

## **DEVELOPING THEROETICAL RIGOUR IN INTERPROFESSIONAL EDUCATION**

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Dr Hean has expertise in interprofessional education and collaborative practice (IPECP) with a particular interest in developing theory in this field. She is an educational researcher by background with a keen interest in interprofessional working and learning specifically that which enhances interdisciplinary working between the Courts and Mental health services and the scope for IPE in this context. She is chair of the In-2-theory: International interprofessional scholarship and practice network, is a board member for the Centre of the Advancement of Interprofessional Education (CAIPE) and an Associate Editor for the Journal of Interprofessional Care.

### **Introduction**

In this chapter, the author explores the meaning of theory and the role it plays in the development of interprofessional education. The chapter explores specifically the utility of the theory of social capital in the field and uses this as a case theory to present the dimensions of theoretical quality that is proposed as essential to the advancement of research, evaluation and curriculum development in this arena.

Theories are a set of propositions that link concepts together through a rational argument. These statements predict, describe, explain, prescribe or organise a particular phenomenon (Walker and Avant, 2005; Fawcett, 2005; Jary D & Jary, 1995). The phenomenon in question in this chapter is interprofessional education and practice (IPECP). Researchers, interprofessional health care practitioners and educators deductively test or inductively develop a series of propositions that relate to IPECP. In this chapter we focus on the interprofessional education (IPE) dimension primarily

### **Role Of Theory**

A decade ago, interprofessional education (IPE) was accused of being theory-less with curriculum design and evaluations being superficial, descriptive, with little justification given for why certain areas of the programme were being evaluated and with no understanding of the outcomes or potential processes that may be at work within these (Hean et al., 2009). However, it is now obvious that many, educators and practitioners may be using theory (often involving the concepts of adult learning), but do so implicitly in their practice (Craddock et al., 2013). Further, whilst many educators, evaluators and practitioners continue not to articulate their theoretical underpinnings explicitly or do so with insufficient depth, there is a growing number of researchers who have begun to search for and apply theories from other disciplines: sociology, psychology and education. Theories now abound to the degree that various syntheses of this abundance have been attempted (Helme et al., 2005; )(Hean et al., 2012a; Barr, 2013;

Reeves and Hean, 2013) and a special interest group set up to promote this area of interest (In-2-Theory network: <https://www.facebook.com/groups/IN2THEORY/>) (Hean et al., 2013a). Despite this increased interest, the application of theory still lacks frequency and rigour or remains at a level of abstraction that has little pragmatic use to the IPE curriculum developers or educators.

The lack of use of theory in IPE may come from practitioners' common and negative reaction to the word *theory*; i.e., as health and social care practitioners they view themselves as action orientated, pragmatic individuals who place an emphasis on patient outcomes rather than academic navel gazing. They do not have the inclination to explore theoretical frameworks that are seen as of little practical relevance, that are often inaccessible and overly complicated on the one hand or highly reductionist on the other (Brazil et al., 2005; D'Onofrio, 1992). However, for other practitioners, especially those based within the higher education environment, it may not be that they are theory ignorant or averse to theory that leads to this lack of engagement, but that the fast pace of today's higher education system offers little time or financial reward to support critical educational research or theoretical reflection. Many of them will have completed higher level education courses as part of their postgraduate training, that is laden with education and learning theories at least. However, time pressures, and the norm of having always taught in a particular way, works against the need to make the time for theory and critical reflection.

The need to make this time in order to bridge the theory/practice divide within the IPE arena and overcome the barriers to integration of theory into practice are not original. From Aristotle, Marx, Dewey and even the Dalai Lama, (Glanz et al., 2002), the interdependence between theory and practice are explored and consensus achieved that theory is not the exclusive property of academic ivory towers. Humans are natural theorists, constantly formulating theories that later underpin their actions even at the simplest of levels (Hean et al., 2012b). So too in IPE. The IPE curriculum developer is not acting without a theory. They design, deliver and evaluate a curriculum often using a range of learning theories implicitly but often fail to articulate why certain outcomes are being assessed and the rationale behind the processes through which these outcomes will be achieved. By failing to articulate these propositions clearly, curriculum developers are unable to test, develop or follow alternative propositions, if the original propositions are falsified. Theory would encourage them to achieve what Wackerhausen (2009) describes as second order reflection, where common practices are "destabilized" and reexamined.

