

Original Research Article

A Realist Synthesis of Potential Underlying Causative Mechanisms Related To the Optimal Design of a Nursing Student Practicum

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Abstract: This paper acknowledges the critical importance of effective practice learning experiences within pre-registration nursing programmes and recognises that such student experiences are commonly delivered by use of a block or integrated practicum framework. It highlights a paucity of research regarding the most effective model to facilitate positive placements and optimise learning before reviewing a range of theories that may act as underlying causative mechanisms affecting clinical experiences for such learners. Congruent with Critical Realist principles, a realist synthesis is undertaken to identify theories and associated empirical studies which might best explain the most important factors affecting practice learning placement within pre-registration nursing programmes. Five theoretical concepts derived from the literature search appear relevant for further examination in respect of their effect on the most desirable practicum model for nursing students; namely the ‘Distributed Practice Effect’, ‘Contextual Interference Effect’, ‘Situated Learning Theory’, ‘Social Identity Theory’ and the ‘Theory of Human Relatedness’. These concepts are explained, supported by related research and their potential relationship with the most desirable qualities of a nursing student placement outlined. It is so far unclear as to the precise extent these five concepts support use of the block and integrated practice learning models within pre-registration nursing programmes; although preliminary analysis suggests the Theory of Human Relatedness may provide the most complete theoretical framework to explain student practicum experiences. The author hopes this realist synthesis will stimulate wider academic debate on the subject and encourage further research in the field.

Keywords: causation, models, placement, practicum, practice learning.

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INTRODUCTION

Practice learning is a key component of education within all healthcare disciplines. Enabling pre-registration students to have practice experiences in different clinical environments and to respond to a diverse range of patient needs may improve educational outcomes (Ohaja M, 2010, Taylor J, *et al.* 2012, Vatansever N, *et al.* 2016), allow such learners to apply ‘what is learned in the classroom to patient care through teamwork, good role models, and advocacy’ (Dimitriadou M, *et al.* 2014, p.241) and facilitate professional socialisation (Msiska G, *et al.* 2014). Given the critical nature of clinical placements within pre-registration nursing programmes, it is therefore surprising that there is still no single placement model that provides a demonstrably superior practice learning experience (Bourgeois S, *et al.* 2011, Rohatinsky N, *et al.* 2017, Bhagwat M, *et al.* 2018) and only limited evidence detailing what factors help to create a good practicum (Jack K, *et al.* 2018).

Whilst the terminology used to identify specific practicum models differs internationally, placement experiences for pre-registration students in various health professions, including midwifery, nursing, occupational therapy and speech and language pathology, are commonly based on just one of two frameworks, namely the block or the integrated practicum model. The block model, also known as the ‘daily’ (Bonello M, 2001) or ‘full-time’ (Shiverick D, 2012) model, which in medical education is referred to as a ‘clinical clerkship’ or ‘core clinical rotation’ (Thistlethwaite J, *et al.* 2013), provides continuous periods of programme time for clinical experiences, which may last weeks or months, and are uninterrupted by classroom-based teaching (Uys L, *et al.* 2005, Levett-Jones T, *et al.* 2011). In contrast, the integrated model, also termed the ‘continuous’ (McKenna L., *et al.* 2013), ‘day release’ (Institute for Employment Studies & International Centre for Guidance Studies 2019), ‘distributed’ (Reinke N, 2018), ‘non-block’ (Perry R, *et al.* 2016), ‘part-time’ (Sala-Hamrick K, 2019),

'protracted' (Boardman G, *et al.* 2019) or 'weekly' (Sheepway L, *et al.* 2011) placement, combines both classroom-based and clinical practice learning opportunities within the same programme study week.

