Poster

TITLE

A Latent Transition Analysis of Team Conflict Profiles

SHORTENED TITLE

Team Conflict Profiles Over Time

ABSTRACT

Little research has investigated team conflict over time, despite its dynamic nature. Using latent transition analysis, we examined different patterns of transitions that teams make between the conflict profiles, and the implications these transitions have for team outcomes. Results supported the presence of an ideal type of conflict, and its role in optimal team performance and innovation.

PRESS PARAGRAPH

Although team conflict is often described as being dynamic in nature, little research has investigated change in conflict over time. Taking a team-centered perspective and using latent transition analysis, this study examined the profiles of team conflict that emerge over time, and the transitions between profiles that teams experience. This study also explored the influence that different patterns of transitions have on team performance outcomes. Results underscored the presence of an ideal type of conflict (i.e., high task conflict, combined with low relationship and process conflict), but also highlighted when, during a team's lifecycle, this ideal type of conflict can be optimal for team performance and innovation.

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Team conflict has been an important research interest for decades, and one that continues to persist (e.g., Jehn & Mannix, 2001; Maltarich, Kukenberger, Reilly, & Mathieu, in press). Although past studies have discussed the dynamic nature of conflict (e.g., Jehn, 1995), most research has focused on static levels and has neglected to investigate change in conflict over time. As well, few studies have leveraged team-centered analytical frameworks, which examine the co-occurrence of conflict types. This study aims to bridge these gaps in the literature by 1) investigating the profiles of team conflict that emerge over time and the transitions teams experience into different profiles, and 2) explore the influence that different patterns of transitions have on team performance outcomes.

Jehn (1995) identified three distinct types of team conflict: Task conflict, relationship conflict, and process conflict. Task conflict involves perceived incompatibilities in opinions and perspectives about the task. Relationship conflict involves perceived interpersonal incompatibilities involving friction and personality clashes. Process conflict involves perceived incompatibilities in team roles and responsibilities. Considering each conflict variable individually, recent meta-analyses reported that task conflict is unrelated to performance, and relationship conflict and process conflict are negatively related to performance (de Wit, Greer, & Jehn, 2012; O'Neill, Allen, & Hastings, 2013).

In the current research, we investigated profiles of team conflict, which were recently introduced by O'Neill, McLarnon, Hoffart, Woodley, and Allen (in press). The profile approach, or a "team-centered" approach differs from the traditional variable-centered approaches used in the majority of past conflict research. Briefly, variable-centered approaches (i.e., regression, factor analysis) focus on the relations between variables, whereas team-centered approaches (i.e., latent profile analysis [LPA]) are more holistic in nature and group teams based on similar

patterns of scores. One major insight offered by O'Neill et al. (in press) is that variable-centered approaches may not be well-aligned with the conceptual nature of team conflict. More specifically, variable-centered approaches adopt a separation perspective of team conflict, in which the different conflict variables are examined independently. The separation perspective, however, has resulted in findings that contrast theorizing on the benefits of task conflict.

Task conflict may be beneficial for team performance because it can promote intra-team discussion and can stimulate development of alternative plans (e.g., Loughry & Amason, 2014; Pelled, Eisenhardt, & Xin, 1999). Higher levels of task conflict might also promote learning from others' perspectives, which can lead to creativity and innovation (Badke-Schaub, Goldschmidt, & Meijer, 2010; De Dreu & West, 2001). Thus, task conflict should yield benefits for both team performance and innovation.

However, higher task conflict, by itself, may be unlikely to result in positive outcomes. For instance, task conflict will not be beneficial when it occurs in the presence of relationship conflict (de Wit et al., 2012). Similarly, task conflict might only be functional in the absence of process conflict because teams "hung up" in process issues have fewer resources available for working through task conflicts (Greer, Jehn, & Mannix, 2008). Together, high task conflict may only be optimal when relationship and process conflicts are low.

This underscores the importance of considering team conflict via a complexity perspective. Investigations into the role of the individual conflict variables, even with attention paid to potential interactions, have generally been ineffective at identifying the optimal conditions for task conflict (de Wit et al., 2012). Team-centered approaches, which involve examining combinations of conflict variables within teams, may offer an advantage in this regard. Team-centered approaches acknowledge combinations of conflict types may be more

important than any one form of conflict alone (O'Neill et al., in press). Team-centered approaches (i.e., LPA), therefore, can present much stronger alignment between the complexity perspective of conflict than variable-centered approaches.

