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**Interpersonal and Critical Thinking Capabilities in those about to enter
qualified social work: a six-centre study**

Abstract

The 'Process' of intervention is understood to be fundamental to social work - evident in, for example, the literature on reflexivity. Little work though has focused on the detailed excavation of the cognitive processes of reasoning in decision making. This is widely recognized as requiring considerable analytic and critical abilities. Although this is long-established, its importance is contemporarily apparent at policy level from the rationale underlying current initiatives such as Frontline. However, it is also long understood the reasoning capabilities underlying these processes cannot, be considered in isolation from the interpersonal-emotional, encapsulated in a longterm theoretical concern for both Heart *and* Head. Furthermore terms like 'capability' or 'proficiency' in professional qualification imply some standard to be reached in practice. This invites measurement. This novel study seeks to bring together three dimensions of the (1) measurement of (2) the interpersonal-emotional and (3) critical thinking – measurement of key facets of *both* Head *and* Heart. A six-centre, six-University collaboration it focuses on those at a crucial point: where individuals are about to enter qualified practice. The findings show they score highly on most interpersonal measures (with room for improvement), but show huge variability in Critical Thinking Capabilities. The implications of this are discussed

Interpersonal and Critical Thinking Capabilities in those about to enter qualified social work: a six-centre study

How social workers think - the cognitive processes of decision making - is an issue at least as important as what they should know. The latter is the subject of the much more prominent focus on Evidence Based/Informed Practice (Scurlock-Evans and Upton, 2015). How practitioners make sense though is an issue of meaning, but that 'making of meaning' is also a cognitive-reasoning process (thinking about something logically): What are the key facets of reasoning involved? What are the mental processes (rather than, say situational characteristics) by which they decide a course of action? How can they ensure the maximum rigour when conducting practice? How can error be minimized? and so on. These are all - from a cognitive perspective - issues of reasoning rather than knowledge.

This focus on reasoning processes is at the heart of judgement and decision making. However, compared with, say medicine (Patel et al, 2005), there has been little focus on these reasoning processes in social work research. This does not mean that process as a whole has not been of interest in social work – reflexivity, with its myriad meanings, multiple theoretical positions and, at times combination of situational factors with process in part does (D’Cruz et al, 2007). But the contribution – specifically - of process reasoning has been little examined. Where it has, this has primarily been through theoretical considerations or critical analysis rather than research-based (Munro, 1999; Taylor and White, 2006)

Equally, the issue of measurement is at the heart of practice – not only in the sense of, say, evaluating outcomes or levels of need, but in the quality of practice performed. Measurement is, however, implicit, hidden by its qualitative nature. If we look at the most obvious measures of quality – those of capabilities (BASW, 2016) or proficiencies (HCPC, 2016) – we see standards to be achieved, expressed linguistically. Those qualifying should be competent, capable or proficient (depending on which adjective is in vogue). A myriad of expectations are encapsulated within standards for qualification. Each of these involves reaching a certain level. That level however is one qualitatively measured, a matter of judgement, and left to a wide range of practice educators to decide. Who is to say that practice educators in Carlisle make judgements on the same grounds as those in Camborne, or those in Berwick the same as Bromley?

However, although linguistic, they are as much measures, albeit implicit, as would be the case if they were numerical. As a caveat we might expect greater exactitude - and potentially consistency – with (rigorously developed) numerical measures. Clearly we are measuring practice quality when we use criteria, even linguistic, to distinguish that which is good enough from that which is not.

This reasoning process, or level of criticality, and implicit measurement are, furthermore, of central policy interest. This is reflected most obviously in initiatives like Frontline (2014). This emerged with the explicit purpose of focusing on improving the quality of social work force, particularly its leadership, through encouraging highcalibre

entrants to social work. In an early bulletin it advertised the huge increase in Oxbridge and Russell Group graduates applying for Frontline, when compared to conventional social work qualifying routes, reflecting, it stated, the need of social work for 'attracting the best and brightest' and calling social work 'a highly skilled leadership profession' (Frontline, 2014) . It is fast track, carried out separately from mainstream social work education, trains a minority of starting professionals and

costs considerably more. It is the subject of some controversy, some criticising it as misdirected and politically motivated (Cooper, 2017)

Both the process of practical reasoning underlying judgement and decision making and its implicit measurement are key to social work, yet subject to limited research. These, though, cannot be considered without reference to the interpersonal/emotional.

