



Impact of Negotiators' Predispositions on Their Efforts and Outcomes in Bilateral Online Negotiations

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Abstract. This study uses the Thomas-Kilmann Instrument (TKI) to analyze the negotiators' predispositions in handling conflicts in online negotiations. It explores the impacts of the individual predispositions on the negotiation processes and outcomes. The results show that TKI scores are significantly related to both the efforts that the negotiators put in their negotiation activities and the achieved agreements. The results also show that the various compositions of individual predispositions in dyadic negotiations can lead to different results.

Keywords: Bilateral negotiation · Online negotiation experiments
Individual predispositions · Thomas-Kilmann Instrument

1 Introduction

Negotiation is a mechanism frequently used to resolve conflicts or solve problems involving two or more individuals or organizations. During their negotiations negotiators need to evaluate offers and arguments they receive from their counterparts and decide on their own offers and arguments. Individual characteristics influence the negotiation process and its outcomes. However, empirical studies differ in their assessment of the impact of individual characteristics on negotiations. Potential reasons include the negotiators' ability to adapt to different contexts, problems, and counterparts, individual characteristics distorted by situational factors, and the confounding effect of the other party [1–3].

It is a challenge to decide on an effective way to group negotiators into specific categories of characteristics in order to obtain a large enough sample for analysis. In the last decade, the InterNeg Research Centre conducted online experiments for both training and research purposes [4]. More than 1000 dyadic negotiations with anonymous partners have been conducted. To capture the participants' predispositions regarding five conflict-handling approaches, prior to the negotiations they were asked to answer Thomas-Kilmann Instrument (TKI) questions [5]. Based on the data collected from the experiments, the current study investigates the influence of individual

predispositions on negotiation by exploring the impact of TKI scores on negotiators' efforts during the negotiations and negotiation outcome. The results show that TKI can be used to distinguish individual negotiators in terms of their general predispositions to conflict resolution.

In most cases the negotiators have strong and medium predispositions to two or three approaches. This allows them to select an approach that they consider the most fitting a particular situation as well as to change the approach during the negotiations [6, 7]. The negotiators who face exactly the same type of conflict and who are placed in the same situational context should employ their strongest and the best-fitting predispositions. The question asked here is as follows: *Do the negotiation predispositions, subject to the perturbations introduced by the anonymous counterparts, influence the negotiators' aspirations and their behavior?*

The analysis of the negotiation data shows that the predispositions indeed influence the negotiators' aspiration levels and the negotiation process and its outcomes.

2 Dual Concern Model and Thomas-Kilmann Instrument

Blake and Mouton [8] proposed the "managerial grid", a model to assess managers' conflict caused by their concern for people and concern for results. Managerial grid offers a perspective on social value orientation that is particularly suitable in studies of, and approaches to, negotiations. To stress its applicability in negotiations, it was renamed as a dual concern model. It has been used in negotiation research and verified in numerous studies [e.g., 9–11]. The adapted model uses the strength of the negotiator's *concern for self* and *concern for others* (counterpart) to determine the negotiation approach predisposition. These two concerns are used to specify the following five predispositions of the negotiators: (1) *avoiding* conflict and disengaging with the counterpart; (2) *accommodating* requests of the counterpart; (3) *competing* with the counterpart to achieve as much as possible; (4) *collaborating* to achieve a solution that satisfies both parties; and (5) *compromising* which involves making and demanding concessions to achieve a solution that both sides can accept [7].

Several research instruments to measure negotiators' predispositions towards the five conflict-handling modes were developed [12]. One of the most widely used instruments to measure the propensity for negotiation approach is TKI (also called MODE) formulated by Thomas and Kilmann [13]. TKI uses a variant of the dual concern model with the dimensions describing assertiveness (effort to satisfy own concerns) and cooperativeness (effort to satisfy the counterpart's concern). It is a forced-choice instrument designed to create an individual profile which is a vector of five values (from 0 to 12) associated with each approach [14]. TKI has been commercialized and used to help individuals understand the impacts of different conflict-handling modes in various settings [15].

3 Inspire Bilateral Online Negotiations

Inspire is an e-negotiation system supporting bi-lateral multi-issue negotiations with enhanced negotiation analytic methods, communication, and dynamic user-controlled graphical tools [16, 17]. The system has been used in both lab and online negotiation experiments.

