

**A STUDY OF THE RELATIONSHIP BETWEEN
CREATIVITY AND FIELDWORK PERFORMANCE
OF SOCIAL WORK STUDENTS**

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ABSTRACT

This study investigates the relationship between social work students' creativity and their fieldwork performance. Systems theory provides a theoretical framework to explain the ambiguity, indeterminacy and uncertainty in social work practice, and account for the need for creativity during the helping process in fieldwork training. In this study, creativity was defined as the ability in divergent thinking with five dimensions, which are fluency, originality, elaboration, abstractness of titles and resistance to premature closure. The existing literature suggests that social work students' creativity may have impact on their fieldwork performance in three areas, namely problem solving, application of theories and empathy. 52 social work students from a university in Hong Kong participated in this study and data regarding their creativity and fieldwork performance were collected. Multiple regression analyses were conducted to investigate relationships between participants' competences in different dimensions of creativity and their fieldwork performance in each of the three fieldwork performance areas. Significant relationships were found between competences in two dimensions of creativity and fieldwork performance in those three areas. Both quadratic and linear significant relationships were found, and in some of them, the competences in some dimensions of creativity were found interacting with each other, and affecting each other's relationship with fieldwork performance. The findings of this study provided detailed information about the possible relationships between social work students' competences in different dimensions of creativity and their fieldwork performance in the three selected areas, and some tentative suggestions regarding potential use of the findings of this study for further development of social work curriculum were discussed. Further studies to confirm the findings of this study and to further investigate the possibility of enhancing social works students' fieldwork performance through improving their competences in certain dimensions of creativity were recommended.

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ABBREVIATIONS

ACL	Adjective Check List
AS/HFA	Asperger's Syndrome and High-functioning Autism
CAQ	California Adult Q-set
CPSM	Creative Problem Solving Model
CPSP	Creative Problem Solving Process
GPA	Grade Point Average
MEPS	Means-End Problem-Solving Test
PMA	Spatial Test of Primary Mental Abilities
TTCT	Torrance Tests of Creative Thinking
VIF	Variance Inflation Factor
β	Standardized Regression Coefficient

CHAPTER 1

INTRODUCTION

INTRODUCTION

Learning-by-doing has long been playing a significant role in social work education. Before the establishment of formal social work education programmes, training for social work practitioners was primarily done by on-the-job training, and after formal schools of social work were established, fieldwork training has been one of the essential components of the curriculum for social work education (Alperin et al, 1990; Gelman, 2004). Social work students under fieldwork training are attached to social service agencies, providing professional services for clients in need under close supervision of fieldwork supervisors. Fieldwork training is taken as a significant component of social work education, which plays a significant role in ensuring graduating students have achieved a performance level necessary for beginning practice (Bogo et al, 2002). In Hong Kong, all social work students are required to successfully complete the fieldwork training modules of their training programmes before they can graduate and obtain the qualifications required for social work practice (The Social Workers Registration Board, 2007).

Fieldwork training provides social work students with opportunities to experience themselves in the social worker role, and to develop practice-based skills through application of theories in practice (Bogo et al, 2004). In fieldwork training, under the supervision of fieldwork supervisors, social work students deliver services to real clients and are provided with the chance to apply theories learned in classroom to real-life situations of their clients. It provides an arena for experiential learning that the students can test their own skills and learn from the feedback received, which is essential

for acquisition of professional skills (Edmond et al, 2006). An “articulated approach” is usually adopted in social work education that there is a close relationship between classroom learning and fieldwork training (Savaya et al, 2003). Social work theories and skills from simpler to more complex levels are taught in tandem in the classroom and fieldwork training. The more complex the theoretical knowledge the students learn in class, the more complex the practical tasks the students are required to do in fieldwork training. The ultimate objective is to help the students acquire the knowledge and skills and become competent social workers (Lit and Shek, 2007).

The author worked as a fieldwork supervisor in a university in Hong Kong several years ago. Similar to many other universities, an “articulated approach” was adopted in this university and social work students were expected to put the theories they had learned in the classroom into practice during fieldwork training. At that time, he observed a great variation among social work students in their performance in applying what they had learned. Some students seemed to have difficulty in linking the relevant theoretical knowledge they had learned with the real-life situations of their clients, while some of their classmates could perform quite well in this area, although all of them could show that they had already learned the relevant theories in the classroom. Hence, besides the acquisition of relevant knowledge, there seemed to have other factors contributing to the difference in performance in application of theoretical knowledge. The author was interested to know more about these factors since they might have implications for the development of new training methods to further enhance social work students’ performance in fieldwork training.

Later on, the author came across a paper written by Pearlman (1989) who had made the same observation on the variation of social work students’ performance in applying what they had learned. Observing that some students had intellectual understanding but were unable to transfer knowledge to practice while some were like

“a duck to water” as if they were born to it, Pearlman argued that variation in their creativity might account for the difference. She explained that since the students were faced with the clients’ situations which were different and unique, and they had to rely on their creativity to draw the similarity between people and situations in order to find the linkage between their clients’ situations and what they had learned. In other words, Pearlman (1989) suggested that creativity is the internal factor that social work students bring with them to the fieldwork settings, which may contribute to the variation in their performance in application of theoretical knowledge.

Pearlman’s (1989) paper triggered the author’s interest in learning more about the relationship between social work students’ creativity and their fieldwork performance. As a fieldwork supervisor, he would like to explore different ways that may help his students further enhance their performance in professional practice. Since creativity is suggested to be a factor affecting social work students’ fieldwork performance, it is worthwhile to know more about the details of the relationship between creativity and fieldwork performance and in what ways the former may affect the latter, so that it would be possible to figure out what kinds of changes in fieldwork performance may be brought about by inducing changes in social work students’ creativity. This type of information is valuable to the development of effective training methods in social work education. This provided an educational rationale for the author to conduct the present study.

On the other hand, the scarcity of research findings in this area found by the author in reviewing literature about the relationship between creativity and fieldwork performance provided an academic rationale for him to conduct the present study. The literature reviewed by the author showed that many scholars believed social work practitioners’ creativity may affect their performance in social work practice (Rapoport, 1968; Gelfand, 1988; Goldstein, 1990; Goldstein, 1998; Bitel, 1999;

Compton et al, 2005). Besides application of theoretical knowledge in practice, social work practitioners' creativity is also expected to be related to their performance in other areas of social work practice. For example, it is suggested that creative thinking is involved in the problem solving process of social work intervention (Gelfand, 1988; Heppner et al, 1989; Fogler and LeBlanc, 1995; Zachary, 2000), and social work students with good creativity are expected to be more capable of helping their clients solve their problems. Moreover, a creative mind is taken as important to social work students in perceiving accurately their clients' feelings and making appropriate empathic responses, and hence is proposed to be a significant factor in their fieldwork performance in empathy (Rapoport, 1968; Buie, 1981; Alligood, 1991; Carlozzi et al, 1995).

Although many scholars postulated that there is a relationship between social work practitioners' creativity and their professional practice, especially in the three performance areas mentioned above, the author found that very few studies had been conducted in this area to provide data and findings about the postulated relationship. Hence, very limited empirical evidence concerning the relationship between social work students' creativity and their fieldwork performance could be found. In this connection, there is a need to conduct more studies in this area to examine whether the postulated relationship between creativity and fieldwork performance is supported by study findings. Study findings in this area are very useful to social work scholars in developing knowledge of factors which may affect social work students' fieldwork performance. Hence, it provided an academic ground for conducting the present study.

IMPORTANCE OF THIS STUDY

Traditionally, little has been done to train up students' creativity in the curriculum of social work education. The traditional knowledge-based teaching can merely ensure that students understand relevant developments in research and theory related to social work practice, but is insufficient to bring about development of creativity among the students (Eadie and Lymbery, 2007). Rothman (1980) suggested that social work training not only fails to cultivate students' creativity and help them utilize their creative potential, but also leads to a built-in incapacity in this aspect. They are trained to have a critical eye to be skeptical, instead of learning to defer their judgment for creative ideas.

Although there are voices, from time to time, stressing the importance of enhancing social work students' creativity, not many changes in this direction can be identified in social work education. There are some isolated examples of teaching the generation of innovative ideas and use of creativity in social work practice, but major changes in curriculum design of social work education are not found (Burgess, 2004). Instead, in recent years, there is a growing emphasis on developing competence-based social work education, and it is criticized as overemphasizing on the technical aspect of the professional practice to the detriment of the development of social work students' creativity, which is essential to the application of professional judgment in dealing with human circumstances that are characterized by ambiguity, indeterminacy and uncertainty (Lymbery, 2003; Eadie and Lymbery, 2007). The emphasis on competence-based social work education is clearly reflected in the standards of social work curriculum stipulated by the Social Workers Registration Board in Hong Kong that they are mainly concerned with learning of professional knowledge and competences, while the development of students' creativity is not

mentioned at all (The Social Workers Registration Board, 2007).

Perhaps the scarcity of empirical findings supporting the proposed relationship between the creativity and practice performance of social work students has brought about reservation in social work educators about including creativity training in the social work curriculum. A review of the literature shows that only a limited number of studies have been conducted in this area and their findings seem insufficient to provide substantial support to the proposed relationship between social work students' creativity and their practice performance. Moreover, these studies also failed to provide detailed information on how students' creativity is associated with their practice performance. For example, in Gelfand's (1982) study on the feedback of social work students who had participated in a course of creative problem solving, it was reported that in general the students found it exciting and useful, but the specific impact on the actual practice of the students was not examined. In Pearlman's (1989) study on social work students' performance in fieldwork training, it was reported that social work students' creativity was positively correlated with their global rating of fieldwork performance. However, it provided very limited information about which specific areas of fieldwork performance are likely to be related to social work students' creativity. The scarcity of relevant research and paucity of study findings on specific impact of creativity on social work students' practice performance probably contributes to the reluctance on the part of social work educators to take a step forward to integrate creativity training into the social work curriculum.

It is expected that the present study on the relationship between social work students' creativity and their fieldwork performance can provide more concrete empirical data for social work educators to consider whether creativity training is an effective means to further enhance social work students' performance. On the one

hand, it may provide more evidence to show whether there is really a relationship between creativity and fieldwork performance as proposed by some scholars. On the other hand, through collecting detailed information about the relationships among the variables investigated, this study may generate more specific information about the impact of creativity on different areas of fieldwork performance. In this study, instead of studying the general relationship between social work students' creativity and their fieldwork performance, the specific relationships between different dimensions of creativity and fieldwork performance in different areas are investigated. It is possible that social work students' competence in different dimensions of creativity may have different impacts on their fieldwork performance in different areas, and some of these impacts may be positive while some may be negative. It is also possible that competence in some dimensions of creativity may not have any impact on fieldwork performance at all. This study provides a good opportunity to examine these relationships specifically, and provide comprehensive information about them. The findings of this study are very useful to social work educators for selecting and deciding on the most effective ways to incorporate creativity training in social work education to further enhance students' fieldwork performance in some areas.

In comparison with other Western countries, there seems to have a greater need to conduct the present study to investigate the relationship between creativity and fieldwork performance of social work students in Hong Kong. Many scholars suggested that creativity of Chinese people is more underdeveloped than that of people in Western countries. A cross-cultural study was conducted to compare the creativity of people at different ages in Hong Kong and in United States (Jaquish and Ripple, 1984). Findings of this study show that there are significant differences in creative abilities between people from the two cultures. Among all age groups, the

American samples scored higher in creativity than Chinese samples, and the difference between Chinese and American cultures is suggested to be a possible explanation for the findings. Indeed, some educators have pointed out that the Chinese culture of collectivism that treasures conformity, discipline and obedience may have negative impact on the creativity development of Chinese students (Gardner, 1997; Watkins, 2000; Cheng, 2004a). Moreover, the education system in Hong Kong which is highly competitive, examination-oriented and keen on rote-learning, is also suggested to be detrimental to the creativity development of students (Cheng, 2004b). If social work students' competence in some dimensions of creativity really has positive impact on their fieldwork performance, lack of proper creativity training in the social work curriculum may affect social work students in Hong Kong more, in comparison with students in Western countries, since their creativity is relatively more underdeveloped. Hence, there is a greater need to conduct research to study the relationships in question in Hong Kong and it is expected that the present study can provide useful information about these relationships in Chinese culture for social work educators.

AIMS OF THIS STUDY

The present study aims to investigate the relationship between creativity and fieldwork performance of social work students. Social work students were invited to participate in this study. Relevant data regarding their competence in different dimensions of creativity and their fieldwork performance in some areas were collected. Data collected were analyzed to see if there are any significant relationships between the variables studied. If the social work students' competence in a dimension of creativity has positive impact on their fieldwork performance in a certain area, it is expected a

positive relationship to be found between them in the present study. This study aims to provide concrete and detailed information about the relationship between social work students' creativity and their fieldwork performance, and its findings are useful to social work educators for further development of the social work curriculum with creativity training appropriately integrated into it.

OVERVIEW OF THESIS

In the next chapter, there is a review of literature regarding major theories of creativity and possible relationship between social work students' creativity and their fieldwork performance. Before discussing the possible relationship between creativity and fieldwork performance of social work students, it is essential to have a clear understanding of what creativity is. The literature reviewed shows that although there are different theories of creativity proposed by different scholars, these theories are not mutually exclusive, but instead they are supplementing each other. These theories together provide a comprehensive picture of creativity and show how creativity can be defined as the ability in divergent thinking with five dimensions, namely fluency, originality, elaboration, abstractness of titles and resistance to premature closure. In order to understand the possible relationships between these dimensions of creativity and fieldwork performance, relevant literature was reviewed. The results suggest that the abilities in some dimensions of creativity are probably related to fieldwork performance in three areas, namely problem solving, application of theories and empathy.

The research design of this study is delineated in Chapter 3. Based on the literature review, specific definitions of important concepts and hypotheses to be tested in this study are put forward. Methodology of this study, including selection

of participants, data collection, measurement of creativity and fieldwork performance, methods of data analysis and research ethics, is discussed in detail in this chapter. The creativity of the participants was measured by the Torrance Tests of Creative Thinking (Torrance, 1966, 1990a, 1998), while their fieldwork performance in empathy was measured by Empathy Quotient (Baron-Cohen and Wheelwright, 2004) and their fieldwork performance in problem solving and application of theories was assessed by their fieldwork supervisors. There is a thorough discussion on the measurement reliability and validity of these methods in this chapter.

Findings of this study are presented in Chapter 4. Results of measurement of creativity and fieldwork performance, and results of statistical analyses conducted to test the hypotheses are presented. Multiple regression analyses were conducted to identify significant relationships between participants' competence in different dimensions of creativity and their fieldwork performance in different areas. Steps were also taken to check if the underlying assumptions for multiple regression analyses are met. The results of multiple regression analyses and all the tests of underlying assumptions are presented in this chapter.

The findings of this study are analyzed and discussed in Chapter 5. The results of multiple regression analyses are reviewed to see if they are supporting the hypotheses of this study. The significant relationships found in this study between social work students' competence in some dimensions of creativity and their fieldwork performance in three areas are examined, and possible explanations are put forward to account for the findings of this study. The contribution that this study has made to the theoretical knowledge is discussed.

In the final chapter, there is a summary of the main findings of this study and the strengths and limitations of this study are discussed. The contribution made to the theoretical knowledge is highlighted and its implications to social work education are

explored in detail. Different ways to incorporate creativity training in the social work curriculum to further improve social work students' fieldwork performance are suggested. Finally, based on the study findings, suggestions for further research are put forward.

CHAPTER SUMMARY

The rationale for conducting this study was discussed. Fieldwork training is taken as an important component of social work training and it plays a significant role in helping social work students acquire the knowledge and skills necessary for beginning practice. Creativity is suggested to be an internal factor, which social work students bring with them to the fieldwork settings, that affects their fieldwork performance. It is expected that social work students' creativity has extensive influence to various aspects of their fieldwork performance, and it is worthwhile to conduct the present study to generate more information in this area.

The scarcity of studies on relationship between creativity and fieldwork performance of social work students also gives rise to the need to conduct this study. On the other hand, it is suggested that the Chinese culture and education system in Hong Kong may cause the creativity of social work students to be underdeveloped. Hence, there may be a greater need to incorporate creativity training in the social work curriculum in Hong Kong and it adds to the need to conduct the present study.

The present study aims to investigate the specific relationships between social work students' competence in different dimensions of creativity and their fieldwork performance in certain areas. It is expected that findings of this study may provide valuable information about the possible impact of social work students' creativity on their fieldwork performance, which is useful for further development of the social

work curriculum. An overview of this thesis is presented to give an overall picture of its contents.

CHAPTER 2

RELATIONSHIP BETWEEN CREATIVITY AND FIELDWORK PERFORMANCE

INTRODUCTION

Before investigating the relationship between social work students' creativity and their fieldwork performance, it is important to have a clear understanding of what creativity is and how it is defined in the present study. Otherwise, it will be difficult to develop any hypotheses concerning its relationship with fieldwork performance. Hence, in the first part of this chapter, there is a thorough discussion about creativity. Major theories of creativity are reviewed and the definition of creativity to be used in this study is put forward.

Following the discussion on creativity, the relationship between creativity and fieldwork performance of social work students is explored. Besides the general relationship between creativity and fieldwork performance, the possible relationships between different dimensions of creativity and different areas of fieldwork performance will also be investigated. Relevant literature is reviewed, including that on the relationship between creativity and social work practice. In fieldwork training in Hong Kong, social work students are placed in social service agencies and responsible for providing the same kinds of services provided by professional social workers. They deal with real clients and tackle their real problems in fieldwork training. Thus, it is believed that literature concerning creativity and social work practice in general is relevant to the present study.

Systems theory, which is accepted by many social work scholars as providing a unifying conceptual framework for social work practice (Pincus and Minahan, 1973;

Compton et al, 2005; Hudson, 2000; Payne, 2002), will be reviewed to provide a theoretic view of social work intervention and show how social workers' creativity is relevant to their professional performance. In order to generate specific hypotheses for the present study, relevant literature related to some areas in fieldwork performance, namely problem solving, application of theories and empathy, will also be reviewed. The central importance of problem solving, the challenges in theory application and the significant role of empathy in social work practice will be elaborated in detail and the possible relationships between these three areas of fieldwork performance and some dimensions of creativity will be examined thoroughly.

WHAT IS CREATIVITY?

A popular usage of the term 'creativity' is reflected by the meaning of it found in the Penguin Dictionary of Psychology (Reber and Reber, 2001):

A term used in the technical literature in basically the same way as in the popular, namely to refer to mental processes that lead to solutions, ideas, conceptualizations, artistic forms, theories or products that are unique and novel. (p. 165)

It points out two important aspects of creativity. First, creativity is referring to some mental processes. As described by Barron and Harrington (1981), creativity is the invisible thinking process taking place between setting a problem and producing an excellent answer. Second, as these processes are invisible, its counterparts in reality, the original products or the creative outcomes, are taken as their indicators. In other words, creativity is discerned through the emergence of creative products or outcomes.

Nicholls (1972) pointed out that creative outcomes should be those

“achievements that are original and make a meaningful contribution to culture” (p.717), which highlights the two main characteristics of creative products and outcomes, the unusualness and usefulness. Jackson and Messick (1967) suggested that originality or unusualness is the first criterion to be satisfied in calling anything creative. Creative outcomes are expected to make people who come across with them surprised. However, besides expressing a sense of unusualness, creative outcomes should also be perceived as satisfactorily serving some purposes, no matter as solutions to some scientific problems, or as artistic expressions of human natures. This is the distinction between children’s paintings and those of Picasso, although both appear to be some ill-structured representations on canvas (Jackson and Messick, 1967). Unusualness and usefulness are well accepted by many scholars as the criteria for assessing creative products and outcomes (Fabian, 1990; Brockman, 1993; Russ, 1993; Peterson, 2002). Providing a comprehensive description of these two criteria, Vernon (1989) defined creative products as “new or original ideas, insights, restructuring, inventions, or artistic objects, which are accepted by experts as being of scientific, aesthetic, social, or technological value” (p.94).