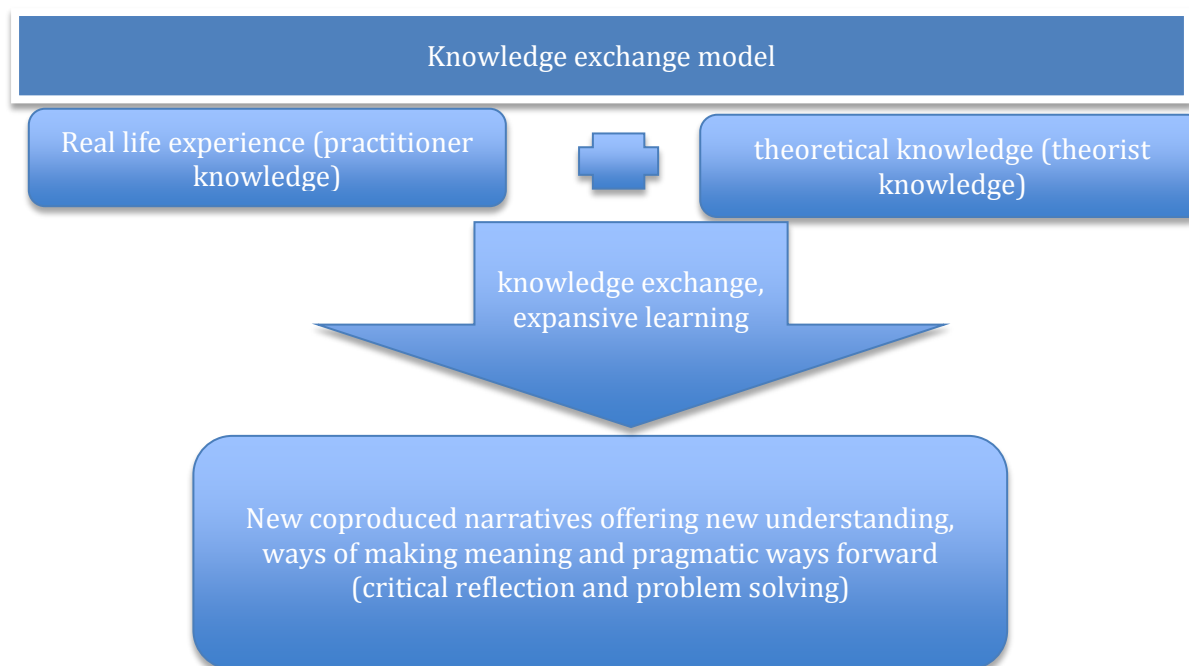
Theory is not the opposite of practice. These are not what Derrida (Thistlethwaite et al., 2013) describes as binary pairs where the one concept is described by what the other is not. Theory is not best explained as not being practice but is in fact the description or explanation of practice. The author hence takes the philosophical standpoint of pragmatism: that the meaning or value of a theory lies in its practical consequences (Dewey, 1923), that theory is essential for intelligent practice, that theory and practice

cannot (and should not) be separated and go as far as agreeing with Eraut, (2003) that practice without the explicit articulation of theory is tantamount to malpractice.

For those who favour inductive theory building, testing theories and propositions from the psychosocial sciences as explained above, is overly reductionist, and based on a positivist paradigm. For them, theory in IPE must develop from, and be rooted in, the specific IPE context. Inductive theory construction does not ignore extant theoretical resources, often employing sensitising concepts to guide theory-building. It does not, however, attempt to force empirical data into pre-existing conceptual framings. Both theory testing and theory building approaches possess utility, and whichever is favoured, IPE researchers agree that theory is essential to move the discipline forward and must be achieved in a way that is meaningful and with utility for those engaged in IPE practice, namely the development and evaluation of IPE curricula.

