

A Pilot Study to Examine the Conflict Handling Preferences of Health Professional Students before and after Participation in an Interprofessional Education and Collaborative Practice (IPECP) Initiative

Daniel G. Dominguez, Patricia C. Sanchez-Diaz, David S. Fike, Monica N. Ramirez, Matthew E. Walk, Helmut Gottlieb, Ramona A. Parker

Dominguez, DG, Sanchez-Diaz, PC, Fike, DS, Ramirez, MN, Walk, ME, Gottlieb, H, Parker, RA. (2016). A Pilot Study to Examine the Conflict Handling Preferences of Health Professional Students before and after Participation in an Interprofessional Education and Collaborative Practice (IPECP) Initiative. *Health, Interprofessional Practice & Education* 3(1):eP1093. Available at: <https://doi.org/10.7710/2159-1253.1093>

© 2016 Dominguez et al. This open access article is distributed under a Creative Commons Attribution License, which allows unrestricted use, distribution, and reproduction in any medium, providing the original author and source are credited.

HIPE is a journal published by Pacific University | ISSN 2641-1148

A Pilot Study to Examine the Conflict Handling Preferences of Health Professions Students Before and After Participation in an Interprofessional Education and Collaborative Practice (IPECP) Initiative

Daniel G. Dominguez PhD, MHA *Master of Health Administration, University of the Incarnate Word*

Patricia C. Sanchez-Diez DVM, PhD *School of Optometry, University of the Incarnate Word*

David S. Fike PhD *School of Education, University of the Incarnate Word*

Monica N. Ramirez PhD, RN *Nursing Program, University of the Incarnate Word*

Matthew E. Walk DPT *School of Physical Therapy, University of the Incarnate Word*

Helmut Gottlieb PhD *Pharmaceutical Sciences, University of the Incarnate Word*

Ramona Ann Parker Ed.M., PhD, RN *School of Osteopathic Medicine, University of the Incarnate Word*

Abstract

INTRODUCTION A hallmark of interprofessional teams is the ability to deal with conflict, thus a fundamental component of interprofessional education is the ability to address and resolve conflict. This pilot study investigated the association between an interprofessional education and collaborative practice (IPECP) experience and the conflict handling modes of students from five health professions programs.

METHODS The Thomas-Kilmann Conflict Mode Instrument (TKI) was used to assess 88 IPECP health professions students (health management=9, nursing=19, pharmacy=36, physical therapy=12, and optometry=12). Pre- and post-intervention changes in student TKI percentiles were evaluated using paired t-tests and one-way analysis of covariance (ANCOVA). IBM SPSS 22 was used for statistical analyses with .05 as cutoff value for significance.

RESULTS After the IPECP intervention, in aggregate, participants were less likely to prefer avoiding as a means of handling conflict ($t(87) = 3.43, p = .001$). Using a one-way ANCOVA, degree program ($p = .016$) and gender ($p = .008$) were significantly associated with changes in compromising handling mode percentile scores.

DISCUSSION The decrease in the avoiding percentile suggests that, post-intervention, students were more willing to engage in conflict, thus, increasing their overall preference for the more assertive and cooperative dimensions of the TKI model.

CONCLUSION Though results are preliminary, they suggest that an interactive and patient-centered IPECP may be associated with the development of effective conflict handling skills among health professions students.

Received: 09/09/2015 Accepted: 08/22/2016

© 2016 Dominguez et al. This open access article is distributed under a Creative Commons Attribution License, which allows unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Implications for Interprofessional Practice

- Participation in a highly interactive interprofessional education and collaborative practice program may influence the conflict handling preferences of health professions students.
- Among health professions students, interprofessional education may be associated with a decrease in the use of avoidance as a strategy for handling conflict.
- The Interprofessional Education Collaborative core competencies may offer an appropriate framework for the development of effective conflict handling skills within the context of a hybrid interprofessional education and collaborative practice educational model.
- Further research is warranted to investigate and clarify the associations between conflict handling modes, degree program, and gender. A deeper understanding of these associations may lead to more student-specific curriculum design.

Introduction

Health professions education is in the midst of significant transformation as policy makers, employers, accreditors, and educators seek to develop practitioners who are prepared to work effectively as members of interprofessional teams. Today's health professionals must be able to integrate the exponential growth of knowledge and technologies within the context of increased professional differentiation and the provision of multifaceted care in a variety of practice settings (Frenk et al., 2010). In this increasingly complex environment, effective patient management and treatment requires unprecedented levels of teamwork and the ability to effectively handle conflict (Benner, Sutphen, Leonard, & Day, 2010; Cooke, Irby, O'Brien, & Shulman, 2010; Frenk et al., 2010; Bandiera, Sherbino & Frank, 2006).