O'Neill et al. (in press) documented preliminary evidence for a robust set of four conflict profiles. First, a pattern defined by relatively high task conflict and very low relationship and process conflict was recovered and labeled *task conflict-dominant*. Second, a pattern defined by relatively high task conflict and low relationship and process conflict was identified and labeled *relationship conflict/process conflict-minor*. Third, a pattern defined by moderate task, relationship, and process conflict was identified and labeled *mid-range conflict*. Finally, a pattern defined by relatively low task conflict and high relationship and process conflict was found and labeled *dysfunctional*. Studies by O'Neill et al. (2017) and O'Neill, McLarnon, Hoffart, Onen, and Rosehart (in press) have replicated these profiles.

This early research on conflict profiles, however, has been cross-sectional and has not provided insight into whether profile membership is stable or dynamic over a team's lifecycle. For example, it may be possible that some teams transition into one of the less desirable patterns of conflict. Likewise, it may be possible for a team, initially categorized as *dysfunctional*, to improve and transition into a more desirable conflict profile, such as the *mid-range* profile.

Adopting a team-centered approach to conflict can also be extended to examining change in conflict patterns over time. Whereas the studies of O'Neill and colleagues used LPA, latent transition analysis (LTA) can be used to track transitions that teams make between conflict profiles over time (O'Neill & McLarnon, in press; Collins & Lanza, 2010). Further, team outcomes can be included in LTA to investigate the consequences of the transitions into different conflict profiles.

In the current study, we refrain from making explicit predictions regarding the number and nature of transitions that will be uncovered, but instead suggest that transitions are more likely to occur in an incremental nature. This is supported by past research, which has theorized relative stability (DeChurch, Mesmer-Magnus, & Doty, 2013) and consistency over time (Goncalo, Polman, & Maslach, 2010; Greer et al., 2008). Yet, longitudinal research has reported a degree of change in conflict over time (e.g., Peterson & Behfar, 2003; Rispens & Demerouti, 2016). Together, it is more likely that change will take the form of single-degree transitions to an adjacent profile, rather than dramatic transitions between the task-conflict dominant pattern and the dysfunctional pattern, for example.

In sum, this study investigated the transitions teams experience in their conflict profile membership during completion of a long-term project. Additionally, we investigated the role different transitions patterns have for team effectiveness and team innovation.

Method

Participants

We conducted LTA on a sample of 100 teams, comprising 499 undergraduate students enrolled in an entrepreneurship business course (53% male). Teams were tasked with developing a new business venture over the course of a four-month semester.

Measures

We adopted conflict measures of Behfar, Mannix, Peterson, and Trochim (2011). The measure included three items assessing task conflict, four items for relationship conflict, and three items for process conflict. All responses were given on a 5-point Likert scale with options ranging from “a very small amount” to “a lot.” The conflict measures were taken at weeks 6, 9, and 12 of the course.

Assessed at the end of the course, the performance criterion consisted of teams' grades on the marketing material, 7-minute pitch, and business model, which together was worth 40% of the course grade. Innovation ratings were provided by local entrepreneurs who rated each team's project on: quality of the pitch, innovativeness of the idea, and scalability of the proposed business. Because different raters provided innovation ratings, innovation was *z*-scored within each class section.

Analytical Strategy

Data was aggregated to the team-level (cf. Kozlowski & Klein, 2000), and using M*plus* 7.4 (Muthén & Muthén, 2012) analyses were conducted in multiple stages. Briefly, LTA involves a measurement component meant to capture membership in discrete latent profiles (i.e., LPA at multiple timepoints) and a structural component to model change in membership over time. As such, the first stage in LTA is to identify the optimal number of profiles at each timepoint (Wang & Hanges, 2011). Next, we investigated the similarity of the profiles across time by adapting Morin, Meyer, Creusier, and Biétry (2016) procedures. Finally, using Nylund-Gibson, Grimm, Quirk, and Furlong's (2014) procedure for controlling for imperfect profile membership, we explored the transitions that occur between profiles. Lastly, performance and innovation criteria were incorporated to examine differential effects of each transition.

Results and Discussion

Table 1 presents the descriptives, intercorrelations, reliability estimates, and intraclass correlations for each of this study's variables.

