

# Students' reflections on first-year interprofessional teamwork: Phenomenographic evaluation of function and success

*S.M. McNaughton*

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## Abstract

**Background:** While early interprofessional teamwork is of uncertain benefit to patients, it has value for changing attitudes towards interprofessionalism and for developing skills and traits relevant for healthcare students. Exploring and evaluating changes in these skills and attitudes is under-researched, especially in early healthcare education. Reflective assessment, while frequently used to gauge clinical students' professional skills and attitudes, is hampered by issues related to authenticity and reliability. A potentially more productive use of reflection is for developing skills and attitudes such as self-awareness, communication and respect in early interprofessional teamwork. The aim of the study was to collect and analyse first-year non-clinical students' reflections in which they specifically evaluated their own and their team's success and collaboration on an interprofessional teamwork project.

**Methods:** Phenomenographic analysis of summative participant reflections was conducted to demonstrate variations in factors and elements that influenced interprofessional teamwork function and success.

**Findings:** Four factors were perceived to influence team function: individual characteristics, team dynamics, team structure and external factors. From participant responses, four critical elements of successful teamwork emerged: time management, communication, cooperation and leadership. The phenomenographic outcome space shows how variations in the presence of and relationships between these elements produced differences in team function and success. Variation in individual self-awareness and reflective capacity was also identified.

**Conclusions:** This study identified factors and elements that students believe affect collaboration, and how these influence team success. The findings confirm the value of formal reflection in helping students to develop self-awareness in teamwork settings.

**Keywords:** interprofessional education, teamwork, reflection, undergraduate, assessment.

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Auckland University of Technology

**Correspondence:**  
A-25, Akoranga Campus  
Auckland University of Technology  
90 Akoranga Drive, Northcote  
Auckland 0627  
New Zealand  
Email: smcnaugh@aut.ac.nz

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## Introduction

Interprofessional education (IPE) aids the development of the professional skills healthcare graduates need for communicating and working effectively within interprofessional teams to deliver optimum health outcomes (Gibson & Molloy, 2012; Howard, Ryan, Eudy, Mosser, & Boyd, 2010). Despite a Cochrane review that found insufficient evidence to confirm the effectiveness of IPE (Reeves et al., 2009), literature suggests that healthcare students working in practice environments benefit from and generally respond positively to interprofessional teamwork-based learning (Levinson & McGillion, 2011; Osborne, 2009). Teamwork is recognised as an essential non-clinical skill, especially in rural and remote practice contexts (Bell, Walker, Allen, MacCarrick, & Albert, 2010). While early IPE is considered desirable and necessary for developing teamwork skills (Howard et al., 2010), there is still inconclusive evidence that it positively affects patient and practitioner outcomes (Hayashi et al., 2012), and there is insufficient research on teamwork skill development to draw a conclusion (Bell et al., 2010).

Evidence for the effect of early IPE on attitudes towards interprofessional teamwork is similarly inconclusive. Curran, Sharpe, Flynn and Button's (2010) longitudinal study across several health disciplines demonstrated positive but unchanged student attitudes towards interprofessional teamwork. Other studies suggest that single large first-year IPE classes, simulation and problem-based collaborative learning all produce positive attitudinal change (Cameron et al., 2009; DiVall et al., 2014; Hayashi et al., 2012; Osborne, 2009).

Despite the unclear long-term benefits of early IPE, health students consistently value face-to-face small group interprofessional learning and see teamwork as relevant to future practice (Curran et al., 2010; Hood et al., 2014). Prior exposure and early interprofessional socialisation opportunities favourably influence attitudes towards later IPE (DiVall et al., 2014; Hood et al., 2014). Psychological, educational and sociological rationales for IPE support a focus on the early development of self-awareness about strengths and weaknesses, verbal communication, organisational and conflict resolution skills, reflection and respect (Barr, 2013; Bell et al., 2010; Gibson & Molloy, 2012; Molinari, 2012). These non-clinical skills and traits underpin desired teamwork competencies such as understanding team roles and responsibilities, practising mutual respect and collaborative trust (IPECER, 2011).