Their necessarily interwoven nature is encapsulated in the long-standing notion of social work being a matter of 'Heart and Head' (Bosanquet, 1901; Hardiker, 1981). These may be considered foundation elements underlying much, if not all, aspects of social work (certainly that related to work with service users). Their status as key foundations for social work is evident from the separate literatures devoted to the intellectual-critical thinking and the interpersonal-relationships (Coleman et al, 2002; Brown and Rutter, 2009; Hennessy, 2011; Ruch et al, 2010) and indeed the proficiencies required of qualifying practitioners (HCPC, 2016).

Their centrality in social work is widely recognised. Coleman et al (2002, p 583) comment – regarding critical thinking - on its practical importance 'Critical thinking is an important ability for social workers to have'. Brown and Rutter (2009, p 29) indicate why: 'the skills of critical thinking allow the best quality decisions or actions for the situations.... [social workers] encounter'. Likewise, on relationships, Howe (1998, p 45) comments 'that relationship skills.....are necessary in social work,

....

not an add-on luxury..... Rather, they are integral and essential to the theory and practices of the occupation'. The features, in other words, are necessary conditions for social work to be taking place at all.

Decision Making in social work, then, is a process: developmental, with head and heart as foundation elements. Some social work research has addressed decision making but not generally in the tradition of cognitive processes analysis (Helm, 2011; Whittaker, 2014). One approach has focused on the examination and explication of cognitive processes (the processes involved in thinking and reasoning). Sheppard's (1995a and b) theoretical work on 'Emergent Understanding' drew on three foci: construction of meaning; process of reasoning; and accuracy of judgement (Sheppard, 1995a and b). Subsequently empirical research conceptualised a range of reasoning processes undertaken. However, the data suggested considerable variation between social workers in precision and capability in this reasoning process (Sheppard et al, 2000; 2001)

This tantalizing small scale study was undertaken, however, without formal measurement nor overt reference to the 'Heart' element of Head and Heart. That Head and Heart, however, have an uneasy, even contradictory, relationship has become evident in a more recent study (Sheppard and Charles, 2015). This demonstrated the intellectual and interpersonal remain highly distinct domains in social work, capabilities in the one at times actively contrary to those in the other. It provided a welcome demonstration of the exceptional capabilities required by social workers - there is evidence in literature beyond social work that proficiencies tend to be in one *or* the other (cognitive or empathetic) rather than both (Gillin et al, 2013). However, it also indicated evidence of the fundamental demands of social work, before the complexity of cases is even considered.

Their fundamental place within social work; the urgency bestowed by current policy and practice developments in social work; their key role in judgement and decision making; and the growing importance of precision in determining performance levels suggest an urgent need for overt measurement of the intellectual-Critical Thinking

and Emotional-Interpersonal (Head and Heart) in tandem. This research seeks for the first time to undertake a substantial study measuring these two key dimensions jointly at a crucial point by carrying out a six-centre study involving 12 cohorts on the verge of entering qualifying practice.

It has the following aims

- to identify interpersonal and critical thinking capabilities in social work graduands
- to contextualise these measures through comparison with relevant normative samples
- to examine variations in these capabilities according to University (pre/post 92) status and degree (Masters/Bachelors level)

Methods

This study was of a cross sectional survey design. It was a six University collaboration involving 12 cohorts equally divided between Bachelors and Masters programmes from geographically diverse Universities in England and Wales. These institutions constituted just under one-fifth of the 34 Universities providing both Masters and Bachelors social work provision, enabling a comparison by degree taken. The sample was broadly stratified to reflect the 50/50 division between pre and post-92 Universities, with three former and three latter institutions. Pre 92 Universities are older establishments, while post 92 universities have been established after 1992. The former generally have higher status, applications and entrance standards. A pilot study was undertaken prior to the main research, to ensure both the viability of the study and its efficacy (Reference – Authors')

Instruments

Two measures were used: the NEOPI-R to measure Interpersonal (IP) and the Watson-Glaser Critical Thinking Appraisal (WGCTA) to measure Critical Thinking (CT) Capabilities. These are the longest established, most widely used and comprehensively tested instruments in their fields, with high levels of reliability and validity, confirmed internationally (Costa and McCrae, 2006; Loom and Thorpe, 1999). They also both possess normative sample data in relation to which our sample could be compared, enabling findings to be placed in context.