3.1 Inspire System and Experiments

In 2009 the GRIN project (global research in Internet negotiation) was initialized by a group of researchers and instructors from multiple universities in 5 different countries [4]. The Inspire system became part of the GRIN's activities. Over the last decade, online negotiations via Inspire have been regularly conducted for students and professionals from different countries. The system has been used to augment and enhance courses. For that purpose, teaching materials, lecture notes, slides and assignments were designed. Participants were asked to consent to the collection of their negotiation transcripts and to fill in pre- and post-negotiation questionnaires. The InterNeg Research Centre did not provide any specific incentive to participants, instead the Centre requested that instructors integrate the Inspire negotiation in their courses and use it and the accompanying report as an assignment.

Most of the Inspire users found the system easy and fun to use. They have enjoyed online discussions with unknown opponents. They were able to use different strategies, learn more about negotiations and negotiation support, and work on their communication and negotiation skills.

To provide participants with real-life-like context and enhance their engagement, several business cases were created. One of the most often used cases that young participants from different countries could relate to was "Yowl-Pop". This case involves a music artist and an entertainment company negotiating a contract. The scenario involves four issues, each of them has several options (<http://invite.concordia.ca/cases/inspireYowlPop.html>). An agreement can be made when the two parties agree upon a contract that contains one option for each issue.

The negotiation process of each Inspire negotiation is divided into three phases: negotiation preparation, negotiation, and post-settlement. Participants were asked to fill in TKI questionnaire, during the negotiation preparation phase. Then, they read the materials related to the case. According to the information contained in the business scenario, they specified their preferences with the issues and options. Before the participants started their negotiations, they were asked to specify the best contract that they may achieve and the worst-but-acceptable contract. In the negotiation and post-settlement phase, the elicited preferences were used to provide decision support to the participants. The utility (score) of the expected and achieved agreements were also measured based on the elicited preferences.

3.2 The Dataset

The participants were paired into dyads; as a rule, students from one university represented one side of the case: either the agent of the musician or the manager of the

entertainment company. In total, 1994 individual observations were obtained after cleaning the data. All the participants of the current study answered the TKI questions. The reported age of the majority sample (i.e., 80.2%) was between 20 and 30. The data were collected from eleven online experiments conducted between 2010 and 2016.

The composition of the data in chronological order is reported in Table 1. The dataset of each online experiment is further decomposed according to gender. Overall, the number of female participants is slightly higher than that of male participants.

Table 1. Participants in the Inspire negotiations

Experiment (year/month)	Age (20–30)	Gender			Total
		Female	Male	Missing	
2010/12	195	116	111	8	235
2011/05	122	58	74	75	207
2011/10	138	67	88	0	155
2012/04	107	66	45	0	111
2013/04	219	109	121	0	230
2013/11	87	70	73	0	143
2014/04	253	177	136	0	313
2014/11	53	34	33	0	67
2015/04	233	164	117	0	281
2015/11	31	28	32	0	60
2016/04	161	115	77	0	192
Total	1599	1004	907	83	1994

4 Results

The TKI has been used for over forty years as an instrument to assess general strength of individual predispositions to conflict situations [5]. Inspire users were asked to fill in TKI questionnaire prior their negotiation preparation activities.

4.1 Comparison of CPP and Inspire TKI Results

The CPP Inc. (<https://www.cpp.com>) developed a report with a normative sample that can be used to guide applications of the TKI instrument and interpretation of its results [18]. The normative sample comprises 8,000 American respondents. The selection of the sample is balanced between males and females. The selection also represents respondents' different levels in organizations, ethnicities, regions of the United States, and so on.

The CPP's normative sample is restricted to the United States. In contrast, the majority of respondents in our dataset are from outside of North America. The comparison of the Inspire sample and the CPP sample was conducted to check for both the consistency and the differences in our dataset and the CPP normative sample. The comparison of TKI raw scores on three level of percentiles is reported in Table 2.

Table 2. TKI raw score comparison of Inspire and CPP samples

Range	Competing		Collaborating		Compromising		Avoiding		Accommodating	
	Inspire	CPP	Inspire	CPP	Inspire	CPP	Inspire	CPP	Inspire	CPP
Top 25%	7–12	7–12	6–12	9–12	10–12	10–12	8–12	8–12	7–12	7–12
Middle 50%	3–6	3–6	4–5	5–8	7–9	6–9	5–7	5–7	3–6	4–6
Bottom 25%	0–2	0–2	0–3	0–4	0–6	0–5	0–4	0–4	0–2	0–3

TKI adopts a forced-choice approach, in which respondents have to make choices between 30 pairs of statements [13]. The choices of the respondents are counted to form the raw TKI scores. The TKI percentile scores are obtained by rescaling the raw score within a sample.