Tools to assess early interprofessional skills are lacking (Tseng, Wang, Ku, & Sun, 2009). The study reported in this paper used summative reflections to explore health students' perceptions of skills and attitudes necessary for early non-clinical interprofessional face-to-face and online teamwork success, and compared these with assessed success. Reflection, the foundation of reflective practice, is widely used in clinical disciplines for self-evaluation of traits and skills, despite being poorly correlated with summative assessment of knowledge and skills (Connaughton & Edgar, 2011; Sitzmann, Ely, Brown, & Bauer, 2010). This may be because reflection is best used as a key learning process in interprofessional skill and attribute development rather than as an assessment tool (Clark, 2009). Primary reflection focuses on self-awareness, while secondary reflection involves attempting to stand outside personal and disciplinary perspectives (Clark, 2009).

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Since IPE exposes students to others' perspectives, it can prompt secondary reflection and produce deep, transformative learning (Barr, 2013). Early IPE may facilitate this by developing the self-awareness and ability to recognise one's own strengths and weaknesses, which is necessary for good primary reflection. In non-clinical teamwork, reflective assessments can demonstrate metacognition and how well self-assessment of attitudes and performance aligns with other team members' estimations (Mayne, 2012); therefore, early IPE should not only encourage self-awareness and self-assessment but also attempt to improve alignment with peer assessment and other summative outcomes.

The aim of the study was to explore first-year health students' perceptions of early non-clinical interprofessional teamwork success by analysing and comparing summative reflections on individual and team outcomes and processes with assessed team success. The study also sought insight into first-year student self-awareness and reflective capacity, both of which are under-researched (Clark, 2009; Sendall & Domocol, 2013). The intention was to inform and improve course teaching and assessment.

## Methodology

Student reflections on teamwork are uniquely personal, so the study methodology had to accommodate a range of individual perspectives without losing sight of the interprofessional team context. Mayne (2012) analysed bioscience students' teamwork reflections to identify four categories of self-insight. Categories are a characteristic outcome of phenomenography, the methodology used in this study. Developed in education and closely related to theories of deep and surface learning (Marton, 2000), phenomenography involves searching for critical differences between the ways participants perceive their experiences of a situated phenomenon. These are expressed as a limited number of qualitative variations or categories belonging to a bounded set called the outcome space (Pang, 2003). The phenomenographic analysis of reflective data is uncommon, but some studies exist, for example Sendall and Domocol's (2013) study of Australian first-year public health students, which demonstrates the different ways students view reflective journaling.

Critics of phenomenographic research highlight the fact that it does not distinguish between what is perceived and what this is interpreted to mean (Dahlin, 2007). In analysing reflective material, this difference may be smaller since the participants have already interpreted their experiences (Clark, 2009). The phenomenographic researcher groups these interpretations into categories and shows the relationships between them (Pang, 2003). In this study, specific questions about personal and team success were asked, so the variations identified were expected to include both shared and unique interpretations, thus giving insight into individual self-awareness.

## Research design

All first-year health, sport and applied science students at Auckland University of Technology complete a 6-month semester of shared courses. In the second semester, all health students beginning non-clinical majors such as health promotion, medical

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laboratory science, conjoint business/health or sport/health degrees, or seeking to enter clinical disciplines later, complete a course on health systems and service delivery. Over half the grades for this course are gained from an 8-week purpose-designed teamwork project that includes a “common learning outcome” (Osborne, 2009, p. 58) for “effective teamwork with colleagues”. Students work online and face-to-face in self-selected interprofessional teams of five or six to present a report on a health service organisation, and a symposium on a proposed improvement to service delivery. Grades are awarded for individual and team processes and products. After completion of the project, students write an 800-word individual summative reflection using this guided reflection:

1. What went well and not so well in the team and what factors contributed to this? How did you respond?
2. How successful or not do you feel the team report and symposium were?
3. What was your role in the team and what personally could you have done differently?
4. What have you learned about your own style of learning in a team?
5. What will you do differently in future teamwork?

The reflections are marked against four learning outcomes, each with A–D criteria for depth of reflection on teamwork at the foundational reporting, responding and relating to self and others level (Ryan & Ryan, 2013). Marking is moderated by a course lecturer who also co-marks the team symposia.

All students enrolled in the course in July 2013 were asked by an independent staff member for consent for their reflections to be used for research purposes. As the researcher taught and assessed the students, consent forms and reflections were not accessed until after official confirmation of grades for the course were released. The research received ethical approval from the Auckland University of Technology Ethics Committee.