The NEOPI-R examines the five domains of personality (neuroticism, extraversion, openness, agreeableness and conscientiousness). These domains contain 30 facets,

each of which is sufficiently robust to be examined in its own right (Lord, 2007). Our focus was on six facets which have been identified to be of enduring importance to social work. These were (with references to relevant exemplar social work literature in brackets):

Altruism (Ngai and Cheung, 2009)

Warmth (Koprowska, 2010)

Compassion/tender mindedness (Radley and Figley, 2007; Kinman and Grant, 2011)

Feeling Insight (personal receptivity) (Kinman and Grant, 2011)

Deliberation (Koprowski, 2010)

Assertiveness (McCabe, 1998; Hardcastle et al, 2011, ch 8)

These are areas often associated with Emotional Intelligence. However this has been subject to extensive criticism in psychology for: the misapplication of the term 'intelligence', failing to differentiate between personality traits and emotional states attitudes and values, and confusion with established personality traits for which there is considerable evidence without recourse to emotional intelligence as a term (Ingram, 2013; Locke, 2005; Schulte et al, 2004; Smith et al, 2008) and may best be understood as a metaphor. Rather than 'throw the baby out with the bathwater' we

identified key interpersonal areas long-established in social work, employing the extensively validated and reliable NEOPI-R for the purpose of measurement. Although we focused on six facets it was necessary, nevertheless, for the NEO PI-R to be completed as a whole (thence to extract data from the relevant facets). Hence participants responded to the 240 items from which data from the five domains and 30 constituent facets (each of which contained eight items) may be extracted. The WGCTA measures Critical Thinking (CT) 'defined as the ability to identify and analyse problems as well as seek and evaluate relevant information in order to reach appropriate conclusions' (TalentLens, 2011, p 3). Although general, as a description of key elements of reasoning and thinking for social work this can hardly be bettered. However WGCTA nevertheless focuses on generic CT capabilities, enabling contextualisation of findings/scores.

The WGCTA has three domains, measuring reasoning in Inference, Recognising Assumptions and Drawing Conclusions (containing Deduction, Interpretation and Evaluating arguments) (TalentLens, 2011). Inference involves 'rating the probability of truth of inferences [deducing or reasoning something from evidence or reasoning rather than explicit statements]...based on given information'; Recognising Assumptions is 'identifying unstated assumptions or propositions underlying given statements'; Drawing Conclusions encapsulated three facets - Deduction 'Determining whether conclusions follow logically from given information', Interpretation 'weighing evidence and deciding if generalisations or conclusions based on data are warranted' and Evaluating Arguments 'evaluating the strength of arguments with respect to a particular question or issue' (TalentLens, 2011, pp3-4). It contains 40 items, multiple choice questions, each of which has a correct answer and overall, therefore, yields a maximum score of 40 (and minimum of 0). Measurement and scores for each domain of CT may also be extrapolated.

Ethics and Data Collection

The data were collected during the final term before qualification after, or close to, the end of final placement. Data collection was strategically placed at that point because of its crucial stage in professionalization – immediately prior to the point of qualification, enabling us to have a 'window' into standards close to the point of starting qualified practice – and because this approach enabled us to capture a diverse and substantial sample.

The study initially Ethically Approved by the lead institution, received multi-site approval. Before undertaking these tasks a number of facets were explained to the participants both verbally, and in writing, including the nature and purpose of the study, freedom to choose whether or not to participate, confidentiality, and the right to withdraw. They were given the opportunity to ask questions (generally taken up) which were answered. Written consent was provided by all participants. Only once this process was complete were the tasks undertaken. A pilot study focused on its efficacy and ethical features, included in particular the need for consent confidentiality and right to withdraw following initial consent (Reference-Authors'). The instruments were themselves explained to participants, although clear instructions are also included in the instruments themselves. Participants completed the instruments in groups. They generally each take less than 30 minutes to complete, but participants were given as long as required. Each instrument was completed separately in order to prevent mental fatigue. A member of the research team was available throughout and all finished instruments were checked to ensure they were fully completed.