There is little disagreement about the criteria for assessing creative products and outcomes. However, theorists differ in their accounts of the mental processes which lead up to the creative outcomes. As a result, different creativity theories have been developed.

Theories of Creativity

Many scholars are interested in the thinking processes involved in creative acts and how creative ideas are generated in human minds (Woodman and Schoenfeldt, 1989). Different theories have been developed to account for the underlying mental

processes from different perspectives. These theories mainly consist of three major types: association theory, divergent thinking theory and problem solving theory. These theories are not mutually exclusive, but instead interrelated. At the end of this section, it will be shown how the association theory can be taken as providing an explanation to the mechanism underlying divergent thinking, and how the problem solving theory can further clarify the role of divergent thinking in the problem solving process leading to creative outcomes.

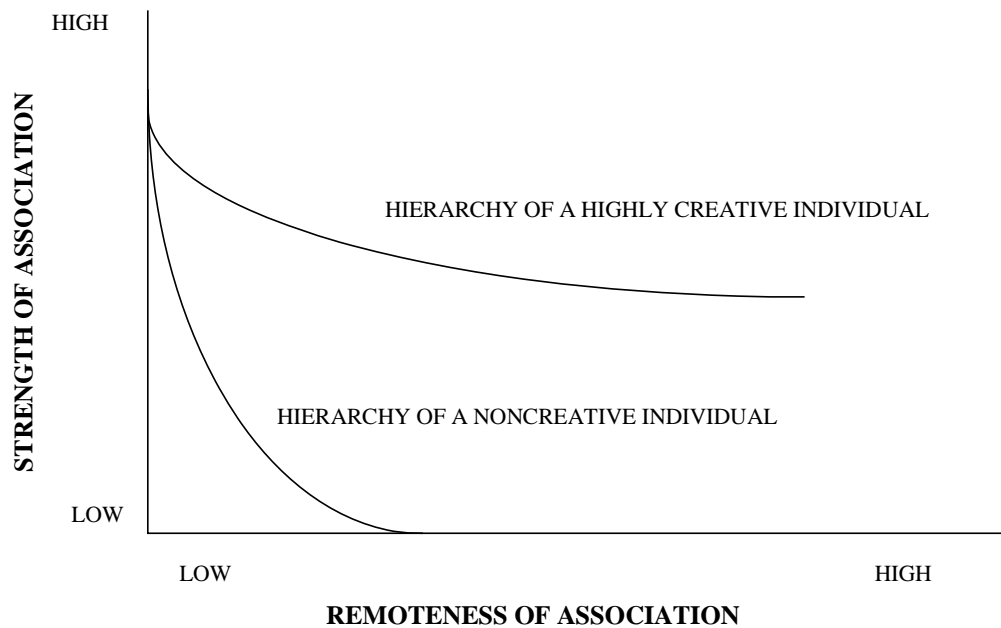
Association Theory

Mednick's (1962) theory of creativity is described to be the most influential association theory (Baer, 1993). His postulations set the foundation for the associative perspective in studying creativity. Mednick (1962) defined the creative thinking process as:

the forming of associative elements into new combinations which either meet specified requirements or are in some way useful. The more mutually remote the elements of the new combination, the more creative the process or solution. (p.221)

Mednick proposed that there are some associative mechanisms underlying the formation process of creative products. For example, Kekules's association between a snake's swallowing its tail and the structure of the benzene molecule is a well-known illustration of this postulation (Poze, 1983). Mednick and Mednick (1967) developed the Remote Associates Test, as a creativity test, to assess the associative abilities of individuals.

Fig. 1 ASSOCIATIVE HIERARCHIES



Mednick (1962) attributed individual differences in creativity to people's "associative hierarchy", which is the pattern of relative strengths of various associations one has to a given concept. As shown in Fig. 1, these hierarchies are represented by different degrees of steepness. One dimension of the graph is the "Strength of Association", which represents the probability of producing the association. Another dimension is the "Remoteness of Association", which represents association types ranging from low, common association, to high, creative association. Among less creative people, the associative hierarchy is steep. They tend to produce a large number of common associations but few or no uncommon associations. People with flat associative hierarchy are relatively more creative. Besides the common associations, they are capable of producing more uncommon or unique associations that are remote from the initial stimulus. A very steep gradient represents a style that is rigid and biased, while a extremely flat gradient represents a completely open style that every idea

has almost the equal chance to be produced.

Another factor Mednick (1962) proposed to be essential in accounting for individual differences in creativity is the acquisition of relevant knowledge in the field that a person is working on. Although having too much knowledge may increase the chance of overlearning the usual or common associations which may hinder the occurrence of remote ones, acquisition of sufficient raw materials for making different types of associations is a fundamental requirement for producing creative outcomes. People must be aware of the existence of some elements before they can make use of them to develop associations, and it points to the importance of relevant knowledge, which includes knowledge in books and experience in related areas. The larger the repertoire of relevant knowledge available in the mind, the higher the chance to produce remote creative associations. Basically, any knowledge which is possible to be used in generating useful associations for the problems or issues being worked at is relevant knowledge to be acquired. However, practically it is hard to predetermine which areas of knowledge are relevant for a specific problem, especially when remote associations are being pursued, but at least, the acquisition of the “domain-specific knowledge” of the field under working is suggested to be important (Mednick, 1962).

Results of some studies give support to the association theory by showing that there are positive relationships between associative abilities and indexes of creative achievement (Mednick and Mednick, 1967; Mendelsohn, 1976). Studies conducted by Rothenberg and Sobel showed that conditions stimulating associations are positively related to creative performance (Rothenberg, 1986; Rothenberg and Sobel, 1980; Sobel and Rothenberg, 1980). In these studies, subjects of the experimental and control groups were placed under different conditions to generate literary or artistic products. In the experimental group, the subjects were shown two slides superimposed on each other, while in the control group, the two slides were displayed side by side. The

creativity of the products generated by the subjects in the two groups was examined. The results of these investigations show that conditions stimulating merging and combination facilitate production of creative products.

Many scholars expressed their support to the association theory, and put forward postulations in line with Mednick's theory. Gagne (1977) proposed that for creative inventions, there is an "inductive leap", caused by combination of ideas from widely separated knowledge systems. Koestler (1981) described scientific inventions as "marriages between ideas which were previously strangers to each other, and frequently considered incompatible" (p.2). He suggested creative products are results of "bisociation", in which "cross-fertilization", resulting from combination of rules from two frameworks, takes place. Koestler's concept of "bisociation" was echoed by Proctor (2005) who argued that novel associations form the bedrock of creative ideas. Applying graph theory, Schilling (2005) explained that creative insights are the results of unexpected connections between disparate mental representations, which can be represented by graphic illustration, showing that random unlikely combinations can greatly reduce the distance between originally distant knowledge clusters and increase the chance of generating creative ideas.

The important role of knowledge in creative thinking is also well received by many scholars. Koestler (1981) pointed out that:

The creative act does not create something out of nothing, like the God of the Old Testament; it combines, reshuffles, and relates already but hitherto separate ideas, facts, frames of perception, associative contexts. (p.2)

After reviewing relevant studies, Schilling (2005) suggested that acquiring domain-specific knowledge is a necessary condition for creative insight. Indeed, the importance of acquiring knowledge of the subject-matter area in producing innovative

ideas has been underscored by many scholars (Bradshaw et al, 1983; Langley et al, 1987; Simonton, 1984; Snow, 1986; Weisberg, 1988; 2006; Sternberg, 2006; Wu et al, 2005).

Divergent Thinking Theory

The divergent thinking theory of creativity was developed out of Guilford's (1956, 1959, 1967) model of intelligence, the "Structure of Intellect", which suggests that there are five mental operation processes and divergent thinking is one of them. Guilford (1967) postulated that divergent thinking is the mental process underlying creativity. Divergent thinking is defined as the ability to call for a number of varied responses to some given information in order to meet certain objectives, and there are four primary abilities underlying divergent thinking, which are fluency (ability to produce a large number of ideas), flexibility (ability to produce a great variety of types of ideas), originality (ability to produce unusual but appropriate ideas) and elaboration (ability to develop or embellish ideas, and to produce many details to flesh out an idea) (Guilford, 1967).

Divergent thinking theory has become one of the most popular theories of creativity, and it is mainly due to the success of the creativity tests developed by Torrance, a successor to Guilford (Baer, 1993). Torrance's contribution to the study of creativity is well recognized that he is named as the "Father of Creativity" (Kaufman and Baer, 2006), and a special issue of the Creativity Research Journal has been dedicated to him in 2006 (Sternberg, 2006). Torrance (1966, 1972, 1984, 1988, 1990a, 1998) developed the Torrance Tests of Creative Thinking (TTCT) out of the divergent thinking concepts. TTCT was first developed in 1966, which provided separate fluency, flexibility, originality and elaboration scores. In the latest version of TTCT, two norm-referenced measures, abstractness of titles and resistance to premature closure,

were added (Torrance, 1990a; 1998), while the measure of flexibility was eliminated because it correlated highly with fluency (Hebert et al, 2002). Abstractness of titles is a measure of the ability to produce abstract ideas which can capture the essence of a phenomenon, and resistance to premature closure is a measure of the ability to keep open in processing information. Although there were some modifications of the scoring system of TTCT, the major theoretical orientation of the tests is basically the same (Kim, 2006).

TTCT is well accepted by many researchers as a measuring instrument of creativity since the test was developed. According to a comprehensive survey of 242 published creativity studies, TTCT was used in three quarters of all creativity studies involving elementary or secondary school students, and 40% of all creativity studies conducted to college students and adults (Torrance and Presbury, 1984). After thorough literature review, Baer (1993) concluded that TTCT dominated the field of creativity research, and “creativity has come to mean divergent thinking in much research in, assessment of, and theorizing about creativity” (p.12). TTCT has been used in more than 35 countries (Kim, 2006) and remains to be the most widely used creativity test (Sternberg, 2006).

There are different reasons suggested for the popularity of divergent thinking theory. Baer (1993) suggested that the divergent thinking theory is commonsensical. It possesses a great intuitive appeal that in general people accept the chance to produce creative ideas will be enhanced if one can consider: a) many ideas as opposed to only a few; b) a wide range of ideas; and c) unusual ideas in addition to typical ones. According to Runco (1987), many people accept a “constant probability model” which suggests that every idea generated has an equal chance leading to a creative outcome. Hence, the more one can think of, the higher the probability of making creative achievements. On the other hand, the capacity for divergent thinking is suggested to be

reflecting the ability to use multiple understandings or different concepts in approaching problems, which can enhance the likelihood of generating creative ideas (Mumford and Gustafson, 1988).

Divergent thinking theory has received support from many study findings. In Runco's (1984) study, divergent thinking tests scores of children were compared with teachers' evaluation of their creativity. Divergent thinking tests were conducted to 97 gifted children (nominated to school district's Gifted and Talented Program, and IQs > 130), 53 "talented" children, (nominated to school district's Gifted and Talented Program, but IQs < 130), and 90 nongifted controls. Two scores, fluency and originality, were generated from the tests. Teachers of these children were asked to rate the children's creativity. The results showed that the fluency and originality scores were significantly correlated with the creativity scores given by the teachers in all the three groups.

In Runco's (1986) cross-sectional study on 212 grade 5 to grade 8 children, their divergent thinking scores were found correlated with their extracurricular creative performance. A questionnaire was used to collect information of the extracurricular creative performance of the children in seven performance domains: writing, music, crafts, art, science, performing arts, and public presentation. Divergent thinking tests were also conducted and the fluency scores of the subjects were obtained. The results showed that the fluency score was significantly related to the extracurricular creative performance measured by the questionnaire.

Significant relationships between the results of divergent thinking tests and the results of other measures of creativity were found by Torrance (1990a) in his study on 33 graduate students. The total scores as well as the scores of fluency, originality and elaboration of his tests were found significantly correlated with different creativity tests, including the Adaptation-Innovation Inventory, the Similes Test and the Rorschach Originality. TTCT was also found to be significantly correlated with Spatial Test of

Primary Mental Abilities and the Gordon Test of Visual Imagery Control (Gonzales and Campos, 1997). These findings contribute to the concurrent validity of TTCT (Kim, 2006), and give support to the divergent thinking theory.

A longitudinal study was done by Torrance (1972, 1981, 1990a) to test the predictive validity of TTCT. In this study, TTCT was administered to some high school students, and they were followed up twelve years later. Information concerning three criteria of creative behaviour was collected in the follow-up study: 1) the number of publicly recognized creative achievements reported, 2) the quality ratings of five judges of the three most creative achievements described by the subjects, and 3) the creativity of their future career images. The results showed that the TTCT scores significantly correlated with the creative behaviour measured twelve years later. Reanalyzing Torrance's data collected in this longitudinal study, Plucker (1999) found that TTCT score was the best predictor of adult creative achievement.

Problem Solving Theory

Theories of creativity developed from a problem solving perspective are attempts to account for the process in real life situation leading to creative achievements. Weisberg (1992) suggested that situations in which humans exhibit creative thinking can usually be considered as having problems to be solved, although sometimes people involved do not realize it. Creative behaviour is taken as a special type of problem solving behaviour, since the latter may range from some highly imaginative to routine ones (Dacey, 1989; Ochse, 1990). For creative problem solving, original and innovative solutions are generated, while in routine problem solving, standardized procedures for solving certain types of problems are recalled (Smith and Good, 1985; Proctor, 2005). The former is the focus of many studies on creativity, and out of these

studies different “stage theories” have been developed, which suggest there are different stages in the creative problem solving process (Frederiksen, 1984; Proctor, 2005).

Wallas’s (1926) creativity theory is described by Ochse (1990) as the most frequently cited early stage theory of creativity, and it continued to be cited by many recent publications on creativity (Anderson, 2000; Peterson, 2002; Ward, 2003; Proctor, 2005). Wallas delineated four distinct stages in the creative problem solving process: (a) preparation, (b) incubation, (c) illumination and (d) verification. Descriptions of them are as follows:

Preparation. In this stage, besides collecting relevant information of the problems at hand, one has to learn as much as possible about the problem area and to gather all the basic materials that might be helpful to solving the problem.

Incubation. In this stage, the problem is left alone, and the person does anything other than thinking about the problem. Efforts to solve the problem are allowed to sink into the unconscious mind. Hadamard (1945) suggested that in this stage the unconscious mind considers a large number of combinations and looks for useful ones.

Illumination. It is a stage when the idea, solution, or new relationship suddenly emerges. “Aha” feeling is usually incurred. The idea may be very vague in the first instance (Crovitz, 1970). The idea is on the tip of the tongue, and it requires some effort of conscious mind to label the enlightening thought.

Verification. Although a solution has been generated, there remains an important step that the idea must be tested against the cold reality of fact to make sure that the solution fits the problem.

The part of Wallas’ model which receives much attention is the “passive” stage of incubation, in which the person is consciously doing nothing relevant to the

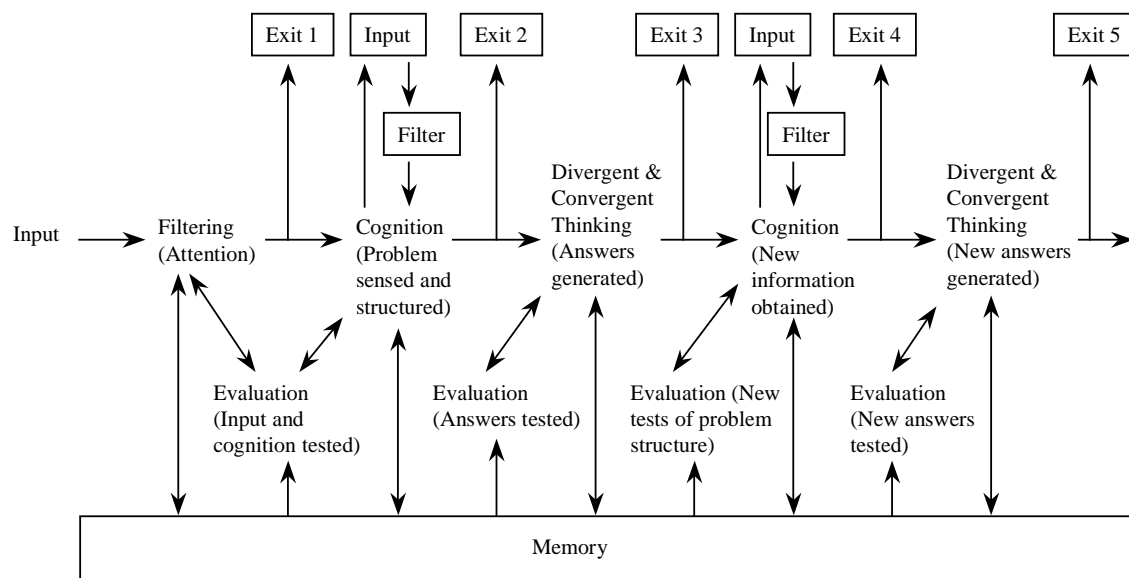
problem solving process. This stage is treated as more critical to creative thinking than the other stages. Although many scholars are fascinated by the unconscious thinking suggested to be associated with incubation, very few of them can overcome the practical difficulties in studying it empirically. That is the reason why Weisberg (1986) suggested that postulations about incubation should be set aside, since they are not useful in the study of creativity.

Some scholars, who did not favor the postulation of incubation, developed other stage theories of creativity in terms of active cognitive processes involved in each stage of the problem solving process. One of the early well-known models in this area is Guilford's (1967) model of creative problem solving. Afterwards, some other problem solving models were developed, such as the IDEAL problem solving model (Bransford and Stein, 1984), and the Creative Problem Solving Process (Proctor, 2005).

Guilford's (1967) model of creative problem solving was mainly based on his "Structure of Intellect". The model is shown in Fig. 2. This is a model describing how the five mental operation processes (cognition, memory, divergent thinking, convergent thinking and evaluation) work together in stages to solve problems. The process starts with some input from external or internal stimuli. With the operations of memory, evaluation, and cognition, the problem is defined and the search for solutions starts. The divergent and convergent thinking work together with memory and evaluation to produce different possible solutions to the defined problem. However, during the process, the problem may be redefined or perceived from a new perspective. Hence, the related operations will work together again to generate solutions. The mechanism of defining the problem and producing solutions will continue until the problem is satisfactorily solved. Memory storage and retrieval affects all steps, while evaluation occurs throughout the process to perform the checking and correcting functions. Cognition is the unique operation involved in defining problems and

divergent thinking and convergent thinking are the critical components in generating solutions.

Fig. 2 GUILFORD'S MODEL OF PROBLEM SOLVING



One of the important contributions of Guilford's model is the postulation of filters and exits at different stages (see Fig. 2) in the problem solving process. The idea of having filters and exits at different stages of the problem solving process helps explain the differences between creative and noncreative people. For example, the first filter is related to people's difficulties in recognizing the presence of problem, which may be a result of poor sensitivity. If one fails to pass through this filter, one will leave at Exit 1 and the problem remains unaware and unresolved. In the second filter, people may give up for some excuses, due to poor judgment, lack of tolerance or confidence, and they leave at Exit 2. Other people choose the first solution that seems to suffice may leave at Exit 3, resulting in premature closure of the problem solving process. Only those with the perseverance to go further, may achieve new perspectives and find a truly creative solution.

Bransford and Stein (1984) used the word “IDEAL” to represent the five steps in their model of creative problem solving. The five steps are: 1) **I**dentify potential problems; 2) **D**efine them appropriately; 3) **E**xplore a variety of possible approaches; 4) **A**ct on your ideas; and 5) **L**ook at the effects of your actions. Similar stages are found in Proctor’s (2005) Creative Problem Solving Process (CPSP), which is a further development of Isaksen and Treffinger’s (1985) Creative Problem Solving Model (CPSM). CPSP consists of six stages:

1. *Objective finding* - identify the relevant problem areas;
2. *Fact finding* - gather relevant information to facilitate generation of new ideas;
3. *Problem finding* - consider a variety of problem perspectives and identify the most productive problem definition or redefinition;
4. *Idea finding* - brainstorm as many solutions to the problem as possible;
5. *Solution finding* - evaluate and choose between possible solutions; and
6. *Acceptance finding* - implement the chosen solutions correctly, effectively and appropriately with the acceptance of relevant parties.

