness among university researchers. Based on the results managerial suggestions and future study direction were underlined.

Key words: Team effectiveness, task conflict, task interdependence, personality

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

In the past years, study on team effectiveness has developed quickly as teams have become increasingly prevalent within educational and organizational settings¹. The interface between group members is an imperative to organizational work, as it could have an important effect on team and/or individual performance. Mostly, team members work with a high responsibility and share knowledge and sense of interdependence for the completing of a given task. Team members are responsible for the collective and individual performances and work toward a common goal typically assigned by their group. Team work is progressively becoming a major concern in most organizational settings in their development platforms. The concern of team work gains importance as a consequence of the growing pressure on organizational settings to accomplish their tasks with more effective outcomes. In this concern, organizations challenge to remain productive and create an environment in which conflict may be present by the disagreement among team members about ideas and opinion, the distribution of resources, judgments and procedures and so on.

Scholars have discovered task conflict to be damaging to team effectiveness². Team members regularly have claimed that task conflict and satisfaction and team performance in team members are negatively related because conflict reduced productivity in organizational settings^{3,4} and decrease team members' desires to take part in collective activities and team meetings^{5,6}. Recent study demonstrated that task conflicts also increased strain and tension, subsequently distracting members from task accomplishment⁴. Due to the negative depiction of task conflict, the need to identify the essential attributes needed for effective teamwork in organizational settings^{7,8}. In line with, this study draws attention to the collaborative effect of personality and task interdependence in task conflict and team effectiveness to resolve the issue of conflict management in group tasks.

More specifically, as demonstrated by Van Der Veegt *et al.*⁹ and Barki and Hartwick¹⁰, personality and interdependence cannot be ignored as sources, influence or even antecedents of relationship between team effectiveness and task conflict management in today's competitive organizational settings. Study by Bradley *et al.*¹¹ showed that task conflict displayed a positive effect on team performance with high levels of personality factors. Marlow *et al.*¹² added that, within organizations, team members rely on each other for the completion of their tasks. Task interdependence impacts the individual work outcomes of team members who promote to the work of the organization. Furthermore, the results of

previous studies have demonstrated consistent support for the use of personality and task interdependence as moderators in relationships between task conflict and effective team performance¹¹, although the question of why and how team members influence team effectiveness is still not fully comprehended.

Thus, it is important to further investigate and advance a perspective on the imperative moderating role those personal factors and task interdependence play and how team members may promote understanding of the connection among task conflict and team effectiveness.

In literature, Barki and Hartwick¹⁰ has presented task conflict as a mix of interference, disagreement and damaging emotion. Jehn¹³ indicated that conflict may refer to divergence in opinions and view points due to personal mismatch, which usually result in acrimony, strain, tension and frustration between team members within organizations. Though task conflict in organizations is virtually unavoidable, researchers have found task-related to conflict has both positive and negative effects on team performance¹⁴. It appears that researchers have different opinions about the consequences of task conflicts, where some researchers such as Jehn and Chatman¹⁵ reported that conflict can recover the quality of decision as diverse ideas are resolved openly, while others such as Shaw *et al.*¹⁶ suggested that task conflict induces feelings of prejudice and leads to team ineffectiveness. Task conflict may also cause reduced productivity and well-being in organizational settings. On a personal level, it can cause team members strain, frustration, nervousness, loss of sleep and anxious relationships. In line with Lovelace *et al.*¹⁷ stated destructive relationships among task conflict and team performance. Pelled *et al.*¹⁸ also reported insignificant correlation between team performance and conflict in task groups. When seeing the variety of findings gleaned from conflict management investigations, it becomes clear that the issue of task conflict and team effectiveness in organizational settings is rather complex. Based on the above literature review analysis, the following hypothesis was tested:

- H1: There is a negative relationship between Task Conflict (TC) and Team Effectiveness (TE)

The team's ultimate success is not simply confined to the organization members' resource and abilities, but also the highly interactive nature of organization members, which are strongly, resolved by the characteristics of the individual organization members. Personality traits refer to the tendencies inside individuals that clarify their characteristic patterns of enduring thoughts, feeling and

behavior¹⁹. Kinicki²⁰ has presented personality as a stable set of traits that strongly influence beliefs, attitudes and expectations about others, thus assist in predicting and explaining behavior.