### **Theory Is About Coproduction**

Theory has most utility if it used through a knowledge exchange model in which one begins with practitioners' knowledge or their real life experiences as educators developing and evaluating interprofessional education. This is placed alongside the theorist knowledge and both parties work together to coproduce a new narrative of the practice context seen through a theoretical lens (see Figure 1). This principle originates in Bernstein's (1971) views of different domains of knowledge that overlap to form a new and interdisciplinary region of knowledge, accessible to both parties. In this model, the knowledge of the practitioner and the theorist intersect to form a new region of knowledge that can be described as the lived experience of the practitioner but reexamined through a theoretical lens.



**Figure 1:** Overlap of practitioner and theorist knowledge to encourage critical reflection and problem solving.

### **Practitioner Knowledge**

Typically, the life experience of the practitioner begins with an IPE curriculum designer wishing to develop an IPE programme delivered through small group work between students from different professions. S/he may chose this approach to maximise opportunities for interaction between students around a common task, in order that they may better learn with, from and about each other. Curriculum designers are often unclear how to structure these groups to optimise learning, the processes and mechanisms that are at play within them and the impact these may have on students in the short and long term. A theorist may help the practitioner address some of these concerns, by working along side the practitioner, firstly to extract a “good story” relating to their practice lives and challenges, and then to co-construct with the practitioner a new narrative of what small group work in IPE may achieve. This chapter illustrates some of this process, using social capital by way of example.

### **Why Social Capital Theory?**

Hean et al., (2012a, b) and Dennick (2012) suggest that theories that describe and explain social interactions are particularly useful in IPE as social interactions are the essence of these socially mediated experiential learning experiences: students learn with, from and about each other. Each professional group brings to the interprofessional student group (IPSG) knowledge resources about the role and character of their profession. Two central tenets are that the quality of social relationships within the networks must be sufficient for these resources to be shared effectively and learning should be interprofessional. These assumptions imply that the IPSG offers a learning advantage that cannot be accessed elsewhere or through other networks. This is an accumulative advantage as participation in interprofessional groups help students engage in collaborative networks in their future practice. Social capital theory has descriptive and explanatory power. It describes the quality of the network, explains the social inequalities between individuals/groups as dependent on their access to this social networks, and the accumulative advantages this affords.

### **Theorist’s Knowledge: What Is Social Capital?**

Social capital is a heuristic concept used to describe, understand and measure the advantages gained by individual(s) who are part of a social network (Hean et al. 2003). Social capital became popular in the healthcare field to describe the health advantages of being part of a social network and social inequalities in health (Gillies 1997). It is underutilised, however, as a tool to understand the advantage and processes involved in interprofessional working and education.

Social capital theory can be used as a tool to reconceptualise the social network represented in the interprofessional student learning group (ISLG) and explore the potential advantage gained by students who participate within an interprofessional curriculum using this type of activity. Social capital theory proposes that students in these groups learn to build personal social capital and invest in an interprofessional team. They are hence being better prepared to collaborate on entry into practice. Social capital can also be used to describe the dynamic and accumulative effect of being part of these learning groups and the potential inequalities that may arise from being excluded from that network. In this way, social capital theory helps articulate the potential structures and processes within an interprofessional learning network and the advantage that this type of learning may facilitate. There is a central social advantage from being part of an interprofessional learning group or network: knowledge transfer between group members. Acquiring this knowledge leads to an increased understanding of the role of other professionals, an increased ability to articulate one's own professional role and a gain in the competencies needed to work in an interprofessional team. When this is established in training, learning within practice is more easily facilitated and interprofessional knowledge and competence accumulate in a way that would not be possible if the student had not been part of an interprofessional learning group during their initial education. Much of the above is common sense but the theory of social capital gives the practitioner the vocabulary with which to mount a defence of interprofessional education and its importance and advantage alongside uniprofessional education.