Analysis

The instruments produce interval data for both individual items and domains (facets in the case of NEOPI-R). Tests of significance employed, depending on data, the t test

or Analysis of Variance. However, with larger samples significance (the likelihood that findings are a matter of chance or represent some underlying systematic difference) can be achieved where the scale of that difference is relatively trivial (i.e. the difference may indeed be systematic, but it is not very great). In these circumstances additional calculations, including where appropriate, effect size (Cohen's d) has been used. The coefficient of variation was used to examine the degree of homogeneity amongst social work graduands in the CT and IP dimensions examined. Comparison was undertaken according to University status (pre/post-92), degree level (undergraduate/postgraduate); between different facets/dimensions; and against normative samples.

Results

The total cohort was 407, of whom 301 (74%) participated, a highly satisfactory response rate. 86% were women; two thirds (67%) were white British, 23% were Black or mixed race (including Black British) African or Caribbean; 3% were Indian Pakistan or other Asian; the rest classified themselves as 'other white' (including white Irish) or preferred not to say. Mean age was 31 (minimum 20 maximum 59).

IP and CT Measures

Table one focuses on the graduands' Interpersonal Scores, in context of the UK normative sample (Costa and McCrae, 2006). The UK Normative Group comprised 1301 people, 795 men and 353 women [151 unknown], mean age 43. The authors sought to sample as broadly as possible with respect to industry sector, job title and seniority (Costa and McCrae, 2006). It is clear from its make-up that it was an opportunity sample and the implications of this will be made clear later when discussing the results

Table one shows, relative to the normative sample, that social work graduands scored particularly highly on Compassion, and higher in relation to Feelings Insight and Altruism in all of which $p < 0.001$ (t test). More significant is the *scale* of difference (answering the question: how much difference was there between two samples?). This is evident from calculating Cohen's d, where a large effect size ≥ 0.8 ; a medium ≥ 0.5 ; and small ≥ 0.2 .

This yielded a large effect size to Compassion and a small effect size to Feelings Insight and Altruism. They scored considerably lower, however, on Assertiveness. This was also significant and the effect size was large

The coefficient of variation, which measures the degree of variability around the mean, shows a much greater degree of homogeneity, furthermore, amongst the 'positive affect' measures than those of deliberation and assertiveness. These graduands, in other words were, relatively, much more alike on those former measures than latter measures where some were far more liable to be assertive and to deliberate than others.

Table One here

Table two focuses on CT scores. The (UK) General Population comparison group was chosen because of its general application; Law/Business because of the professional/occupational nature of their qualification and because they were applicants for public sector jobs, characteristics largely shared with the social work sample. In both cases, furthermore, the focus was on UK candidates (TalentLens, 2011). However, we should again note that these were opportunity samples (of job

applicants taking these tests) and there is little information on the social and demographic make-up of these groups (for example we are not given gender makeup

of the Law/Business group, though we do of the general population, in that case only one third being female). Again the implications of this will be discussed later. Table two shows these social work cohorts scored markedly lower in critical thinking than either a general population group of multiple occupations or public sector job applicants with law or business degrees. The mean percent score for these social workers was 50.7% compared with 65.2% for the general population group and 66.5%

for the Law and Business group. In both cases the differences (between social work graduands and the normative samples) was significant. The effect size, furthermore, was large in both cases. This is also clear from the difference in mean scores shown in table two.

The 'within group' comparison (of performance at different areas of CT) shows scores as a percentage of potential maximum. This approach was taken because there are different maximum scores for different facets of critical thinking. The first noticeable feature is the considerable difference between the highest and lowest scores – individuals were qualifying with utterly different levels of critical thinking capabilities. This diversity in CT is reflected in its coefficient of variation. If we compare this, for example, with the positive affect measures of table one, we find they were a far more homogeneous group in positive affect than they were in critical thinking.

Table two also compares the three facets of CT, showing the capacity to recognise assumptions was significantly lower than the capacity to evaluate arguments or draw conclusions. As interesting, however, was the relative diversity of capabilities in recognising assumptions in this sample, compared with evaluating arguments and drawing conclusions.