Furthermore, Colquitt *et al.*¹⁹ identified the Five Factor Model (FFM), also known as "Big Five" (BF) personality traits, these include; conscientiousness, agreeableness, neuroticism, openness to experience and extraversion. Jehn²¹ proposed that these personality traits can affect task conflict and largely team performance. It is estimated that the correlation between task conflict and performance will be moderated by the level of personality characteristics. Other study by Bradley *et al.*¹¹ showed that two personality types such as emotional stability and openness to experience function as key moderators for understanding the strength of the associations between task conflict and team performance. The findings of this study discovered that task conflict unveiled a constructive effect on team performance with high levels of emotional stability and openness. On the contrary, the results showed those who score low on these two traits are more vulnerable of having a conflict situation as team members are normally pessimistic, tend to express and experience hostility.

Many studies state that the team members on groups that have the same personality traits (e.g., agreeableness, emotional stability and conscientiousness) are expected to cope with conflict, therefore avoiding conflict from damaging their task in groups^{22,23}. As presented by Hogan *et al.*²⁴ people who have a high level of agreeableness are less expected to live a conflict situation as team members are generally unselfish, trusting, helpful and obedient and moved by others' needs. Based on the results of these studies the following hypothesis was proved:

- H2: Relationship between Task Conflict (TC) and Team Effectiveness (TE) is moderated by the level of personality traits

Team-based work structures have become gradually widespread in groups or organizations. The most study evidence proposes that teams appear to produce a better performance and better results than individuals for groups, mostly for problem-solving task, decision making and concept mastery and creativity tasks²⁵. According to Allen and Hecht²⁶, this performance assists interactions within teams (processes) that are shaped through the mutual interdependence of team members. Task interdependence, is also essential for understanding team effectiveness²⁷.

Task interdependence has been described by many researchers. Hülshager *et al.*²⁸ explain task interdependence as the degree to which teams depend on other members of their group to complete task effectively. A study by Podsakoff *et al.*²⁹ suggests that the collectivism culture (interdependence of individuals) and team creativity was positively associated under conditions of highly task interdependence of individual members of a team in the organization. Another study by Saavedra *et al.*³⁰ showed that interdependence can be beneficial to task performing groups. The findings revealed that interdependence was considerably associated to performance quality and quantity and intragroup conflict. This study also showed that complex interdependence affected collective performance strategies, which in turn influenced group performance progressively. Thus, task interdependence can moderate the relationship between process and performance outcomes²⁷ and the following hypothesis was confirmed.

- H3: Relationship between Task Conflict (TC) and Team Effectiveness (TE) is moderated by task interdependence (TI) in such a way that TC is more positively related to TE when TI is high than when TI is low

MATERIALS AND METHODS

The present study used a quantitative research method and a stratified random sampling method was employed in choosing the respondents. Moreover, this technique is suitable when a slight amount of info is available with regards to the population; it is also free of sorting error-classification problems of a set of groups (sub-populations) a novel observation belongs, on the foundation of a training set of data comprising observations (or instances) whose class membership is known.

The total of 275 participants was randomly chosen to partake in the study. To obtain the data required, an advanced questionnaire was employed. The questionnaire was mainly improved based on previous findings and literature reviews for instance Wageman *et al.*³¹ study and/or BFI which originally designed by John *et al.*³² as a relatively short measure of personality. The validation procedure was achieved through a number of instrument meetings and was then presented to several scholars in organizational settings, along with research staff in universities, for validating reasons.

The data collection procedure was conducted in November, 2015. To speed up the procedure, the investigators

and enumerators went to the universities, such as faculties and research institutes. Normally, every questionnaire took between 15 and 20 min to finish. For queries about team effectiveness, task interdependence, task conflict and personality (section B-E), every respondents was given a Likert-scale choice which ranged from 1 (highly disagree) to 5 (highly agree). By posing Likert-scale choices to the respondents, instead of waiting for a simple yes or no reply, team members could offer answers based on degrees of opinion and even no opinion in any way. Additionally, Likert scales are straightforward as team members direct to less complication and more reliable replies. For the intentions of analysis, AMOS (Analysis of Moment Structures) software was used for examining the data.