Literature Review

Handling Conflict on Interprofessional Teams

A fundamental collaborative competency of interprofessional teams is the ability to address and resolve conflict (Barr, 1998; Thomas & Thomas, 2004). Bandiera, Sherbino & Frank (2006) support this assertion, stating that the ability of team members to effectively

collaborate to prevent, negotiate, and resolve interprofessional conflict is considered a key aspect of interprofessional care.

Conflict engagement is an essential precursor to collaboration and most team members have a preferred manner of addressing conflict (Kriteck, 2011; Thomas & Thomas, 2004). Thomas and Thomas (2004) have conducted extensive research on conflict engagement and have found that team members select different approaches to addressing conflict in an attempt to contribute to team effectiveness based in part on their perceptions of the conflict and the value they place on the possible outcomes of addressing the conflict. Thomas and Thomas (2004) go on to describe the underlying factors that motivate the use of the five conflict handling modes identified and assessed by the Thomas-Kilmann Conflict Mode Instrument (TKI). Additionally, they emphasize the importance of team members not only understanding their own preferences with regard to conflict handling but also those of their teammates. Finally, they advocate for an understanding of the strengths and weaknesses of each style of handling conflict as a means of increasing a team's repertoire of conflict handling skills and ability to match those skills to a given situation appropriately.

The Thomas-Kilmann Conflict Mode Instrument (TKI)

The TKI is a forced-choice questionnaire of 30 pairs of statements describing possible behavioral responses in conflict situations (Thomas & Kilmann, 2007). It was developed in the early 1970s and is based on the model of the conflict styles of managers advanced by Blake and Mouton (1964). Within the TKI model, an individual's behavior when confronted with conflict is measured on the two dimensions of assertiveness and cooperativeness and is described by five modes of handling conflict (Kilmann & Thomas, 1977). (See Thomas & Kilmann, 2015 for link to an overview and graphical depiction of the model.) As put forth by Thomas and Kilmann (2007), assertiveness is defined as the extent to which one tries to satisfy his or her own concerns, and cooperativeness is defined as the extent to which one tries to satisfy other people's concerns. Further, within their model, the five modes of handling conflict are: competing (assertive and not cooperative), collaborating (assertive and cooperative), compromising (in the middle on both dimensions), accommodating (cooperative and not assertive), and avoiding (neither assertive nor cooperative).

Using the TKI, Sportsman and Hamilton (2007) found that allied health students were most likely to prefer avoiding and that nursing students were most likely to prefer compromise followed by avoiding. Also, using the TKI in a descriptive study of undergraduate nursing students, Pines et al. (2012) found that the majority of the participants were more likely to use avoiding and accommodating and were less likely to use competing or collaborating strategies to manage conflict. With the exception of these two studies, there have been no studies that describe the conflict management preferences of students in optometry, pharmacy, physical therapy, and health administration, especially within the context of an interprofessional education and collaborative practice (IPECP) program.

Interprofessional Healthcare Care Team Effectiveness

In 2003 an Institute of Medicine (IOM) report described four key processes necessary for effective interprofessional teams: communication, cooperation, coordination, and collaboration. In 2011, the Interpro-

fessional Education Collaborative Expert Panel (IPEC), defined interprofessional collaboration as a process that promotes communication in practice across discipline boundaries and involves a conscious recognition of the contributions of various health care professionals in patient care. This definition supports the work of Bandiera, Sherbino, and Frank (2006) who note that effective collaboration requires team members to work with other health professionals to prevent and resolve interprofessional conflict. Finally, Baldwin, and Daugherty (2008) note that collaboration within teams is predicated on the ability of individual team members to communicate effectively around issues of agreement and disagreement.

Purpose

The purpose of this pilot study was to examine the pre- post-intervention differences in conflict handling preferences among a sample of health professions students, from health administration, nursing, optometry, pharmacy, and physical therapy, who participated in a university-based IPECP initiative.

Methods

Research Design and Setting

This IRB-approved study used a quasi-experimental design to examine the association between an IPECP experience and the conflict management preferences among a sample of health administration, nursing, optometry, pharmacy, and physical therapy students from a private, faith-based university in the Southwest United States. The IPECP experience (Parker, Gottlieb, Dominguez, Sanchez-Diaz, & Jones, 2015) was designed to prepare the above health professions students for interprofessional collaborative practice. The 36 hour, two-component, experience was delivered to six cohorts of health professions students. Though assisted at times by other faculty, six individuals designated by their schools as interprofessional faculty facilitated the IPECP experience over the three year period of the study. The same six faculty were responsible for recruiting students from their respective schools. (Note: the school of pharmacy was represented by two faculty members and the remaining four schools by one.)