Table 2 Here

Comparing Sectors and Levels: Pre and Post 92 and Masters and Bachelors level

Table three shows variations in CT according to University 'sector' (pre and post 1992 Universities) and degree level (Bachelors and Masters). The pre-92

Universities did not have graduands with higher CT capabilities. Although the post-92 Universities (ex-Polytechnics) had a mean score lower than pre-92 Universities, this difference was not significant. However there was a highly significant difference between mean scores for Masters level compared with Bachelors level cohorts.

Marked as a % out of 40 (maximum) the Masters cohorts mean score was 10% higher than the Bachelors group. There was, in Cohen's terms, a 'medium' effect size (on its upper reaches) where $d=0.66$.

Table 3 Here

The interpersonal scores showed no significant differences, either between pre-post 92 Universities or between Masters and Bachelors cohorts except, in relation to the former division, with Compassion. However, we should remember this was one of only 12 measures (six interpersonal for each of the pre/post 92 and Masters/Bachelors divisions) – 14 if we include CT measures. Where significance is set at $p<0.05$ (a 1/20 likelihood the result will be a matter of chance) finding one significant difference may not be too surprising. The main impression interpersonally is of homogeneity.

Discussion

We should first note the limits to this study. Although a proportionately significant sample (of England and Wales as a whole), this was nevertheless only one year of graduands. They were, furthermore, a sample at one particular point in their career – becoming qualified practitioners. We do not know, for example, that a study would generate similar findings if, say, it concentrated on more experienced practitioners. It is cross sectional – it does not provide a sense of the possibility for growth and change as might happen where a focus were longitudinally on, say, students through the course of their study, social workers over a period of growing experience, or post qualifying study. It is focused on locations in England and Wales, rather than the UK as a whole.

Nevertheless, there is much to recommend it. In an undeveloped field – the forensic examination of cognitive processes in judgement and decision making – the issue of whether key elements of these processes can be measured is very new indeed. Furthermore, where there is a major concern about standards, the issue of measurement becomes of acute importance. The sample is substantial and covers diverse locations within the UK. It is also structured in terms of key features liable to influence, and make representative – the findings: the division between ‘old’ (pre 92) and ‘new’ (post 92) Universities and between the two major social work levels of qualification – Masters and Bachelors. Its focus, moreover, on social workers at a common point in career development lends coherence and focus to the study. That moment furthermore – at the point of qualification – is crucial.

Although our focus is on general implications of these findings for social work generally and education in particular they are underpinned by anti-discriminatory assumptions/principles in two respects: we should be seeking to promote the entrance of candidates with the requisite qualities fairly and consistently in a way that ensures unintended bias does not hinder that entrance; and we should be seeking to promote amongst those selected the capacity to manifest these key professional qualities through educational and development opportunities. The use of these instruments may help in these respects, but also the following/subsequent comments – both in terms of concerns and suggestions may be considered as intending to promote these two principles.

Interpersonal capabilities provide a bedrock for social work – a *sin qua non* of the profession. In this respect the data on positive emotions such as compassion, altruism and personal feelings insight go some way to confirm what may be expected of these capabilities in those about to enter practice. We should be careful, however, about over-interpreting this. The normative group was an opportunity sample and we cannot state that it is representative, in the way characterised by a probability sample, of the adult UK population. Indeed, the gender make-up suggests this is not the case (women make up 47% of the UK workforce, but a third of the normative sample) (Office of National Statistics, 2016)

Deliberation and assertiveness do not perhaps reflect those expectations to the same degree. Deliberation can be highly significant in ensuring decisions are thoughtful and considered, yet these graduands scored markedly less than the normative sample. Likewise, there are many occasions – working with dangerous situations, advocating and ensuring the rights of vulnerable clients with outside agencies and services – where assertiveness is an important asset. It is, indeed, in the *balance* between features like assertiveness and deliberation and the positive emotions that social work may be most effectively manifested. These data suggest that this balance has perhaps not been most efficaciously reached. This may reflect

the stage of these social workers' career – as starting practitioners they may not have encountered the situations which demand high levels of assertiveness. Data on social workers further into their career may settle this issue

The homogeneity in most of these interpersonal measures indicates people with similar interpersonal characteristics. Masters and Bachelors level, as well as both pre and post 92 University cohorts were quite similar. Variability indicates some were quite assertive while others were relatively un-assertive. This is a feature in the development of early career social workers that looks to require some focus, with some markedly better equipped than others to manage situations requiring assertiveness.