The philosophical approach known as Critical Realism, upon which a growing number of research studies in nursing and the wider social sciences are now founded (Miller K, *et al.* 2010, Terry K, 2013, Bakhshi M, *et al.* 2015, Ryan, G 2018), has been described as 'a particularly relevant philosophical framework on which to base investigations within socially embedded, complex, empowerment focused, practice-based fields' (Coleman P, 2020, p.203). It originates from the late twentieth century work of British philosophers Roy Bhaskar and Rom Harré (Bhaskar R, 2008). Within Critical Realist research, causal explanation is deemed much more important than description (Wilson V, *et al.* 2006) and researchers are expected to examine potential theories for their explanatory power to account for the results of their study (Parpio Y, *et al.* 2013, Frecknall-Hughes J, 2016); a process known as 'retroduction' (O'Mahoney J, *et al.* 2014). Critical Realism also asserts that 'there are rational criteria for judging some theories as better and more explanatory than others' (Wikgren M, 2005, p.14) and that 'the best explanations are those that are identified as having the greatest explanatory power' (Parpio Y, *et al.* 2013, p.491).

The author of this paper is currently undertaking a mixed-methods study underpinned by Critical Realist principles which examines the impact of block and integrated practicum models on the learning experiences of pre-registration nursing students at a UK university. As a result, he is therefore obligated to consider potential theories which might describe underlying causative mechanisms to account for the research results. This paper captures part of the literature review undertaken within the study and in so doing examines potential causative mechanisms affecting 'procedural learning', or 'the ability to learn new perceptual, motor or cognitive skills' (Merbah S, *et al.* 2011, p.15) within practicum-based nursing education.

METHODS

A Critical Realist literature review, also termed a 'realist synthesis' (Wong G, *et al.* 2013), differs from more traditional and well-known systematic and narrative literature reviews. The primary purpose of such a review is to stimulate further questions rather than provide definitive answers (Edgely A, *et al.* 2016). Within a realist synthesis, the author strives 'to determine the extent to which previous research has contributed to the critical realist goals of description and explanation' (Ranyard R, 2014, p.5) and present a case, based on the supporting literature, which leads the reader through their arguments (Jones O, *et al.* 2014); hence the results of

this review and the subsequent discussion are inseparable.

The literature search for this paper was undertaken without date range restrictions and was international in its scope but restricted to English language publications. Relevant material was sought from various practice-based disciplines and used databases including Academic Search Complete, BioMed Central, the British Library EThOS resource, CINAHL with Full Text, the Directory of Open Access Journals, Emerald Premier, Google, Google Scholar, Internurse, OvidSP Journals, PubMed, Sage Journals Online, Taylor & Francis Journals Online and library texts. Search terms were generated after professional discussions with academic colleagues involved in nursing and other professional education programmes and, using a snowballing approach, included: "affective learning", "clinical skills acquisition", "cognitive learning", "motor skills acquisition", "placement learning", "practice learning", "practicum learning", "professional identity", "professional learning" and "professional socialisation". To enhance the search, lemmatization, field options and Boolean operators were employed.

RESULTS AND DISCUSSION

Five key theoretical concepts derived from the literature searches in respect of this study appeared relevant for further examination; namely the 'Distributed Practice Effect', the 'Contextual Interference Effect', 'Situated Learning Theory', 'Social Identity Theory' and the 'Theory of Human Relatedness'.

1. The Distributed Practice Effect and Contextual Interference Effect

The Distributed Practice Effect (DPE), also termed the 'spacing effect', is 'one of the most researched memory effects in cognitive psychology' and the first studies in this field were undertaken by Hermann Ebbinghaus over 130 years ago (Küpper-Tetzl C, 2014, p.71). Essentially, the DPE suggests that 'increasing the time between practice opportunities improves retention' (Tenison & Anderson 2017, p.1). Benjamin A, *et al.* (2010, p.228) claim that 'the advantages provided to memory by the distribution of multiple practice or study opportunities are among the most powerful effects in memory research'. Moreover, Simmons A, (2017, p.357) asserts that 'the positive effects of distributed practice have been observed in numerous domains of motor skill' and Kaipa R, *et al.* (2020) claim that similar benefits have now also been observed in cognitive-based tasks. Various possible explanations for the DPE have been presented, including the suggestion that spacing 'promotes learning by driving changes in cognitive processing' (Tenison C, *et al.* 2017, p.1). For example, Küpper-Tetzl C, (2014) suggests that studying a piece of information repeatedly may lead to the storage of a

range of different contextual components related to the information within its memory trace and subsequently any overlap between the contextual components that are present during a final test session and the ones stored in memory enhances an individual's performance.