All the reflections were read repeatedly by the researcher over a period of six weeks with no attempt made to identify variations or categories, as is consistent with the phenomenographic method (Marton 2000; Pang, 2003). This iterative process improves rigour through a sustained reflexive stance towards the data (Cousin, 2009). Two preliminary sets of variations were identified in the participants’ reflections on their experiences, one representing the factors affecting interprofessional team function and the other identifying critical elements associated with successful teamwork. To improve trustworthiness of the analysis (Bryman, 2008), preliminary categories were discussed with the moderator. Finally, all variations were checked against individual reflections and adjusted until all text could be assigned to at least one set. Examples of self-awareness and reflective capacity were selected for each category.

Two diagrams were constructed to show the perceived importance of the factors affecting interprofessional team function, the critical elements associated with teamwork success and the relationships between factors and elements within each set. These diagrams represent the “part-whole” structure of awareness of each factor and

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each critical element (Akerlind, 2012). Presenting phenomenographic data visually is a new approach that shows relationships and complements textual explanations. The type of success exhibited by each team was determined from participants’ reflections and the assessed success of the team reports and symposia.

**Results**

Consent was obtained from 19 of the 32 students who completed the course. Sixteen participants (12 female, 4 male) studying health promotion (4), conjoint sport/business and health (4), medical laboratory science (2), non-clinical health (3) or seeking clinical entry later (3) completed the reflection. Table 1 shows the participants and, since consent to use grades was not obtained, descriptions of each team’s report and symposium assessed success, and the type of success (explained below).

Table 1  
*Team Membership and Assessed Measures of Success*

Team	Participants (F = female, M= male)	Team report success	Team symposium success	Type of team success
1	F1, F2, F3, M1	Highly successful	Highly successful	Synergistic
2	F1	Highly successful	Very successful	Synergistic
3	M1	Successful	Successful	Compromised
4	F1, M1, M2	Successful	Successful	Compromised
5	F1, F2, F3, F4, F5	Very successful	Successful	Technical
6	F1, F2	Highly successful	Very successful	Individual

Figures 1 and 2 illustrate the phenomenographic outcome space of the participants’ perceptions of teamwork. They show four variations in factors affecting team function and four variations in critical elements of successful teamwork. Circle size indicates the relative numbers of reflections in which a factor or element was found. Intersections in Figure 1 indicate approximately how frequently factors were found concurrently. Intersections of critical elements in Figure 2 indicate four types of team success identified from answers to Question 2 and assessed team success (as shown in Table 1): synergistic success—report and symposium better than some individual contributions; individual success—some individual contributions better than report and/or symposium; technical success—individual contributions variable, report and symposium adequate; compromised success—individual contributions, report and symposium variably adequate.

In the following sections, the factors and elements are further explained with examples that also illustrate variation in self-awareness and reflective capacity. Participants are identified by team and gender, for example, T1F2 (Team 1, Female 2).

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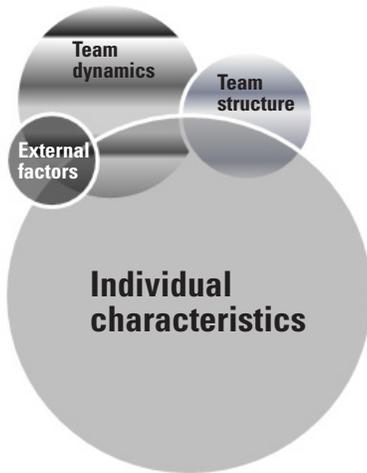


Figure 1. Factors affecting team function.



Figure 2. Critical elements of successful teamwork.