IPECP Experience

Didactic Component. The IPECP experience included a didactic and a clinical component. The didactic component was 12 hours in duration and was delivered over a six week period for each cohort. This component consisted of a series of face-to-face and online activities developed around the core competencies of IPECP (IPEC, 2001). In the first session of the didactic component, aggregate TKI percentile scores for the members of that cohort were presented, and effective and ineffective uses of each of the five conflicting handling modes were discussed. Student participants were also provided an opportunity to reflect on their personal conflict handling preferences. (Each student received an individualized report of their conflict handling preferences after completing the TKI assessment.) Finally, while working within their interprofessional teams, students were asked to identify and discuss appropriate ways to address conflict through the use of a case that was set within the context of a primary care setting.

Clinical Component. Successful completion of the didactic component was a prerequisite for students to enroll in the 24 hour clinical component of the IPECP experience. In the clinical component, interprofessional student teams worked under the guidance of an interprofessional faculty practice team at a partnering primary care clinic. The teams planned for and treated primary care patients.

Study Sample

The six interprofessional faculty noted above were responsible for defining the requirements used during student recruitment from their respective schools for participation in the IPECP experience. A key inclusion criterion for participation in the IPECP experience was that the student had to be at a point in their education that would allow them to engage in patient care when participating in the clinical component of the IPECP experience (e.g. last semester for undergraduate nursing students, second year for physical therapy and health administration students, and third year for optometry and pharmacy students).

The recruitment goal was five students per academic

program for a minimum of 25 students per cohort. Each cohort had at least 25 students who began the IPECP experience for a total of 225 participants over the three year period of the study. Of the 225, only 108 participated in the clinical component of the IPECP experience—a requirement for being a participant in this study. The primary reason that the number of participants decreased significantly between the didactic and the clinical component was due to issues related to academic program scheduling and student availability. This is also the reason for the variability in the number of students in each cohort included in our analysis, i.e., depending on semester, student availability to complete both components of the IPECP experience varied considerably. As shown in Table 1, the number of study participants ranged from five in Cohort 6 to 24 in Cohort 4. In addition to sample size and academic semesters for both the didactic and clinical components, Table 1 also includes the average age, gender, ethnicity, year in program, and degree program for each of the six study cohorts.

Student schedule and availability also influenced completion time of the 24 hour clinical component in that some students were able to complete both the educational and clinical components in as few as three and others in as many as six months. As such, the time between pre- and post-TKI assessment was between three and six months.

For the reasons noted above, a total of 108 students completed the two part IPECP experience and therefore met the criteria to be included in this study. Of the 108 students completing the IPECP experience, 20 either declined to participate in the study or did not complete the post-assessment. As such, 88 students (9 health administration, 19 nursing, 12 optometry, 36 pharmacy, and 12 physical therapy) completed the pre- and post- IPECP Thomas-Kilmann Conflict instrument and consented to be included as participants in this study. Table 2 summarizes the demographic characteristics of the 88 students included in this study. Demographic data for the study group included age, gender, ethnicity, degree, year in the program, and previous IPE experience.

Sample size requirements were calculated using G*Power 3.1.7. For paired t-test alpha = .05, power = .80 and moderate effect size ($d = .50$), a sample size of 34 was required. For ANCOVA analyses with 5 groups, alpha = .05, power = .80 and large effect size ($f = .40$), a sample size of 80 was required. The sample size for this pilot study was 88.