Kaipa R, *et al.* (2020, p.17) examined the retention of eight novel French utterances by 50 healthy native English-speaking participants who were randomly assigned to massed or distributed practice groups. Their findings suggested 'participants involved in distributed practice demonstrated better learning over participants involved in massed practice' and they suggested that a possible explanation might be that Distributed Practice was superior in consolidating memory. Work by Simmons A, (2017) examined the effect of time intervals between practice sessions on musicians' learning and found that, amongst 29 non-pianists, significant performance improvement was observed when practice sessions were separated by a period of 24 hours in comparison to those separated by either 5 minutes or 6 hours. Cepeda N, *et al.* (2009, p.9) comment that many studies examining the DPE indicate that a gap of one day from exposure to a learning experience and testing of learning optimises performance but note that very little robust work has been undertaken to examine the DPE over longer periods. Their laboratory studies measuring recall of foreign vocabulary, facts and names of visual objects included test delays of up to six months and found that 'very substantial temporal gaps between learning sessions should be introduced – gaps on the order of months, rather than days or weeks' to optimise learning.

Merbah S, *et al.* (2011, p.15) highlight a related concept, the Contextual Interference Effect (CIE), which refers to the advantage of a 'random' over a 'blocked' practice condition in skill learning tasks but conclude that field-based studies have so far consistently failed to demonstrate this effect. A study by Cheong J, *et al.* (2010) on the acquisition of hockey skills for players with no prior experience of the game, however, challenges this assertion. Their research discovered that 'the random group practicing in a random practice order was more accurate than the block and randomised-blocks groups practicing under repetitive or combination conditions respectively' and so supports the existence of the CIE beyond a laboratory environment.

If improved practice learning results from intervals of several days between exposure to a learning experience and a subsequent learning experience or test, then this would appear to suggest the integrated practice learning model within pre-registration nursing programmes is a preferable placement design. If, however, gaps of weeks or months between a learning experience and a subsequent learning experience/test optimise learning, then this would appear to support the block model of practice learning. Alternatively, if

random practice/testing is most beneficial then a combination of both models might be desirable. At present, however, the type of tests undertaken in this area and the lack of clear indicative evidence in more comparable field-based studies means that the relative strengths of both models of practice learning in respect of the DPE and CIE remain unclear.

2. Situated Learning Theory

'Knowledge is not only contained within written texts, but also within disciplinary and professional organisations, in institutions and in social relationships' (Harden J, 1999, p.209). Congruent with this assertion, the concept of 'informal learning' describes 'the learning that takes place in the spaces surrounding activities and events with a more overt formal purpose'. Such learning is commonly invisible; either because it is taken for granted or simply not recognised as learning (Eraut M, 2004, p.247). Within the context of nurse education, it has been argued that there is a need 'to know more details about the social components of the professional learning community' (Bergjan M, *et al.* 2013, p.1393); not least because the largest component of a student's learning experiences may be informal and unplanned (Wotton K, *et al.* 2004) and 'clinical practice is where student nurses are socialised into a professional role and acquire the distinct behaviour, attitudes and values of the nursing profession' (Thomas J, *et al.* 2015, e4).

Some theories therefore regard informal learning as far more influential than formal educational activities. For example, Situated Learning Theory (SLT) 'focuses on understanding learning contexts rather than individual learning styles' (Fairbrother M, *et al.* 2016, p.46) by proposing that learning is primarily embedded in the social relationships and linguistic processes that predominate within a culture and that effective socialisation within a community of practice (CoP) is fundamental to a newcomer achieving full legitimate status (Lave J, *et al.* 2002). Moreover, 'the identity of the novice or beginner is built through performing tasks and the subsequent reflection and automatization of the new concepts and activities' (Martínez-Arbelaiz A, *et al.* 2016, p.528). SLT claims that 'it is the social situation, social practices and social relationships that create the possibilities for learning' (Wisdom H, 2011, p.13) and that these influences are therefore inseparable from the nature of learning (Whiting C, 2009).