Data analysis: For the present study, the Structural Equation Modeling (SEM) analysis was applied. The benefits of using this method are that it (a) Corrects statistical estimation with regards to the measurement error in the estimation method, (b) Admits the proving numerous connections all together, (c) Observes much more intricate models such as scrutinizing moderation and prepares goodness of fit indices for the model studied and (d) Offers improved gratitude for validity and reliability for the inventories³³. Thus, the average variance extracted and construct reliability was made for gauging the validity and reliability of instruments. Convergent validity designates to a set of items that adopt to assess a variable.

Data preparation: The data were normally distributed, as the skewness amounts were from -1.002 to 0.412 and the kurtosis amounts were from -0.684 to 1.753 for entire constructs. Byrne³⁴ stressed that if the skewness value is between -2 and +2 and the kurtosis value is between -3 and +3, data were right and proper assessment of normality. Intended for model fit, Kline³⁵ mentioned using model fit indices, with the Chi-square/degree of freedom ratio (CMIN/DF), the Comparative Fit Index (CFI), the Goodness of Fit Index (GFI) and Normed Fit Index (NFI). In relation to rule of thumb for the fit indices, if four of the values are equal or bigger than 0.90 then this shows adequate model fit³⁶. Also, the model can be categorized as satisfactory if the Root Mean Squared Error of Approximation (RMSEA) is between 0.03 and 0.08. This model presented acceptable fit indices: CMIN/DF = 4.402, p<0.01, CFI= 0.924, GFI= 0.927, NFI= 0.905, RMSEA = 0.111. As stated by Kline³⁵, the model offers an suitable fit for the model. In the part of reliability analysis, the factor loadings of all constructs are higher than overall standard 0.50 and Composite Reliability (CR) ranged from 0.813-0.839, subsequently; all factors in the measurement model had satisfactory reliability.

In the part of validity analysis, all constructs show satisfactory convergent validity and discriminant validity, while all Average Variance Extracted (AVE) value in each construct ranged from 0.524-0.570 and the value of square root of AVE of every dimension was larger than the correlation coefficients of the pairwise dimension.

RESULTS AND DISCUSSION

Demographic profile of respondents: Data on the respondents' profiles are presented in Table 1. The data shown in Table 1 will give a clearer impression of the demographic of the respondents, including data on gender, age, race, educational level, position, years of working, leader in research projects and membership in research projects.

A total of 46.9% of the male respondents, versus 53.1% of females, believe that women have potential for being researcher in universities. The respondents were sorted into three age categories. Those were between 25-35 years old formed the majority, 49.1%. In addition, there are clear racial differences with local Malay having more potential researchers

Table 1: Demographic profile of respondents (n = 275)

Demographic profile	Frequency	Percentage	Mean	SD
Gender				
Male	129	46.9		
Female	146	53.1		
			39.19	10.235
Age				
25-35	135	49.1		
36-45	83	30.2		
46-55	29	10.5		
56 and above	28	10.2		
Ethnicity				
Malay	186	67.6		
Chinese	34	12.4		
Indian	17	6.2		
Bumiputera Sabah/Sarawak	37	13.5		
Others	1	0.4		
Educational level				
PhD	197	71.6		
Master	30	10.9		
Degree	41	14.9		
Others	7	2.5		
			9.9	10.037
Years of working in university				
1-10	189	68.7		
11-20	49	17.8		
21-30	14	5.1		
30 and above	23	8.4		
			2.01	2.272
Leader in research projects				
No project	84	30.5		
1-5	166	60.4		
6-10	23	8.4		
11 and above	2	0.7		
			4.32	4.676
Team member in research projects				
No project	28	10.2		
1-5	180	65.5		
6-10	53	19.3		
11 and above	14	5.1		

(67.6%) than any other racial groups. In terms of educational level, most respondents (71.6%) have obtained PhD level, while about 10.9% (n = 30) of respondents had master degree and 14.9% (n = 41) of respondents had degree. That means, majority of Malaysian researchers in this study had highest qualification in universities and institutions. With regards to years of working in higher institutions, the average working year is approximately 10 years. In terms of being a project leader, more than half of respondents (60.4%) completed 1-5 projects as leader. Finally, the majority of respondents (65.5%) were also team member in 1-5 projects.