For both IDEAL and CPSP, it is suggested that problems encountered in any one stage may hinder a person from solving problems creatively.

Compared with Guilford’s model, the IDEAL and CPSP models developed further in two areas. First, they include more detailed steps of the problem solving process. For example, fact finding is added before defining the problem; selection and implementation of the solutions is added after solution generation. Second, divergent thinking is taken as relevant not only to the stage of solution generation, but also the stage of defining problems (Proctor, 2005). Indeed, the emphasis on the use of divergent thinking in defining problems has received much attention.

The significance of generating innovative problem definitions in creative

problem solving has been repeatedly mentioned by many scholars (Getzels,1975; Mackworth, 1965; Bransford and Stein, 1984; Runco and Okuda, 1988). As solutions are generated and evaluated according to the problem definition employed, the quality of problem definition will have determining influence to the quality of solutions generated. However, many people have conceptual blocks leading to a tendency to define problems in some preferred ways, which will prejudice the chance of generating creative solutions (Karathanos et al, 2004).

Integrated View of Creativity

Some major theories of creativity have been reviewed and it can be seen that these theories are not mutually exclusive. Instead, different theories are supplementing each other in accounting for the mental processes underlying creativity. By integrating postulations put forward by different creativity theories, a comprehensive picture of the process in producing creative outcomes and the mental thinking processes involved can be generated.

It is postulated that creative outcomes with the characteristics of unusualness and usefulness are produced through a problem solving process with different stages. Problem solving theories of creativity are actually not very different from each other and the stages proposed by them can be integrated into a seven-stage creative problem solving process as follows:

1. *Problem Identification.* Potential problems are identified. Sometimes there are no presenting problems but just some ideas for improvement.
2. *Data Collection.* Information and knowledge concerning the problem and related areas is collected.
3. *Defining Problem.* Based on the information collected and the knowledge

acquired, different problem definitions are generated and the most appropriate one is selected.

4. *Solution Generation.* According to the problem definition selected, different solutions are brainstormed.
5. *Solution Selection.* Among all the possible solutions generated, the most suitable one is selected.
6. *Solution Implementation.* A plan is developed to implement the solution selected, and actions are taken accordingly.
7. *Evaluation.* The effects of the actions taken are evaluated to see if the problem is satisfactorily solved.

The incubation and illumination stages suggested by Wallas can be incorporated in the solution generation stage, which may include generation of solutions by both conscious efforts and unconscious insights. As suggested by Guilford's concepts of filters and exits, people may leave at any stage for different reasons, failing to produce any creative solutions or outcomes.

According to divergent thinking theory, divergent thinking is the mental process underlying creativity. As suggested by many scholars, it plays a significant role in the stages of defining problem and solution generation, and is a key mental process generating innovative ideas leading to creative outcomes.

Baer (1993) suggested that association theory has provided an explanation for the underlying mechanism of divergent thinking. It was suggested that in divergent thinking, information or data are combined in different ways to produce as many new ideas as possible. People good at divergent thinking are those who can produce not only common associations but also remote associations, and as a result they can produce more ideas than the others. As suggested by the association theory, knowledge provides elements for combination and is crucial in determining the outcome of

association formation, and so the amount of knowledge acquired is a factor affecting performance in divergent thinking.

Definition of Creativity

Referring to the literature reviewed above, in the present study creativity is defined as the ability in divergent thinking with five dimensions (fluency, originality, elaboration, abstractness of titles and resistance to premature closure) as suggested by Torrance. During the creative problem solving process, besides divergent thinking, many other mental processes, such as evaluation and memory retrieval, may be involved but these mental processes are also found in other noncreative problem solving processes. On the other hand, many scholars suggested that divergent thinking is the key element in the creative problem solving processes which brings unusualness to the outcomes, and is a significant factor distinguishing between creative and noncreative problem solving processes. As suggested by Plucker et al (2006), a parsimonious definition of creativity should be developed by including only the critical components of it and avoiding those of minor relevance. Hence, creativity is defined as the ability in divergent thinking in the present study, and it is supported by research findings, which have already been presented, showing a positive relationship between divergent thinking and real life creative performance.

SOCIAL WORK PRACTICE AND CREATIVITY

The importance of creativity to social work practice has long been mentioned. As early as the 1960s, Rapoport (1968) pointed out the significance of creative thinking to social work intervention. She argued that social work traditionally was defined as

both science and art. Science refers to the scientific development of knowledge which can provide principles and concepts guiding professional practice, while art refers to how the knowledge is adapted and applied in different unique situations, which involves judgment and imagination of the practitioners. The creativity of social workers was suggested to be an influential factor contributing to the artistic ability of them, and important to social work practice.

Similar argument was put forward by Eadie and Lymbery (2007), who pointed out that social work, as a profession, contains both ‘technicality’ and ‘indeterminacy’. Besides mastering the technical knowledge and skills, social workers must be able to develop sophisticated responses to an infinite range of unpredictable and complex circumstances with which they may be confronted. In this connection, exercise of creativity becomes an integral feature of social work practice.

The circumstances of social work intervention are described as unique and complex, and social workers are required to make their own judgment about what responses are appropriate in the midst of these unpredictable human situations (Taylor and White, 2001). To be able to make the appropriate professional judgment in the face of the ambiguity, indeterminacy and uncertainty encountered in social work practice, there is a need for application of creativity and imagination (Clark, 1995).

The importance of creativity in social work practice is also reflected by the emphasis on intuition in social work practice by some social workers and scholars (Raines, 1990; Gorman, 1993; Richards and Bergin, 1997; Damianakis, 2001). In a survey of what social work fieldwork supervisors relied on to assist with their practice decision-making process, 71% of the respondents said they always or usually relied on intuition (Edmond et al, 2006). It seems that intuitive ideas are highly treasured by many social workers as they often provide rapid and useful suggestions or ideas for them to make practice decision when they are facing the complex circumstances of their

clients.

Some scholars suggested that the intuition emphasized in social work practice is actually the creativity of social workers. Fromm-Reichman (1955) maintained that the intuitive process is essentially a rapid thinking process of making associations among various data, and referring to the literature reviewed above, association formation is suggested being the process underlying creative thinking. In describing the importance of intuition to group work of social work practice, Eichler and Halseth (1992) treated intuition as consisting of four stages: preparation, incubation, illumination and verification, which are actually the four stages in the model of creativity suggested by Wallas (1926).

Many other scholars have also suggested that there is a positive relationship between creativity and performance in social work practice (Rapoport, 1968; Gelfand, 1988; Goldstein, 1990; Bitel, 1999; Compton et al, 2005). Goldstein (1998) used the metaphor of social workers as performing artists to illustrate the need for them to move beyond the constraints of method and technique and use their creativity to deal with the impromptu and here-and-now nature of social work practice. All of these point to a possible relationship between social work students' creativity and their fieldwork performance.

SYSTEMS THEORY

Systems theory which was first elaborated by von Bertalanffy (von Bertalanffy, 1968) provides a useful theoretical framework to account for the complex and unpredictable circumstances of social work practice, and the importance of practitioners' creativity to effective social work intervention. Systems theory began to have great impact on social work since 1970s and continues to have its influence on the profession

nowadays (Payne, 2002).

According to systems theory, a person is regarded as a system which is part of a series of systems in layers (Compton et al, 2005). A person is treated as a system composed of a set of subsystems, such as the biological systems, belief systems, emotional systems and other subsystems, while at the same time he or she is part of some larger systems, e.g. cultural systems, community systems, family systems. Every system is a suprasystem to some systems and also a subsystem of other systems. All of these systems at different layers interact and influence one another (Montgomery et al, 2001).

One of the significant contributions of systems theory is that it offers a conceptual framework that shifts attention from the linear cause-effect relationships to the person-in-situation holistic view (Compton et al, 2005). A client is observed as a part of his or her total situation, which is a system composed of people and their interactions. The client's problems can only be understood in the context of his or her situation. In the system, elements are interdependent that people are influencing each other (Connors and Caple, 2005). Hence, it is difficult to isolate cause-effect relationships and each element can be both cause and effect, and an influence at any point may produce effects around causing changes at the point of origin (de Shazer, 1982). From a systems perspective, a problem is not conceived as belonging to one individual, and, instead, an interpersonal or contextual conceptualization of problems is suggested (Montgomery et al, 2001). Diagnosis is done on the system level and problems are identified in the dynamics and transactions of the system as a whole.

Understanding of the client's situation from a systems perspective can only be achieved by employing a holistic approach (Compton et al, 2005). The whole is greater than the sum of its parts (von Bertalanffy, 1968) and it is difficult to understand the whole by adding the understanding of each separate entity within it. The dynamic

interactions and transactions of people within the situation make the whole situation a unique phenomenon at any given moment (Connors and Caple, 2005).

On the other hand, systems theory also provides a theoretical framework for intervention actions. Since elements in a system are constantly interacting with each other, systems theory holds that an intervention at any one point in the system will affect the whole system (Watzlawick et al, 1967; Compton et al, 2005). Like a tuning fork, a strike at one end will make the other end reverberate (Kaplan, 1986). As described by Maruyama (1963), a small initial action may result in a great impact:

Once a system is kicked in a right direction and with sufficient initial push, the deviation-amplifying mutual positive feedbacks take over the process, and the resulting development will be disproportionally large as compared with the initial kick. (p.166)

As presented above, systems theory puts forward a theoretical framework to account for the complex situations faced by social workers and in this way it provides an explanation for the importance of creativity in social work practice. From a systems perspective, clients' situations are complex, unique and changing from moment to moment. Diagnoses of cases with the same presenting problems may turn out to be very different due to the difference in context and composition of the systems involved. In order to achieve useful understanding of the problems presented by a client, a social worker need to have a creative mind which can flexibly and spontaneously take into consideration various elements in the systems involved to generate all possible meanings. Moreover, due to the uniqueness of clients' situations, social workers are frequently faced with circumstances they have never met before and hence their ability to generate innovative ideas is very important.

On the other hand, from a systems perspective, interventions can be directed at many different points of the systems involved, e.g. the clients, their family members,

interactions within the family, etc. It provides a theoretical base for the need to develop a rich and expansive repertoire of intervention methods and strategies (Compton et al, 2005). Social workers need to explore and consider many alternative actions directed at different points of the systems, which may directly or indirectly lead to the change sought. As suggested by Compton and her associates (2005), by thinking systemically, social workers need to tap into their creativity to identify a range of change targets and strategies during the helping process in order to induce the changes required.

An overall view of systems theory has been presented and it provides a theoretical framework to explain the complexity of social work intervention and the relevance of social workers' creativity to it in general. It points to a possible relationship between social work students' creativity and their fieldwork performance. There are other concepts of systems theory which can help illustrate some proposed relationships between certain dimensions of creativity and fieldwork performance in some areas. These concepts will be highlighted when the proposed relationships are discussed in the following section.

FIELDWORK PERFORMANCE AND CREATIVITY

Existing literature suggests that social work students' creativity is related to their fieldwork performance. For example, it is postulated that social work students' creativity is important to them in helping their clients solve problems in two aspects, facilitating problem diagnosis and generating effective solutions (Heppner et al, 1989). It is likely that some dimensions of creativity are related to social work students' performance in these two aspects.

Clinical assessments of social work students were found vulnerable to the influence of their preexisting perspectives (Kurtz et al, 1989) and hence their ability to

free themselves from preexisting points of view and generate new perspectives according to the information collected is suggested to be significant for accurate assessment of clients' situations. This points to the possible relationship between social work students' competence in originality and their performance in assessing clients' problems. On the other hand, it is also suggested that social work students who have better competence in fluency can generate more ideas about the problem situations of their clients and have greater chance of finding appropriate ways to formulate their clients' problems (Gelfand, 1988).

Concerning the performance in generating effective solutions, some scholars suggested that one's ability to generate innovative solutions is influential to his or her performance in problem solving (Fogler and LeBlanc, 1995; Zachary, 2000), while some suggested that during the problem solving process, the more alternatives one can generate, the better the chance to identify an effective solution (Verberne, 1997; Zachary, 2000). Hence, it is possible that social work students' abilities in originality and fluency are related to their performance in generating effective solutions. Besides, one's ability to select the best solution out of all the alternatives generated may also be relevant, and this is suggested to be related to one's ability to capture the most useful criteria in the circumstances for selecting the best solution (Parnes, 1992). This shows the possibility that the competence in 'abstractness of titles', which is defined as the ability to know what is truly essential, is also related to social work students' performance in problem solving.

Besides problem solving, there are other fieldwork performance areas which may also be related to social work students' competences in different dimensions of creativity. There are all sorts of possibilities concerning how the former is related to the latter. It is possible that for a specific area of fieldwork performance the impact of different dimensions of creativity may be different. Some may have positive influence,

some may have negative influence, while some may not have any influence at all, and the strength of these different relationships may also vary. For different areas of fieldwork performance, their relationships with the same dimension of creativity may also be very different.

According to the existing literature, which will be presented in this chapter, social work students' creativity is suggested to be related to their fieldwork performance in the following three areas:

- 1) Problem Solving
- 2) Application of theories
- 3) Empathy

In the following sections, each of them will be thoroughly examined. Challenges faced by social work students and factors which may affect their performance in these areas will be examined and relevant literature will be reviewed to see how competences in some dimensions of creativity are related to these challenges and factors. Based on the literature reviewed, possible relationships between fieldwork performance in these areas and different dimensions of creativity will be explored. Although these areas of fieldwork performance will be discussed one by one, in actual practice they may not be discrete from each other. They may take place at the same time and may have influence to each other. However, for the sake of clarity in discussion, they will be studied separately.

PERFORMANCE IN PROBLEM SOLVING

Traditionally, social work intervention is taken as a problem solving process, helping clients to solve their problems, with stages similar to those proposed by problem solving theories of creativity. As discussed above, creativity which is defined as

divergent thinking is suggested to have significant impact on social workers' performance in the problem solving process of social work intervention, especially at the stages of defining problems and generating solutions.

Problem solving is described as the common process of social work intervention across different service settings. Johnson and Yanca (2001) pointed out that problem solving was one of the earliest commonalities found among casework, group work, and community organization, the three major methodologies of social work practice. Perlman (1959) was one of the earliest who described casework as problem solving process. At nearly the same time, Ross (1955) discussed the planning process as a key concept in his formulation of community organization, and indeed the planning process was an adaptation of the problem solving process. Later, when Northen (1969) talked about social work with groups, the problem solving process was also taken as the theme.

Following the postulations of these scholars, problem solving has been well accepted as the framework accounting for the process of social work intervention in different settings. This has been repeatedly mentioned by different social work scholars. For example, DuBois and Miley (2005) suggested that social workers are problem solvers who:

address problems through policy formulation at the institutional and community levels, resolve issues concerning the delivery of services in agencies and organizations, and work with individual and family client systems to develop solutions for individual and family problems. (p.200)

In talking about the helping process in social work, Garvin and Tropman (1992) maintained that "while these processes differ with each level (individual versus societal services, for example,) there is a common problem-solving process idea that crosscuts all the methods in social work." (p.237)

Social work process is described as a problem solving process since social workers are engaged in a joint process with clients to solve their problems (Compton et al, 2005). Although social workers are working in different settings and serving different target groups, “social workers share a common goal: to assist clients in coping more effectively with problems of living and improving the quality of their lives.” (Hepworth et al, 2006, p.33) Clients need social work services because they fail in problem solving activities. Human living is full of problem solving. Clients seek professional help because they have trouble coping with some problems in relation to specific life situations encountered.

In the present study, the problem solving process in social work practice is perceived from a systems perspective, as suggested by many social work scholars (Johnson and Yanca, 2001; Compton et al, 2005). It is believed that clients’ problems can only be understood from a person-in-situation holistic view, and should not be attributed to the clients alone. The problems of clients are taken as the results of imbalance in the transactions among systems in the clients’ situations, which leads to unmet needs of the clients, and the purpose of the problem solving process in social work practice is to seek to rebalance the transactions with the collaborative efforts of the social workers and clients, by using the knowledge, values and skills of the social workers and the strengths and resources within the clients and their environment (Johnson and Yanca, 2001). Instead of blaming the clients, social workers would involve them as partners during all phases of the problem solving process, and this collaborative partnership represents a form of “joining with” rather than “doing to” or “doing for” clients, and is much emphasized in social work practice (Compton et al, 2005). From this perspective, the problem solving process in social work practice is described as empowerment-based, and the collaboration between social workers and clients aims at facilitating growth and development of the clients for further

enhancement of their own lives (DuBois and Miley, 2005). Throughout the process, the strengths and competencies of the clients are respected and the focus is on the possibilities for positive growth and change (Johnson and Yanca, 2001).

Table 1 CREATIVE PROBLEM SOLVING PROCESS & PROBLEM SOLVING PROCESS IN SOCIAL WORK PRACTICE

CREATIVE PROBLEM SOLVING PROCESS	PROBLEM SOLVING PROCESS IN SOCIAL WORK PRACTICE		
	Garvin and Tropman (1992)	Johnson and Yanca (2001)	Compton et al (2005)
1. Problem Identification		1. Preliminary statement of the concern & need 2. Statement of preliminary assumptions	1. Engagement
2. Data Collection	1. Needs assessment and diagnosis	3. Selection and collection of information	2. Assessment
3. Defining Problem		4. Analysis of information available	
4. Solution Generation	2. Development and consideration of options	5. Development of a plan	3. Intervention
5. Solution Selection	3. Selection of one option for work		
6. Solution Implementation	4. Development of plans of action required by the option selected 5. Putting the plan into action	6. Implementation of the plan	
7. Evaluation	6. Ongoing evaluation	7. Evaluation of the plan	4. Evaluation

The problem solving process in social work practice suggested in social work literature is similar to the one suggested by problem solving theories presented in the previous section. The problem solving processes described by different social work scholars and the one developed out of different problem solving theories of creativity as presented above are listed in Table 1. It is not difficult to see the similarities between them. As discussed above, divergent thinking is suggested as contributing significantly to one's performance in the stages of defining problems and generating solutions, and has positive impact on the whole problem solving process. The same impact of divergent thinking on the problem solving process in social work practice is expected. This is clearly reflected by the comment of Heppner et al (1989) that the importance of creativity in the professional helping process is reflected in its contributions in two major areas: (a) to understand the essence of the client's problems, and (b) to develop interventions to facilitate desired client changes. Thus, it is expected that a positive relationship will be found between social work students' creativity and their fieldwork performance in problem solving.

With a view to exploring the specific relationships between fieldwork performance in problem solving and different dimensions of creativity, the challenges that usually social work students encounter in the stages of defining problems and generating solutions will be reviewed. It will be shown that the competences in some dimensions of creativity can probably help overcome these challenges.

Creativity and Defining Problems

From a systems perspective, the social work intervention situation is also treated as a system which includes the social worker as one of its elements (de Shazer, 1985; Montgomery et al, 2001). In this suprasystem of social work intervention, the

social worker is no longer an observer but a participant that he or she cannot observe and assess without interfering with the targets. The social worker, the client and others present in the intervention system influence each other and they may cause each other to speak and act sequentially and simultaneously. The social worker brings along with him or her elements in those systems associated with him or her, such as perceptions and beliefs. What the social worker receives in the interaction with the client is a hybrid of that brought by the social worker and the client into the larger suprasystem of social work intervention (de Shazer, 1982). In this connection, Compton et al (2005) pointed out that, from a systems perspective, the situation perceived by the social worker is not the objective reality and is also different from that perceived by the client. It is tempting for the social worker to conclude that his or her perception is more accurate, and such conclusion will easily lead to distorted perceptions and selective attention. All in all, it is no easy task for social work students to define clients' problems accurately and appropriately in their fieldwork training.