A CoP is not a specific physical environment, nor a clearly defined social or occupational group, but 'an activity system about which participants share understandings concerning what they are doing and what that means for their lives and for their communities' (Lave J, *et al.* 2002, p.115) and is oriented by mutually-held historical and social resources (Wareing M, 2012). The CoP may enable novices and experts to interact with one another (Booth

J, *et al.* 2007) and it is considered natural for these participants to discuss their experiences and knowledge in various ways (Choi M, 2006). For example, storytelling enables participants to ‘contribute to the construction and evolution of “communities of interpretation” and through the continued development of these communities, the shared means for interpreting complex activity is formed, transformed, and transmitted’ (Murphy D, *et al.* 2006, p.539). From the perspective of SLT, learning is not, therefore, a passive process that treats the uninitiated as empty vessels to be filled (McClimens A, *et al.* 2013), but one in which the newcomer both affects, and is affected by, the CoP; ‘acquiring the shared repertoire and displaying it through participation in social activities’ (Martínez-Arbelaz A, *et al.* 2016, p.527). This is not, however, to suggest that effective student learning always automatically occurs within a CoP but may instead be ‘a dynamic process that needs nurturing’ (Morley D, 2016, p.162) through, for example, access to effective role models, peer support and pre-entry placement preparation (Bifarin O, 2016).

Watts J, (2009, p.687) argues that ‘becoming a professional involves the undertaking of professional education and training that are founded on a broad base of learning and culture that serves as a professional apprenticeship’; hence cultural awareness of, and social interaction within, a discipline are deemed fundamental to understanding the principles of practice within a profession. Indeed, Rennie I, (2009, p.20) concedes that, within nursing, ‘it is difficult to determine whether it is training or the clinical environment that informs practice’. For the new entrant to a discipline, learning within a CoP involves participating in socially valued activities and, in so doing, ‘facilitates a move from being at the fringes of a community to engaging in more centralised performances in that community’ (Linehan C, *et al.* 2000, p.437). Such ‘legitimate peripheral participation’ (LPP) within a CoP is fundamental to an individual’s acceptance, integration, and disciplinary learning; hence ‘the focus in situated learning is on participation rather than experience’ (Quay J, 2003, p.108).

LPP is also seen as a pre-requisite in moving towards greater recognition as a member of the CoP, professional mastery (Hall W, 2006) and ‘full participation in the socio-cultural practises of a community’ (Mikkonen I, 2005, p.23). These assertions are supported by the results of research involving interviews with 12 occupational therapy students at a UK university by Clouder L, (2003, p.217), who found they spoke of the need to ‘play the game’; that is to say, the need to become ‘aware of rules, both written and unwritten, and learning to conform to (or at least comply with) the systems in place’. Similarly, Ousey K, (2007, p.39) interviewed 15 nursing students in the UK about their placement experiences and reported that ‘when they learn the language, they begin to feel part of

the ward team as they can communicate with other members of the staff in their own language’.

From the SLT perspective, apprentice competence is acquired through knowledge and understanding of the practice culture by interaction with both peers and masters, rather than through simple observation and imitation, but masters in a setting may also act as gatekeepers regarding opportunities for LPP (Lave J, *et al.* 2002). Within nursing education, mentors (registered nurses supporting such students), and to a lesser extent the wider body of registered nurses, are arguably the masters in a practicum and so nursing students may strive to ensure their actions align with those promoted in the immediate CoP to optimise the scope for their LPP. From an SLT perspective, therefore, the most desirable model of practice learning which a pre-registration nursing programme could employ would arguably be one which best facilitates LPP, promotes professional mastery and ultimately leads to effective socialisation, and full participation, within the CoP.

In Australia, a qualitative study by Ranse K, *et al.* (2007, p.171) explored ‘nursing students’ experience of learning in the clinical setting of a Dedicated Education Unit using a communities of practice framework’ via focus groups attended by 25 second and third-year pre-registration nursing students. The practice learning model for this provision involved two days placement per week alongside other student activities within the nursing programme, so although not described as such, was an integrated practicum design. Respondents reported that the placement model facilitated familiarity with the clinical setting, improved relationships with staff and allowed them to contribute to service provision in a more meaningful way. Similarly, Kevin J, *et al.* (2010) undertook a qualitative and quantitative analysis of a questionnaire completed by 39 nursing students to evaluate a weekly (integrated) placement model for second and third-year nursing students. Respondents reported that the integrated model helped them better understand the practicum setting and assisted clinicians to understand what they should expect from learners. Arguably, such findings support the assertions of SLT and, specifically, the importance of LPP.