A concept analysis of social capital (Hean et al. 2004) highlighted some of its global attributes and component characteristics. Social capital combines two concepts. The first is the social component. This exists in or through the quality, quantity and context of relationships (e.g. Coleman 1988; Vimpani 2000, Mitchell & Harrison 2001). In interprofessional education, the social capital that may accumulate within an interprofessional team in practice is mimicked, or in fact begins, in the interprofessional learning group. The level of social capital generated is dictated by the quality of the relationships formed between student practitioners in their learning interactions. In particular, in interprofessional education, this happens during the experience of learning about, from and with each other.

The second concept relates to the capital of social capital. A Marxist understanding of capital sees it as both a dynamic and durable phenomenon. Bourdieu describes social capital as 'an unceasing effort of sociability, a continuous series of exchanges in which recognition is endlessly affirmed and reaffirmed'; an 'aggregate of the actual or potential resources which are linked to possession of a durable network' (Bourdieu 1997, pp. 51–52). As interprofessional education learning groups are of limited duration and disband at the end of the interprofessional education intervention, the durability of any advantage gained within an interprofessional learning group may at first be questioned. However, the learning, skills and trust of other professional groups created within the interprofessional education network, if managed

correctly, encourages the student practitioner to reinvest in future collaborations when joining interprofessional teams in practice. In this way, interpersonal trust in interprofessional learning group members becomes generalised trust of other professional groups in practice, and the advantages of working in a team accumulates. Greater detail on the concepts of the dynamic nature of social capital in formal groups, such as an interprofessional education group, and ideas of investment and reinvestment in formal social networks is available in Hean et al. (2003).

Capital is also a concept that enables us to explore issues of power differentials and social inequality. The exclusion of the patient from active participation in the interprofessional network means that, whilst they are essentially the reason for collaboration, interprofessional working may enhance the lives of professionals, but excludes the patient from the potential advantages of active group membership. Similarly, if a student does not participate in an interprofessional education learning network (because interprofessional education is not offered, because it is not a compulsory part of the curriculum or if a student is ostracized from the learning network by other student members), the advantage gained through this social network is afforded to some but denied others. Similarly, not all professionals come to the interprofessional education learning group on a level playing field. Students may bring in social capital (and other forms of capital also, e.g. human capital) from their professional groups (or other networks) that afford them greater status, skills and/or experiences. This enables them to take advantage of the knowledge transfer that takes place in the interprofessional education group to a greater degree than other students denied these networks.

Social capital as a multidimensional concept and part of its strength lies in its unification of these dimensions to provide a heuristic and encompassing view of the social advantage that may develop within the interprofessional learning group. An exploration of these dimensions, as seen below, can help curriculum developers pinpoint where interprofessional learning interactions can be enhanced.

#### *Network characteristics*

A first dimension in this pluralistic framework is the description of the social network in which social capital is generated. The features of this network can be partitioned into the physical (e.g. network size; heterogeneity, horizontality – Tijhuis et al. 1995, Veenstra and Lomas 1999) and affective characteristics (e.g. social cohesion; feelings of solidarity – Kilpatrick 2003). In IPE, the professional mix of the student group is a key network characteristic but so too are other demographic factors such as age. Anderson and Thorpe (2008) for example, find that younger students entering straight from school achieved more learning outcomes and were more positive about the learning than older students in IPE and that positive and negative stereotyping was differently constructed between younger and older students.

Behavioural measures of frequency and level of participation in the network may also alter the amount of advantage obtainable from the network (Putnam 1995, Veenstra & Lomas 1999). These network characteristics can be used to describe the nature of the interprofessional learning group. Curriculum developers need to consider how these network characteristics can be optimised to maximise the social advantage, for all participants, that learning in an interprofessional group can achieve.