In the following paragraphs, the literature reviewed show that many social work practitioners are subject to the adverse influence of their own views and perspectives, and are much constrained by these preexisting frameworks in defining clients' problems as suggested by the systems theory. This problem is aggravated by many possible barriers in communication between social work students and their clients, which allow selective attention and distortion in perception to keep the preexisting perspectives prevailing. It is argued that social work students who are good at some dimensions of creativity are more capable to overcome these problems and perform well in defining clients' problems.

Influence of Personal Views and Perspectives

In defining clients' problems, social work students are engaged in a challenging process, which is similar to the story of the blind men and an elephant, that they are strongly influenced by their own perspectives and experience. Phillips (1993) pointed out that therapists do not know the clients as they actually are, but as they exist within the mental model of the therapists. In fieldwork training, clients are perceived through the preexisting cognitive schemas or internal frame of reference of the social work students, and these schemas are shaped by their experience in the past (Scott, 1989). However, clients' situations may be very new to the social work students that they may not have experienced or seen something similar before. In these cases, the assessment done by social work students is vulnerable to adverse influence of preexisting views, perspectives and even stereotypes held by them, and there is a risk of producing predetermined stereotypical problem definitions, which may not accurately or appropriately reflect clients' situations.

Eisenberg's (1979) comprehensive review of literature indicated that stereotypes related to social class, economic background, ethnicity, family influence, physical appearance, and sex always affect clinical decision-making. Study findings show that in therapy, diagnoses and clinical judgments are in general affected by therapists' stereotypes (Rabow and Manos, 1980; Pellman, 1980; Yarhouse, 1999; 2000). In a study conducted to social work students, clinical assessments of both beginning and advanced social work students were found affected by stereotyping (Kurtz et al, 1989).

Stereotypes are always consciously and unconsciously involved in social work practice since they provide convenient ways to cope with complexity. They help process an enormous amount of information by fitting into existing schemas (Kurtz et al, 1989) and efficiently guide the interaction with clients with minimum expenditure of

energy (Kirkham et al, 2002). Many people fail to realize the influence of stereotypes, and are not aware of the impact on their perception and analysis (Yarhouse, 2000). Hence, Fogler and LeBlanc (1995) treated stereotyping as one of the common perceptual blocks that prevent problem solvers from clearly perceiving the problem itself.

Social work students may easily be blinded by their own views, perspectives and stereotypes because they have a strong urge for certainty, constancy, and stability (Gitterman, 1988). For many social work students, ambiguity faced in social work practice is threatening, and makes them become cautious, avoid risks, and develop rigid frameworks. Study findings show that social work students are experiencing anxiety towards their fieldwork training, with concern about working with clients (Gelman, 2004), and this will render themselves vulnerable to the influence of preexisting perspectives and stereotypes.

Barriers in Communication

Barriers in communication with clients make social work students further vulnerable to the adverse influence of their own views and perspectives. As it is difficult for clients' situations to be clearly, precisely and completely communicated, there is room for social work students' manipulation to fit data collected into perspectives developed out of their past experience. Some of these barriers in communication are presented in the following paragraphs.

It is difficult for clients to use their language to give a precise representation of their situations. Polanyi (1962) suggested that for a language to have enough words to describe or connote every meaning with precision, the language would contain so many words that it is deemed to be unusable. In reality, people are using smaller number of words, resulting in loss of precision in specifying human experience. When using

words, people may slightly twist their meaning to fit the words, and hence their meaning cannot be precisely conveyed. The same thing happens when clients use their language to communicate their situations and problems to social work students. What they can achieve is, at most, an approximation of the truth, and social work students are facing the challenge to make appropriate assessment based on the imprecise information provided. In discussing linguistic processes in social work practice, Sherman and Skinner (1988) made it clear that the spoken representation of clients is less rich, less detailed, and frequently more distorted than the corresponding actual experience, but it is the latter that the social workers are attempting to elicit.

Besides the imprecise nature of language, there are other obstacles for clients to express themselves clearly and sufficiently to the social work students. First, many clients do not have sufficient verbal skills in expressing themselves and actually some of them, especially those with a low education level, are having difficulty in presenting accurately what they know about their problems (Holland, 2000). There may be a gap between what clients know and what they are able to express. Second, as there are usually too many facts and details involved in their problems, clients have to selectively present what they think are typical and important to the social work students, and some useful pieces of information may be missing due to poor judgment of the clients. Third, in some situations clients fail to provide social work students with some important information simply because they do not know about it themselves. For example, some clients are not aware of their own emotional responses to some incidents, and some parents think that they know their children's problems well but actually they do not (Moon, 2002).

On the other hand, some social work students may fail to receive accurately clients' messages because of their own problems in listening exactly what their clients are saying. In describing how social workers listen to the historical truth of their

clients, Socor (1989) pointed out that like many other people, social work practitioners may listen to what they expect to hear, or what fit the framework they prefer during the process. Such kind of selective listening greatly influences their ability to realize what are actually taking place in their clients' world.

In their conversation with clients, some social work students may be so keen to show that the frameworks or perspectives adopted are appropriate that they may consciously or unconsciously exert too much influence on topics to be discussed, which makes the clients actually not free to express themselves. In Day's (1985) study of social workers' interviews, based on tape recordings, it was found that the dialogue was limited by social workers' attempt to control the conversation by focusing on topics they thought as being related to the presenting problems and did not consider other problems. Similar results were found in Prodgers' (1979) study of intake work of social workers and Hutchby's (2005) study of tape recordings of child counseling sessions. Social work students actually are participators, instead of spectators, along with their clients in constructing the "historical truth" and they are involved in bringing about what appear to have happened (Schafer, 1983). They may control the topics by asking biased questions or indicating their interests in the most subtle ways, and lead clients to provide information that interests them (Dean, 1989).

All in all, these barriers in communication between social work students and their clients may obscure the possible discrepancies between clients' situations and the preexisting perspectives of the social work students. It greatly restrains social work students' ability to see clients' situations from new perspectives, which indeed is very essential in defining clients' problems appropriately since the situation of each client is unique as suggested by the systems theory.

Originality and Defining Clients' Problems

In order to minimize the undesirable influence of their preexisting views and perspectives, social work students should develop their competence in generating new ways of formulating clients' problems when necessary. On the one hand, it helps to counter the tendency of using inappropriate preexisting perspectives, frameworks and stereotypes to define clients' problems as presented above. On the other hand, defining clients' problems in new and useful ways can also be a constructive step to help clients solve their problems. The importance of it in social work intervention is reflected by the emphasis on the therapeutic effect of the technique of reframing in defining and redefining clients' problems appropriately (Clark, 1998). Reframing has been taken as one of the essential techniques in solving clients' problems, especially in the field of family therapy and solution focused counseling (Barker, 1986; Brown and Christensen, 1986; Gladding, 1995; LaFountain et al, 1996).

Some problems are difficult to solve because they are defined in ways directing attention from the cruxes of the issues. In these cases, it is important for the social work students to be able to redefine the problems in some new and useful ways. Reframing the ways of constructing events may change clients' perceptions of their problems, and is an effective way to permit solutions to emerge (Satir, 1967; Brock and Barnard, 1988). For example, it is helpful in some cases to redefine children's non-compliant behaviour as parents' inability to control their children, to help the parents realize their role in the problem and suggest new directions in tackling the problem.

In other situations, redefining the problems can give rise to positive and constructive impact on the motivation and feelings of the clients and other people involved, and enhance their ability to deal with the problems. By ascribing positive or noble motives to symptomatic behaviour of clients or others, their negative attitude

towards each other and the problems can be mitigated (Clark, 1998). Many scholars believed that providing positive connotations is important, even essential, in helping clients to solve their problems (Palazzoli-Selvini et al, 1978, Stanton, 1981). For example, Palazzoli-Selvini et al (1978) redefined the situation of a 10-year-old boy, who exhibited psychotic symptoms following the death of his grandfather, as carrying on the role of his grandfather to keep the family together. It was suggested that this definition might have positive effect on the attitude of other family members towards the boy, and their motivation and involvement in solving the problem.

Systems theory provides a theoretical framework to account for the technique of reframing. From a systems perspective, the meaning of a problem or symptom can only be understood in context, and it may be serving some purposes in the larger systems, e.g. family, school, etc. (Montgomery et al, 2001). People involved in the systems may not realize the contextual meaning of the problem and very often the troubled individuals are blamed. Reframing is the technique to explore the problem from a new and holistic perspective, to discover how the problem is maintained in the larger systems, and to make use of this new understanding of the problem to facilitate the problem solving process.

In a nutshell, to be able to perform well in defining clients' problems, social work students must be able to generate new and even unusual ideas about how the clients' problems should be defined. It is essential for social work students to think out of the box so that they can consider a variety of problem perspectives besides the accustomed ways. Innovative problem definitions will bring positive impact on the helping process and lead to innovative solutions, enhancing problem solving effectiveness (Zachary, 2000). Hence, it is expected that there is a positive relationship between social work students' ability in "originality" and their fieldwork performance in defining clients' problems.

Fluency and Defining Clients' Problems

Talking about creative problem solving in social work practice, Gelfand (1988) suggested that social workers' ability in thinking fluently is an important factor in developing useful definitions of clients' problems. He argued that social workers who can think fluently about the data collected can generate a large quantity of problem definitions, and in turn have greater chance of generating and selecting an appropriate one, leading to good solutions.

In view of the barriers in communication with clients presented above, the ability in fluency is an asset to social work students as it helps them generate more ideas about what might have happened based on the incomplete information provided by clients during the intervention process. It assists in generating appropriate directions for further enquiries and facilitates achievement of accurate understanding of clients' situations and appropriate definitions of their problems.

However, Gelfand's postulation did not receive support from Fortune's (1984) study on social work students, examining the relationship between their competence in generating ideas and their performance in different problem solving tasks, including "problem specification" and "generating treatment strategies". 37 social work students participated in the study. Their ability to generate ideas was measured by Means-End Problem-Solving test (MEPS). They were presented with the beginning of stories (problematic situations) and the end of the stories (specific resolutions) and requested to generate means in between. Responses to each story were scored for the number of relevant means generated. The students' ability to help other people solve their problems was measured by written exercises, including the Problem Specification exercise and the Generating Treatment Strategies exercise.

Hypothetical cases were used in these exercises and the written assignments were graded according to the appropriateness and comprehensiveness. Correlations between the scores of MEPS stories and the grades on Problem Specification exercise were computed, and no significant relationships were found. Hence, this study did not give any support to the proposed positive relationship between the ability in “fluency” and the performance in defining problems. However, due to the small sample size of this study, its findings are by no means conclusive. There is a need to conduct further studies to explore the relationship postulated.

Creativity and Generating Solutions

The step of generating alternative solutions is repeatedly mentioned by many scholars as one of the crucial elements in the professional helping process (Aldous, 1971; Janis and Mann, 1977; Kieren, 1966; Straus, 1971; Warmbrod, 1982). Accurate assessment of clients’ situations is not necessarily followed by appropriate intervention actions, and in many occasions “right problem definitions” are matched by “wrong solutions” (Fogler and LeBlanc, 1995). There is a significant distinction between “knowing that” and “knowing how”, and one of the critical professional tasks of social workers is to transform understanding into helpful professional behaviour (Gitterman, 1989). The importance of social workers’ ability to generate solutions is highlighted by Schwartz’s (1964) remark that “there are ‘knowers’ who cannot help anybody... The client is not interested in his worker’s store of knowledge... always his question will be: does he seem to know what to do for me, and has he been able to help me” (p.4).

Generating solutions is an essential step in the problem solving process of social work practice, and social workers’ creativity is suggested to be influential to

their performance in this aspect. In this section, difficulties clients usually encounter in generating appropriate solutions to their problems and their implications for social work students' competence in these areas will be explored. Then, possible relationships between some dimensions of creativity and social work students' fieldwork performance in generating solutions will be discussed.

Clients' Weaknesses in Generating Solutions

Many clients cannot solve their problems because they fail to generate appropriate solutions to their problems. In the following paragraphs, the common weaknesses of clients in generating solutions will be examined. In order to help their clients, social work students must, at least, be able to avoid making the same mistakes their clients make. Obviously, their ability to supplement clients' weaknesses in solution generation is very important to effective intervention.

Many clients cannot solve their problems because they stick to some old ways they used in tackling problems. Solution-focused therapy pointed out that many people are caught in stress because they fail to generate other solutions than the one they usually stick to (Bucknell, 2000). The same response is repeatedly used in a problem situation despite the fact that it does not help to solve the problem. They seem to have problems in realizing the fact that a particular strategy may succeed in one occasion, but its application in other situations may not be appropriate or useful. Some scholars even suggested that most problems of clients are maintained by inappropriate solutions, and one way to help these clients is to know in what ways the problems have been dealt with, and to avoid repeating those solutions already tried (Fisch et al, 1982).

The argument that many clients' problems are in need of new solutions is

supported by the findings of Sherman and Skinner's (1988) study. In this study, 95 transcripts from segments of audio-taped clinical sessions were studied. Deletion, a type of cognitive dysfunction, indicated by a tendency to close down alternative options for behaviour, feeling and thinking, was found in 79% of the clients. Tallman (1961) also found that intellectual disabled children with highly adaptable mothers progressed better than those with mothers of middle level adaptability, while one of the three components of adaptability was the ability to employ alternative means of action, instead of using the same strategy all the time.

Failure to produce many alternative solutions to their problems is suggested to be another factor contributing to clients' inability to solve their problems. Study findings show that people requiring professional help are more likely to be those have difficulties in generating many solutions to their problems. Spivack and his associates (Shure and Spivack, 1978; Spivack et al, 1976; Spivack and Shure, 1975) have done a number of studies on people's ability to generate solutions to real life problems. Their study findings showed that psychiatrically hospitalized teens had fewer alternative solutions to real life problems than normal teens; adult psychiatric patients proposed fewer means than non-patient groups; emotionally disturbed children imagined fewer means of solving a problem than normal children. Similar results were also found in Gotlib and Asarnow's (1979) study that depressed university students suggested fewer means of solving interpersonal problems than non-depressed university students.

Systems theory provides a conceptual framework to account for the clients' problems in adhering to ineffective solutions. It is postulated that all systems develop patterns of recurring interactions, which provide safety, regularity, and stability (Connors and Caple, 2005). Patterns may become more rigid over time and affect the adaptability of the system. Since many of these patterns operate below

conscious awareness, people involved may not realize their existence (Compton et al, 2005). It explains why some people keep on repeating old ways of handling problems and are not aware of the ineffectiveness of these rigid patterns of behaviour. Hence, it is suggested that the problem situations of some people are actually maintained by some rigid patterns of behaviour (Montgomery et al, 2001).

Originality and Generating Solutions

To supplement clients' weaknesses in generating solutions, first of all, social work students must have the ability to develop new alternatives to tackle clients' problems when necessary. They should be able to avoid sticking to some strategies or solutions used in the past, and realize that effective solutions for one case may be totally unfit for another. It is important that they can base their decisions on the unique situation of each client to generate new and unique solution.

The emphasis on the ability to generating innovative solutions is especially relevant to social work students because as a result of the relatively high uncertainty and ambiguity they are experiencing during fieldwork training, they are facing greater pressure to resort to some readily available solutions. When dealing with complicated human problems in fieldwork, many social work students are frustrated by the fact that it is difficult to find the correct solutions. What are in front of them are choices and uncertainty, which they may not have much experience in dealing with. They are described as struggling in "complex, ambiguous human circumstances for which there are no prescriptions, equations, recipes, or dependable guidelines that will ensure one predictable solution" (Goldstein, 1993, p.172). Inability to tolerate uncertainty and ambiguity may easily lead to dependence on rigid structures, standard procedures and common quick-fix answers, resulting in

ineffective intervention.

On the other hand, in many cases, there is a need for innovative solutions. When clients approach social work students for professional help, most of them should have tried all the strategies they could think of but still fail to cope with their problems. Moreover, people around them, such as their family members or friends, probably have suggested other solutions which they thought were helpful. In other words, many solutions, which appear to be relevant and useful to people in general, have already been tried and found not effective. When seeking assistance from social work students, many clients are expecting something really different. If the social work students cannot suggest new solutions besides those many ordinary people can think of, it will greatly limit the effectiveness of their intervention, and may disappoint the clients. Hence, in general, there is a demand for social work students to have a good competence in generating innovative solutions which can lead to successful intervention.

After reviewing different solution generation techniques, Gelfand (1988) suggested there was one commonality that they all demanded the user to be able to explore unconventional and original ideas, including those seemed inappropriate at first glance. Many people will reject original ideas at a very early stage since these ideas are so uncommon that they sound very different from what they expect a good solution should be. However, it is not uncommon that many solutions appearing to work initially turn out to be unsuccessful, while some original ideas given up in the very first minute may give rise to effective solutions after second thoughts or further modification. To avoid missing good ideas and to make sure that a wise choice will be made, an ability to generate original solutions is suggested to be essential.

As a summary, social work students who are good at generating innovative and original solutions are less likely to stick to ineffective solutions used in the past,

and can provide new choices that fit the unique situations of clients. Indeed, many scholars suggested that the ability to generate innovative solutions is one of the attributes for good problem solvers (Fogler and LeBlanc, 1995; Zachary, 2000). Facing the tough problems of clients, social work students' competence in generating innovative solutions is definitely a great asset. In this connection, a positive relationship between "originality" and performance in generating solutions is expected.

Fluency and Generating Solutions

It is likely that social work students who can produce many different solutions are more capable of supplementing clients' weakness in this area. From the review above, it is shown that clients' inability in producing many possible solutions to their problems may be one of the possible factors contributing to their failure to solve their problems. Social work students who can produce a lot of alternatives may give more choices to their clients, and have a greater chance of finding an effective solution.

Gelfand (1988) suggested that in finding solutions, social workers should learn to acquire the skills to generate ideas fluently. Borrowing Osborn's argument for the brainstorming technique, he maintained that quantity breeds quality. He suggested that those first come ideas are those which can be easily remembered and not of good quality. In order to generate good quality solutions, people must go beyond those ideas of common quality by producing many more ideas. Actually, many scholars supported the argument that the more alternatives one can generate, the better the chance is to identify a good and workable solution to a problem (Fogler and LeBlanc, 1995; Verberne, 1997; Zachary, 2000).

Fortune's (1984) study, which has been mentioned in the previous section, investigated the relationship between social work students' competence in generating ideas and their performance in generating treatment strategies in helping other people. Students' ability in generating ideas was measured by Means-End Problem-Solving test (MEPS), while their ability in generating treatment strategies was measured by Generating Treatment Strategies exercise. The correlation coefficient between the number of relevant means scored for each MEPS story and the grade on Generating Treatment Strategies exercise was computed. Out of the six stories, positive significant relationships between students' ability in generating ideas and their performance in generating treatment strategies were found in two. As the findings were inconclusive, there is a need to conduct further studies to explore the possible relationship between social work students' ability in "fluency" and in generating solutions for their clients' problems.

Conclusion: Creativity and Problem Solving

As discussed above, it is likely that social work students' creativity will have positive impact on their fieldwork performance in problem solving. Based on the literature reviewed, it is suggested that students who are more competent in two dimensions of creativity, namely "originality" and "fluency", will have better fieldwork performance in problem solving since they are more capable of defining clients' problems appropriately and finding solutions for them. Study findings so far are not conclusive regarding the relationships suggested, and the present study provides a good opportunity to test them specifically.