Measurement of critical thinking raises some concerns. We should note first that, like the normative interpersonal samples, the CT comparison groups are opportunity samples. Furthermore, for example in the case of Law and Business graduates, collection of data occurred in the context of job applications. In a competitive environment there is an imperative to perform at the optimum level. It makes more likely, furthermore, that these candidates had practiced for the WGCTA (practice tests are available e.g. Clifford Chance, 2016.) Where candidates prepared themselves it is reasonable to suppose that their performance would have been enhanced. These points may help explain some of the gap in mean performance levels. Having stated this over 200 of the completed WGCTAs contained some corrections, suggesting participants were thinking carefully about their responses. Other samples of those attending University – in these cases unlike the normative samples from *outside the UK* - do not always show such wide divergence from these social workers in WGCTA 40 item scores. For example Turkish teachers-in-training had a mean score of 18 (Sendag and Odabsi, 2009), nurses 20 (Walsh, and Seldomridge, L (2006) - both comparable to these social workers - and American respiratory care trainees scored 23 (Wettstein et al, 2011). Others, though, scored more highly such as American philosophers and psychologists (25) (Burke et al, 2014) and Canadian management and nursing candidates (27) (Loom and Thorpe, 1999)

However, it would be unwise to ignore these differences. In particular the mean score of Bachelors-level social workers (18.9) was hardly better than chance (18.5) in a suitably sized sample. In other words *had all the Bachelors graduands guessed all the answers we would have expected their mean score would have been practically the same.*

This shows room for considerable improvement. In a profession where CT capabilities are so fundamental to best practice we might expect a mean score to be rather higher. If, indeed, these CT capabilities were embedded in the learning undertaken in the social work courses, we might expect this to have been reflected in the WGCTA scores.

This raises two possible issues: are critical thinking capabilities all they should be in social work? And are they sufficiently a focus on social work courses? In relation to the first, there is clearly room for improvement.

On the second: is there a tension in the learning process?

Recent research has demonstrated convincingly that intellectual and interpersonal domains are highly differentiated in social work (Sheppard and Charles, 2015). This exclusivity implies social work is highly demanding in terms of the expected aptitude of its practitioners – quite different talents are being expected and we may expect these differences to create a tension in the learning processes required.

These tensions can be traced to fundamental distinctions in cognitive processes. We can draw on the distinction between System 1 and System 2 thinking. Recognition of affect, creativity and intuitive judgement are all aspects of System 1 thinking – the process of thinking which is fast, direct and spontaneous, and operates automatically.

Much of social work emphasises these particular qualities. System 2 thinking is consciously engaged and involves deliberative thinking – it covers the capacity for reasoning which underlies critical thinking, is effortful and intentional (Evans, 2008). Difference, of course can reflect innate individual differences in reasoning capacity (pre-dispositions). However, while recognising the reservations about the normative samples mentioned earlier, if there is an underlying difference between, say Law and Social Work, this may reflect in part the learning process. The close relationship between performance in Law and WGCTA suggests some of the Law learning processes may encapsulate reasoning processes underlying critical thinking more consistently (TalentLens, 2011). Such processes could involve overt and close examination of argumentation, underlying assumptions and the process of drawing conclusions. In an adversarial system such processes would be strongly highlighted in case based work, and, for example, moots.

It may be that social work learning processes do not emphasise these underlying reasoning capabilities to the same extent as, say, Law. This is understandable. Few would question the importance of intuition, creativity and awareness of affect in social work. However, these are System 1 capabilities, not System 2 which is the focus for reasoning, and it is the former in this case being encouraged rather than the latter. This process exclusivity enhances chances that one may be nurtured more than the other. None of this implies that learning processes designed for critical thinking enhancement does not occur. It does suggest, however, that this could be undertaken more overtly and systematically.

More concern may be expressed, however, at the huge diversity of CT capabilities amongst these graduands. The best scored close to 100%, similar to the best of other samples, but the lowest scores raised questions about CT capabilities for practice. Of course we might suggest that the tests were themselves abstract, and that a focus of similar reasoning processes on social work exemplars may improve scores, and this might have some legitimacy. On the other hand, the critical nature of speculation of possible alternatives in social work practice (what is likely to happen? What alternatives are there? What might be the result if we did *this*?) indicates that the capacity for such abstract thinking is of considerable importance. .