**Factors affecting team function**

1. Individual characteristics

Despite team-focused questions, the participants perceived individual characteristics as the most significant effect on team function (Figure 1). Three-quarters of the participants identified taking full responsibility for their own role as the most important factor affecting teamwork. Half the participants linked this with a desire to complete work to a high standard. Five participants showed significant self-awareness in their acceptance of some responsibility for having not fulfilled their role or produced their best work, especially for the symposium presentations:

*I felt like I could have done a better job in researching ... as I was introducing the topic I felt like I semi let the team down by not setting the proper tone for the rest of the group to follow. (T4M2)*

Five participants demonstrated reflective capacity by identifying personal strengths and weaknesses or by linking their experience to previous teamwork experiences:

*I was very much the quiet one ... I knew that I needed to contribute more to the discussions. (T3M1)*

*Working in groups was one of the tasks which I never enjoyed and was always afraid and stressed ... being shy, difficulty in talking, afraid of making mistakes and always having low self-esteem. (T6F2)*

2. Team dynamics

Individual characteristics frequently intersected with team dynamics, the interpersonal aspects of working together. Half the participants identified support and respect as significant influences on behaviour within the team, particularly in difficult situations.

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One team voted to remove the incomplete and inadequate contribution of a member from their report, a decision that the leader elected to communicate:

*I recognized that our decision would be met with significant animosity ... I was very proud of the way the team rallied around to support each other. (T1F1)*

In describing this situation, another member reported that the team *“decided to relieve the stress from our team leader and ... came together to ... create the written report which took well over three hours”* (T1F3).

Individual motivation and team dynamics affected each other, for better and worse. In one team, members were *“willing and able to stick to the agreed direction, tasks and deadlines”* (T6F1), while in another, *“lack of enthusiasm led to a less than average outcome”* (T4F1).

Negotiating interpersonal issues such as face-to-face awkwardness and different communication styles improved team function, while regular meetings and majority decision-making reduced replication, workload and confusion.

### 3. Team structure

Influences on team function attributed to team structure varied. Some felt working with people they did not know *“made me feel more confident in myself, that I am able to work in a group comfortably”* (T4M1), while others felt that *“because we all knew each other ... there was no drama and everyone just got along with what they were supposed to do”* (T5F4). Similar contrasts were expressed around personality, gender or age differences and getting to know new people.

### 4. External factors

Only three participants felt individual performance and team dynamics were adversely affected by pressure from assessments in other courses, while five participants commented on the critical nature of understanding the assessment criteria and recognising *“team members who are struggling to understand the requirements of the assessment”* (T1M1).

## ***Critical elements of successful teamwork***

While the four critical elements of successful teamwork were individually distinct, most participants' reflections combined at least two.

### 1. Cooperation

Helping each other, commitment to shared goals, rules and deadlines, collaborative writing, assigning specific roles and tasks, and working as a unit were important elements of success for 75% of the participants:

*It was not an individual effort, and working together as one to achieve a shared goal was the key idea. (T5F1)*

This included expecting and working through conflict:

*Not all team members agreed with each other on everything, which is normal. (T2F1)*

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Making an effort with relationships, sometimes at personal cost, was recognised by some more deeply reflective participants. In Team 5, one member “responded badly” to being advised of a breach of team’s rules. Although all members of this team participated in the study and this event, only one recorded that cooperation was restored when:

*I apologised and did not take it personally.* (T5F5)

Failing to clarify roles or negotiate decisions was mentioned by several participants as producing reduced cooperation and success. Also in Team 5, a more reflective participant felt the symposium could have been more successful:

*I believe I am personally responsible for this to some extent. I was unsure about our topic from the start; I also tried to come up with some suggestions, but they were never discussed in our team meeting.* (T5F2)

## 2. Communication

As illustrated by the last quote, communication was closely related to cooperation and was recognised as crucial. For the two most successful teams,

*Communication was one of the best things my group did ... through text, phone calls and wiki page ... Everyone turned up to meetings.* (T1F2)

Members of less successful teams recognised poor communication as a significant weakness:

*Not having enough face to face with the rest of the team members hindered my progress.* (T4F1)

*Good communication ... is key in planning and knowing what each member has to do for the group to complete its objectives and goals.* (T3M1)

Good communication gave participants confidence to speak up, helped teams stay on task and enabled conflict resolution. Good presentations, communication and professionalism were recognised as important for successful symposia.

## 3. Time management

Over 50% of the participants mentioned time management. Poor time management was linked to poorer product, performance and grades; wasted decision-making time; reduced choices and increased stress, pressure and workload, especially when work “would come in late without any notice” (T3M1).

Reduced choice of topics for the report was not always seen as disadvantageous:

*It enhances your learning ... it helped me to increase my knowledge about a topic that I initially did not find interesting.* (T5F2)

For the symposium however, teams struggling with time management tended to panic. Participants acknowledged that they left “inadequate practice time” (T4M2) and “could have been more organised and alert” (T5F4).