PERFORMANCE IN APPLICATION OF THEORIES

The existing literature suggests that social work students' creativity is also related to their fieldwork performance in application of theories. In this section, the issue of application of theories in social work practice will be discussed. It is no easy task for social work practitioners to apply the theories they have learned to the real-life situations of their clients. Many social work students may learn very well in class and achieve very good examination results, but when they deliver services to their clients in fieldwork training, they may be very frustrated to find that it is not easy to see the linkages between the theories they have learned and the intervention situations they are faced with.

Social work students are taught many different theories which are useful for guiding their professional practice. Different theories focus on different aspects of human situations and behaviour, and may have very different implications for social work practice. For example, social work students are taught different theories of therapy, such as psychoanalytic therapy, behavioural therapy and cognitive therapy. These theories, which stem from different theoretical positions, put forward different concepts and postulations regarding diagnosis of clients' problems and intervention strategies. The selection of appropriate concepts and practice principles among these theories for application in social work practice is a challenge to social work students who are so green and probably have yet to assimilate them.

The difficulty in choosing between these theories of therapy may be attributed to the great difference among them. The foci of these theories in making diagnosis and generating solutions for clients' problems are so diverse that the social work students may easily get the feeling of comparing apples and oranges when choosing between them. In the following paragraphs, an overview of these theories of therapy will be

presented to show the huge difference between them, which may reflect how great the challenge is for social work students in theory application, especially when most of them have yet to develop a good understanding of how the concepts of different theories are linked to what they find in clients' situations.

Psychoanalytic therapists believe that clients' problems are caused by unconscious materials repressed by the clients in the past (Corey, 2009). According to the psychoanalytic view, human personality is comprised of three systems: the id, the superego and the ego (Seligman, 2001). Functioning on the pleasure principle, the id strives to pursue pleasure, gratification and satisfaction of needs, and is intolerant of tension, pain, and discomfort. The id is largely unconscious, and its impulses are outside awareness. The superego includes the internalized moral codes, rules and guidelines of the society, which are transmitted by parents and teachers. For moralistic goals, superego inhibits the id impulses for gratification. The ego can be thought of as a mediator, which tries to respond to the pressures of the id and the constraints of the superego on the basis of the reality principle. It controls consciousness and use logic, intelligence, objectivity and awareness of external reality to formulate wise behaviour to meet the internal and external demands and pressures. When the ego fails to cope with the demands and cannot handle the conflicts among the id, superego and itself, anxiety is generated. If the ego cannot control the anxiety by rational and realistic methods, it will resort to defense mechanisms, which operate on an unconscious level to push the unpleasant experiences and related impulses outside awareness and have them buried in the unconsciousness. According to the psychoanalytic view, many clients' problems are related to the unpleasant experiences repressed by defense mechanisms in the early years. These repressed materials may transform into different symptoms (Nelson-Jones, 2006).

Social workers who make use of psychoanalytic therapy to help their clients

would conduct diagnosis by using psychoanalytic techniques, such as free association and dream analysis, to identify the repressed unconscious materials that are connected to the clients' problems. The purpose is to dig out the relationships between clients' current problems and the related repressed significant events in the past. To help clients solve their problems, they would make appropriate interpretations of the meanings of the clients' behaviour and symptoms at appropriate time to assist the clients in gaining insights into their problems and defense mechanisms involved, in order to enable their egos to gain more control over their lives and cope with their problems with rational and realistic methods (Corey, 2009).

In contrast to psychoanalytic therapy, behaviour therapy focuses on current observable behaviour, instead of past repressed unconscious materials. Behaviour therapists believe that behaviour, including maladaptive behaviour, is learned and can be either unlearned or replaced by new behaviour (Sommers-Flanagan and Sommers-Flanagan, 2004). Behaviour can be learned through classical conditioning or operant conditioning (Seligman, 2001). Through classical conditioning, new behaviour may be elicited by environmental stimuli accompanying the behaviour before. For example, a man may start feeling an overwhelming fear and refuse to sit inside a car, after a traffic accident in which he is badly injured inside a car. On the other hand, human behaviour is also influenced by the consequences through operant conditioning. Behaviour followed by reinforcement tends to occur more, while behaviour leading to punishment is less likely to occur in the future. For example, parents who pay extra attention to their children whenever they misbehave may encourage recurrence of children's naughty behaviour.

When making diagnosis from a behavioural approach, social work practitioners will conduct a thorough behavioural analysis to identify the conditions maintaining the problem behaviour by collecting information systematically through

observation or interviews. An ABC model is usually employed that information is collected to figure out how the problem behaviour (B) is influenced by some particular events preceding it, the behaviour's antecedents (A), and by certain events following it, the behaviour's consequences (C) (Corey, 2009). After the assessment, specific goals in behavioural terms will be developed to cope with the problems. These goals are to be achieved by changing the physical and social environments (Sommers-Flanagan and Sommers-Flanagan, 2004)). For example, techniques that withdraw the conditions maintaining or reinforcing the problem behaviour, such as extinction, may be used to help the clients unlearn the behaviour, while reinforcements may be used to encourage development of desirable behaviour to replace the maladaptive behaviour (Seligman, 2001).

Different from behaviour therapy, the cognitive therapy developed by Aaron T. Beck (1963, 1976) suggests that the most direct way to solve clients' problems and change their maladaptive behaviour is to modify clients' inaccurate and dysfunctional thinking, instead of changing the environment. Cognitive therapists believe that people's feelings and behaviour are determined by how they perceive and structure their experience, and clients' problems stem from their faulty thinking, such as making incorrect inferences on the basis of inadequate or incorrect information and failing to distinguish between fantasy and reality. There are different types of cognitive distortions that may lead to dysfunctional emotions and behaviour, which include arbitrary inferences, selective abstraction, overgeneralization, magnification and minimization, labeling and mislabeling, personalization and dichotomous thinking (Beck and Weishaar, 2008).

During cognitive therapy, the focus of diagnosis is to identify the maladaptive thoughts behind clients' presenting problems. Usually, a comprehensive problem list is established first and then social workers would help the clients

elucidate their thoughts associated with these problems (Sommers-Flanagan and Sommers-Flanagan, 2004). An effective technique to collect information for diagnosis is to ask the clients to fill in the “Thought Records” when they come across their problems outside interview sessions, jotting down information regarding the situations, emotions, behaviour and the associated thoughts that occur (Nelson-Jones, 2006). Once the dysfunctional thoughts are identified, social workers would guide the clients to evaluate the validity of these thoughts and modify them into more realistic and adaptive cognitions in order to solve their problems. During the process, cognitive techniques, such as reframing, thought stopping and self-talk, may be used to help the clients restructure their cognitions (Seligman, 2001).

As presented above, obviously the foci of the three theories of therapy, the psychoanalytic therapy, behaviour therapy and cognitive therapy, are completely different. They put forward different views regarding which aspects of clients’ problems that social workers should pay attention to during the intervention process, i.e. the past repressed unconscious experiences, the antecedents and consequences of behaviour and the underlying beliefs and thoughts of behaviour. It may not be easy for the inexperienced social work students to determine which approach they should adopt when helping a particular client. There seems to have no hard and fast rules to follow in selecting appropriate theories and concepts for application in social work practice. The practitioners have to make their own professional judgment when delivering services to their clients, and this is suggested to be the artistic aspect of social work practice (Rapoport, 1968).

Science and Art in Social Work

Rapoport (1968) suggested that the development of theories and the learning of

them is the scientific aspect of social work, which is important but not sufficient. Social work practitioners should not focus only on the scientific aspect of the profession, but have to develop their artistic abilities as well. Rapoport (1968) made use of Ralph Tyler's classic definition of a profession proposed that:

For an occupation to be a profession, it should involve complex tasks which are performed by artistic application of major principles and concepts rather than by routine operations or skills. The application of these principles necessitates an analysis of the particular problem to see what are its unique aspects which will require adaptation of the principle. This adaptation is an artistic task; that is, it involves individual judgment and imagination as well as skill. (Tyler, 1952, p.56).

From this definition, Rapoport pointed out that the development of those major principles and concepts, or the professional knowledge, is the scientific aspect of social work as a profession, while the artistic aspect of social work practice is referred to the adaptation and the application of the professional knowledge in each unique situation. An imaginative mind was suggested to be important to the latter. Hence, creativity is proposed to be significant in the application of theories in social work practice.

Referring to the past development of the social work profession, it seems that it has taken a long time for many social workers and social work scholars to understand the difference between the scientific and artistic aspects of the profession and realize the role of practitioners' creativity in social work practice. In the several decades after 1930, there was a strong aspiration for upgrading the social work practice by developing scientific social work theories (Bowers, 1950). It was believed that social work could be "a behavioural science performed by social work scientists using scientific problem-solving methods" (Siporin, 1988). Many scholars perceived social work as similar to physical science that theories developed could easily be applied to enable

social workers to induce changes required. As influenced by the pursuit of scientific methods, psychodynamic theory was well received by many social workers (Wood, 2001). It was expected that the scientific method of linear cause-effect relationships could be applied in the professional helping process, just like chemists dealing with chemicals (de Shazer, 1982).

However in the past few decades, there were more and more voices criticizing this unrealistic expectation (Sung-Chan and Yuen-Tsang, 2008). A great difference was found in applicability between physical science theories and social work theories, which was described by Johnson and Yanca (2007) as a difference between "hardness" and "softness" of the knowledge:

Social work has placed increasing emphasis on knowledge that is scientific as opposed to beliefs in unconfirmed ideas. An attempt has been made to develop a knowledge base that begins to move toward the hardness characteristic of the sciences. Yet the very nature of the social sciences, with their concern for the complex phenomenon of the human being in his social environment, tends to make this difficult and gives a quality of softness to the knowledge base. (p.41).

The psychodynamic theory was found unable to account for the complex human situations faced by social workers and was attacked as ineffective in guiding social work intervention (Fischer, 1976). The increase in dissatisfaction with psychodynamic social work is taken as one of the reasons for the systems theory to gain its strong impact on social work in the 1970s (Payne, 2002). From a systems perspective, theory application in social work practice is no easy task. Based on systems theory, changes of the whole system can be achieved by a wide range of interventions targeting at many different points of it. Systems theory also permits a wide range of theories to be used in an eclectic way (Jones, 1996). Hence, social

workers are required to consider how to apply different theories to various possible intervention points in the complex situations of the clients. It explains the complexity of theory application in social work practice.

Difficulty in application of theories is reflected by study findings revealing weak connection between theoretical knowing and practical doing (Carew, 1979; Kolevzon and Maykranz, 1982; Sainsbury, 1980; Sheldon, 1978). Twenty-five social workers identified by National Institute for Social Work of USA as excellent practitioners were interviewed in a study to elicit their ideas about principles of practice and how they were used (Kane, 1987). A common comment of social work education given by them was that it had been a meaningful experience, but it did not provide very concrete, useful information or guides for practice. Application of social work theories has been an important issue in social work practice, and many social work scholars realize that it is an error to assume previously acquired knowledge and theory in classroom would necessarily prepare the learners for practice in the field (Goldstein, 1993).

In order to tackle the difficulty faced in linking theories to practice, it is suggested that social work students should be helped to use their imagination to match significant aspects of the practice situation with knowledge or theory that may be relevant (Fisher and Somerton, 2000). Such kind of association formation, consciously or unconsciously, between knowledge acquired and the practice situation is taken as an essential step leading to integration of theory and practice (Atkins and Murphy, 1995). Obviously, the proposed use of imagination and association formation in linking theories to practice is suggesting a relationship between creativity and theory application in social work practice.

In the following paragraphs, factors which make the application of social work theories difficult will be reviewed, and their implications to the significant role of some

dimensions of creativity in facilitating the application process will be discussed.

Open Mind and Theory Application

Human situations are so complex that it is difficult to develop universal applicable theories to account for them. Human beings are living organisms that will take advantage of moment-to-moment opportunities in their environments and it makes human situations so complex that thousands of variables may be involved if universal theories are to be generated to give comprehensive accounts of what are going on in them (Pearlman, 1989; Peile, 1993). A theory of this type can hardly be a manageable or useful one for guiding social work practice. As a result, what social work students learn are mainly theories and concepts which focus only on certain perspectives, involving only certain factors and their relationships with each others. It is believed that focusing on certain important aspects of human situations is useful and sufficient in helping clients to solve their problems. However, the foci of different theories can be very different.

It is no easy task for social work students to choose the appropriate theories and concepts to account for situations presented by their clients. It is a great challenge for social work students to determine which theories and concepts are most suitable for handling which kinds of problems, for which types of clients, under what circumstances, and for what sorts of intervention targets. There are many overlaps between areas to which theories of different approaches are claiming to be applicable, and in many occasions these claims are not sufficient to give clear guidance for social work students on how to choose the appropriate theories and concepts to help their clients. On the other hand, due to the complexity of human situations, there is always an element of randomness and unpredictability in using theories to account for human phenomena

(Prigogine and Stengers, 1984), and it adds to the gap between what are described or predicted in theories and what the social work students see in reality. Hence, the relevance of different theories to clients' situations may not be easily identified.

Furthermore, the wide gap between the "borrowed" theoretical concepts in social work knowledge and the actual situations in social work practice makes the application of the former in the latter even more difficult. In social work practice, the practitioners cannot expect too much on the similarity between the theoretical concepts to be employed and their counterparts in the real situations, since many of these theories are knowledge borrowed from other disciplines (Johnson and Yanca, 2001). England (1986) commented that one of the reasons for application of theories in social work practice so difficult is the utility of social science theories, which were not devised as prescriptions for practice. Social work knowledge is largely borrowed from social science disciplines, such as psychology and sociology. The direct applicability of these theories to the complex situations of social work practice has been challenged by many scholars (Fisher and Somerton, 2000). The high degree of difference between the "original learning contents" and the "practice contexts" has made the transfer of learning very difficult (Gray, 1986). All of these make the selection of appropriate theories and concepts for social work practice far from straight forward and increase the chance that social work students will make the wrong choice.

In order to perform well in application of theories, social work students should make the best use of the information collected to select theories and concepts to guide their intervention, and constantly review the appropriateness of them in light of the feedback and further information received. They must be patient and persistent during the process, and an open attitude is essential to the success of it. Premature conclusions or stubborn reliance on some favorite theories are detrimental. As Gitterman (1988) pointed out that one of the problems in the application of theory is the tendency of social

workers to fit people and their situations into the theories selected, instead of choosing the appropriate theories to fit their clients' situations. Saari (1986) suggested that truly excellent clinical social workers need to be creative in their practice that they should have an open mind in selecting theories and concepts fitting their clients' situations, without rigidly sticking to any one of them. A similar view was presented by Johnson and Yanca (2001) that "there can be no cookbooks, no standardized procedures that must be adhered to in great detail, though there can be generalized ways of approaching persons in situations. The application of knowledge ... can be approached only from a creative stance" (p.54).

An open attitude in application of theories will help social work students to be willing to make changes when necessary. They should always remain open to new information and observations, and be ready to develop new ideas about what and how theories can be applied according to the feedback received. From the reflective practice perspective, practitioners are recommended to employ an interactive approach (Reay, 1986). Through constant reflection, they should participate in a process described as "a spiral of appreciation, action, re-appreciation", that feedback is processed with an open mind to ensure relevant theories are appropriately and effectively applied during the intervention process.

As presented above, an open mind is taken as very important to choosing and integrating appropriate theories in social work practice. It leads to the hypothesis that social work students' ability in "resistance to premature closure" is positively related to their fieldwork performance in application of theories.

Controversy on Relationship between Fluency and Application of Theory

Some scholars suggested that the more theoretical concepts social workers can

think of in their practice, the better their performance will be in choosing the appropriate ones to apply in their intervention. However, some other scholars criticized this point of view and argued that it will cause confusion and hinder the application of theory.

Following the views of systems theory, some social workers are employing an “amalgam model” (Barbour, 1984) or “integrationist approach” (Phillips, 1993) in theory application. They believe that no one theory can provide an adequate framework to understand human beings and human situations, and each theory has a piece of the truth. In this connection, social workers should allow a wide range of theories to turn up side by side in their mind, so that they can draw from this “tool kit” the materials which are useful for the particular cases which they are providing service to. From this perspective, it is expected that social work students’ ability to apply theories in their practice is related to their ability to generate a wide range of possible related theoretical concepts. The logic is simple that the wider the range is, the more the choices there are and the greater the chance of identifying and applying the appropriate theoretical concepts in practice. As social work education usually begins with a generic approach, social work students should have learned quite a number of theories and approaches. It is expected that out of those theories and concepts which they have learned, the amount of ideas they can think of in practice situations should be positively related to their “fluency” ability. From this point of view, “fluency” ability should be positively related to performance in application of theories in practice.

However, there is reservation about the postulation that the more theories one can think of, the more likely one can select the appropriate theories to guide the professional practice. Reay (1986) criticized that the attempt to teach social work students so many theories so that they could make “informed choices” in their practice was a “fundamental error” in social work training. The practice of laying logically incompatible theories alongside each other and leaving the choice to the students is

irresponsible and unreasonable. She pointed out that many students and even social workers do not have time to assimilate the theories they have come across and have not developed the skills required for critical analysis of these theories. The choice given by a large number of theories is a burden to them and makes them “lose sight of the process of applying theory to practice” (Reay, 1986, p.55). Phillips (1993) also suggested that the problem of an integrationist approach is the difficulty in selecting from a number of different conceptual frameworks. He commented that “the ideas of integrationists challenge us to choose from a variety of theories... and don’t offer us much guidance in doing so” (p.255). Based on these arguments, it is possible that the more theories a social work student can think of in their practice, the more confused they will be in applying theories in practice. Thus, for social work students, “fluency” ability may be negatively related to the performance in applying theories in practice.

It seems that there are pros and cons for having good “fluency” ability. As commented by Compton et al (2005), “There are advantages and disadvantages to both large and small arrays of alternate intervention approaches. Too many options with similar risk-benefit ratios may lead to confusion; too few alternatives reduce the opportunity for genuine choice.” (p.75)

Conclusion: Creativity and Theory Application

Application of theories in social work practice is found to be far from straightforward. A creative mind is suggested to be helpful to social work students in this aspect. It is expected that the ability in “resistance to premature closure” may help students make the best use of the information collected during the intervention process to select appropriate theories to guide their practice, and avoid stubborn reliance on some favorite theories. It is also suggested that “fluency” ability may help generate a wide

range of possible related theoretical concepts for application in a specific situation, but some scholars have reservations about it.

PERFORMANCE IN EMPATHY

Empathy is the third area of fieldwork performance which is suggested by the existing literature having a relationship with social work students' creativity. Many social work students find it difficult to perform well in this area, and it is not uncommon to find social work students failing to relate at an empathic level necessary to work effectively with their clients (Hepworth et al, 2006). They know very well that they should try their best to understand their clients' feelings and respond appropriately, but it is difficult for them to find hard and fast rules to follow. Hepworth et al (2006) commented that it is difficult to grasp how to achieve good empathic communication and he described the learning process involved as a process of "becoming" that even highly skilled social workers still have room for improvement.

Many scholars are interested in finding factors which may help social work practitioners to attain a high level of empathy in their interaction with clients. Some of them proposed that there is a positive relationship between social workers' creativity and their ability in empathizing (Buie, 1981; Compton and Galaway, 1994; Rapoport, 1968). It is suggested that to put oneself in another's shoes requires the person to have an imaginative mind, which may generate possible suggestions on others' feelings based on the facts collected. In this section, the proposed relationship between social work students' creativity and their empathy will be explored in detail.

Empathy is commonly agreed by many social work scholars as a necessary quality of the helping relationship (Compton and Galaway, 1994; Edwards and Bess, 1998). Empathy, together with unconditional positive regard and congruence, were

originally claimed by Carl Rogers (1957) as three core facilitating conditions in helping relationship. The important role of empathy as a curative factor in psychotherapy is supported by other scholars (Beck et al, 1979; Kernberg, 1982), and its important status in producing positive therapeutic outcomes has been confirmed by research findings (Nugent, 1992; Carlozzi et al, 1995).