Table 2 shows that the raw scores in competing, compromising, accommodating, and avoiding modes at the top 25% are the same as those of CPP. The scores between 0% and 25%, and between 25% and 75% percentile are close to those of CPP normative sample. The only difference is the collaborating predisposition. Strong collaborating predisposition (i.e. 75%–100%) has a wider score range for the Inspire negotiators than for the CPP sample, i.e., 6–12 vs. 9–12. In contrast, weak collaborating predisposition has narrower score range for Inspire sample than for the CPP sample, i.e., 0–3 vs. 0–4. The score range for medium collaborative predisposition is much narrower for Inspire data than for CPP data, 4–5 vs. 5–8. The comparison results indicate fairly good reliability and validity of TKI in the current research setting.

Possible factors behind this difference include culture, age, occupation, and place of residence. The majority of respondents in our dataset are younger than those in CPP normative sample. Most of them are students from different global regions rather than from the US only. Unfortunately, it is not possible to explore which is the key factor that causes the differences.

4.2 The Effects of TKI on Negotiation Effort and Aspiration

The correlations of TKI scores with a set of measures are examined here in order to determine the effect of TKI scores on the negotiators' aspirations before the negotiations and their effort during the negotiations.

We selected the following four variables to represent the effort: the number of offers, the number of messages, negotiation time, and the length of messages (i.e., the no. of characters). The correlations are given in Table 3.

The negative and significant correlation between the competing score and the number of messages indicates that negotiators with strong competing predisposition tend to send fewer messages. This result also suggests that negotiators with strong competing predisposition may spend less effort persuading their counterparts, since persuasion can only take place in messages in their negotiations. In contrast, negotiators with strong collaborating predisposition tend to send more and longer messages, since the collaborating score significantly correlates with both the number of messages

Table 3. The correlation of TKI scores with process and aspiration

TKI Mode	Effort				Agreement (score)	
	Number of C offers	No. of messages	Nego. time (hours)	Length of messages	Expected best	Worst acceptable
Competing	.017	-.050*	.027	.010	-.002	.021
Collaborating	-.001	.063**	.014	.048*	.030	.041
Compromising	-.081**	.036	.020	.038	.043	.025
Avoiding	.048*	-.027	-.052*	-.043	.016	.005
Accommodating	.012	.023	-.018	-.043	-.078**	-.066**

*significant at the 0.05 level (2-tailed); **significant at the 0.01 level (2-tailed).

and the length of messages. This result indicates that these negotiators put more effort in persuading their counterparts.

The compromising score significantly and negatively correlates with the number of offers, which suggests that the negotiators with strong compromising predisposition send fewer offers. This result also suggests that these negotiators were more likely to wait for their counterparts to propose offers and then they could consider whether the offers were acceptable.

The avoiding score correlates positively with the number of offers and negatively with negotiation time. This result suggests that the stronger the avoiding predisposition of a negotiator, the more offers will be sent but less time will be spent. These negotiators tend to interact less with their counterparts, while they tried more offers that were more substantive to potential agreement.

The correlations between TKI scores and the utility value of the expected best contract and the utility value of the worst contract that negotiators expected were tested. These two values reflect the negotiators' aspiration levels regarding their negotiation. The correlations show that the accommodating score negatively correlates with the expected agreement score and the score of the worst acceptable agreement.

4.3 Relationship Between Negotiators' Predispositions and Agreements

Both the raw scores and percentile scores of the five predispositions are not independently measured in TKI. Thereby, these scores cannot be used as regular variables. The relative strength of the five predispositions determines the general characteristic of a person in terms of their approach to conflicts.

Given the specifics of TKI, the current study uses its scores as dependent variables when examining their potential influence on agreement. A Kruskal-Wallis test was conducted to compare the TKI percentiles of the five scores between two groups: (1) without-agreement group (i.e., 289 members did not reach agreement) and (2) with-agreement group (i.e., 1705 members reached an agreement). The significant difference between the two groups indicate the potential influence of the five predispositions. The test results are presented in Table 4.

The results show that the two groups significantly, albeit weakly, differ in terms of the compromising score at 10% level. There is no significant difference between scores

Table 4. Comparison of TKI scores between with- and without-agreement groups

TKI Mode	Agreement	Mean rank	Significance
Competing	No	1043.14	.143
	Yes	989.76	
Collaborating	No	955.27	.172
	Yes	1004.66	
Compromising	No	938.72	.058
	Yes	1007.46	
Avoiding	No	981.48	.606
	Yes	1000.22	
Accommodating	No	1031.98	.267
	Yes	991.66	

for the other predispositions. This result indicates that the stronger the negotiators' compromising predisposition the more likely they are to achieve an agreement.