Also congruent with SLT, it is argued that care quality (Arkan B, *et al.* 2018) and practice learning (Lee J, *et al.* 2018) may be enhanced by students having long periods of time in a placement. Indeed, research by Warne T, *et al.* (2010, p.814) concluded that ‘a nursing student who sees the whole individual nursing process over a longer period, and with the same patient, is likely to gain a clearer understanding of the role of the nurse than one who has only participated in a series of disconnected tasks during a two or three week placement’ and that longer placement periods ‘appeared to influence the level of overall student satisfaction and

how the quality of supervisory relationship and the pedagogical atmosphere on the ward was experienced'. Nevertheless, a more recent study by Lee J, *et al.* (2018, p.108) found that 'a longer clinical placement guarantees neither positive interpersonal relationships between nurses and nursing students, nor the students' positive learning experiences.' Furthermore, Morley D, (2016, p.161) claims that despite the value of SLT being widely acknowledged, 'its impact on practice learning in the UK has, however, been limited'; whilst Fuller and Unwin (2003) criticise the theory for failing to include any clear role for formal education institutions within the new entrant's learning process.

3. Social Identity Theory

In the context of nursing, little research has been conducted into professional identity (Willettts G, *et al.* 2014), but written records may provide one method by which to understand the culture of a profession (Williams A, *et al.* 1999). Yap T, *et al.* (2014, p.242) claim that the cultural identity of nursing is evident in its 'values, visions, norms, nomenclature, systems, symbols, beliefs, and habits', and this identity affects the way nurses interact with one another, different professional groups, those receiving care and other stakeholders. Social Identity Theory (SIT), developed by psychologists Henri Tajfel and John Turner in the late twentieth century, has been described as 'one of social psychology's pre-eminent theoretical perspectives' (Brown R, 2000, p.745). This theory suggests that social identity emerges from 'people's identification with the groups and social categories to which they belong' (Crogetti E, *et al.* 2014, p.282). Each social category, such as a work group, into which an individual either falls or feels an association, provides a definition of who this individual is in terms of the defining characteristics of this category (Hogg M, *et al.* 1995).

SIT suggests that social identification initially involves the formation of 'a reflexive knowledge of group membership' acquired, for example, via professional education and training and then the development of 'an emotional attachment or specific disposition to this belonging' through, for example, subsequent practice experience (Benwell B, *et al.* 2006, p.25). Categorization and a drive for self-enhancement affects an individual's beliefs about relations between their own 'ingroup' and identified 'outgroups'; accentuating both the perceived similarities between the individual and other ingroup members and their differences to outgroup members (Stets J, *et al.* 2000). Although these differences may have no basis in reality, they still affect 'the specific behaviours that group members adopt in the pursuit of self-enhancement' (Hogg M, *et al.* 1995, p.260).

SIT proposes that individuals seek to acquire and maintain a positive and secure social identity (Hornsey M, 2008) and thereby enhance their self-

esteem by making favourable comparisons between the social group to which they belong, the ingroup, and other different relevant outgroups (Brown R, 2000); a process known as 'social comparison' (Skevington S, 1981). Such comparisons often lead outgroups to be reductively characterised by members of the ingroup, leading to stereotyping and prejudice (Benwell B, *et al.* 2006). For example, in nursing, nurses delivering physical healthcare are commonly portrayed simply as the doctor's helper (Ballou K, *et al.* 2010) or handmaiden (Matziou V, *et al.* 2014), displaying 'an obsession with physical care' and perceiving the care recipient as a diagnosis rather than a human being (Pearson A, *et al.* 2005, p.46). Nurses working in other fields are often described in equally critical terms; being regarded as not 'real' (Shepley J, 2016) or 'proper' (Ramsay D, 2015) nurses and so inferior to their colleagues delivering physical healthcare (Sabella D, *et al.* 2014). Specifically, mental health nurses have been portrayed as having a job that is primarily custodial (Nolan P, 2000), founded on little more than common sense (Holmes C, 2001) and regarded as lazy; avoiding hard work and instead chatting to patients (Hitchen L, 2008).