There are two dimensions of empathy. First, as defined by Rogers (1966), empathy is “the perceiving of the internal frame of reference of another with accuracy, and with the emotional components which pertain thereto, as if one were the other person but without ever losing the ‘as if’ condition” (p.409). In other words, empathy is the capacity for entering into the feelings and experiences of another without losing oneself in the process. Besides this understanding dimension, there is another dimension of empathy, that is the communication of understanding of feeling in ways attuned to the client’s experience of the moment (Hepworth et al, 2006). This dimension plays a vital role in nurturing and sustaining the helping relationship as conveying empathic understanding reduces threat and defensiveness, communicates interest and helpful intent, and creates an atmosphere conducive to behaviour change. Miller (1989) stressed that “if empathy is truly a curative factor it must somehow be both communicated to and received by the patient” (p.531). The first dimension is a precondition of the second because no understanding can be conveyed if the practitioner lacks an accurate grasp of the inner feelings and experience of the client. However, the empathic understanding will do little good to the relationship or the therapeutic process if the client cannot sense it. Thus, social work students’ abilities in both dimensions are equally important.

As mentioned above, from a systems perspective, social workers bring along with him or her elements in those systems associated with him or her, such as perceptions and beliefs. All of these may interfere with social workers’ perception of

clients' feelings and affect their ability to make the best use of the cues they receive. In order to achieve good empathy, social workers must be able to associate what expressed by the clients verbally or non-verbally with all possible feelings. Hence, many scholars suggest that there is a relationship between creativity and empathy. Rapoport (1968) asserted that social workers engage the imagination heavily to bring out the empathic response, and their creativity is a factor influencing their ability to empathize. Buie (1981) maintained that empathic understanding depends on one's "creativity of his imagination and capacity for fantasized imitation" (p.303). Similar argument was put forward by Compton and Galaway (1994) that in learning to be empathic, social workers have to develop their creativity.

There are research findings suggesting that one's capacity for empathizing is positively related to one's creativity. Kalliopuska (1992) conducted a study to test the relationship between creative way of living and empathy of twenty students of an open university. A test on creative way of living was used to measure the extent to which the subjects were ready to apply their creative capacity to activities and experiences, and their empathy was measured by the 33-item empathy scale developed by Mehrabian and Epstein (1972). The results showed that participants' creativity scores were positively correlated with their empathy scores, but the relationship was not significant. Kalliopuska suggested replicating the study with a larger sample.

Alligood (1991) has studied the relationship between empathy and creativity of a volunteer sample of 236 men and women between the ages of 18 and 60. The Similes Preference Inventory (Pearson and Maddi, 1966) was administered to the subjects to measure their creativity. The empathy of the subjects was measured by the 39-item Hogan Scale (Hogan, 1969; Greif and Hogan, 1973). This study found a positive correlation between creativity and empathy, and the relationship was

statistically significant.

Carlozzi and his associates (1995) have conducted another study on the relationship between empathy and creativity. The participants were 56 graduate students enrolling in counseling and educational courses at a university. Their creativity was measured by the Statement of Past Creative Activities (Bull and Davis, 1980). Empathy of the subjects was measured by the Affective Sensitivity Scale (Kagan and Schneider, 1977), which covered both the understanding and communication dimensions of empathy. The Pearson product-moment correlation coefficient was calculated between the empathy scores and the creativity scores. A positive correlation was found, and the relationship was statistically significant.

Empathy and Different Dimensions of Creativity

As discussed above, there are two dimensions of empathy in social work practice. The first dimension is concerning the accurate understanding of clients' feelings, and the second dimension is related to the communication of this understanding of feelings to their clients in appropriate ways so that they can sense it. In the following paragraphs, by looking into the processes involved in these two dimensions of empathy, the possible relationships between performance in empathy and competences in some dimensions of creativity will be explored. Although in general a positive relationship between practitioners' creativity and their performance in empathy is expected, the literature shows that competences in different dimensions of creativity may have different relationships with performance in empathy, and both positive and negative relationships may be found among them.

Positive Relationship between Elaboration and Empathy

According to Miller's (1989) model of empathy, three stages are involved in understanding and experiencing the inner states of clients during the professional helping process. The three stages are:

- 1) The client sends both verbal and nonverbal cues regarding his or her own inner experience.
- 2) The therapist receives the cues sent by the client.
- 3) The therapist processes the cues received and recreates the affective state of the client.

Miller (1989) suggested that at the first stage, due to various reasons, e.g. reservation about expressing feelings to others, defense mechanisms, selective attention, and limitations of language and communication skills, the clients can, "at best, only be able to express an approximation of their inner experiences" (p.534). It creates considerable difficulty at the later stages, and therapists' ability to overcome it becomes a significant factor in achieving empathic understanding of their clients.

Similar to Miller's model, Blonder et al (1991) proposed a two-stage hierarchic model of communication of emotion, which highlights the significant role of the ability to link emotions with different cues perceived. At the first stage, the visual, spatial and acoustic information conveying the emotion was accurately recognized. However, emotional states and feelings are not something that can be seen directly. They can only be recognized by interpreting what have been perceived, and this is what taking place in the second stage. In this stage, the therapists are carrying out a complex set of mental activities to process the cues sent by the clients in order to figure out their emotions. It is a difficult process as it includes recognition of not only the superficial affective states of the clients, but also the

hidden dimensions of the feelings (Schlesinger, 1981). The therapists have to match the verbal and nonverbal cues received with representations of various emotions, which are elaborated into different ways of expression in their mind. It involves a mental process to link the relevant external and internal information in order to produce an empathic experience. If the therapists are incapable of elaborating various emotions appropriately into different possible expressions that can be seen, heard or sensed, it will be difficult for them to make sense of the cues received. Hence, it points to the important role of the competence in elaboration during the empathizing process. The better the social work students' ability to elaborate various emotions and feelings in many different ways, the better their competence in generating ideas about the possible feelings behind what they have perceived. Hence, it is expected that social work students who are good at "elaboration" will also be good at generating empathic understanding of their clients.

Moreover, it is suggested that social work students who scored high in "elaboration" are also good at communicating empathic understanding to their clients. It is unrealistic to expect that all social work students can easily express their empathic understanding of clients' feelings, and indeed it is quite difficult to convey the empathic understanding in an appropriate way. It is not unusual for social work students who can grasp the feelings of their clients to fail to convey their understanding of those feelings (Hepworth et al, 2006).

It is important for social work students to be able to generate appropriate verbal and non-verbal responses according to the circumstances, to communicate their understanding of clients' inner experience. Simply telling the clients that "I understand how you feel" can seldom be sufficient, and if empathy is expressed inappropriately, it may adversely affect the relationship with clients. In communicating empathic understanding, it is important for social work students to

understand precisely what are conveyed by different verbal and non-verbal responses, and choose the appropriate ones (Miller, 1989). After acquiring a good understanding of clients' feelings, social work students must be able to elaborate the expression of this understanding into different possible empathic responses, which may include a sigh, a facial expression, a remark, an appropriate physical touch, a short phrase reflecting clients' feelings, a few sentences expressing understanding, or a sharing of similar experience. Due to the wide range of emotions that may be experienced by clients, it is a great challenge to social work students to elaborate accurately their understanding with appropriate ways of expression to reflect clients' feelings (Hepworth et al, 2006). Social work students who lack elaboration ability will easily limit themselves to a few ways of communicating empathy and it will greatly hamper the effectiveness of it. Again, social work students' ability in "elaboration" is suggested being positively related to their fieldwork performance in empathy.

Negative Relationship between Originality and Empathy

For social work students to perform well in empathizing with their clients, they must be able to free themselves from the restraints of their own internal frame of reference and to figure out something that may be very different from or even strange or alien to their own experience. Self-centered ones are less likely to perform well in generating empathic understanding of their clients.

Miller (1989) held that it is important for the therapist to set aside his or her egocentric views, in order to correctly perceive the cues from the clients and objectively interpret the cues received. Otherwise, it may create distortion and generate biased views about clients' emotional states. Thus, it is reasonable to

expect that empathy of those highly self-centered persons is comparatively weaker, and this postulation is supported by study findings (Kalliopuska, 1992).

Study findings show that people with high “originality” are likely to be more self-centered, and hence a negative relationship between “originality” and empathy is suggested. It is proposed that originality develops out of childhood strivings for independence and the need for exploration, and highly original people are oriented toward self rather than others (Blatt and Shichman, 1983; Wink, 1991). Indeed, originality was found related to socially inconsiderate behaviour (Millon, 1990). On the one hand, it is likely that self-centered people are more original because they are not much influenced by the others and have fewer constraints on developing their own way of thinking. On the other hand, high originality may lead to self-centered personality. Unusual ideas may easily lead to disagreement since they are quite different from the conventional ways of thinking and many people do not welcome and some even cannot tolerate new ideas. People with high originality may face more challenges in maintaining good interpersonal relationship, and may easily get isolated. These repeated experiences of being different from the others will gradually lead to self-centered thoughts and behaviour (Holland et al, 2004).

Frank Barron has conducted a study to test the relationship between originality and different personality characteristics (Helson and Wink, 1996). 141 college students in Mills College participated in the study and their originality was assessed by an inventory scale developed from the California Psychological Inventory (Gough, 1987). Personality characteristics were measured by the California Adult Q-set (CAQ) (Block, 1978) and Adjective Check List (ACL) (Gough and Heilbrun, 1983). The study findings show that students with high originality are characterized by self-indulgence, impulsivity, condescension, self-dramatization, and manipulateness. Moreover, originality was found negatively related to “ability to

delay gratification” and “self-control”. In a study on one hundred undergraduate students, O’Reilly et al (2001) found a positive significant correlation between originality and impulsive non-conformity. All these findings suggest that in general people with high originality are quite self-centered and may have problems in getting along with others. In this connection, it is likely that there is a negative relationship between originality and empathy.

Conclusion: Creativity and Empathy

Many scholars suggested that an imaginative mind help social work students to understand clients’ feelings and study findings also show that there is a positive relationship between creativity and empathy. However, the literature reviewed indicates that different dimensions of creativity may have different relationships with empathy. It is likely that social work students who are rated high in “elaboration” will also be scored high in empathy, since it will be easier for them to recognize others’ feelings and use appropriate responses to communicate their understanding. However, those who are rated high in “originality” are expected to be relatively weak in empathy, as they are likely to be more self-centered.

CHAPTER SUMMARY

The present study is to investigate the relationship between social work students’ creativity and fieldwork performance. In this chapter, literature on related theories, concepts and studies was reviewed to explore the possible relationships between some dimensions of creativity and fieldwork performance in certain areas.

A clear definition of creativity is essential to the investigation of the

relationship between creativity and fieldwork performance. Hence, major theories of creativity, including association theory, divergent thinking theory and problem solving theory, were reviewed. It was found that these theories are not mutually exclusive. Instead, they are supplementing each other in providing a comprehensive picture of creativity and support the author to define creativity as the ability in divergent thinking with five dimensions (fluency, originality, elaboration, abstractness of titles and resistance to premature closure) in the present study.

Many scholars suggested there is a relationship between creativity and social work practice, and it is important for social workers to have a creative mind, which will assist them in making the appropriate professional judgment in the face of the complex and unpredictable circumstances of social work intervention. Systems theory was introduced to provide a theoretical framework to explain the ambiguity, indeterminacy and uncertainty in social work practice, and account for the need for creativity in the helping process. All of these point to a possible relationship between social work students' creativity and their fieldwork performance. The specific relationships between some dimensions of creativity and fieldwork performance in three areas, namely problem solving, application of theories and empathy, were thoroughly examined.

Based on the literature reviewed, the problem solving process in social work practice was presented from a systems perspective. It is proposed that social work students' ability in "originality" and "fluency" is positively related to their performance in problem solving. Students who can generate innovative ideas and produce a large quantity of possible alternatives will probably perform well in defining clients' problems and in finding solutions for clients' problems. Hence, competences in these two dimensions of creativity are taken as contributing factors to fieldwork performance of social work students in problem solving.

Some commonly used theories in social work practice were presented to illustrate the challenges in theory application faced by social work students. For good performance in application of theories in fieldwork practice, it is suggested that an open mind to select and apply different theories in practice is important. An open mind will enable social work students to make changes and modifications according to the feedback received and avoid rigid reliance on favorite theories. Thus, a positive relationship is suggested between “resistance to premature closure” and fieldwork performance in application of theories. On the other hand, there is controversy over the impact of good “fluency” ability on the performance in application of theories. It is suggested that, in general, having more ideas about what and how theories can be applied is helpful as it provides more choices, but there is concern whether too many ideas will confuse social work students who do not have much experience.

Finally, it is suggested that social work students’ fieldwork performance in empathy is positively related to their competence in “elaboration”. Those who are more capable of elaborating different emotions and feelings into specific and concrete visual and acoustic cues are likely to have better performance in recognizing the feelings behind those cues received from the clients. Also, they are expected to be more capable of communicating their understanding of clients’ feelings in elaborate ways. On the other hand, as those who are rated high in “originality” are likely to be more self-centered, a negative relationship between social work students’ “originality” and fieldwork performance in empathy is expected.

In a nutshell, the literature reviewed supports the postulation that there is a relationship between social work students’ creativity and fieldwork performance. Specifically, it shows that fieldwork performance in three areas, namely problem solving, application of theories and empathy are probably related to some dimensions of creativity as follows:

- (a) Fieldwork performance in problem solving is positively related to “originality” and “fluency”.
- (b) Fieldwork performance in application of theories is positively related to “resistance to premature closure” and “fluency”.
- (c) Fieldwork performance in empathy is positively related to “elaboration”, but negatively related to “originality”.

This provides a basis for developing the hypotheses of the present study in the next chapter.

CHAPTER 3

RESEARCH DESIGN

INTRODUCTION

In the previous chapter, the relationship between creativity and fieldwork performance of social work students was explored. In this chapter, the choice of paradigm for the present study will be discussed. Then, the hypotheses to be tested in this study will be presented, and the methodology of this study, including the selection of participants, the assessment of participants, the methods of data analysis and research ethics, will be discussed.

CHOICE OF PARADIGM

In general, there are two main paradigms for educational research, the positivist and interpretive paradigms (Cohen and Manion, 2007). The key differences between these two paradigms lie in their epistemological assumptions, concerning what researchers believe the nature of social reality is and how the knowledge should be established. In order to decide on the research approach of this study, the epistemological assumptions of these two paradigms will be examined. Then, the phenomena to be investigated in the present study and the epistemological assumptions held by the author will be reviewed to determine which paradigm should be adopted in this study.

Positivists believe that there is a real world out there which exists whether or not it is observed and irrespective of who observes it (Dooley, 2001; Gall et al, 1999). This world can be investigated by the scientific methods of natural science and there

are laws governing events and phenomena in this world. Human behaviour is influenced by different factors and once the laws governing the relationships between human behaviour and various factors are correctly observed and identified, human behaviour can be predicted (Neuman and Wiegand, 2000). Hence, the primary goal of positivist research is to discover the causal relationships between observable phenomena for the purpose of generalization across a target population (Easterby-Smith et al, 1994). To avoid errors in discovering existing facts, steps are taken to prevent bias arising from the researchers by minimizing close interaction between researchers and participants. Quantitative methods, such as experimental methods and collecting data by questionnaires, are used by positivists to ensure research results can be objectively quantified and replicated (Gall et al, 1999). Usually a large sample is drawn and hypotheses concerning the causal relationships under study are developed and tested by statistical techniques to ensure generalizability.

Interpretivists believe that the world is not objective and exterior, but is socially constructed by people who participate in it and is constructed differently by different individuals (Easterby-Smith et al, 1994; Gall et al, 1999). People act as interpreters and their behaviour can only be understood by entering into their reality (Bogdan and Biklen, 2003). Hence, the primary goal of interpretive research is to interpret the complexities embedded in human experiences and seek an understanding of their meanings and significance (Neuman and Wiegand, 2000). Research methods adopted by interpretive researchers are qualitative in nature, such as participant observation and interviews (Dooley, 2001). The researchers would interact closely with the participants to seek holistic understanding of their subjective experiences. The main objective is to generate rich and detailed data that yield better understanding of human behaviour in relation to the phenomena under

investigation, instead of generalization of study results. In this connection, the sample size is usually small.

The purpose of this study is to investigate the relationship between social work students' creativity and their fieldwork performance. As discussed in the previous chapter, social work is traditionally defined as both science and art. The literature reviewed in the previous chapter suggests that the use of social work students' creativity in their practice is related to the artistic aspect of the profession. The circumstances of social work intervention are described as unique, complex and changing from moment to moment. From a system perspective, different elements within these circumstances are constantly interacting with each other and influencing each other, and these dynamic interactions make each of these situations a unique phenomenon at any given moment, in which the social work practitioner cannot draw direct reference from other situations he or she has come across before. Moreover, the complex interactions between elements in these situations also contribute to the difficulty in identifying cause-effect relationships among them. Some elements may produce effects around, which may subsequently induce changes to these elements themselves. Hence, it is suggested that in order to achieve good understanding of clients' situations and make appropriate professional judgment during social work intervention, social work students need to make good use of their creativity to flexibly and spontaneously take into consideration various elements in the circumstances to generate all possible meanings. From this perspective, it seems that the interpretive paradigm is more compatible with the purpose of this study in exploring the artistic aspect of social work practice, in comparison with positivist paradigm which appears to be more relevant to studies on the scientific aspect of the profession.

However, as suggested by Neuman and Wiegand (2000) that when conducting a social research, there is no single, absolutely correct approach and the

choice of paradigm is ultimately based on the philosophical assumptions held by the researcher. In designing this study, the author shared the views of positivists and perceived what to be studied from a positivist perspective. The author believed that the complex and dynamic nature of the circumstances of social work intervention does not deny the existence of causal relationships between different elements in it. Instead, the complexity simply reflects the fact that a large number of causal relationships coexist within the context, and it may require great effort to separately identify each of them. The phenomenon of having some elements producing effects around and may subsequently induce changes to themselves can be explained in terms of circular chains of cause-effect relationships, in which the effect of one relationship becomes the cause of another one and so on. Hence a cause may induce a chain of effects which may finally have impact on itself. Although these cause-effect relationships are interrelated and joined in a circular chain, it does not mean that any one of them does not exist and cannot be studied separately. On the other hand, the author perceived the uniqueness of social work practice situations as representing the unlikelihood of finding two situations comprising exactly the same set of elements in the same condition. Nevertheless, the author believed that although the overall circumstances of social work intervention for different clients are different, there are some common causal relationships which can be found among them. Knowledge of these causal relationships is considered generalizable to different social work intervention situations, and may be useful to social work educators for further development of social work training programmes. The relationship between social work students' creativity and their fieldwork performance is taken as one of these relationships and it is worthwhile to conduct research to generate more knowledge about this relationship. Based on the above discussion, obviously the positivist approach is more compatible with the epistemological assumptions held by the author

and hence was adopted for the present study.

For studies adopting a positivist approach, quantitative methods are suggested to be used, unless they are found unfeasible or impractical (Dooley, 2001). Hence, in this study, hypotheses regarding the relationships between different dimensions of creativity and fieldwork performance in some areas were developed based on the literature reviewed, and these hypotheses were tested by quantitative procedures. There was an intention to generalize the conclusions drawn from the results of this study.

HYPOTHESES OF THIS STUDY

The objective of this study is to investigate the relationship between creativity and fieldwork performance of social work students. As discussed in Chapter 2, creativity is defined as one's ability in divergent thinking with five dimensions, namely fluency, elaboration, originality, abstractness of titles and resistance to premature closure. For fieldwork performance, the focus of this study is on the following three areas:

- 1) Problem solving
- 2) Application of theories
- 3) Empathy

In the following paragraphs, the definitions of the five dimensions of creativity and the three areas of fieldwork performance will be presented. Then, the hypotheses of the present study concerning the relationship between some dimensions of creativity and the three areas of fieldwork performance will be discussed.