The influence of TKI score is further examined by checking correlations with the achieved agreement utility for the with-agreement group. The correlations are reported in Table 5. The competing score significantly and positively correlates with agreement utility, which suggests that the stronger the competing predisposition, the greater the utility value of the agreement. On the other hand, the accommodating score significantly but negatively correlates with agreement utility. This suggests that the more accommodating the negotiators are, the lower utility value they achieved in their agreements. Since, most, if not all, agreements require compromise this result is consistent with our expectations.

Table 5. The correlation of TKI scores with agreement utility

TKI mode	Agreement utility
Competing	.062*
Collaborating	.011
Compromising	.003
Avoiding	.007
Accommodating	-.091*

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

4.4 Tests Aligned with the Triangle Hypothesis

The adaptation of the collaborating negotiators when they negotiate with competitive counterparts, was first mentioned by [19] and confirmed in experiments conducted by Kelley and Stahelski [2], Weingart et al. [20], and others. The triangle hypotheses posit that collaborating negotiators view the negotiation world as comprising of both collaborating and competing negotiators, while competing negotiators see only competing negotiators. This is because collaborating negotiators modify their behavior; when their counterparts compete; the cooperative negotiators will adapt and compete as well.

Competing negotiators, however, do not adapt their behavior; they compete with both collaborating and competing counterparts.

The competing and collaborating TKI scores indicate personal predispositions to be collaborating or competing when individuals handle conflicts. Several tests of competing and collaborating TKI scores aligned with the triangle hypotheses were conducted. The tests were carried out by coding negotiation instances based on the TKI scores of the dual parties. Only the dyads where both parties had TKI scores were selected. TKI scores were firstly used to code individual negotiators' profiles by following the suggestion of Shell [7]. The 75% percentile was used as the cut-off point. TKI scores that are above 75% were coded as indicators that the individual would behave strongly in the respective modes. For instance, if an individual has the following set of TKI scores: competing – 8, collaborating – 5, compromising – 7, accommodating – 6, and avoiding – 4, then this set of scores was first converted to percentiles, i.e., competing – 82%, collaborating – 45%, compromising – 24%, accommodating – 47%, and avoiding – 36%. This individual was then profiled as being strong in competing because only the competing percentile is above 75%.

It is possible that some individuals are strong in both competing and collaborating modes. These negotiators' profiles were temporarily coded as a special case, in which the negotiators' profiles depend on their counterparts. If their counterparts were strong in the competing mode, the negotiators were profiled as competing. If their counterparts were strong in the collaborating mode, the negotiators were profiled as collaborating as well. This coding rule aligns with the propositions of triangle hypotheses.

The coded individual negotiators' profiles were used to further code negotiation instances. For instance, a negotiation instance will be coded as “collaborating-collaborating” if both parties are strong in collaborating mode. Competing-competing indicates that both parties are strong in competing mode. Competing-collaborating suggests that one party is strong in competing mode, while the other party is strong in collaborating mode. The instances were coded as “other” when any party was not profiled as being strong in either collaborating or competing mode. The coded instances were grouped giving their profiles. The between-group differences in terms of agreement were then tested and the results are presented in the Table 6.

Table 6. Instance profiles and agreements

Dyads	Agreement			Sum
	No	Yes	Rate	
Collaborating-collaborating	7	57	89.1%	64
Competing-collaborating	13	50	79.4%	63
Competing-competing	8	41	83.7%	49
Other	112	703	86.3%	815
Total	140	851	85.9%	991

The collaborating-collaborating group has the highest agreement rate, i.e., 89.1%, while the competing-collaborating group has the lowest agreement rate, i.e., 79.4%. A Chi-square test was conducted with the cross-tab approach to examine whether the agreement rate differs between groups. No significant effect was found ($p = 0.387$).

The “other” group was then filtered out after the test. A non-parametric median test was then conducted to examine the difference in terms of joint performance of agreements between groups (i.e., the three groups were profiled in terms of being collaborating and competing). Two measures were adopted in this test, including the number of dominating packages and the joint utility of agreement. The joint utility of agreement was calculated as the product of the two parties’ individual utility in each negotiation (Table 7).

Table 7. Instance profiles and joint utility

Joint utility	Dyads		
	Collaborating-collaborating	Competing-collaborating	Competing-competing
>Median	20	30	24
<=Median	37	20	17
Ratio	0.54	1.5	1.41

No significant effect was found in terms of the number of dominating packages. The results show that the collaborating-collaborating group has a significant number of instances with their joint utilities below median ($p = 0.016$). This finding contradicts the expectation that collaborating-collaborating dyads should achieve better performance. The results are visualized with a box-plot shown in Fig. 1. The box-plot shows that the collaborating-collaborating group has no more observations of high joint utilities than the other two groups.