LPAs at Each Timepoint

We explored the optimal profile solutions at each timepoint by initially specifying a one-profile model, and then adding profiles in subsequent models. Optimal LPAs can be chosen on

the basis of a model demonstrating the lowest Akaike Information Criteria (AIC), Consistent AIC (CAIC), Bayesian Information Criteria (BIC), sample-size adjusted BIC (aBIC) values, and a p-value < .05 associated with the bootstrapped likelihood ratio test (BLRT; which assesses improvement in fit of a k-profile model over a k-1 profile model). Further, optimal models should demonstrate statistical adequacy and be free of estimation errors. In general, researchers should seek a model that balances empirical fit, parsimony, and, perhaps most importantly, is consistent with theory.

Table 2 presents the model fit indices for the LPAs conducted at each timepoint. Results robustly suggest that three-profiles were optimal at each timepoint. The AIC, CAIC, BIC, and aBIC values were consistently lower for the three-profile versus the two-profile models. As well, the BLRT demonstrated that the three-profile models provided better fit over the two-profile models. Moreover, at each timepoint, models with more than three profiles resulted in estimation errors, suggesting the statistical inadequacy of those models. Together, a three-profile solution was optimal to describe teams' conflict profiles each timepoint.

Although recovery of three profiles differs from previous studies, those recovered here demonstrate considerable similarity to three of the four recovered by O'Neill et al. (2017; in press). As such, we adopt their naming conventions. Figures 1-3 present the profiles from each timepoint. The first profile exhibited high levels of task conflict in relation to very low relationship and process conflict, and was referred to as *task conflict-dominant*. The second profile, revealed a similar level of task conflict, but moderate levels of relationship and process conflict. This profile was named *mid-range conflict*. The third profile displayed high levels of all three conflict variables, and was named *dysfunctional*.

LPAs Across Timepoints

The structure of the profiles appeared to be relatively consistent over time. In other words, at each timepoint, a *task conflict-dominant*, a *mid-range*, and a *dysfunctional* profile were recovered. However, Figures 1-3 reveal minor differences in the profiles over time, and we make three observations. One, *task conflict-dominant* appears to be more consistent than either the *mid-range* or *dysfunctional* profiles over time. Specifically, in *task conflict-dominant* the task, relationship, and process conflict variables appear to have approximately similar scores across time. Using Morin et al.'s (2016) procedure to investigate profile similarity, we constrained the means of the conflict variables to equality across timepoints. For this model, the CAIC and BIC values were lower than the combined model, providing evidence for the similarity of the *task-conflict dominant* profile over time. Two, applying the same procedure to the *mid-range* profiles at Time 1 and 2 also revealed evidence of similarity. However, including the Time 3 *mid-range* profile suggested a moderate degree of dissimilarity (i.e., worse fit as indicated by higher AIC, CAIC, BIC, and aBIC values). This means that the *mid-range* profiles were relatively equal at Time 1 and 2, but demonstrated an increase in relationship and process conflict scores at Time 3. Three, in consideration of *dysfunctional*, no evidence of similarity across time was recovered. Thus, as the project progressed, *dysfunctional* teams demonstrated increasing levels of relationship and process conflict. Together, this suggests a self-reinforcing pattern of conflict if a team was not initially identified as a member of *task conflict-dominant*.

Transitions Between Profiles over Time

We next explored the transitions that were exhibited between teams' profile membership using LTA. Although we proposed that teams would likely demonstrate a degree of consistency over time, we considered each possible transition. As shown in Table 3, many teams experienced stability in their profile membership over time (i.e., 47% of teams maintained their initial profile

status), and would be considered 'stayers,' in that initial status (i.e., *task conflict-dominant* at Time 1) would be maintained at Times 2 and 3 (see the proportions on the diagonal of Table 3). In contrast, although not every possible transition type was populated with at least one team, over half of teams experienced some transition in profile membership. Generally, these transitions were of a positive nature, as the proportions of teams in *task conflict-dominant* increased while *mid-range* and *dysfunctional* membership decreased. This, we believe is encouraging evidence that teams may have the ability to self-regulate and improve their conflict states during their lifecycle, a finding which contrasts common thinking on the effectiveness of teams (Hackman, 1990; Steiner, 1972).

Implications of Transition Patterns for Team Performance and Innovation

The final stage in this study involved embedding team performance and innovation outcomes into the LTA to examine the implications of the transition patterns observed. Table 4 presents the cumulative transition patterns, and the mean performance and innovation scores for each transition. Given that several of the possible transitions did not have teams, these results considered the 15 populated transition patterns, and 105 comparisons (i.e., $15!/(2!\times(15-2)!)=105$) for each outcome. In the interest of brevity, we only focus on selected results here.