One felt that “my individual grade was poor since I was not prepared for the presentation and lacked effective presenting skills” (T5F3).

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## 4. Leadership

Participants from teams who either did and did not elect a leader recognised leadership as critical. Two-thirds of participants felt a leader was needed to keep the team focused and ensure that tasks and deadlines were coordinated:

*Being under the direction of a strong leader ... contributed immensely to the work provided by the team. (T1F3)*

A few participants mentioned specific leadership characteristics, such as encouragement, listening, building trust and problem solving. Although the importance of leadership was valued, the participants who took on leadership roles had mixed experiences:

*I tried to act as the leader, but I was not confident enough. (T6F1)*

*Having taken on a leadership role in the group, I was too anxious to accommodate everyone, as opposed to making decisions that would achieve the best outcome overall. (T1F1)*

## 5. Types of team success

For participants, the benefits of teamwork outweighed the disadvantages created by individuals who let the team down. Many acquired new knowledge or gained new teamwork skills applicable to other contexts. Others reported enjoyment and increased confidence. One suggested that the process “empowered me to work together as well as learn from these young students” (T6F2); another explained that the process “taught me to be more patient with people and to listen and respect everybody’s ideas” (T2F1).

Participants’ perceptions of success and actual team success in the report and symposia were used to define four synthesised types of team success (Figure 2, Table 1). “Synergistic success”, achieved by Teams 1 and 2, was characterised by highly successful reports and symposia that were better than some individual contributions. All four critical elements were present in these teams, although only three participants recognised the synergistic effect. Team members attributed success to individual effort, strong leadership, good communication and attention to the assessment criteria.

Team 6 achieved “individual success”; some individual contributions were excellent, but this did not enhance team success. This team was characterised by excellent time management and cooperation, but there was ineffective leadership, and members struggled to communicate. Both study participants noted that team members who were already friends chatted in meetings and there was poor use of the wiki. The team worked hard to address these issues and “gradually became more consistent with working on the wiki and made [an] effort to exchange ideas” (T6F1). In the end, despite some excellent individual contributions, the symposium lacked unity.

Team 5 achieved “technical success”; communication and time management were adequate, but work ethic and interpersonal conflicts resulted in sporadic leadership and reduced cooperation.

*Every time we got together to do some part, especially the symposium, it was just a waste of time ... I learned that sometimes acting like the person in charge would help and that might make the group more organised. (T5F5)*

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The report and symposium were adequate but lacked cohesion, editing and substance, despite some good individual ideas and effort. As one member noted:

*Our symposium presentation was not as successful as planned since the team members had personal issues. (T5F3)*

Teams 3 and 4 exhibited some communication and cooperation but lacked time management and effective leadership. This resulted in disjointed, inadequately researched and poorly presented reports and symposia. While individuals produced some good work, this was not supported or was insufficient in isolation. Participants from both teams recognised the time management issues, and some were aware that they were personally responsible for the poor outcomes.

*I think we could have done much better ... what I could have done differently was giving more time to researching. (T4M1)*

One participant suggested that in future he would “*show more commitment ... getting involved as well as contributing more to the group planning*” (T3M1).

## Discussion

The findings from this study demonstrate the ability of first-year health students at the beginning of discipline-specific education to reflect constructively on interprofessional teamwork experiences and recognise significant influences on team function and success. This study of face-to-face and online interprofessional collaboration confirms that communication, organisation, clear understanding of objectives and trust affect team function and student satisfaction (Tseng et al., 2009). It also identifies other factors and links these to success, adding detail about the relationships between factors from a first-year student perspective.

The most interesting finding is that individual student characteristics were identified as the most important influence on interprofessional team function, particularly responsibility towards assigned tasks and producing the best work possible. While this may reflect a cohort of more motivated research participants, the design of the study potentially reduced self-selection bias since consent was gained from 60% of the class before the teamwork project began. Despite consistent recognition of the importance of taking personal responsibility, recognition of the impact on teammates of participants' own deficiencies was variable. This correlates with Rhee, Parent and Basu's (2013) findings of a tendency amongst students to overrate themselves on team contribution and timeliness, and Mayne's (2012) observation of a connection between poor performance and lack of insight. Only some participants demonstrated in-depth self-awareness and reflection.