According to SIT, a member of a low status group can acquire a positive social identity, an action called 'social change' (Skevington S, 1981), by various means. These include making comparisons that are more flattering to the subordinate group, downplaying the less desirable aspects associated with their group, seeking to overturn the existing hierarchy (Hornsey M, 2008), reinterpreting such aspects of the group in positive ways, or highlighting new, distinctive, or positive dimensions about the group (Skevington S, 1981). Members of an inferior group may even choose to enhance their self-esteem by leaving this group (Hornsey M, 2008).

From the perspective of SIT, the most appropriate model of practice learning may arguably be one that best enables nursing students to form strong, positive, emotional attachments with members of the clinical team within a placement, identify themselves as members of this group and perceive it as having high social status. Presumably when such learners are unable to develop an affinity with placement staff, however, they may instead create a social identity based upon membership of another group; for example, being an undergraduate within the university or a member of the student group in a practicum. Such conditions might lead the student to regard non-student practitioners within their placement merely as members of an outgroup with whom they are compelled to interact. Moreover, these perceptions may lead them to hold negative views of this staff group, be challenging towards them, critical of their practice or the service they offer and thereby adversely affect the student's performance within the placement. A recent survey in the UK completed by 6,329 healthcare learners across

clinical learning environments in north east England and Yorkshire found that over 25 percent of respondents who were unlikely to recommend their practicum said that this was because it had not felt inclusive; whilst over 55 percent of respondents who indicated that they were likely to recommend their placement would do so specifically because it had felt inclusive (Health Education England 2021). Perhaps such responses reflect the extent to which these learners acquired a positive social identity as a member of the clinical team within their practicum.

Despite the potential value of SIT as a conceptual framework to examine the relationship between nursing students and practitioners within a practice learning environment, several limitations of this theory have been highlighted. Whilst SIT has been frequently used to retrospectively explain intergroup activity it has been much less effective in predicting such behaviour (Korte R, 2007) and research has not so far provided evidence of a strong correlation between the individual's self-esteem and the perceived status of their ingroup (Brown R, 2000). Moreover, Hogg M, *et al.* (1995) suggest that SIT fails to clearly articulate the specific psychological and social factors involved in group processes. Given the expectation that, to be deemed a robust and credible explanation, any scientific theory must be falsifiable, a key criticism of SIT is that its ability to account for an extremely wide range of observed phenomena means that it fails to comply with this requirement (Hogg M, *et al.* 2000).

4. The Theory of Human Relatedness

Originating from the discipline of mental health nursing, the Theory of Human Relatedness (THR) addresses psychosocial mechanisms associated with human development, wellbeing, and learning. In common with SLT and SIT it recognises a social dimension to learning, but places greater emphasis on 'establishing and maintaining relatedness to others, objects, environments, society and self' (Hagerty B, *et al.* 1993, p.291) and the importance of an individual's sense of belonging (Hagerty B, *et al.* 1996) within individual growth and development. Relatedness is regarded as a universal phenomenon over which people have choice and responsibility, but one affected by factors such as race, culture, age, and gender. Individuals assign meaning to their experiences of relatedness based upon their sense of self and 'the concurrent level of comfort or discomfort associated with that involvement'. It is argued that people also 'experience sensitive periods during which interventions can influence the nature of their relatedness experiences' (Hagerty B, *et al.* 1993, p.292) and disruptions to an individual's sense of relatedness can adversely affect their physical, psychological, social and spiritual wellbeing (Silvas D, 2013, Potter-Dunlop J, 2017).

The THR proposes four states of relatedness, namely 'connectedness', 'disconnectedness',

'parallelism', and 'enmeshment' (Betz C, 2004). Connectedness describes an individual's active involvement with another person, object, group, or environment that generates a sense of comfort, well-being, and a reduction in anxiety (Levett-Jones T, *et al.* 2009b). Disconnectedness occurs when a lack of active involvement leads someone to experience anxiety, distress, and reduced well-being. Conversely, parallelism refers to situations when a lack of involvement is experienced as comfortable and promotes a sense of well-being; whilst enmeshment refers to conditions in which active involvement generates discomfort and anxiety (Hagerty B, *et al.* 2003).