The teams that were initially in *task conflict-dominant*, and maintained that status over time, demonstrated significantly better performance than several types of transitions, for instance those with a trajectory of *mid-range* at Time 1, *task conflict-dominant* at Time 2, and then returned to *mid-range* at Time 3. Additionally, consistent *task conflict-dominant* teams performed better than teams that transitioned from *dysfunctional* at Time 1 and 2 into *mid-range* at Time 3. This suggests that the ideal conflict profile has positive performance implications when maintained over the course of a team project.

Perhaps more interestingly, teams that demonstrated the highest performance had a transition pattern of being *task conflict-dominant* at Time 1, *mid-range* at Time 2, and then returned to *task conflict-dominant* at Time 3. This suggests that rather than consistency in *task conflict-dominant*, superior performance may actually be associated with increased levels of relationship and process conflict mid-way through a project. This finding speaks to the importance of *timing* of conflict. It appears that *task conflict-dominant* status at the beginning and end of a team's lifecycle, interrupted by modest increases in relationship and process conflicts, may be associated with stronger performance. This transition may reflect a spill over of high task conflict at Time 1 resulting in higher process and relationship conflicts at Time 2, which is aligned with previous findings that task conflicts can spur other types of conflict (Peterson & Behfar, 2003). What is important then is the recovery to *task conflict-dominant* at Time 3, which suggests these teams were able to integrate each member's perspectives and effectively manage personal tensions.

Not surprisingly, teams that spent the majority of the project occupying the *dysfunctional* profile had some of the lowest performance scores. For example, teams exhibiting the *dysfunctional* profile at Times 1 and 2, and then transitioned to *mid-range* at Time 3 were one of the worst performing transition patterns and performed substantially more poorly than many of the other transition patterns. Although we expected that teams consistently occupying *dysfunctional* would have demonstrated the weakest performance, the transition to the *mid-range* profile near project completion may suggest a 'too little, too late' approach to managing the levels of relationship and process conflict that have escalated from Time 1 to Time 2, perhaps entrenching members in ineffective behavioral and interpersonal patterns. Thus, despite the transition to *mid-range*, which may be arguably better than *dysfunctional*, this may suggest that

individual members have accepted the dysfunctional nature of their team and have attempted to distance themselves from the team, reducing the effort and time committed to team goals.

In terms of innovation, several interesting findings are offered. The teams that maintained *task conflict-dominant* status throughout the three timepoints demonstrated greater innovation as compared to many of the teams that experienced a negative transition pattern (i.e., *task conflict dominant* at Time 1, but then at *mid-range* for Time 2 and Time 3).

The pattern that appears to be most positively related to innovation, however, was for teams that transitioned between *task conflict-dominant* at Time 1, *dysfunctional* at Time 2, and then *mid-range* at Time 3. One aspect of this finding is that the degradation from *task conflict-dominant* to *dysfunctional* during Time 1→Time 2 could be associated with obstinate, spitefully stubborn reactions to the sharing of ideas during early team meetings. This may occur, for example, if early disagreements about the team's task have been taken personally, and have translated into personality clashes and disagreements about individual members' roles and responsibilities. This may also be a further example of early task conflicts subsequently spilling over to other types of conflict (Peterson & Behfar, 2003). Although this suggests a strongly negative conclusion, this transition pattern, which implies an improvement from Time 2 to Time 3, suggests that these types of teams may actually be able to undergo successful conflict management processes. As a practical suggestion based on this finding, it suggests that conflict management training may be highly effective in improving outcomes for teams tasked with a project requiring innovation.

Though we believe the current study offers a unique contribution and important insight into the dynamics involved with team conflict, there are a number of limitations readers should be considerate of. Primarily, this study involved a single, modestly-sized sample, and replication

with larger samples of teams is required. Cross-validation is also needed to assess these effects in additional types of teams. Although our results offer a degree of correspondence to the earlier findings offered by O'Neill and colleagues on the number and structure of cross-sectional conflict profiles, more diverse samples are also required.

Conclusion

The current study offered an examination into the dynamic nature of team conflict using latent transition analysis. This research built upon a burgeoning interest in team-centered approaches to conflict, and examined the longitudinal implications of different patterns of conflict profiles over time.