Table 1: Sample Size and Demographic Data for Study Cohorts

Participants by Cohort (sample size) IPECP Didactic and Clinical Semesters	Age Mean (SD)	Gender		Ethnicity ^a				Number of Participants by Program Year				Health Profession Program					
		Male	Female	AA	A/PI	C	H	Other	1st	2nd	3rd	4th	Nursing	Health Adminis- tration	Optometry	Pharmacy	Physical Therapy
Cohort 1 (n=20) Fall 2012 – Spring 2013	29.35 (8.19)	5	15	3	6	6	4	1	0	5	8	7	5	5	5	5	0
Cohort 2 (n=13) Spring 2013 – Summer 2013	32.69 (8.40)	5	8	0	4	3	5	1	2	3	8	0	3	2	3	5	0
Cohort 3 (n=12) Summer 2013 – Fall 2013	28.00 (6.80)	1	11	3	2	2	5	0	-- [‡]	-- [‡]	-- [‡]	-- [‡]	1	0	1	5	5
Cohort 4 (n=24) Fall 2013 – Spring 2014	24.68 (3.47)	5	19	2	2	12	8	0	0	10	10	4	9	0	0	10	5
Cohort 5 (n=14) Spring 2014 – Summer 2014	26.21 (4.96)	3	11	2	1	7	3	1	3	7	4	0	1	1	2	8	2
Cohort 6 (n=5) Fall 2014 – Spring 2015	23.80 (1.60)	1	4	0	2	2	1	0	0	2	3	0	0	1	1	3	0
Total (88)	27.49 (6.80)	20	68	10	17	32	26	3	5	27	33	11	19	9	12	36	12

^aAA: African-American; A/PI: Asian/Pacific Islander; C: Caucasian; H: Hispanic

[‡]Not reported by that cohort

Table 2: *Student characteristics (N = 88)***Study Participants**

Age	M = 27.44, SD = 6.8
Gender	
Male	20 (22.72%)
Female	68 (77.28%)
Race/Ethnicity	
African American	10 (11.36%)
Asian/Pacific Islander	17 (19.31%)
Caucasian	33 (37.5%)
Hispanic	26 (29.54%)
Other	2 (2.27%)
Degree Program	
Health Administration	9 (10.22%)
Nursing	19 (21.6%)
Optometry	12 (13.63%)
Pharmacy	36 (40.89%)
Physical Therapy	12 (13.63%)
Year in Program	
First	5 (5.68%)
Second	25 (28.4%)
Third	33 (37.5%)
Fourth	11 (12.5%)
Not reported	14 (15.9%)
Previous IPE experience	
Yes	11 (12.5%)
No	40 (45.45%)
Not reported	37 (42.04%)

Table 3: *TKI mode percentile scores pre- and post-IPECP intervention (N=88)*

TKI Mode	Pre-IPECP Percentile	Post-IPECP Percentile
	Mean (SD)	Mean (SD)
Accommodating	56.24 (29.77)	55.42 (26.75)
Avoiding^a	57.72 (24.38)	46.09 ^a (27.31)
Collaborating	42.20 (27.40)	39.64 (28.57)
Competing	40.84 (29.51)	42.90 (29.08)
Compromising	58.06 (27.57)	55.16 (28.28)

^aPaired t-test ($t(87) = 3.430, p = .001$)

Data Collection

The Thomas-Kilmann Conflict Mode Instrument (TKI) was the primary data collection tool used in this research. The TKI was administered twice to measure pre- post-IPECP differences in student conflict handling preferences. The first administration was prior to participation in the didactic component of the IPCEP program. The second administration of the TKI was promptly after completion of the clinical component and took place no later than six months after its first administration. Data for six demographic variables listed above was also collected prior to participation in the didactic component of the IPCEP experience.

Raw scores on the TKI ranged from zero to 12 for each of the five conflict handling modes. They were converted to percentile scores and categorized as “low” (below the 25th percentile), “medium” (25th to 75th percentile), and “high” use (above the 75th percentile) based on a normative sample of men and women ages 20 through 70 years (Thomas & Kilmann, 2007). The TKI has test-retest and internal consistency reliabilities ranging from .61 to .68 (Kilmann & Thomas, 1977). Walker reported coefficient alphas (as cited in Sportsman and Hamilton, 2007) for competing of .87, accommodating of .73, avoiding of .69, collaborating of .84, and compromising of .76 after creating a Likert-type scale of the TKI.

Data Analysis

IBM SPSS 22 (IBM Corp, Armonk, NY) was used for statistical analysis. Data were analyzed using descriptive statistics (frequencies, means, and standard deviations). Paired t-tests were used to evaluate within-group (pre to post) differences in conflict handling preferences. Between-group differences were evaluated using analysis of variance (ANOVA) and analysis of covariance (ANCOVA). For ANCOVA pre-intervention scores were used as the covariate to adjust for differences in baseline scores. For all analyses, the *a priori* level of significance was .05.

Results

Pre-post-intervention differences in conflict handling mode preferences

As shown in Table 3, the average “avoiding” TKI percentile score for the 88 students changed from $M = 57.72$, $SD = 24.38$ pre-intervention to $M = 46.09$, $SD = 27.31$ post-intervention (paired t-test; $t(87) = 3.43$, $p = .001$, 95% CI [-18.36, -4.89], Cohens $d = .37$). No statistically significant changes were observed for the other four conflict handling modes (accommodating, collaborating, compromising, or competing).