Structural model: This model comprises TC as exogenous variable and TE as an endogenous variable. As can be viewed from Fig. 1, TC is not significant in explaining proportion of TE ($\beta = -0.100$; p -value = 0.163). Thus, H1 is not supported. The TC variable explained only 1.0% of the variance in TE among Malaysia researchers.

These findings are not consistent with scholars who report a positive effect of task conflict on team outcome³⁷⁻³⁹. The association among task conflict and team effectiveness was not significant. It is likely that task conflict directs to an increase in cognitive load that interrupts the team effectiveness.

Moderation test of personality: An evaluation among "The unconstrained model" and "The measurement residuals model" uncovered that the unconstrained model ($\Delta\chi^2 = 145.599$, $df = 38$, $p = 000$) and the measurement residuals model ($\Delta\chi^2 = 193.854$, $df = 55$, $p = 000$) were significant; on the contrary, the unconstrained model was suitable more than the measurement residuals model, as the

chi-square was smaller⁴⁰. Along with the measurement residual's model ($\chi^2 = 48.255$, $df = 17$, $p < 0.05$) in "assuming that the unconstrained model is correct," The results exhibited that the impact of likely differences throughout personality was significant.

The findings showed that there was significant relationship between TC and TE for low level of personality ($\beta = 0.164$, Table 2) and not significant relationship between TC and TE for those who have high level of personality.

Consequently, according to Hair *et al.*⁴⁰ the moderating impact of personality on the path relationship between TC and TE was supported. Thus, H2 was accepted. These findings support the results of Bradley *et al.*¹¹ reported that personality traits had a significant moderating effect on the relationship between task conflict and job performance. Similarly, the research results are consistent with Lin *et al.*⁴¹ who discovered that the relation between team performance and the personality composition measures of conscientiousness and agreeableness. The influence of personality composition measures of extraversion and emotional stability on team performance, though, seemed more contingent upon content of the team task and/or other team features. Likewise, quite strong results were discovered for the associations between social cohesion and mean levels of extraversion and emotional stability, while the results with the personality composition measures of conscientiousness and agreeableness were influenced by features of the team task or context. Taken together, the results of current study indicate that organizations must comprise their teams with persons who show acceptable levels of personality traits, as this will impact positively to effectiveness of the team.

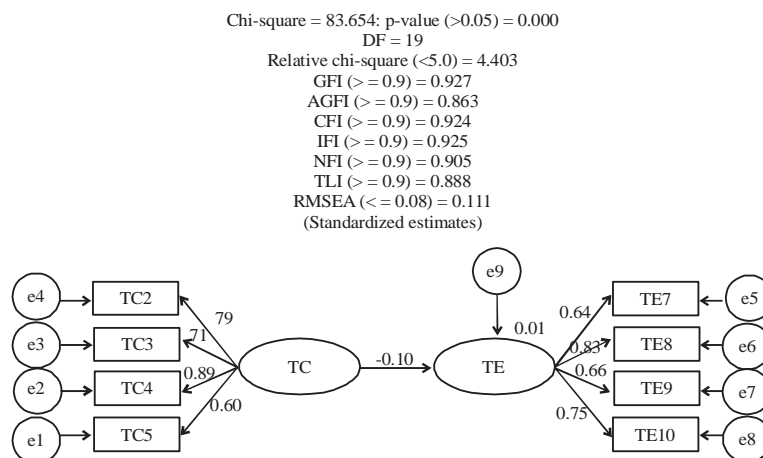


Fig. 1: Path analysis of all the research constructs, Task conflict (TC) and Team effectiveness (TE), For all estimates * $p < 0.05$. ** $p < 0.01$, *** $p < 0.001$