Rhee et al. (2013) also reported that emotionally unreactive students are more likely to perceive responsibility sharing as unequal, and suggest that calmness may indicate disengagement or apathy. In the current study, responses from members of Teams 1, 4 and 5 support the complement of this; more emotionally responsive members increased engagement with the team despite unequally shared responsibilities. This included both participants who helped with weaknesses in researching and writing

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and those needing help. These findings suggest that individual self-awareness and emotional responsiveness, essential characteristics in challenging interprofessional healthcare settings (Bell et al., 2010), enhance engagement regardless of team composition. When assisting students to develop these attributes through early IPE, rewarding persistent engagement and protecting students from unfair grading as a result of others' disengagement (Molinari, 2012) may be more beneficial than trying to prevent what they may later experience in practice.

Team dynamics appear to relate more strongly to individual characteristics than to interprofessional structure. Neither positively nor negatively reported characteristics or behaviours were confined to particular disciplines. Interpersonal issues arose despite teams being self-selected from acquaintances made in class prior to the teamwork, as recommended (Howard et al., 2010; Tseng et al., 2009). This may reflect the nature of the teamwork. Problem-based collaborative learning is rated positively by students (Hayashi et al., 2012; Osborne, 2009), perhaps because focusing short term on a specific problem creates fewer interpersonal issues. Working on a longer-term integrated project more accurately reflects the workplace, where interpersonal issues do affect team performance (Rhee et al., 2013); however, it may also reduce task-orientation which adversely affects team dynamics (Mayne, 2012). Specific teaching on managing interpersonal issues may be essential for improving interprofessional teamwork (Howard et al., 2010) and has been introduced to the course.

Extraversion, conscientiousness and grade point average are positively correlated with leadership, useful contributions, timeliness, and written and oral presentation grades in teamwork (Rhee et al., 2013). The present study supports these findings; teams with effective time management and leaders, and therefore possibly at least one extroverted member, were more successful than those without. Effective team leaders produce direction and efficiency gains and may also reduce tensions between members (Tseng et al., 2009), but as the study findings demonstrate, this can be at personal cost. First-year students may lack the resources needed to be, or adequately support, leaders, and undergraduate teaching in leadership is lacking (Mayne, 2012). Leadership development requires curricular integration and regular formative feedback (Gibson & Molloy, 2012; Molinari, 2012). In early IPE, assessments like team symposia in which all students must demonstrate some expertise may be effective vehicles for leadership development. Levinson and McGillion (2011) included a shared presentation in their small but effective IPE intervention.

The types of success identified in this study suggest that early interprofessional teams can succeed, but that a synergistic effect is less common than most course leaders would like. "Individual success" may satisfy certain students, and even "technical" or "compromised success" may be acceptable to some, but these are unlikely to generate positive attitudes towards future interprofessional teamwork (Hood et al., 2014). Reducing the incidence of lesser versions of success may be possible through specific teaching on team dynamics, communication and cooperative strategies. Processes encouraging good time management, such as staged assessment points, practice presentations and monitoring of early wiki activity, are being trialled in this course.

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The findings confirm the capacity of first-year students to report, respond and relate to interprofessional teamwork with variably insightful self-awareness (Ryan & Ryan, 2013). Most participants readily identified their individual roles in teamwork success, but few were aware of their weaknesses and impact on others. Insight into strengths and weaknesses is the foundation of team success (Mayne, 2012), yet self-reflective skills, while valued in health graduates, are often limited in students and may not be well supported (Gibson & Molloy, 2012). These limitations may contribute to the lack of evidence for any effect of early IPE on patient outcomes (Hayashi et al., 2012), although finding ways to grow these skills in health undergraduates remains a challenge.

The study findings confirm the importance of using a guided reflection or framework for first-year students and of attributing summative value to such reflections (Connaughton & Edgar, 2011). Using reflection to improve self-awareness rather than assess it (Clark, 2009) is a good primary objective, but the findings suggest that summative assessment of reflective material in conjunction with teamwork “products” creates better alignment of self-assessment with assessed success (Sitzmann et al., 2010). This approach may create opportunities for students to develop more authentic self-assessment.