### *Trust*

Two forms of trust exist, depending on whether or not the person to be trusted is known personally to the respondent or not (Baum et al. 1999, Mitchell & Harrison 2001). In interprofessional education, interpersonal trust is exemplified by the trust that builds between students in the interprofessional learning group. When students rely on a fellow student to pull their weight in the team task, this is an example of interpersonal trust in action. Trust, in those with whom individuals have no first-hand knowledge is generalised trust (Cox 1997) and is to a degree a more important phenomenon. Trusting in the goodwill and professional ability of other professional groups facilitates the working of teams that may be geographically dispersed or transient. It is the aim of IPE that personalized trust developed in fellow group members within the IPSG be translated eventually into generalised trust in others in different professional groups who students will encounter for the first time when they enter practice. Facilitators and curriculum developers should pay attention to the way curricula can be developed to include tasks that build interprofessional trust both at a personal and generalised level.

### *Resources.*

Another attribute of the network important to the generation of social capital are the resources the social network offers to its members (Vimpani 2000). Two forms of resource are relevant: those external and those internal to the individual (Cowley & Billings 1999). External resources exist outside of the individual. They are accessible only through interaction with others within that same network. They take both physical (e.g. financial and other material resources) and abstract forms, (e.g. a collective skill base of people in the network, willingness of network members to offer assistance) (Tijhuis et al. 1995, Cattell 2001). In the interprofessional student group, one external resource is the knowledge that each member holds of their individual profession and their willingness to share this with other members of the group if so requested. Students come to the interprofessional education learning group with a wealth of human capital (the knowledge and skills from their own professional group); However, if the interprofessional education student group does not communicate effectively, does not cooperate with each another, is unwilling to spend time with each other to explore each other's professions, then learning with, from and about each other does not happen. If the social capital is missing from the interprofessional education group, no human capital (increased skills and knowledge of other professional groups) will accrue.

Resources internal to the individual are also worthy of consideration. These are necessary in many instances to help the individual access external resources resident in the network. Internalised knowledge of whom, when and where to go for help, if required, is an example of this (Bourdieu 1997).

### *Norms and rules.*

Norms are those unstated rules or standards that often govern actions during informal or spontaneous social relations. Whilst deviation may be punished by socially imposed sanctions enforced by other group members, compliance with these norms may promote spontaneous co-operation between individuals (Cox 1997). Such cooperation either restricts or facilitates individual and group action for the benefit of the whole (Coleman 1988). The norms and rules in the interprofessional learning groups are not well understood. Complaints of freeloading, especially when the interprofessional learning group is assessed as a group, are often mentioned in the interprofessional education student groups, as in any team. A curriculum developer needs to consider the rules of interaction that should be prescribed when designing interprofessional education activities, or the degree to which norms should be allowed to develop naturally within the group as they begin to work together.