Additional factors associated with adjusted post-intervention TKI conflict handling percentile scores.

A one-way ANCOVA was used for each of the independent variables listed in Table 2 to identify additional factors that might be associated with the observed changes in conflict handling preferences. Of these only degree program ($p = .016$) and gender ($p = .008$) were found to be significantly associated with adjusted mean post-intervention percentile scores for compromising. With regard to degree program, Bonferroni *post hoc* analysis indicated that nursing students ($M = 71.49$, $SE = 5.90$) had a significantly higher ($p = .04$) compromising percentile score when compared to optometry students ($M = 43.39$, $SE = 7.43$). With regard to gender, females ($M = 59.28$, $SE = 3.17$) had a significantly higher ($p = .008$) adjusted mean post intervention percentile score for compromising when compared to males ($M = 41.17$, $SE = 5.87$). The statistically significant results are summarized in Table 4.

Table 5 provides descriptive statistics for the pre- and post-intervention percentiles by conflict mode and profession for the population sample. It is important to note that the differences within, and among, schools are not statistically significant. As such, this information is not included in our discussion of study findings but is instead provided for the benefit of those interested in this information as it relates to the professions involved in this pilot study.

Table 4: Table 4: Summary of Statistically Significant Changes in Health Professional Student Conflict Handling Preferences after IPECP Intervention

Variable	TKI Conflict Handling Mode	
	Avoiding	Compromising
Student participants as a group	In aggregate participants were less likely to prefer avoiding post intervention ^a	
Degree program		Nursing students' post intervention percentile scores were higher than optometry students ^b
Gender		Female students' post intervention percentile scores were higher than male students ^c

^a Paired t-test ($p = .001$)

^b ANCOVA ($p = .016$)

^c ANCOVA ($p = .008$)

Table 5: Pre- and Post-Intervention TKI Percentile Mean and (Standard Deviation) Scores by Program

	Avoiding		Competing		Compromising		Collaborating		Accommodating	
	Pre	Post								
Health Administration (n=9)	63.44 (17.00)	55.56 (27.00)	58.78 (26.20)	65.22 (33.20)	63.33 (33.30)	45.11 (24.10)	27.00 (23.50)	46.56 (23.30)	41.11 (28.40)	35.22 (30.96)
Nursing (n=19)	58.89 (23.90)	41.47 (22.90)	27.79 (24.10)	29.37 (27.00)	59.32 (26.00)	71.89 (24.90)	47.58 (30.50)	41.63 (28.30)	62.95 (24.75)	63.89 (24.56)
Optometry (n=12)	60.25 (17.90)	44.00 (23.20)	37.75 (35.70)	40.58 (24.50)	54.25 (29.60)	42.17 (30.10)	40.58 (28.30)	50.67 (30.10)	64.17 (36.10)	66.58 (25.60)
Pharmacy (n=36)	55.66 (26.00)	47.66 (28.80)	43.71 (29.70)	45.00 (28.90)	59.03 (29.70)	51.29 (27.50)	43.43 (27.50)	39.11 (28.90)	52.09 (30.90)	53.80 (25.10)
Physical Therapy (n=12)	53.71 (30.60)	43.29 (33.00)	41.00 (27.10)	44.64 (25.50)	50.14 (22.80)	55.86 (30.50)	46.79 (26.80)	28.64 (32.60)	63.14 (26.70)	51.86 (25.20)

Discussion

The purpose of this pilot study was to examine the pre- post-intervention differences in the conflict handling mode preferences of a sample of health professions students who participated in an IPECP initiative. The results of this pilot study indicate that, as a whole, participants were less likely to prefer avoiding as a means of handling conflict after the IPECP intervention. Our results also indicated that two demographic factors were significantly associated with post-IPECP differences in conflict handling preferences among the participants. The latter findings centered on post-IPECP intervention differences in the preference for compromising as a means of addressing conflict. Specifically, when compared to optometry students, nursing students were more likely to prefer compromising as a means of handling conflict and females were more likely to prefer compromising compared to males. Although there were some changes in the structure and content of the face-to-face sessions and in the clinical setting as the IPECP experience evolved and the faculty adjusted to working together, this did not result in statistically significant differences among the different cohorts. Moreover, as previously noted, we did not find significant differences in TKI changes associated with age, ethnicity, year in the program, or previous IPE experience.