### ***Limitations***

The main limitation of this study is the small number of participants and teams. Additionally, distorted self-reporting and achievement motivations cannot be excluded (Sitzmann et al., 2010). The researcher’s interpretations of content, self-awareness and reflective capacity were not corroborated by the participants. This study has produced some limited evidence that teamwork reflections have value, but future research should include comparisons with peer assessments or interviews and perhaps complementary scale-based evaluations of specific interprofessional competencies (IPECEP, 2011).

### **Conclusions**

This study identified some factors and critical elements perceived to be important in student interprofessional teamwork and success. Despite the importance of communication and cooperation, individual characteristics such as responsibility and effort appear to be most significant in affecting team function. Leadership has a significant effect on whether teams achieve synergistic success rather than individual, technical or compromised success.

The findings support the value of summative reflection using guiding questions in conjunction with assessment of teamwork products as a way to help students develop self-awareness in IPE. While these first-year students appear to have reflective capacity, levels of self-awareness vary. This may have implications for individual health professional students and for interprofessional practice. More extensive research into teamwork success and the use of reflection as part of summative teamwork assessment may further clarify which factors indicate the likelihood of reduced teamwork success and whether self-awareness can be enhanced through ongoing teamwork assessment.

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## Acknowledgements

The author wishes to thank the participants for generously allowing their assessed material to be used for this research.

## References

- Akerlind, G. (2012). Variation and commonality in phenomenographic research methods. *Higher Education Research and Development, 31*, 115–127. doi:10.1080/07294360.2011.642845
- Barr, H. (2013). Toward a theoretical framework for interprofessional education. *Journal of Interprofessional Care, 27*, 4–9. doi:10.3109/13561820.2012.698328
- Bell, E., Walker, J., Allen, R., MacCarrick, G., & Albert, E. (2010). Non clinical rural and remote competencies: Can they be defined? *Focus on Health Professional Education: A Multidisciplinary Journal, 11*, 28–41. Retrieved from <http://search.informit.com.au/documentSummary;dn=183471;res=AEIPT>
- Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford, England: Oxford University Press.
- Cameron, A., Rennie, S., DiProspero, L., Langlois, S., Wagner, S., Potvin, M., . . . Reeves, S. (2009). An introduction to teamwork: Findings from an evaluation of an interprofessional education experience for 1,000 first-year health science students. *Journal of Allied Health, 38*, 220–226. Retrieved from [http://www.asahp.org/journal\\_ah.htm](http://www.asahp.org/journal_ah.htm)
- Clark, P. G. (2009). Reflecting on reflection in interprofessional education: Implications for theory and practice. *Journal of Interprofessional Care, 23*, 213–223. doi:10.1080/13561820902877195
- Connaughton, J., & Edgar, S. (2011). Framework for reflective practice. *Focus on Health Professional Education: A Multidisciplinary Journal, 12*(3), 89–93. Retrieved from <http://search.informit.com.au/browseJournalTitle;res=AEIPT;issn=1442-1100>
- Cousin, G. (2009). *Researching learning in higher education: An introduction to contemporary methods and approaches*. New York, NY: Routledge.
- Curran, V. R., Sharpe, K., Flynn, D., & Button, P. (2010). A longitudinal study of the effect of an interprofessional education curriculum on student satisfaction and attitudes towards interprofessional teamwork and education. *Journal of Interprofessional Care, 24*, 41–52. doi:10.3109/13561820903011927
- Dahlin, B. (2007). Enriching the theoretical horizons of phenomenography, variation theory and learning studies. *Scandinavian Journal of Educational Research, 51*, 327–346. doi:10.1080/00313830701485437
- Divall, M. V., Kolbig, L., Carney, M., Kirwin, J., Letzeiser, C., & Mohammed, S. (2014). Interprofessional socialization as a way to introduce collaborative competencies to first-year health science students. *Journal of Interprofessional Care, 28*, 576–578. doi:10.3109/13561820.2014.917403