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Table 1

Descriptives and Correlations

	Mean	*SD*	*ICC*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. TC (Time 1)	3.45	.51	.23	(.79)										
2. TC (Time 2)	3.56	.49	.20	.41**	(.83)									
3. TC (Time 3)	3.60	.46	.09	.40**	.67**	(.87)								
4. RC (Time 1)	1.50	.37	.21	.22*	.12	.17	(.87)							
5. RC (Time 2)	1.55	.49	.30	.12	.04	.13	.42**	(.92)						
6. RC (Time 3)	1.71	.63	.36	.08	-.11	.05	.36**	.61**	(.95)					
7. PC (Time 1)	1.55	.39	.16	-.13	-.19	-.10	.62**	.37**	.30**	(.79)				
8. PC (Time 2)	1.52	.40	.22	-.03	-.19	-.17	.36**	.75**	.60**	.53**	(.78)			
9. PC (Time 3)	1.63	.54	.26	.02	-.23*	-.09	.25*	.50**	.77**	.35**	.65**	(.89)		
10. Performance	137.61	14.05	--	.32**	.14	.14	.10	-.08	-.15	-.04	.09	-.13	--	
11. Innovation	.01	.97	--	.10	.06	.12	-.06	-.03	-.24*	-.07	-.09	-.27**	-.02	--

Note: $n = 100$. TC = Task conflict; RC = Relationship conflict; PC = Process Conflict. * $p < .05$; ** $p < .01$. Innovation was *z*-scored within raters. Cronbach's α estimates presented on the diagonal in parentheses.

Table 2

LPA Model Fit Indices

	AIC	CAIC	BIC	aBIC	*p* BLRT
Time 1					
1-profile	332.52	338.52	348.16	329.21	--
2-profile	278.15	288.15	304.20	272.62	.00
3-profile	260.21	274.20	296.68	252.46	.00
4-profile [a]	249.76	267.76	296.66	239.81	.00
5-profile [a]	244.87	266.87	302.19	232.71	.06
Time 2					
1-profile	359.30	365.06	374.37	355.43	--
2-profile	311.36	320.95	336.47	304.91	.00
3-profile	293.76	307.18	328.91	284.72	.00
4-profile [a]	272.82	290.08	318.01	261.21	.00
5-profile [a]	261.06	282.15	316.29	246.86	.00
Time 3					
1-profile	487.62	493.62	503.25	484.30	--
2-profile	404.78	414.78	430.83	399.25	.00
3-profile	350.74	364.74	387.21	343.00	.00
4-profile [a]	338.35	356.35	385.24	328.40	.00
5-profile [a]	334.80	356.80	392.11	322.63	.38

Note. AIC = Akaike Information Criteria; CAIC = Consistent AIC; BIC = Bayesian Information Criterion; aBIC = sample-size adjusted BIC; *p* BLRT = *p*-value for bootstrap likelihood ratio test. [a] Indicates that model estimation did not converge on adequate or proper solutions due to Heywood cases, a non-positive definite Fisher Information matrix, empty profiles, or non-replicated loglikelihood values, this suggests that the results offered from these models may not be trustworthy.

Table 3

LTA Transition Patterns

	Time 2			
Time 1	Task conflict-dominant	Mid-range	Dysfunctional	*Time 1 %*
Task conflict-dominant	40%	11%	1%	*52%*
Mid-range	15%	17%	0%	*32%*
Dysfunctional	3%	9%	4%	*16%*
Time 2 %	*58%*	*37%*	*5%*	

	Time 3			
Time 2	Task conflict-dominant	Mid-range	Dysfunctional	*Time 2 %*
Task conflict-dominant	53%	4%	1%	*58%*
Mid-range	10%	25%	2%	*37%*
Dysfunctional	1%	1%	3%	*5%*
Time 3 %	*64%*	*30%*	*6%*	

Note. Top panel displays the transition patterns between the Time 1 → Time 2 profiles, and the bottom panel displays the transition patterns between the Time 2 → Time 3 profiles. Percentages in italics reflect the marginal proportion of teams in each profile at each timepoint. With three profiles at each timepoint there are 27 different transition patterns to consider (see Table 4).