Table 2: Standardized regression weights (personality variant model)

Hypotheses		SE	CR	Standard estimate
TE	← TC	0.093 (0.089)	1.451 (-2.601)	0.145 (0.009*)

TC: Task conflict, TE: Task effectiveness, SE: Standard error, CR: Critical ratio, Results from low level of personality are presented first and the results for high level of personality are showed in parentheses, *p<0.05, **p<0.0 and ***p<0.001

Table 3: Standardized regression weights (task interdependence variant model)

Hypotheses		SE	C.R	Standard estimate
TE	← TC	-0.158 (-0.369)	-1.645 (-2.442)	0.100 (0.015*)

TC: Task conflict, TE: Task effectiveness, SE: Standard error, CR: Critical ratio, Results from low level of task interdependence are presented first and the results for high level of task interdependence are showed in parentheses. *p<0.05, **p<0.01 and ***p<0.001

Moderation test of task interdependence: The participants of the survey categorized in two groups: Those with low level of task interdependence and a second group of high level in task interdependence. Result indicated that the differences were significant (p<0.05) and the unconstrained model was better than the measurement residuals model ($\Delta\chi^2 = 52.546$ (188.381-135.835), df = 17 (55-38), p = 000), then it is concluded that these is some forms of moderation effect of task interdependence on the overall model. The results of Table 3 indicated that task interdependence significantly moderates only the path relation between TC and TE. Thus, H3 was supported.

The findings of this present study were revealed to be partly in line with those of Rousseau *et al.*³⁶. The findings discovered by Kasl *et al.*³⁸ showed that task interdependence had a moderating role in the relation between the work management dimension and team performance (the introduction of the interaction terms in the regression model significantly intensified the percentage of explained variance by 5%). The greater the task interdependence, the stronger the relationship would be between the team's inside operative aspect and the functioning and the higher the task interdependence, the greater the relation would be between the work management dimension and performance. Though, the studies about the relation between task interdependence and performance/effectiveness are not completely convincing, showing some contradictions⁴⁰. As said by McShane and Von Glinow⁴², when task interdependence is at a greater level, team collaboration will be more significant than when team members are working separately. These findings suggested that a greater amount of task interdependence will improve team effectiveness and the degree of task interdependence will influence task conflict and team effectiveness.

CONCLUSION

As teams have to study to effectively modify to their varying environment, it is imperative to know what factors lead to team effectiveness. This study established three hypotheses. The first hypothesis addressed the relation between task conflict in teams and team effectiveness. The following two hypotheses addressed the moderating effect of personality and task interdependence on the association between task conflict and team effectiveness. The results of this study did not confirm the first hypothesis as there is no significant correlation between task conflict and team effectiveness. However, the results of this study supported hypotheses two and three. The results showed task interdependence not only improves task conflict, but also enhanced work efficiency and team effectiveness. There is also a significant difference between the level of personality traits in the task conflict and team effectiveness. As a result, this study remarks important information on the interactive effect of personal and task interdependence in task-conflict and team effectiveness at higher institutions levels to help address the issue of conflict task in teams. These findings are also all the more interesting, as this study may have been one of the initial studies to investigate personality traits and task interdependence as key moderators for understanding the strength of the relationship between task conflict and team effectiveness. In addition to this fact, it is believed that this study makes great contributions to the managerial practices and organizational (IWO) psychology works. These results in this study have practical implications for practitioners, who should pay attention to task interdependence and personality traits. For instance, group associates' interdependence can be reinforced to lead to compatible and harmonious interpersonal relationships, in which negative emotions are avoided and team cooperation is increased and team effectiveness is enhanced. It follows that the most effective individuals across a variety of teams may be those who can accurately assess the expectations of peers and who can adjust their initiating interdependence behavior accordingly. Finally, organizations may also have to take into account training techniques that fit the personality traits of the team. This should be taken into consideration when evaluating that the relationship between collective personality and team effectiveness differs with diverse tasks.

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