Avoiding. Though preliminary, the most encouraging finding is the overall reduction, on the part of study participants, in the preference for using avoiding as a means of handling conflict. There are certainly times when it is appropriate to avoid conflict, such as when more pressing issues must be addressed, when the issue is unimportant, or when the parties involved require time to regain composure or perspective (Thomas & Thomas, 2004). However, there are other times when it would be more appropriate to address the conflict through one of the other four TKI conflict handling methods. For example, there are situations within the context of team-based care in which choosing to avoid conflict may actually allow harm to come to a patient (e.g. administration of the wrong medication). In such a case, the appropriate means of addressing conflict is competing (i.e. a team member must insist that a procedure be stopped to ensure patient safety).

Still, in electing to address conflict, team members must be willing to expend the time and psychological energy necessary to identify and address the source(s) of the conflict (Thomas, 2002). As such, team members must perceive a benefit to engaging in conflict before they will invest the time and energy in addressing the conflict.

In this pilot study, the aggregate post-intervention decrease in the preference for avoiding as a means of addressing conflict may suggest that after the IPECP experience students were more willing to address situations that involved conflict than prior to the intervention. This possibility is especially encouraging as the IPECP intervention employed in this research was centered upon the treatment of complex patients in a primary care setting which, as discussed below, results in a clinical setting where conflict abounds.

In the context of primary care, the potential for conflict (i.e. the struggle between interdependent parties who perceive incompatible goals and interference from the other party in accomplishing their goals is increased) (Wilmot & Hocker, 2005). This is particularly true in situations involving multiple treatment interventions (typical in the case of chronic care patients) as they often result in differences in opinion regarding treatment priorities and care plans (Brown et al., 2011). These differences in opinion serve to amplify conflict which, if unaddressed, can hinder the function of teams, decrease their effectiveness, and negatively impact patient care (Drinka & Clark, 2000; Grumbach & Bodenheimer, 2004). However, if conflict is well managed, different perspectives from varied health professionals can facilitate a shared decision making process to more effectively and efficiently serve patients.

As previously noted, the ability to effectively collaborate and resolve interprofessional conflict in the context of an interprofessional team is dependent on high quality problem-solving and communication (Bandiera et al., 2006; Gittel et al., 2008; Baldwin & Daugherty, 2008). Though further research is clearly warranted, the IPEC core competency framework and the highly interactive problem-solving approach used in this pilot study, coupled with an understanding of their own preferences for handling conflict, may have helped students better understand the importance of addressing patient

care issues, as well as, the different approaches to doing so as members of an interprofessional team. Further, participation in the clinical component of the IPECP may have provided students the opportunity to develop their conflict handling skills as they were allowed to observe and participate in the provision of interprofessional care. Combined, these experiences may have increased the students' willingness to expend the time and energy necessary to address conflict rather than avoid it.

Compromising. Another example of when avoiding conflict would be inappropriate is when work must continue and reaching a temporary settlement is necessary, when fairness is an important consideration, or when the parties involved reach dead-lock (Thomas & Thomas, 2004). In these situations, compromising might be the best approach as a mutually acceptable solution that partially satisfies the needs of the involved parties and will allow important work to move forward.

As previously noted, Sportsman and Hamilton (2007) found that nursing students were most likely to prefer compromise as a means of addressing conflict. This finding also holds true in our pilot study based on post-intervention mean scores (See Table 5). Moreover, though the nursing students' post-IPECP TKI percentile score (71.89) was only statistically higher than that of optometry students at 42.17, it was also higher than each of the other student groups based on our sample descriptive statistics.

Thomas and Thomas note that each style of managing conflict comes from an attempt to make a positive contribution to team effectiveness. Further, that those who favor compromise are often motivated by the desire to be a force for moderation, balance, and fairness on their teams (2004). Finally, that compromisers are helpful in finding fair and workable solutions that put "... less strain on goodwill than does a competitive style and takes less time than does a collaborative style." (p.18). Though further research is indicated, it could be that nursing students as a group perceive themselves as a moderating influence within the group and choose to pursue solutions that are possible, practical, and fair. This perspective might also explain why nursing students' use of the competing mode of handling conflict, both pre- (27.79) and post- (29.37) intervention is the lowest among the student groups.

Other factors that may influence a strong preference for the use of compromise are noted by Brown et al., (2011). These factors include: (1) a lack of motivation to address conflict, (2) avoiding conflict due to the emotional discomfort it might cause, and (3) avoiding conflict due to a lack of power relative to other members of the team. Others add support for the presence of the third obstacle noting that motivation to address conflict is influenced by an individual's perceptions of power and conflict (Janss, Rispen, Segers, & Jehn, 2012).