These data reflect empirically some of the concerns expressed politically about standards within social work. In particular Frontline is an education/training development aiming at 'boosting the image of social work and getting the very best people into the profession' by recruiting 'top graduates on to its programmes' (Frontline 2014)

While, however, the data provide evidence to support the concerns, these data suggest (given very high and very low scores) a focus should also be on the performance levels of those with low CT capabilities. One-quarter of the sample scored 15 or less, substantially below the chance mean. This is a serious concern in a profession where CT is considered to be at the heart of practice. It indicates that, in addition to augmenting social work entrants with a number of high achiever 'leaders', as with Frontline, attention be given to improving the CT of a significant minority of qualifying social workers whose performance is poor.

Some of this is about increasing the quality of those entering social work. This is

clearly a more significant issue – though not exclusively - for Bachelors than Masters cohorts. If reliance is placed on formal educational qualifications then their reliability at indicating CT capabilities needs to be established. Alternatively psychometric tests additional to these qualifications – rather in the manner established by medicine, screening entrants – may be efficacious. A further radical solution might be to confine social work qualification to Masters level, although while this would substantially improve mean CT capabilities, there would remain room for considerable improvement at the lowest levels.

The second solution lies in the curriculum and perhaps practice itself. It is well beyond the scope of this article to examine in detail possible developments. We may reasonably ask: how, in principle, can CT be enhanced in learning about social work? Some common elements clearly potentially contribute to enhanced critical thinking. Many researchers have maintained that CT is dependent on predispositions (an issue of gatekeeping as above) and purposeful reflection that requires logic (Behar-Hornstein and Niu., 2011).

Certainly purposeful reflection is embedded in the social work curriculum - and is expected in subsequent qualified practice- both in university and practice based learning, focused furthermore on social work issues and cases. It is a central feature of practice standards [Proficiency 11 'be able to reflect on and review practice' (including Critical Reflection) (HCPC, 2016)].

It is, however, the *logic requirement* that has been highlighted by these findings. It is not, in other words, sufficient to reflect on issues and cases, even to be imaginative and creative in considering actions, but to do so in a way placing a premium on logic. Broadly this focuses on the rigour with which the thinking-about-practice (reasoning) processes is undertaken. This is apparent in earlier research which highlighted the importance of 'forward thinking' in social work, rather than the backward-focused nature of reflection (Sheppard et al, 2000). This took the form of 'speculative hypotheses' – 'if-then' statements, often of a highly complex nature - focusing on alternative future possibilities, their likelihood and consequences, in terms of service users' thoughts actions and reactions, the actions and interventions of social workers and others, the interaction and outcome of these actions and the likely possible results of all these interactions.

This points to the *overt* and *precise* formulation of hypothesis based thinking as an *underlying principle* of the learning and practice processes of social work, whichever particular emphasis is placed on teaching-learning processes chosen. The appropriateness of this as an underlying principle is apparent in a particular approach to the teaching of science 'Hypothesis-Based Learning' (VanDorn, 2005) Students are presented with common, simple materials Each student... then ... begin(s) making observations. When the student finds something interesting, the student should attempt to explain the observation. Given an explanation, he or she needs to think of a way to test the explanation and make a prediction. Of course, the test is next. Then the student must analyze test results to decide if the prediction is supported or unsupported (VaDorn et al, 2016)

This is, of course a simplistic presentation in terms of social work materials or cases. It also refers to a particular approach, though it is here being used as an indicator of how an *underlying principle* might operate (both in the curriculum and subsequent practice). However it is apparent how this approach could, in principle, both develop cognitive processes appropriate to the complex developmental and changing nature of cases and practice situations, and at the same time provide a framework through

which the logic of CT may be developed. It is in the *provision of a framework to enable the enhancement of reasoning capabilities* that such an approach may be efficacious, when linked, for example, with social work relevant exercises 'Heart and Head' have long been seen as the central features of practice, the combination going some way to defining what social work is. The findings here show great strength in positive emotions and great diversity in assertiveness and deliberation, the lower levels of which require nurturing. They also indicate serious concerns regarding critical thinking, particularly regarding lower performers upon which an increased intensity of focus needs to be placed.

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