Table 4

Cumulative Transition Patterns and Mean Performance and Innovation

Transition Pattern	% of teams	Performance	Sig. as compared to transition patterns:	Innovation	Sig. as compared to transition patterns:
1. 1 1 1	35	134.77	> 11, 26; < 4, 19	.29	> 5, 9, 23, 26; < 8, 11
2. 1 1 2	4	125.29	< 4, 8, 19, 22	-.32	> 9; < 8
3. 1 1 3	1	--	--	--	--
4. 1 2 1	3	156.90	> 5, 8, 9, 11, 14, 23, 26, 27	-.91	< 8
5. 1 2 2	7	135.39	> 11, 26; < 8, 19	-1.38	< 8, 10, 11, 13, 14, 19, 23, 26, 27
6. 1 2 3	0	--	--	--	--
7. 1 3 1	0	--	--	--	--
8. 1 3 2	1	139.62	> 9, 11, 26	1.40	> 9, 10, 11, 13, 14, 19, 22, 23, 26, 27
9. 1 3 3	1	132.82	> 11, 26; < 19	-1.48	< 10, 11, 13, 14, 19, 23, 26, 27
10. 2 1 1	15	141.73	> 11, 26	-.02	< 11
11. 2 1 2	1	125.70	< 14, 19, 22, 23	.78	> 13, 14, 23, 26, 27
12. 2 1 3	0	--	--	--	--
13. 2 2 1	7	146.34	None	-.32	None
14. 2 2 2	9	136.63	> 26	.11	None
15. 2 2 3	0	--	--	--	--
16. 2 3 1	0	--	--	--	--
17. 2 3 2	0	--	--	--	--
18. 2 3 3	0	--	--	--	--
19. 3 1 1	3	153.59	> 26	.05	None
20. 3 1 2	0	--	--	--	--
21. 3 1 3	0	--	--	--	--
22. 3 2 1	1	149.35	> 26	-.28	None
23. 3 2 2	8	136.89	> 26	-.35	None
24. 3 2 3	0	--	--	--	--
25. 3 3 1	0	--	--	--	--
26. 3 3 2	1	126.30	None	-.50	None
27. 3 3 3	3	136.28	N/A	-.07	N/A

Note. Transition patterns: 1 = task conflict-dominant, 2 = mid-range, 3 = dysfunctional. Significant differences in mean comparisons, at $p < .05$, given. Dashed entries reflect transition patterns that were not populated and were fixed to zero. *None* reflects that no comparisons, excluding those in previous rows, reached statistical significance. N/A reflects that comparisons involving transition pattern 27 were already examined in previous rows.

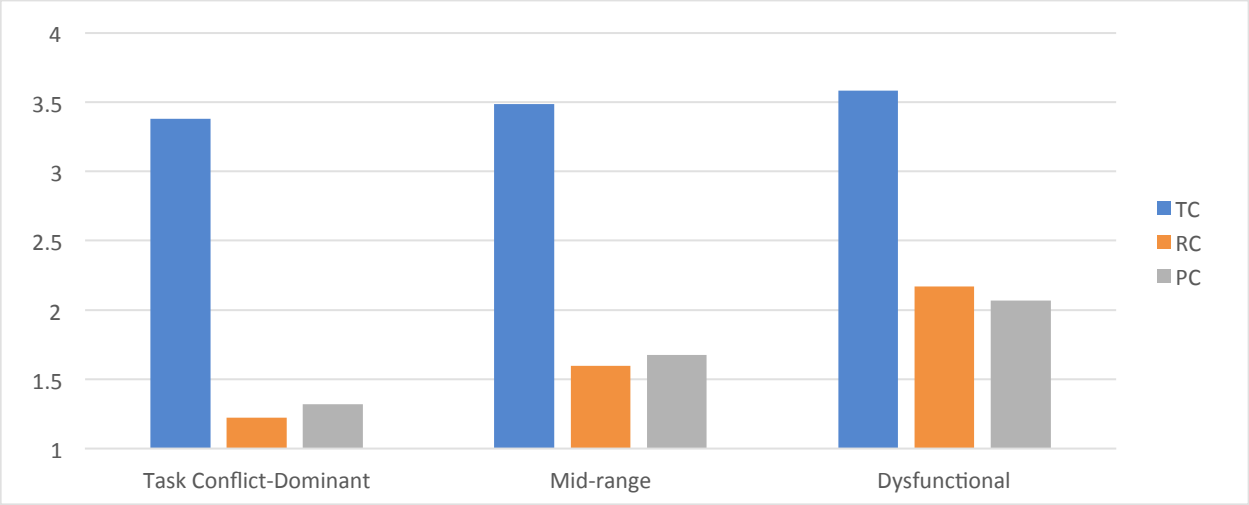

Figure 1. Time 1 conflict profiles. TC = task conflict, RC = relationship conflict, PC = process conflict.