These results partially confirm the results of earlier studies in which participants negotiated face-to-face [10, 20, 21].

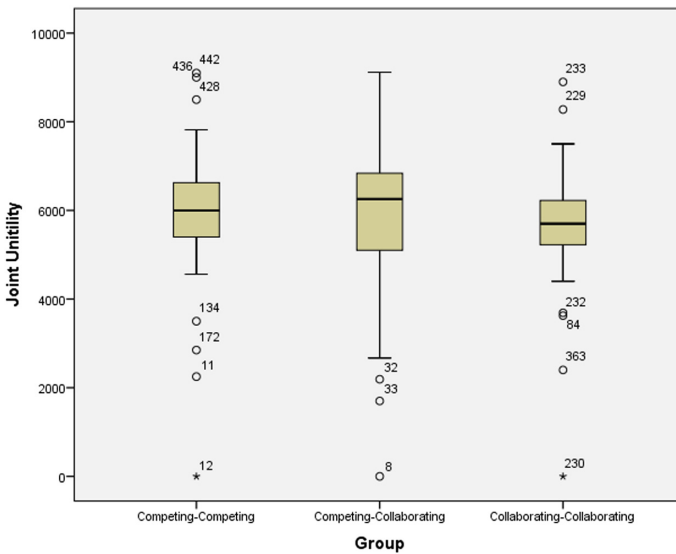


Fig. 1. Plot of instance profiles and instance joint utility

5 Conclusions

This study explores the effects of individual predispositions of handling conflict in negotiations by using TKI. It demonstrates that individual predispositions to resolution of conflict influence negotiations in many ways.

The obtained results indicate that individual predispositions influence the negotiation process. The higher the negotiators' competing scores, the fewer messages they sent to their counterparts. In contrast, the higher the negotiators' collaborating scores, the more and longer messages they sent. This suggests that competitive negotiators are less interested in establishing rapport with their counterparts and educating them. Instead, they are focused on achieving high substantive outcomes.

Negotiators with higher avoiding scores were found to send more offers, while achieving the compromise in shorter time than other negotiators. We also found that compromising scores have negative impact on the number of offers. This suggests that strongly compromising negotiators are less interested in the offer exchange process.

We found that individual predispositions can influence whether an agreement will be reached. Negotiators who reached an agreement had stronger compromising predisposition than those who failed to obtain an agreement. Understandably, negotiators who had stronger accommodating predisposition achieved lower agreement utility. Negotiators who had strong collaborating predisposition did not outperform others in terms of either agreement rate or the utility values of achieved agreements. These negotiators put more effort into their negotiations but their efforts did not produce better results than the results achieved by other participants. Negotiators with stronger competing predisposition achieved higher agreement utility. During the process, they sent fewer messages; this could have helped them to focus on extracting value from their counterparts.

The agreement rate and the performance of negotiation dyads profiled with the combination of strong-to-medium competing and collaborating predispositions of the paired negotiators were also examined. It was found that negotiation instances with both parties having high collaborating scores did worse as compared with the instances with either both parties having high competing scores or the dyads composed of one party with high competing score and the other party with high collaborating score. These findings confirm results of earlier experiments that collaborative dyads more often accept inefficient agreements than competitive dyads [22, 23].

In summary, this study confirms the usefulness of the Thomas-Kilmann Instrument which can be effectively used to characterize individual predispositions. While the predispositions are general in the sense that people behave differently in different situations (e.g., they may compete in one negotiation and collaborate in another), we have shown that the strength of the predispositions affect the participants who face an identical negotiation problem. The impact of the predispositions on the expectations, efforts and agreements may be used in teaching. It may also be used in practice; negotiators may be able to assess their counterparts based on the latter focus on offers and/or argumentation.

A limitation of the current study is that most of our participants were young students. Therefore, their negotiation, judgement, and decision-making behaviors

represents closely the young population group. However, the findings of the current study are still applicable to other population groups, if individual predispositions of handling conflicts indeed have impacts on negotiators behaviors. The predispositions are often stable and evolve slowly over time. Future research may reveal more insights into the influence of individual predispositions on negotiation processes and outcomes. The effort and benefit analysis introduced here may be further elaborated. Negotiators may wish to obtain greater benefits with less effort. In the current study, multiple TKI scores (e.g., competing and collaborating) have significant impact on negotiation process and outcome. The application of the enhanced effort and benefit analysis may yield interesting results.

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