Gender. Within our population sample the female students' preference for the use of compromising remained virtually unchanged when comparing pre- and post-intervention mean percentile scores at 60.04 and 59.81 respectively. On the other hand, while the pre-intervention mean percentile score for males within our population sample was only slightly lower than for females at 51.30, their post-intervention mean percentile scores decreased 12.05 percentile points to 39.25. The reason for this statistically significant post-intervention difference in the preference for the use of compromising based on gender is unclear, and further research is warranted.

Study Limitations

Although the preliminary results described here are encouraging, this pilot study has factors that limit the generalizability of the results which must be specified. First, the sample consisted of volunteer students who may be more receptive to IPECP than the general health professions student population. Second, the sample while sufficient for the analyses conducted, was relatively small (88 students) and was over represented by females (75%). Third, the sample came from a single university and not all healthcare programs were equally represented. Fourth, there is an inherent limitation regarding the TKI instrument because it measures what students *say they would do* rather than their *actual behaviors* in conflict situations. Fifth, the high pre- and post-conflict handling percentile standard deviation scores suggest that variables other than those included in this pilot study have a bearing on these scores. Sixth, this study did not include a control group to contrast changes in TKI percentiles between health professions students who participated in the intervention and those who did not.

Given the above limitations, we strongly recommend that future research into the factors influencing conflict handling preferences be in the form of a randomized controlled trial with a larger sample size. Ideally, such a study would draw data from several universities.

Conclusion

A hallmark of collaborative interprofessional teams is the ability and willingness to resolve interprofessional conflict. This is especially true in the highly interdependent primary care setting in which this study was conducted. To be effective at conflict resolution, healthcare professionals should have knowledge of their preferred method of addressing conflict, as well as, the advantages and disadvantages of its use in various situations. Though preliminary, the results of our pilot study suggest that students in aggregate are less likely to prefer avoiding as a conflict handling strategy after participating in an IPECP experience. Further, there may be an association between the observed changes in the preference for compromising with gender and degree program. Taken as a whole, these findings suggest an increase in the study participants' preference for operating in the cooperative and assertive dimensions of the TKI model after an IPECP experience. However, these findings should be interpreted with caution and there is a need for further research on the association between an interactive, patient-centered IPECP and the development of effective conflict handling skills among health professions students, especially those who will work in primary care settings.

Acknowledgements

Funding for this project was provided by a cooperative agreement from the US Department of Health and Human Services, Division of Nursing, Health Resources and Human Services Health Profession, Nurse Education, Practice, Quality and Retention (NEPQR) Program- Interprofessional Collaborative Practice- Award # UD7HP25055-02-01; Funding period 2012 – 2015. Initial seed funding for the project was provided from the

Brig. Gen. Lillian Dunlap Endowed Professorial Chair in Nursing at the University of the Incarnate Word. Special thanks is extended to Professor Mary Elaine Jones, Ph.D., RN, for initiating this study prior to her retirement and for her ongoing encouragement, support and guidance.

References

- Baldwin, Jr., D. C., & Daugherty, S. R. (2008). Interprofessional conflict and medical errors: Results of a national multi-specialty survey of hospital residents in the US. *Journal of Interprofessional Care*, 22(6), 573-586. <http://dx.doi.org/10.1080/13561820802364740>
- Bandiera, G., Sherbino, J., & Frank, J. R. (Eds.). (2006). The CanMEDS assessment tools handbook. An introductory guide to assessment methods for the CanMEDS competencies. Ottawa: The Royal College of Physician and Surgeons of Canada.
- Barr, H. (1998). Competent to collaborate: Towards a competency-based model for interprofessional education. *Journal of Interprofessional Care*, 12(2):181-186. <http://dx.doi.org/10.3109/13561829809014104>
- Benner, P. (2010). *Educating nurses: A call for radical transformation* (1st ed., Jossey-Bass higher and adult education series). San Francisco: Jossey-Bass.
- Blake, R. R. & Mouton, J. S. (1964). *The managerial grid*. Houston: Gulf Publishing.
- Brown, J., Lewis, L., Ellis, K., Stewart, M., Freeman, T. R., & Kasperski, M. J. (2011). Conflict on interprofessional primary health care teams-can it be resolved? *Journal of Interprofessional Care*, 25(1), 4-10. <http://dx.doi.org/10.3109/13561820.2010.497750>
- Drinka, T. J., & Clark, P. G. (2000). Developing and maintaining interdisciplinary health care teams. In *Health Care Teamwork: Interdisciplinary Practice and Teachings*, 11-49. Westport, CT: Auburn House.
- Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., . . . Kelley, P. (2010). Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *The Lancet*, 376(9756), 1923-1958. [http://dx.doi.org/10.1016/S0140-6736\(10\)61854-5](http://dx.doi.org/10.1016/S0140-6736(10)61854-5)
- Gittell, J. H., Weinberg, D. B., Pfefferle, S., & Bishop, C. (2008). Impact of relational coordination on job satisfaction and quality outcomes: A study of nursing homes. *Human Resource Management Journal*, 18(2), 154-170. <http://dx.doi.org/10.1111/j.1748-8583.2007.00063.x>