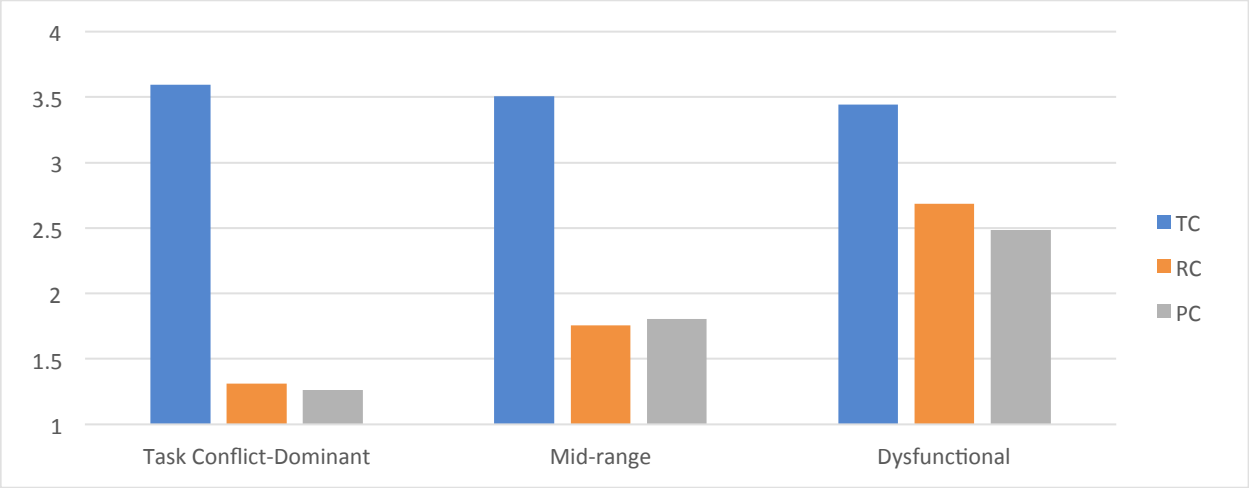

Figure 2. Time 2 conflict profiles. TC = task conflict, RC = relationship conflict, PC = process conflict.

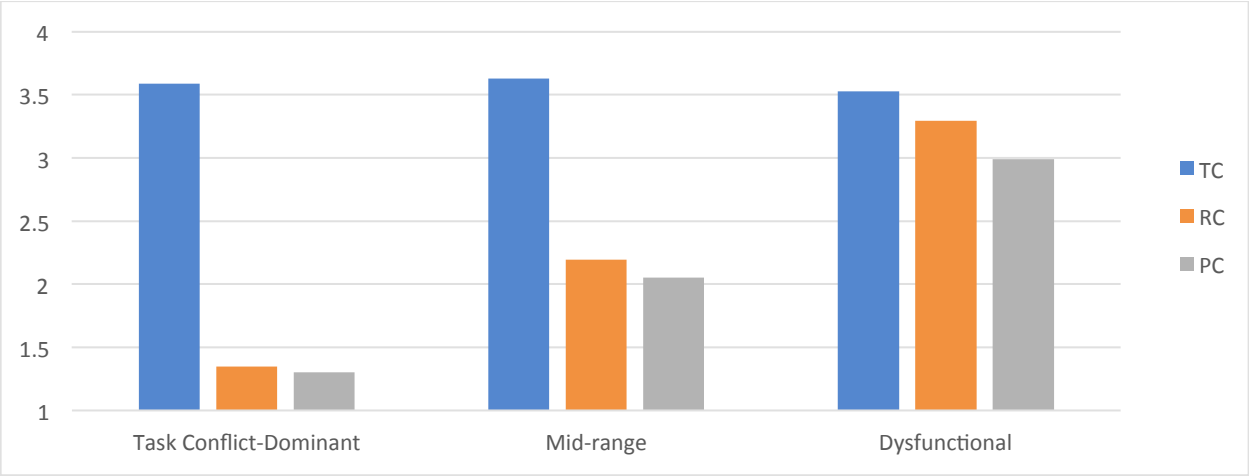

Figure 3. Time 3 conflict profiles. TC = task conflict, RC = relationship conflict, PC = process conflict.