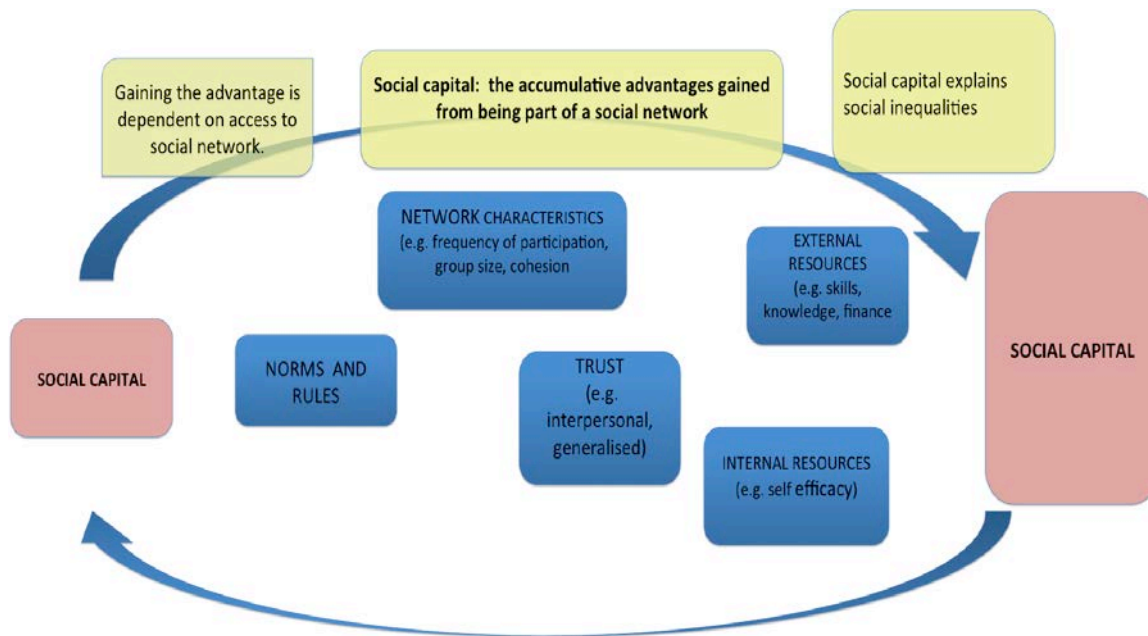
### **Theoretical Quality**

Applying social capital theory to the real life experience of the curriculum developer, as above, can be enhanced if the theorist applies the dimensions of theoretical. These dimensions originate from those criteria developed by Fawcett and Downes to assess the links between theory and research (Fawcett & Downs, 1992; Fawcett, 2005). This chapter focuses on the dimensions of parsimony, pragmatic adequacy, testability, operational and empirical adequacy.

### *Parsimony*

For effective knowledge exchange between the theorist and practitioner, theories must be expressed in as economic a way as possible, clearly and concisely, minimising the number of concepts and propositions that make them up. The premise lies in the fact that the more complex a theory, the more likelihood there is for error being introduced into the claims made by the theory. However, this must be balanced against the danger of over simplifying the phenomenon especially where social processes are complicated (Fawcett & Downs, 1992; Fawcett, 2005). Achieving this balance and making theory as accessible to practitioners as possible is the daunting task of the academic. A good discipline for the academic in achieving this parsimony is attempting a “two minute sell” of their preferred theory. Bourdieu (1997) could seldom be accused of parsimony but Figure 2 attempts this.





**Two minute sell:** Social capital theory applied to IPE explains and predicts the benefits (sometimes unequally distributed) accumulated by students working within an IPE learning groups. It addresses the value of building sustainable relationships and how to achieve this through manipulation of the norms/rules, network characteristics, internal and external resources and interpersonal trust between participants.

**Figure 2:** Two minute sell of the key concepts of social capital.

*Pragmatic Adequacy (Does Theory Have Utility?)*

For a theory to have pragmatic adequacy it must be used in practice or, at the very least, its potential use in practice must be made obvious. By practice we mean the theory must have been used to underpin an interprofessional curriculum, the way it is delivered and/or the approach taken to its evaluation. The pragmatic adequacy of other theories used in the IPE field such as the contact hypothesis is clearly established by Carpenter et al., (2006) when articulating the contact conditions (e.g. equality between professional groups; students working on a common goal) they put in place in an interprofessional education intervention for mental health professionals. They propose that bringing students from different groups together in this way will lead to changes in negative professional stereotyping over the duration of the course. The evaluation therefore measures professional stereotyping before and after the IPE intervention. Pragmatic adequacy has yet to be achieved, however, for Derrida's concepts of deconstruction, used by Thistlethwaite et al., (2013) to unpick the concept of collaboration. Although offering deep insights into how this term is used and what it may and may not describe, pragmatic application of the theory to IPE and the way a curriculum may be designed, delivered or evaluated is not yet established.

In this chapter, the application of social capital to the practical problem of developing an interprofessional student learning group has been attempted and the idea posed that various dimensions (e.g., norms, levels of trust) might be manipulated to achieve quality relationships and knowledge exchange between students from different groups which might be sustained into the workplace. This offers social capital a degree of pragmatic adequacy within the context of curriculum development and delivery. However, it falls short of suggesting concrete tasks and approaches to achieving this. This is largely because other dimensions of theoretical quality have yet to be established: pragmatic adequacy is a precursor to the testability, operational and empirical adequacy of social capital theory (to be described below). It is also the outcome of these. In other words, by applying a theory in such a way that testability, operational and empirical adequacy is achieved, allows the theory to become of practical use to curriculum development and/or evaluation.