- Grumbach, K., & Bodenheimer, T. (2004). Innovations in primary care. Can health care teams improve primary care practice?. *JAMA: Journal of The American Medical Association*, 291(10), 1246-1251. <http://dx.doi.org/10.1001/jama.291.10.1246>
- Interprofessional Education Collaborative Expert Panel (IPEC), (2011, May). Core competencies for interprofessional collaborative practice: Report of an expert panel. Washington, D.C. Interprofessional Education Collaborative. Retrieved from <http://www.aacn.nche.edu/education-resources/ipcreport.pdf>
- Institute of Medicine. (2003). Health professions education: A bridge to quality. Washington, DC: National Academy Press.
- Janss, R., Rispens, S., Segers, M., & Jehn, K. A. (2012). What is happening under the surface? power, conflict and the performance of medical teams. *Medical Education*, 46(9), 838-849. <http://dx.doi.org/10.1111/j.1365-2923.2012.04322.x>
- Kilmann R. H. & Thomas, K. W. (1975). Interpersonal Conflict Handling Behavior as Reflections of Jungian Personality Dimensions. *Psychological Reports*, Vol 37(3) 971-980. <http://dx.doi.org/10.2466/pr0.1975.37.3.971>
- Kilmann, R. H. & Thomas, K. W. (1977). Developing a Forced-Choice Measure of Conflict Handling Behavior: The "Mode" Instrument. *Educational and Psychological Measurement*, 37(2) 309-325. <http://dx.doi.org/10.1177/001316447703700204>
- Kriteck, P. B. (2011). Getting from heat to light: Conflict skills in this world of change. Presentation at the 11th Annual Evidenced Based Conference. University of Texas Health Science Center San Antonio, July 1, 2011.
- Parker, R. A., Gottlieb, H., Dominguez, D. G., Sanchez-Diaz, P. C., & Jones, M. E. (2015). Integrating an interprofessional education model at a private university. *International Journal of Higher Education*, 4(3): 112-118. <http://dx.doi.org/10.5430/ijhe.v4n3p112>
- Pines, E. W., Rauschhuber, M. L., Norgan, G. H., Cook, J. D., Canchola, L., Richardson, C., & Jones, M. E. (2012). Stress resiliency, psychological empowerment and conflict management styles among baccalaureate nursing students. *Journal of Advanced Nursing*, 68(7), 1482-1493. <http://dx.doi.org/10.1111/j.1365-2648.2011.05875>
- Sportsman S. & Hamilton P. (2007). Conflict management styles in the health professions. *Journal of Professional Nursing*, 23(3), 157-166. <http://dx.doi.org/10.1016/j.profnurs.2007.01.010>
- Thomas, K. W. (2002). Introduction to Conflict and Teams: Enhancing Team Performance Using the TKI. Mountain View, Ca: CPP, Inc.
- Thomas, K. W. & Kilmann, R. H. (2007). Thomas-Kilmann Conflict Mode Instrument. Mountain View, Ca: CPP, Inc.
- Thomas, K. W. & Kilmann, R. H. (2015). An Overview of the Thomas-Kilmann Conflict Mode Instrument (TKI). Retrieved from: <http://www.kilmanndiagnostics.com/overview-thomas-kilmann-conflict-mode-instrument-tki>
- Thomas, K. W. & Thomas, G. F. (2004). Introduction to Conflict and Teams. Mountain View, Ca: CPP, Inc.
- Wilmot, W. W., & Hocker, J. L. (2005). Interpersonal conflict. McGraw Hill New York.

Corresponding Author

Daniel G. Dominguez PhD, MHA
 Master of Health Administration
 GB 205
 University of the Incarnate Word
 4301 Broadway St
 San Antonio, TX 78209
 domingue@uiwtx.edu