Definitions

Based on the discussion in the previous chapter, the definitions of the five dimensions of creativity and three areas of fieldwork performance were worked out, as shown in Table 2 and Table 3.

Table 2 DEFINITIONS OF FIVE DIMENSIONS OF CREATIVITY
(Torrance, 1990a)

Dimensions of Creativity	Definitions
1) Fluency	- the ability to produce a large number of ideas
2) Originality	- the ability to produce uncommon or unique responses
3) Elaboration	- the ability to develop, embroider, embellish, carry out, or otherwise elaborate ideas
4) Abstractness of Titles	- the ability to sense the essence, to know what is truly essential
5) Resistance to Premature Closure	- the ability to keep open in processing information and to consider a variety of information

Table 3 DEFINITIONS OF THREE AREAS OF FIELDWORK PERFORMANCE

Areas of Fieldwork Performance	Definitions
1) Problem Solving	- the ability to perform well in the problem solving process of social work practice

2) Application of Theories	- the ability to make appropriate use of theoretical knowledge acquired to facilitate achievement of professional objectives in specific social work practice situations.
3) Empathy	- the ability to realize the feelings of clients and to communicate this understanding in ways attuned to them.

Hypotheses

In this study, the relationships between different dimensions of creativity and the three areas of fieldwork performance of social work students were investigated. According to the literature review presented in the previous chapters, it is proposed that only some dimensions of creativity are related to the three areas of fieldwork performance, and the hypotheses of this study are as follows:

- 1) There is a positive relationship between social work students' competence in originality and their fieldwork performance in problem solving.
- 2) There is a positive relationship between social work students' competence in fluency and their fieldwork performance in problem solving.
- 3) There is a positive relationship between social work students' competence in resistance to premature closure and their fieldwork performance in application of theories.
- 4) There is a positive relationship between social work students' competence in fluency and their fieldwork performance in application of theories.
- 5) There is a positive relationship between social work students' competence in elaboration and their fieldwork performance in empathy.

- 6) There is a negative relationship between social work students' competence in originality and their fieldwork performance in empathy.

Each of these hypotheses posits a single relationship between social work students' fieldwork performance in one area and their competence in one dimension of creativity. The six hypotheses can be categorized into three groups according to the areas of fieldwork performance involved, showing that each fieldwork performance area is hypothesized to be related to two dimensions of creativity. Although there are two separate hypotheses for each fieldwork performance area, it does not mean that the two hypothesized relationships must be separate or mutually exclusive. It is possible that the two hypotheses are both valid at the same time and the two dimensions of creativity involved may both be included as independent variables in a model which can be used to account for the variation of the fieldwork performance in the related area. In other words, for each fieldwork performance area, the two hypotheses are to be conceived in a broad sense that they also cover those cases in which the two dimensions of creativity involved have combined effects on the fieldwork performance in that area.

PARTICIPANTS

Participants in this study were all voluntary subjects, and all of them were final year (Year 2) students enrolling in the Higher Diploma in Social Work Programme of a university in Hong Kong. Year 1 students of the programme were not invited since there was no fieldwork training in their syllabus. The final year students were required to attend fieldwork training as part of their curriculum, and they practised as student social workers in social service agencies two days a week during the period from 11 October 2007 to 28 March 2008.

In October 2007, invitation letters were sent to all final year students of the Higher Diploma Programme through the Student Association of their department. In the invitation letter, the students were introduced the purposes and details of this study, and were informed that each participant would receive an incentive of HK\$100. They were invited to participate in this study and those who were willing to join were required to complete a reply slip to confirm their participation. Eventually, out of 72 final year students, 52 students agreed to participate in this study. They consisted of 10 male students and 42 female students, and were between the ages of 20 and 26, with an average age of 21.

Inviting voluntary participants from the same university to join this study has its advantages and disadvantages. Regarding the disadvantages, first, voluntary participation might give rise to self-selection bias, that students with certain characteristics might be more likely to join this study. Second, there might be selection bias since students from other universities were not included. It is possible that students in the selected university are different from students in other universities in certain aspects. All of these would cast doubt on the representativeness of the sample.

It would be better if social work students from different universities in Hong Kong could be randomly selected to participate in this study. However, many universities in Hong Kong are not willing to provide assistance to studies which will collect data on their students' examination or performance evaluation results. Indeed some universities had been contacted for assistance in collecting data for the present study but all of them refused to assist. Without the assistance from the universities and considering the limited resources for the present study, it was deemed not feasible to draw a sample from different universities. Actually, it was found extremely difficult to identify ways to contact all social work students even in a university, not to

mention in different universities. Through personal network, the author finally was able to seek assistance from the Student Association of the selected university, but during the process he had to follow up each participant individually, to collect data from him or her at different stages. It created great difficulty and huge workload.

Recruiting sufficient participants for the present study was also a challenge. There were only 72 final year students in the Higher Diploma Programme. Considering the requirements of data analyses to be conducted for the present study, it was necessary to include all of them or practically all those who were willing to participate in this study, in order to make sure that data would be collected from sufficient participants to generate useful analysis results.

On the other hand, there are some advantages of using the current way of recruiting participants. As all participants were selected from the same university, it could avoid problems in comparing results of fieldwork evaluation conducted by different universities. In Hong Kong, different universities are using different systems and tools for social work students' fieldwork evaluation, and it is very unlikely for any one of them to change its fieldwork evaluation system to match with another institution for the sake of the present study. Selecting participants from the same institution can make it feasible to compare the fieldwork evaluation results among the participants, since all of them are assessed under the same system by the same tool.

Another advantage of selecting participants from the same university is that it can ensure the similarity of social work training received by the participants, and minimize the influence of unexpected extraneous variables. If participants are enrolled in courses of different universities, differences found in their fieldwork performance may be caused by the differences in curriculum among the institutions and it will be hard to draw any conclusions about the relationship between creativity

and fieldwork performance.

MEASUREMENT

In this study, creativity of social work students was measured by the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1966, 1990a, 1998), while empathy of social work students was measured by the Empathy Quotient, a self-report scale designed by Baron-Cohen and Wheelwright (2004). Students' fieldwork performance in problem solving and application of theories was assessed by their fieldwork supervisors according to the existing fieldwork evaluation mechanism of the selected university. In this section, the data collection arrangements will be presented, and then a thorough discussion on each of these assessment methods, especially about their measurement validity and reliability, will follow.

Data Collection Arrangements

Different time slots for taking the TTCT and Empathy Quotient were arranged during the period from 12 November 2007 to 27 November 2007 and the participants were invited to attend any one of them according to their own choice. After taking the tests, participants were reminded not to release the contents of the tests to others since other participants might take the same tests later.

In order to standardize the measurement procedures, in each time slot, the TTCT was administered to the participants by the author himself, following the standard procedures and instructions specified on the TTCT Directions Manual (Torrance, 1990b). Upon completion of the TTCT, the participants were required to complete the self-report scale, Empathy Quotient. All these sessions were conducted

in classrooms of the selected university, which basically provided similar test environment for the assessment. In a nutshell, all participants attending the tests followed the same procedures, and received the same instructions from the same researcher in a similar environment.

All participants were requested to send their fieldwork evaluation results concerning “problem solving” and “application of theories” to the author after receiving their fieldwork evaluation reports from their fieldwork supervisors at the conclusion of their fieldwork training. In March 2008, the participants were reminded by e-mails and phone calls to submit their grades in these two performance areas. Finally, data concerning fieldwork performance of all participants, except one who dropped out of the Higher Diploma Programme before the end of the fieldwork training, were successfully collected in May 2008.

Assessment of Creativity by TTCT

TTCT was developed by Torrance and his associates for people from different cultures with different educational levels. There are several batteries of test activities, including verbal and figural activities. The one selected for this study is the English version of Figural Form A and a copy of it is attached at Appendix A. TTCT Figural Form A consists of three tasks, each designed to tap somewhat different aspects of creative functioning. The three figural tasks can be administered to participants at all educational levels, from kindergarten to graduate school, in groups or individually. Each participant was given ten minutes to complete each task. The three tasks are:

1) Picture Construction Activity

Participants were shown with a curved shape and were requested to think

of a picture or an object which they could draw with this shape as a part.

2) Picture Completion Activity

Participants were shown with ten incomplete figures of different shapes.

By adding lines to the incomplete figures, they were requested to sketch some interesting objects or pictures.

3) Lines Activity

Participants were shown with three pages of sets of parallel lines, and they were requested to make objects or pictures from the pairs of straight lines by adding lines to each pair.

Torrance (1990a) explained that the three tasks represent at least three creative tendencies. The Picture Construction Activity is related to the tendency toward finding a purpose for something that has no definite purpose and to elaborate it so that a purpose is developed. The Picture Completion Activity sets in motion the tendency toward structuring and integrating and gives an opportunity for in-depth presentation of a single object, scene, or situation. The Lines Activity gives repeated stimulus to the participants and it requires an ability to return to the same stimulus again and again to perceive it differently each time and to disrupt structure to create something new.

To assure the comprehensibility of TTCT Figural Form A, a pilot was conducted with four university students studying in different local universities in July 2007. Three were Year 2 students, while one was a Year 3 student. They showed no problems in following the instructions. After the pilot, the participants were invited to give feedback on the test process, and all of them opined that it was easy to understand what to do during the process and the instructions were very clear. They suggested no amendments to the procedures or instructions.

In this study, the scoring of different dimensions of creativity was mainly

based on the scoring guide developed by Torrance et al (1992), and was done by the author. Adjustments were made to the scoring method for “originality”. According to the scoring guide, scoring of “originality” is based on the statistical infrequency of the responses. Scores are only given to original responses which are defined as those provided by 2% or less of the respondents. The scoring guide provides an “originality” scoring list for the TTCT Figural Form A, showing all responses which are not counted as original and should not be given any score. The list was developed based on American data and there are views that it may not be applicable to other cultures (Millar, 1995; Saeki et al, 2001; Kim, 2006). To tackle this issue, in this study, the scoring method for “originality” was modified in a way similar to that suggested by Wechsler (2006) in a study on Brazilians. Applying the same statistical criteria, a scoring list for originality was developed based on all responses to TTCT received in this study. In other words, a list of responses which were given by more than 2% of the respondents in this study was used to replace the one provided in the scoring guide. Besides this, all other scoring procedures specified in the scoring guide were followed.

Measurement Reliability and Validity

Reliability and validity of TTCT have been tested by different studies and the results are very satisfactory. In the following paragraphs, the reliability of TTCT will be examined first. Then study findings regarding its validity will be presented.

In 1965, an experiment was conducted to test the inter-scorer reliability among untrained classroom teachers in scoring TTCT Figural Forms (Torrance, 1966). The mean coefficients of correlation between scoring of the teachers were: 0.96 (fluency), 0.94 (flexibility), 0.85 (originality), and 0.90 (elaboration). Later,

Torrance (1990a) reported the results of five inter-scorer reliability studies conducted on subjects at different age groups that the coefficients of correlation obtained for scoring of fluency, originality, elaboration, abstractness of title and resistance to premature closure were all above the 0.9 level.

In Taiwan, Wu and his associates (1981) has tested the inter-scorer reliability among seven scorers, one trained and six untrained, in scoring TTCT Figural Forms A. The mean coefficients of correlation between scoring of the scorers were: 0.99 (fluency), 0.89 (flexibility), 0.92 (originality), and 0.94 (elaboration). Wu commented that people could become a scorer of TTCT by reading and following the instructions on the TTCT Directions Manual, no matter they had received formal training or not.

In order to examine the test-retest reliability of TTCT Figural Forms among children, a study was conducted on 118 grade 4-6 children in Wisconsin (Torrance, 1966). The alternate forms of TTCT figural tests were administered to the participants from one to two weeks apart. The test-retest reliability ranged from 0.71 to 0.85 and was quite satisfactory. In Taiwan, Wu and his associates (1993) also conducted a study on test-retest reliability of TTCT Figural Form A. 227 students, from primary schools to universities, were administered with the test twice in one month's time. The test-retest reliability was found as follows: 0.72 (fluency), 0.71 (flexibility), 0.67 (originality), and 0.48 (elaboration). Although the test-retest reliability for elaboration was a bit low, overall speaking, Wu commented the test-retest reliability of TTCT Figural Form A was satisfactory.

Concerning the validity, Weisberg and Springer (1961) conducted a study on 32 intellectually gifted fourth grade children to compare personality characteristics of highly creative and less creative children, as measured by TTCT. The children were tested with TTCT verbal and figural activities. Using the median of this group as a

cutting point, they were divided into two groups, highly creative and less creative. The results of their Rorschach Ink Blots test were compared. Highly creative children were found showing more unconventional responses, unreal perception and fanciful and imaginative treatment of the blots, and also gave more human movement and color responses, which were signs regarded as indicators of imaginativeness and creativeness.

Fleming and Weintraub (1962) examined the relationship between rigidity and measures derived from TTCT of 68 gifted elementary school children. TTCT verbal and figural activities were used as criterion measure of creativity, and Frenkel-Brunswik Revised California Inventory was used to measure attitudinal rigidity. The overall score of creativity was found negatively correlated with the attitudinal rigidity ($r = -0.41, p < 0.01$).

At Cornell University, a study was conducted to test the relationship between creative thinking ability and preferences for open-structure learning experiences of 177 pupils in grade 3-6 (Clark, 1964). A questionnaire was developed to determine each pupil's preference for open-structure learning experiences. Characteristics of the open-structure learning experience included emphasis on democracy, flexibility, independence, divergent thinking, and more chance for creativity, curiosity, inventiveness, and originality. The coefficient of correlation between the preference for open-structure learning experiences and overall score of creativity measured by TTCT Figural Form A was 0.27, significant at a level better than 0.01.

The validity of abstractness of titles and resistance to premature closure were examined by Torrance's (1990a) study on 33 graduate students. The students were administered the TTCT Figural Form A and other creativity tests. The results showed that the measure of abstractness of titles was significantly correlated with the

ratings of Creative Motivation Scale ($r = 0.34, p < 0.05$), Physiognomic Cue Test ($r = 0.38, p < 0.05$) and Similes Test ($r = 0.35, p < 0.05$), while the measure of resistance to premature closure was significantly correlated with the rating of Rorschach Movement ($r = 0.35, p < 0.05$).

Correlations between TTCT and two other tests of imagery ability, the Spatial Test of Primary Mental Abilities (PMA) and the Gordon Test of Visual Imagery Control (Gordon Test), were studied by Gonzales and Campos (1997). Originality was found significantly correlated with PMA ($r = 0.36, p < 0.001$) and Gordon Test ($r = 0.30, p < 0.01$), while resistance to premature closure was found significantly correlated with PMA ($r = 0.33, p < 0.001$) and Gordon Test ($r = 0.26, p < 0.01$).

The predictive validity of TTCT was investigated in two longitudinal studies conducted by Torrance. In the first study, 392 grade 9-12 students were tested in 1959 with TTCT (Torrance, 1971, 1972, 1990a). In 1971, information concerning three criteria of creative behaviour was successfully collected from 236 of them, and the information collected was: 1) Quantity of Creative Achievements — the number of publicly recognized creative achievements reported, 2) Quality of Highest Creative Achievement — the quality ratings of five judges of the three most creative achievements described by the subjects, and 3) Creativeness of Future Aspirations — the quality ratings of five judges of the creativity of their future career images. The coefficients of correlation between creativity measures in 1959 and the creative behaviour reported in 1971 were calculated in Table 4 and all of them were significant at a level better than 0.01:

**Table 4 CORRELATIONS BETWEEN TTCT SCORES AND CREATIVITY
BEHAVIOUR IN 1959 and 1971**

	Quantity of Creative Achievements	Quality of Highest Creative Achievement	Creativeness of Future Aspirations
Fluency	0.33	0.38	0.35
Flexibility	0.28	0.38	0.33
Originality	0.40	0.43	0.41

In the second longitudinal study, 211 elementary school students were tested with TTCT in 1958, and their creative achievements were assessed in 1980 based on the following criteria: 1) number of high school creative achievements, 2) number of post-high school creative achievements, 3) number of creative style of life achievements, 4) quality of highest creative achievements and 5) creativeness of future career image (Torrance, 1981). The overall score of TTCT obtained in 1958 was found significantly correlated with each of the assessments made in 1980, based on the above-mentioned criteria. In 1998, the creative achievements of 99 of these elementary students were assessed again by expert judges based on the following two criteria: 1) number of publicly recognized creative achievements and 2) quality of these creative achievements (Torrance, 2002; Cramond et al, 2005). Originality measured in 1958 was found a significant predictor of both quantity ($r = 0.24$, $p < 0.05$) and quality of creative achievements ($r = 0.39$, $p < 0.01$), while fluency was found a predictor of quantity of creative achievements ($r = 0.23$, $p < 0.05$).

Validity of TTCT has been studied in different cultures. In Taiwan, a study was conducted to examine the relationship between originality scores and the ability in creating images (Hung, 1976). TTCT was administered to 120 male students in

secondary schools. Using the median originality score of the students as a cutting point, they were divided into two groups, high originality and low originality. Students were randomly assigned into three classes so that each class had half of the students from each group. Students in the three classes were required to remember a series of words. In the first class, students were asked to create images associated with the words as a way to help memorize them. In the second class, students were provided with images associated with the words prepared by the researchers to help memorize the words. The students in the third class were not asked to create images or provided with images. All the students were tested one week later. It was found that significant difference in performance between students from the high originality group and the low originality group was only found in the first class, and students from the former outperformed those from the latter. It was concluded that students with high originality scores perform better in creating images than those with low originality scores.

In Mexico, TTCT was administered to three groups of people from Mexico City (Chavez-Eakle et al, 2006). Group I was composed of 30 people with highly recognized creative achievements, while Group II, the control group, was composed of 30 ordinary people, e.g. administrative staff and graduate students of a university, members of a parent association, etc. Group III consisted of 30 psychiatric outpatients. It was found that there were significant differences between the groups in originality, elaboration, resistance to premature closure, and abstractness of titles, and Group I obtained the highest mean scores.

A research study was also conducted to study the validity of TTCT in Brazilian culture (Wechsler, 2006). TTCT was administered to 59 Brazilians with recognized creative achievements and 69 Brazilians in a control group. The results showed that the mean scores in fluency, flexibility, elaboration and originality of the

former group were all higher than that of the latter and the differences were significant ($t = -2.07$ to -3.43 , $p < 0.05$). Moreover, it was also found that among those with recognized creative achievements, the scores in fluency, elaboration and originality were positively correlated with the number of recognized creative achievements ($r = 0.18$ to 0.19 , $p < 0.05$). Hence, the validity of TTCT in Brazilian culture was confirmed.

As presented above, the reliability and validity of TTCT receive much support from findings of many studies. However, the reliability and validity of TTCT have not been tested in Hong Kong. Nevertheless, as shown above, there are study findings showing that TTCT possesses good reliability and validity among different cultures. Indeed, the reliability and validity of TTCT has been tested and confirmed among the Chinese in Taiwan. Given the similar Chinese cultural background between Hong Kong and Taiwan, it is likely that the test will also possess satisfactory reliability and validity among the people in Hong Kong. All in all, based on the findings of those studies conducted in different countries and cultures, including those conducted in Taiwan, TTCT is taken as possessing satisfactory reliability and validity, and the use of it in the present study is supported.

Assessment of Empathy by Empathy Quotient

Empathy Quotient is a self-report scale measuring empathy, designed by Baron-Cohen and Wheelwright (2004). There are 60 items in Empathy Quotient, and respondents are required to give responses on a 4-point scale ranging from ‘strongly agree’ to ‘strongly disagree’. Among the 60 items, 20 filler items are included to distract the respondents from a relentless focus on empathy. The order of the items is randomized. Approximately half the items tapping empathy are

worded to produce a “disagree” response and half to produce an “agree” response for the empathic response, in order to avoid a response bias either way.