*Testability (Are clear research questions, propositions and/or hypotheses evident that are clearly linked to the theory?)*

To achieve the criterion of testability the components of a theory must be empirically observable. In deductive studies, propositions must be clearly derived from the theory and in inductive studies, the theory must have been built from clear propositions derived from empirical data. In both cases, the key concepts and the relationships between them should be clearly articulated. Good quality theory is demonstrated through its potential to be broken down into falsifiable propositions (Popper, 2002). Some testable research questions and propositions derived from social capital theory are presented below. A classification of these is explained elsewhere (Hean et al.2013b)(Fawcett & Downs, 1992). Propositions and questions should have relevance to both the development as well as the evaluation of an IPE curriculum using IPSPG as an approach.

Some propositions may simply assert the existence of a phenomenon (Fawcett & Downs, 1992) and is typified by the statements:

- Social capital is created within the IPSPG.
- Bonding and bridging social capital is generated within the IPSPG. Bridging capital is generated through interprofessional relationships between students and bonding capital is generated via students' uniprofessional relationships (Looman & Lindeke, 2005).

Some propositions simply propose the definition of a concept (Fawcett & Downs, 1992). In the IPE context, and using social capital theory, definitional propositions are:

- Students gain social advantages from being part of an IPSPG.

- The social advantages gained by students are the direct, facilitated exchange of knowledge, an understanding of each other's professions and the building sustainable relationships with other professionals that transfer into the workplace.

Relational propositions relate two or more concepts (Fawcett & Downs, 1992). The *social* of social capital suggests the relational proposition that:

- Social capital created in the IPSE group is dictated by the quality of relationships between student members.

The *capital* side of social capital suggests it to be a dynamic and durable phenomenon and leads to the existence proposition that:

- Social capital created in the IPSE group is reinvested in future interprofessional teams.

The capital of social capital also means that power differentials and social inequality are key and this leads to definitional and relational propositions such as:

- Students enter the IPSE with pre-existing differences in human and social capital
- These differences in a priori human/social capital influence students' learning experiences within the IPSE.
- The key components of social capital (e.g. network characteristics, levels of trust) dictate the social capital generated in the IPSE. It is the optimal combination of these dimensions that delivers the most effective IPE.

Some propositions (and /or research questions) may relate to the individual components of social capital:

- Network characteristics (e.g. frequency of participation, cohesion amongst members the IPSE)
  - The size of interprofessional education group will maximise positive learning with, from and about each other.
  - How many professions should be represented within the group and which professions specifically should be combined in one group for maximum effect?
  - How frequently should students interact with the interprofessional education group during their interprofessional education task to optimize the development of interprofessional and interpersonal trust?
  - What role does each member play in the interprofessional education group and what should be their level of their involvement in the group task to achieve positive learning outcomes?
- External resources within the network (e.g. professional knowledge, team working skills of IPSE members);
  - What are the external resources of the interprofessional education student group?
  - What skills, knowledge and experiences that different professionals bring to their

interprofessional education group?

- Internal resources of network members (e.g. self efficacy of student members)
  - How confident do students feel in their ability to work with students of different professional groups?
- Trust (e.g. interpersonal trust between IPSG members)
  - How do we build trust in the interprofessional learning group? What activities are required to build trust in IPE groups and be encouraged to allow students to behave in consistent and predictable ways, be ready to delegate and share control of the task as well as show a concern for each team member?
- Norms and rules that govern the functioning of the IPSG (e.g. assessment guidelines, ground rules set by the students themselves).
  - Are norms and rules of team working, resource/information sharing in place?
  - What ground rules, especially with regard to roles and issues of freeloading, are in place?