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- Gibson, S., & Molloy, E. (2012). Professional skill development needs of newly graduated health professionals: A systematic literature review. *Focus on Health Professional Education: A Multidisciplinary Journal*, 13(3), 71–83. Retrieved from <http://search.informit.com.au/browseJournalTitle;res=AEIPT;issn=1442-1100>
- Hayashi, T., Shinozaki, H., Makino, T., Ogawara, H., Asakawa, Y., Iwasaki, K., . . . Watanabe, H. (2012). Changes in attitudes toward interprofessional health care teams and education in the first- and third-year undergraduate students. *Journal of Interprofessional Care*, 26, 100–107. doi:10.3109/13561820.2011.644355
- Hood, K., Cant, R., Baulch, J., Gilbee, A., Leech, M., Anderson, A., & Davies, K. (2014). Prior experience of interprofessional learning enhances undergraduate nursing and healthcare students' professional identity and attitudes to teamwork. *Nurse Education in Practice*, 14, 117–22. doi:10.1016/j.nepr.2013.07.013
- Howard, D., Ryan, K., Eudy, R., Mosser, G., & Boyd, K. (2010). Critical decision points in designing inter-professional education. *The Journal of Health Administration Education*, 27, 135–144. Retrieved from <http://www.aupha.org/i4a/pages/index.cfm?pageid=3321>
- Interprofessional Practice Education Collaborative Expert Panel. (2011). *Core competencies for interprofessional collaborative practice*. Retrieved from <http://www.aacn.nche.edu/education-resources/ipcreport.pdf>
- Levinson, M. R., & McGillion, T. (2011). Changing perceptions and opinions in nursing and medical students through interprofessional education. *Focus on Health Professional Education: A Multidisciplinary Journal*, 13(2), 13–24. Retrieved from <http://search.informit.com.au/browseJournalTitle;res=AEIPT;issn=1442-1100>
- Marton, F. (2000). The structure of awareness. In J. Bowden & E. Walsh (Eds.), *Phenomenography* (pp. 102–116). Melbourne, Australia: RMIT Publishing.
- Mayne, L. (2012). Reflective writing as a tool for assessing teamwork in bioscience: Insights into student performance and understanding of teamwork. *Biochemistry and Molecular Biology Education*, 40, 234–240. doi:10.1002/bmb.20621
- Molinari, C. A. (2012). Online and blended learning: Are we delivering quality undergraduate programs in health administration? *The Journal of Health Administration Education*, 29, 71–85. Retrieved from <http://www.aupha.org/i4a/pages/index.cfm?pageid=3321>
- Osborne, J. E. (2009). Alternative models for sharing common content across health curricula. *Focus on Health Professional Education: A Multidisciplinary Journal*, 11(1), 49–60. Retrieved from <http://search.informit.com.au/browseJournalTitle;res=AEIPT;issn=1442-1100>
- Pang, M. F. (2003). Two faces of variation: On continuity in the phenomenographic movement. *Scandinavian Journal of Educational Research*, 47, 145–156. doi:10.1080/0031383032000047466
- Reeves, S., Zwarenstein, M., Goldman, J., Barr, H., Freeth, D., Hammick, M., & Koppel, I. (2008). Interprofessional education: Effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*, 1. doi:10.1002/14651858.CD002213.pub2

## PHENOMENOGRAPHIC EVALUATION OF FUNCTION AND SUCCESS

- Rhee, J., Parent, D., & Basu, A. (2013). The influence of personality and ability on undergraduate teamwork and team performance. *SpringerPlus*, 2(1), 16. doi:10.1186/2193-1801-2-16
- Ryan, M., & Ryan, M. (2013). Theorising a model for teaching and assessing reflective learning in higher education. *Higher Education Research & Development*, 32, 244–257. doi:10.1080/07294360.2012.661704
- Sendall, M. C., & Domocol, M. L. (2013). Journalling and public health education: Thinking about reflecting . . . *Education + Training*, 55, 52–68. doi:10.1108/00400911311294997
- Sitzmann, T., Ely, K., Brown, K. G., & Bauer, K. N. (2010). Self-assessment of knowledge: A cognitive learning or affective measure? *Academy of Management Learning & Education*, 9, 169–191. doi:10.5465/AMLE.2010.51428542
- Tseng, H., Wang, C-H., Ku, H-Y., & Sun, L. (2009). Key factors in online collaboration and their relationship to teamwork satisfaction. *The Quarterly Review of Distance Education*, 10, 195–206. Retrieved from <http://search.proquest.com/docview/231183153?accountid=8440>