Four conditions; a sense of 'belonging', 'reciprocity', 'mutuality', and 'synchrony', promote an individual's sense of relatedness (Strobbe S, *et al.* 2012). Belonging describes the extent to which a person feels an integral part of a system or environment, whilst reciprocity reflects the 'individual's perception of an equitable alternating interchange with another person, object, group, or environment that is accompanied by a sense of complementarity'. Mutuality refers to situations in which a person believes they share a vision, goals, sentiments, or characteristics with others; whilst synchrony occurs when a person's experiences are congruent with his or her internal rhythms and their interaction with the external world (Hagerty B, *et al.* 1993, p.294).

During the three decades since the THR was first proposed, there has been growing interest in its principles. Its application to other fields of practice, such as paediatric nursing (Curley 1997, Betz C, 2004), has been examined and research studies have drawn upon this theory in areas such as the treatment of alcohol dependency (Strobbe S, *et al.* 2012) and social processes associated with adolescent connectedness (Karcher M, *et al.* 2002). A particular focus, however, has been on its explanation of the importance of belonging to the student learning experience within clinical settings. Vinales J, (2015, p.534) claims that 'if a student nurse does not fit in and does not feel part of the team, this has the potential to hinder his or her learning and ability to progress from the theoretical elements of nurse education to the practical elements of nursing in the real world' and various studies appear to support this assertion.

A survey in the USA involving 1,296 National Student Nurses Association members found that a strong sense of belonging in the practice learning environment had a positive impact on student learning, motivation, and confidence (Grobecker P, 2016). Using interviews, a focus group and analysis of student journals involving a purposive sample of 12 fourth year pre-registration nursing students and six preceptors (registered nurses supporting such students), Sedgwick M, *et al.* (2008) sought to describe student and

preceptor experience of a remote rural clinical practicum in Canada. The researchers concluded that 'for many students, feeling they were accepted by the staff was more important than the actual clinical nursing experience offered' and that 'the importance of being a team member in the rural hospital setting where the nature of nursing practice is described as 'we work as a team', 'we're it', and 'we're family' is crucial' (p.8); thereby reflecting the key propositions of connectedness, belonging, reciprocity and mutuality captured within the THR. Similarly, a study in Scotland using semi-structured interviews to explore the clinical practice experiences of a purposeful sample of 10 final year nursing students reported that respondents 'felt they were valued team members because they perceived they were doing 'legitimate nursing work'' (Anderson E, *et al.* 2008, p.448).

Results from a study using a questionnaire examining the clinical learning experiences of 147 first, second and third-year undergraduate nursing students at a UK university were said to 'confirm the importance of personalisation and sense of belonging and acceptance for nursing students to be a key factor in the clinical learning environment' (Shivers E, *et al.* 2017, p.63). In Australia, focus groups involving 25 second and third-year pre-registration students highlighted the importance these learners assigned to being accepted within workplace communities and some reported 'incidents of feeling unwelcome' in which they were 'ignored by some staff in the clinical unit or spoken to in an abrupt manner' (Ranse K, *et al.* 2007, p.174). A more recent systematic review of socialization among undergraduate pre-registration nursing students by Salisu W, *et al.* (2019, p.6) similarly found that 'nursing students face career-related challenges such as discrimination, disrespect and being isolated by other members of the nursing profession during training', leading them to 'become withdrawn and lose interest in the training process'; experiences that, from the perspective of the THR, may reflect student disconnectedness.