Testing the hypotheses and exploring some of the research questions posed above, takes social capital from being a theory of passing interest to one that has utility for practitioners. Setting these questions/propositions and clearly linking them to social capital theory, also provides a rationale and legitimacy to the curriculum approach or evaluation strategy taken. This is often missing in the IPE arena and is an omission well illustrated by the ubiquitous use of the Readiness for Interprofessional Learning Scale (Reid et al., 2006). The theory and component propositions underpinning the use of this evaluation approach are seldom articulated. Propositions that present why it is anticipated that the overall scale (and its individual components of professional identity, patient centredness and readiness for interprofessional learning) would be expected to change over time, what the relationships between components are expected to be and the hypothesized impact of these components on student learning and future workplace practice, are required to achieve theoretical quality in these studies.

*Operational Adequacy (Are appropriate methods used to develop, test propositions or answer questions?)*

This criterion is fulfilled if the theory/proposition/hypothesis that underpins the research into, or evaluation of, an IPE curriculum is congruent with the research design used to explore or test these. So for example, a study that explores the quality and sustainability of relationships formed between students of different professionals during interprofessional education lends itself to a qualitative approach. The researcher might use focus groups or interviews, a week and then a year after the module has completed to explore with participants the quality and sustainability of the relationships they formed during the module and, include in their interview schedule questions such as “*In your student group how would you describe the relationships with students from the same profession and with students from other professions? How did these relationship impact on your experience of the module? What did you learn from each other? What happened after the Module? Did you see the members of your group again?*”

*Explain why and how this occurred?"* Key to attaining operational adequacy is the authors making clear the link between the underpinning social capital theory and its propositions on the one hand and the subsequent interview questions on the other.

As a second example: a researcher may wish to test, the following hypothesis derived from a focus on the network characteristics dimension of social capital: *The Frequency of group interaction has an impact on level of knowledge transfer between students engaged in learning with from and about each other.*

Operational adequacy would be achieved if a study testing this hypothesis utilised a pretest-post test study design employing a survey tool that measured levels of knowledge of other professional groups (dependent variable) and frequency of participation (independent variable). For this to have operational adequacy, the authors would need to clearly articulate the link between this proposition being tested and the measurements being made, the relationships being explored and to defend the validity of the scales they had used to measure both the dependent and independent variable.

*Empirical Adequacy (Is there empirical data available that answers the question or proves the propositions to be true or otherwise?)*

This means that the research data collected is congruent with the theory that underpins the study. In grounded, inductive studies, where theory is generated, a clear theory must be articulated that explains a component of IPE and this theory must fit well with the themes arising from the analysis of interviews/focus groups conducted with study participants. Green, (2012) for example, clearly articulates a theory of relative distancing, a grounded theory of how learners negotiate the interprofessional. This describes the collection of strategies students employ to construct their professional identities and negotiate their way through their interprofessional interactions. The link between this theory and its constituents, and the data from which it has been derived, are clearly drawn, giving this theory high empirical adequacy in the field.

In theory testing, deductive studies, the component propositions should be proven correct for the theory to be seen as empirically adequate. Currently social capital as a theory has little empirical adequacy in the interprofessional field as the propositions listed above have not been tested and the questions posed are currently unanswered. Empirical adequacy would be achieved if, in the future, empirical studies established a clear link, for example, between the quality of relationships within the IPSPG and the level of learning between students professional groups within these or if relationships between student professionals created in the IPSPG were shown empirically to continue into the workplace.

## **Conclusion**

In this chapter, the importance of theory in articulating and developing interprofessional education is discussed and the potential of utility of social capital as a tool with which small group work may be visualised is demonstrated. As a theory, social capital has much to offer in terms of potential pragmatic adequacy and a concept analysis of the theory has lent it both testability and operationability. The propositions put forward must now be tested in rigorous research designs to prove the empirical adequacy of the theory in the field and in the end its true pragmatic adequacy as a theory with relevance to the IPE practitioner.

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