A study involving semi-structured interviews with 18 nursing students in two Australian universities and one UK university found that 'staff-student relationships (including receptiveness, inclusion/exclusion, legitimization of the student role, recognition and appreciation, challenge and support) were the most important influence on students' sense of belonging and learning' and the findings were common to learners across all three educational institutions (Levett-Jones T, *et al.* 2009a, p.316). More concerningly, participants in this study spoke of conforming to clinical practices during a practicum that they knew to be incorrect to avoid 'rocking the boat', being viewed as an outsider and endangering 'their precarious sense of belonging' (Levett-Jones T, *et al.* 2009, p.348). Arguably, such findings reflect the THR concept of enmeshment. Thomas J, *et al.* (2015, e5)

therefore assert that 'professional socialisation remains fundamental to the practice of nursing' and 'if negative consequences occur during its process at the beginning of a student nurse's journey, they may well impinge on their ability to nurse and to ultimately provide care'. If the underpinning assumptions of the THR are accepted, one might reasonably assert that the ideal model of practice learning for pre-registration nursing students would be one which best promotes connectedness and a sense of belonging, reciprocity, mutuality, and synchrony.

In Malta, Bonello M, (2001, p.21) undertook semi-structured interviews with 18 newly qualified Occupational Therapists who, as students, had either attended hospital placements between one and three days per week depending on their year of the programme over an average three-month period (an integrated practicum model) or 'were placed in hospitals for one-month periods and had to attend on a daily basis' (a block model). The researcher reported that respondents who had experienced the block placement model suggested it offered effective and meaningful clinical learning opportunities. Those assigned integrated practice learning, however, 'stated that the way that placements were interspersed between their lectures was conflicting to the 'gestalt' of their experiences' and 'seemed to highlight the difference between the theoretical and practical worlds' they encountered within their course', arguably suggesting this model therefore inhibited synchrony.

Using a questionnaire completed by 210 nursing students in two Canadian provinces, Rohatinsky N, *et al.* (2017) discovered that third and fourth-year learners expressed a preference for block placements; believing that they strengthened working relationships with nurses in the clinical setting. Whilst a subsequent survey involving 141 nursing students from 5 universities in Canada and 52 instructors (registered nurses supporting such students) found no clear preference for the block or integrated practicum model, the authors suggested immersion within the clinical setting was better promoted by block placement experiences (Rohatinsky N, *et al.* 2018). Arguably such findings suggest that, from the perspective of the THR, a block framework may, therefore, better promote a student's sense of connectedness and belonging.

In contrast, an evaluation of a nursing associate programme in England by Vanson T, *et al.* (2019, p.4) based on a survey of 2,477 trainees, 531 of their line managers, recruitment and attrition records and focus groups found that 59 percent of trainees and 77 percent of their line managers preferred an integrated placement model. Amongst other perceived benefits, clinical learning experiences within this framework were regarded as providing a better work/life balance. Similarly, an Australian study by Boardman G, *et al.* (2019) reported that 22 second and third-year nursing

undergraduates attending focus groups found practice learning based on an integrated model allowed them to better manage the competing demands of family life and programme studies. It seems, therefore, that a case can also be made for synchrony being better promoted by the integrated practicum model.

CONCLUSION

In accordance with the principles of Critical Realism, this paper has provided a realist synthesis, primarily employing a retroductive process, to assist in determining which underlying theoretical mechanisms best may account for identified practicum experiences in pre-registration nursing programmes. The relevance and value of the DPE, CIE, SLT, SIT and THR to explain these findings has been the focus of such activity. Ultimately, it is expected that the work may help establish which of these theories best explain results from the wider body of knowledge associated with practicum models and student learning experiences in clinical settings; or indeed whether other, so far unidentified theories, may provide more compelling explanatory arguments.

To date, due to the lack of a robust evidence base, it remains unclear as to the extent each concept supports use of the block and integrated practice learning models within pre-registration nursing programmes. Preliminary analysis from this study, however, suggests the THR may currently provide the most complete theoretical framework to explain student practicum experiences. This is because it arguably provides a more detailed explanation of the broadest range of observed phenomena highlighted in research associated with nursing student conduct in a clinical setting.

The author anticipates that this paper and his related research will contribute to clarifying relevant theories which may be used to account for nursing student learning experiences in placements and stimulate further academic debate. It is his wish that it will also encourage other investigators to examine this under-researched topic and in so doing develop the extremely limited body of subject knowledge currently available. Finally, he hopes that this work will help promote further emancipatory research underpinned by Critical Realist principles to address a wider range of practice-based, socially embedded, complex issues worthy of investigation within the field of pre-registration nursing education.

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