The Chinese version of Empathy Quotient, which is available on the webpage of the Autism Research Centre (<http://www.autismresearchcentre.com/tests>), was used in this study. This Chinese version was developed by scholars in Taiwan. In order to make sure that it was suitable for use in Hong Kong, a professional translator was invited to verify this Chinese version of Empathy Quotient against the English version. He was provided with both the English and the Chinese versions of Empathy Quotient. After studying the two versions, he confirmed that the Chinese version is basically an accurate translation of the English version. However, he suggested making amendments to the wording of some items to make them easier for people in Hong Kong to understand, and his suggestion was adopted.

A pilot using the revised Chinese version of Empathy Quotient was conducted with four university students, three Year 2 and one Year 3 students, in July 2007. All of them completed the questionnaire within 15 minutes. After the pilot, the participants were invited to give their feedback on the questionnaire. They opined that the meaning of the items was clear and they had no problem in understanding the items and completing the questionnaire. Hence, this revised Chinese version was used in the present study, and a copy of it is attached at Appendix B, while an English version of Empathy Quotient is attached in a CD-ROM at Addendum.

Concerning the scoring of the scale, each of the items tapping empathy scores 1 point if the respondent records the empathic behaviour mildly or 2 points if the respondent records the behaviour strongly, but 0 point for a ‘non-empathic response’ whatever the magnitude. The filler items score no points, irrespective of how the individual answers them. The sum of all the points received is taken as a measure of the empathy of the respondent.

Measurement Reliability and Validity

A series of studies have been conducted by Baron-Cohen and his associates to examine the reliability and validity of Empathy Quotient (Baron-Cohen et al, 2003; Baron-Cohen and Wheelwright, 2004; Lawrence et al, 2004; Wakabayashi et al, 2007). Findings of these studies show that the scale possesses good reliability and validity.

Test-retest reliability of Empathy Quotient was studied by Baron-Cohen and Wheelwright (2004) in their study on 90 people with Asperger's Syndrome and High-functioning Autism (AS/HFA) and 90 healthy control volunteers. All the subjects were asked to complete the Empathy Quotient two times with a 12-month interval. The test-retest reliability for the scale was found to be very good ($r = 0.97$, $p < 0.001$). In another study, 44 volunteers who had completed the Empathy Quotient were contacted 10-12 months later and invited to fill out the Empathy Quotient again (Lawrence et al, 2004). Finally, 25 of them returned the completed Empathy Quotient, and the test-retest correlation coefficient was calculated to be 0.835, and highly significant ($p < 0.0001$).

In order to examine the internal consistency of Empathy Quotient, Cronbach's alpha coefficient was calculated in a number of studies. Based on the data collected from 90 people with AS/HFA and 197 healthy volunteers, a high Cronbach's alpha coefficient was found ($\alpha = 0.92$) (Baron-Cohen and Wheelwright, 2004). In another study on 47 adults with AS/HFA and 278 normal adults, the Cronbach's alpha coefficient on Empathy Quotient was found to be 0.92 (Baron-Cohen et al, 2003). In a Japanese sample of 137 adults and 1250 university students, the Cronbach's alpha coefficient on Empathy Quotient was calculated to be 0.86 (Wakabayashi et al, 2007). Based on the data collected from 52 social work

students in the present study, Cronbach's alpha coefficient on Empathy Quotient was found to be 0.89, which is again very high. All these findings suggest that Empathy Quotient is tapping a single construct, and contribute to the reliability of the scale.

Study findings also show that Empathy Quotient possesses good validity. Baron-Cohen and his associates (2003) conducted a study on 47 adults with AS/HFA and 47 healthy control volunteers, matched for age, sex and handedness. The socio-economic status profiles of the two groups were also similar. People with AS/HFA are those meeting the criteria for autism but with normal IQ or with no history of cognitive or language delay, and they are expected to be lack of empathy. It was found that the mean Empathy Quotient score of AS/HFA group was 20.3 while that for the control group was 42.2 and a t-test revealed that the difference was significant ($t = -8.5$, $df = 92$, $p < 0.0001$). Similar results were found in another study investigating 90 people with AS/HFA and 90 healthy volunteers in control group, matched for age and sex (Baron-Cohen and Wheelwright, 2004). The socio-economic status of the control group was similar to that of the AS/HFA group. The mean Empathy Quotient score of the former was 42.1 while that of the latter was 20.4. Results of a t-test showed that the difference between the two groups was significant ($t = -13.07$, $df = 178$, $p < 0.0001$).

Three groups of Japanese were involved in a study of validity of Empathy Quotient (Wakabayashi et al, 2007). Group 1 comprised 48 adults with high-functioning autism spectrum condition, who were expected to have deficits in empathizing. Group 2 comprised 137 healthy adults and Group 3 comprised 1250 university students. The mean Empathy Quotient scores of the three groups were 24.9, 33.9 and 33.4 respectively. It was found that Group 1 scored significantly lower than the other two groups, and Group 2 and Group 3 did not differ significantly from one another.

Relationships between Empathy Quotient score and that of other scales measuring empathy were examined in some studies. Lawrence et al (2004) conducted a study on 53 healthy volunteers. The subjects were given the Empathy Quotient and the Eyes Test, which was a scale measuring peoples' ability to decipher a mental state from pictures of the eyes alone (Baron-Cohen et al, 2001; Shaw et al, 2003). The correlation between the Empathy Quotient score and the Eyes Test score was calculated and a significant positive relationship was found between the two ($r = 0.294$, $p = 0.033$). Out of these 53 subjects, 25 were contacted again together with four new participants 10-12 months later (Lawrence et al, 2004). They were given both the Empathy Quotient and the Interpersonal Reactivity Index, a 28-item self-report measure of empathy (Davis, 1980). It was found that the Empathy Quotient score correlated significantly with the scores of two subscales of Interpersonal Reactivity Index, namely 'empathic concern' ($r = 0.423$, $p < 0.05$) and 'perspective-taking' ($r = 0.485$, $p < 0.01$). These results show that Empathy Quotient possesses good validity.

As presented above, the reliability of Empathy Quotient has been confirmed by findings of the present study and also studies conducted in other countries. The validity of the test is also supported by findings of studies conducted in other countries, but has yet to be tested in Hong Kong. After all, as shown above, the validity of Empathy Quotient has been confirmed by studies conducted not only in the Western culture, but also in the Asian culture of Japan. It is believed that the test's validity is also at a satisfactory level in Hong Kong, which shares the East-Asian culture with Japan.

Assessment of Fieldwork Performance by Fieldwork Supervisors

A Fieldwork Manual was published and distributed to all those involved in fieldwork training by the selected university, and it delineated the policies and procedures of fieldwork training in the Higher Diploma in Social Work Programme. The manual laid down the roles and responsibilities of different parties involved, which included faculty members, fieldwork supervisors, social service agency staff and students, and provided them with operational guidelines during the fieldwork process.

According to the Fieldwork Manual, a fieldwork supervisor from the university was assigned to each student to provide professional guidance and advice for the latter during the fieldwork period. The fieldwork supervisors arranged weekly individual supervision sessions to meet with their supervisees and monitor the progress of their fieldwork learning. The students handed in plans, recordings, reports and relevant materials before attending the individual supervision sessions, and discussed these materials and other significant topics and issues related to their fieldwork training with their supervisors during the supervision sessions.

As stated on the Fieldwork Manual, fieldwork evaluation was an on-going process. This was made clear to the students at the initial stage of the fieldwork training by the supervisors. Every fieldwork supervision session was in fact a mini-evaluation exercise. Through exchange of ideas and discussion between the supervisors and the students, the latter's performance and progress in fieldwork was thoroughly analyzed and assessed. Sometimes, fieldwork supervisors might obtain information about the performance of the students through direct observation or tape recording (video or audio). Feedback from agency staff was also collected to provide further information for the assessment.

When the fieldwork placement was drawing to a close, a final evaluation session was arranged for each student by his or her supervisor to evaluate the student's fieldwork performance according to the guidelines provided on the Fieldwork Manual. After the session, the supervisor prepared a written Fieldwork Evaluation Report, with reference to the discussion with the student in the final evaluation session, using the template specified on the Fieldwork Manual. In the Fieldwork Evaluation Report, the supervisor evaluated the student's performance in the following areas:

- 1) Professional Attitudes and Values
- 2) Practice Competence
- 3) Acquisition of Knowledge and Integration of Theory and Practice
- 4) Service Accountability
- 5) Learning Accountability

The focus of the present study is on the second and third areas, namely Practice Competence and Acquisition of Knowledge and Integration of Theory and Practice. The former is concerning students' performance in the problem solving process of social work practice, while the latter is about students' performance in application of theories in delivery of services.

Table 5 GRADING OF FIELDWORK PERFORMANCE

Grade	Description	Grade Points
A+	Outstanding	4.5
A	Excellent	4
B+	Very Good	3.5
B	Good	3
C+	Wholly satisfactory	2.5

C	Satisfactory	2
D+	Barely Adequate	1.5
D	Weak	1
F	Fail	0

In the Fieldwork Evaluation Report, the supervisor graded the student's performance in the above five areas following the grading system specified on the Fieldwork Manual, as shown in Table 5.

Measurement Reliability and Validity

Assessment by fieldwork supervisors is taken as a reliable and valid measure of social work students' fieldwork performance. In the following paragraphs, we shall take a close look at the measures taken by the selected university to ensure the reliability of fieldwork evaluation conducted by fieldwork supervisors. Then, discussion on the validity of assessment by fieldwork supervisors will follow.

In the selected university, a Fieldwork Coordinating Team, which consisted of senior faculty members of the Department of Applied Social Sciences, was set up to ensure fieldwork training of social work students of the Higher Diploma Programme was properly run and the fieldwork evaluation was appropriately conducted. The fieldwork arrangements and evaluation procedures were standardized by the Fieldwork Coordinating Team and published on the Fieldwork Manual. It was impossible to provide exactly the same fieldwork training for all students, since different students were sent to different social service agencies to serve different clients with different problems. However, with clear specifications on every aspect of the fieldwork training published on the Fieldwork Manual, all students

went through similar fieldwork training with standardized arrangements. Besides, steps to ensure the reliability of supervisors' assessment were also included on the Fieldwork Manual. For example, guidelines on conducting continuous assessment of fieldwork performance and the steps to collect relevant information were clearly specified. Both the supervisors and the students were required to prepare different documents and complete various forms at different stages of the fieldwork training to make sure that students' performance were properly kept track of and recorded. All of these contributed to the reliability of assessment made by the fieldwork supervisors.

On the other hand, regular meetings for fieldwork supervisors were held in the selected university to provide them with opportunities to share views and experience in conducting fieldwork evaluation. This helped fieldwork supervisors reach consensus views on different issues in fieldwork evaluation, and facilitated generation of common norms in grading. Moreover, some senior and experienced fieldwork supervisors were assigned as Fieldwork Coordinators, who worked together to review all fieldwork evaluation reports to ensure the same standard was applied in grading fieldwork performance of all students, and gave feedback to fieldwork supervisors when necessary. All these measures contributed to a clear and common understanding of the fieldwork requirements, and ensured the fieldwork supervisors were sharing the same standard in assessing the students. They helped to establish the inter-scorer reliability.

Concerning the validity, fieldwork supervisors are taken as capable of rating performance of students in fieldwork training accurately and effectively. First, as all fieldwork supervisors were experienced social workers, they possessed sufficient professional knowledge and practice experience for them to understand clearly what were expected from students in fieldwork training. Second, fieldwork supervisors

had access to the information required for accurate assessment of fieldwork performance of students. During the fieldwork period, fieldwork supervisors were continuously provided with information about students' performance through different channels, such as paper-work submitted by students, weekly supervision, direct observation, tape-recording of services provided by the students and contacts with agency staff. The information collected allowed the fieldwork supervisors to achieve a comprehensive understanding of their students' performance and avoid undesirable influence of bias from any one of these channels. The supervisors also had sufficient opportunities to seek clarification from various parties and collect further information when necessary.

The validity of evaluating students' fieldwork performance by fieldwork supervisors is supported by study findings concerning the relationship between fieldwork evaluation done by fieldwork supervisors and other measures of students' ability as competent social workers. Bogo and Davin (1989) conducted a study to examine the relationship between fieldwork evaluation results and grade point average (GPA) of 140 students enrolling in a two-year MSW program and 109 students enrolling in a 10-month MSW program. No matter for which program, the fieldwork performance as assessed by fieldwork supervisors was found significantly correlated with the GPA obtained (for two-year program, $r = 0.281$, $p < 0.021$; for 10-month program, $r = 0.296$, $p < 0.003$).

In another study, Reid and his associates (1996) compared the assessment made by a fieldwork supervisor with that made by an independent judge. The student sample consisted of 9 graduate social work interns and 4 counseling psychology interns. Ratings made by the fieldwork supervisor were based mainly on interns' written recordings and oral presentations, while the evaluation made by the independent judge was based on content analyses of tape recordings of interns'

performance. The fieldwork supervisor did not listen to any of the tapes, and the independent judge had no knowledge of the fieldwork supervisor's assessment of the interns. The findings of the study showed that ratings made by the fieldwork supervisor were significantly correlated with ratings made by the independent judge ($r = 0.56$, $p < 0.05$), and they provided concrete support to the validity of fieldwork performance assessment made by fieldwork supervisors.

METHODS OF DATA ANALYSIS

As discussed above, data including the participants' TTCT scores in five dimensions of creativity, Empathy Quotient scores in empathy and the grade points in two areas of fieldwork performance were collected. To test the hypotheses of this study, multiple regression analyses were conducted using stepwise methods in SPSS program. The stepping method criteria were $PIN = 0.05$ and $POUT = 0.10$. As regards missing data, listwise missing-value treatment was employed, that cases with missing values on any one of the dependent or independent variables were not included in the analyses. The fieldwork performance in problem solving, application of theories and empathy were, in turn, used as the dependent variables. For each dependent variable, the multiple regression analysis was first conducted with the five dimensions of creativity as the independent variables. Independent variables involved were more than that found in the hypotheses, since we would like to explore if there were other relationships between the dependent variables and different dimensions of creativity, which were not identified in the literature review. It was assumed that the relationships between the dependent variables and independent variables are linear. Linear regression models generated were used to test the hypotheses of this study, provided that the assumption of linearity is satisfied by

examining the scatterplots or the partial regression plots of the dependent and independent variables involved. In case no linear regression models were generated or the assumption of linearity is not satisfied, second-order regression models were explored by inputting the five dimensions of creativity and their squares and interactions as the independent variables in the multiple regression analysis. Tests on the assumption of linearity were still conducted by examining the scatterplots or the partial regression plots of the dependent and independent variables involved, but, in these cases, the independent variables might be the squares or interactions of the five dimensions of creativity.

Multiple regression analysis is very sensitive to outliers, cases with values well above or well below the majority of other cases, and presence of these extreme cases may create problems in generalizability of the analysis results (Pallant, 2001; Tabachnick and Fidell, 2007). Hence, before conducting the analyses, checking for outliers was performed for all dependent and independent variables. Chauvenet's criterion was employed to identify outliers (Taylor, 1997). According to the Chauvenet's criterion, for a study with 52 participants or less, a datum which differs from the mean by more than 2.6 standard deviations is treated as an outlier. Outliers identified were discarded, and not included in the analyses.

Presence of multicollinearity, which refers to the interrelatedness of the independent variables in the regression equation, will also cause problems for the usefulness of the analysis results (Curwin and Slater, 2002). In the present study, when second-order regression models were explored, all independent variables were centered, by subtracting each of their data by their respective means, to avoid the problem of multicollinearity caused by including squares and interactions of independent variables in the multiple regression analyses, (Tabachnick and Fidell, 2007; Kleinbaum et al, 2008). On the other hand, when more than one independent

variable remained in the regression equation, detection of multicollinearity was carried out to ensure the usefulness of the analysis results. In these cases, the Variance Inflation Factor (VIF) of the independent variables was generated. In general, a VIF of 10 and above indicates a multicollinearity problem (Belsley et al, 1980).

There are some other underlying assumptions for multiple regression analysis. One of them is the assumption of independence of error components, which assumes that the values of the error component of the regression equation associated with any two observed values of the dependent variable are independent of each other and have no mutual effect on each other (McClave and Sincich, 2003). Another way of stating this assumption is that the value of one error component is not a function of any previous or other error components (Meier and Brudney, 1997). This assumption is usually challenged when the order of cases is associated with a variable, e.g. time (Tabachnick and Fidell, 2007). So, usually time series data may cause difficulty in meeting this assumption. In the present study, time series data were not used and the order of cases was a result of some random processing. There is no reasonable doubt about the validity of this assumption.

On the other hand, steps were taken to check if the underlying assumptions of normality and homoscedasticity were met. The former assumes that the values of the error component of the regression equation are normally distributed (Meier and Brudney, 1997), while the latter assumes that the variance of the distribution of the error component of the regression equation is equal to a constant for all values of independent variables (Tabachnick and Fidell, 2007). The assumption of normality was tested by generating the Normal P-P Plot of Regression Standardized Residual and conducting the Kolmogorov-Smirnov Test, while the assumption of homoscedasticity was tested by generating the Standardized Residual Scatterplot and conducting the Levene's test.

For each multiple regression analysis, a regression equation was finally generated with all the regression coefficients of the independent variables included not equal to zero and meeting the stepping method criteria. The final regression equations generated were tested by F-tests and the results were included in the multiple regression analysis results. Those with a p-value less than 0.05 are taken as significant models which can account for the variation of the respective dependent variables (McClave and Sincich, 2003). On the other hand, the t-test results of each regression coefficient were also provided in the analysis results. The regression coefficients, together with their t-test results, provide useful information about the relationship between the respective dependent and independent variables. Basically, independent variables which pass the t-test ($p < 0.05$) are taken as having significant relationships with the respective dependent variables (McClave and Sincich, 2003; Pallant, 2001). Based on these findings, the hypotheses regarding the relationships between different areas in fieldwork performance and different dimensions of creativity were tested.

RESEARCH ETHICS

Participants in this study were all final year students enrolling in the Higher Diploma in Social Work Programme of a university in Hong Kong. Participation in this study was on a voluntary basis and all the data were collected with the consent of the participants. They were informed fully of the relevant details and purposes of this study before they made their own decisions about participation in this study. It was expected that the participants were able to give informed consent for their participation in this study.

The data collected were related to the creativity and the fieldwork performance

of the participants and no sensitive topics were involved. The Torrance Tests of Creative Thinking and the Empathy Quotient were administered to the participants. The former took about thirty minutes while the latter took about fifteen minutes. The participants were required to take the tests only once. Hence, they were not required to participate in any prolonged or repetitive testing. When attending the Torrance Tests of Creative Thinking, the participants were required to draw pictures and give simple titles to their drawings, while the Empathy Quotient requested the participants to specify their level of agreement to the statements included in the test by responding on a 4-point Likert scale. It is unlikely for the participants to have unpleasant experience during the process of taking the tests.

It was in the middle of a semester when the participants were invited to take the tests, and they were still required to attend both classroom lessons and fieldwork training every week. It was expected that they were very busy with their study. In order to minimize the disruption caused to the participants, four sessions on different days were arranged for the participants to take the tests and the participants were allowed to attend any one of them according to their own choice. The dates and time of these sessions for taking the tests were worked out in consultation with the class representative of the final year students of the Higher Diploma Programme, and the timetable of lessons for the Higher Diploma Programme had also been checked, to make sure that the participants might attend one of the sessions at their convenience.

Each student who participated in this study was provided with an incentive of HK\$100, which is taken as reasonable compensation for the time he or she spent on this study. No excessive or inappropriate financial inducements were offered for participation in this study and the incentive provided was unlikely to coerce participation or lead to any adverse influence that might run counter to the welfare of the participants.

Data of individual participants were treated with complete confidentiality.

After taking the Torrance Tests of Creative Thinking and the Empathy Quotient, the participants handed in their test materials to the author directly. Scoring of the tests was done by the author himself and no other people had access to the test materials of the participants and data related to their test results. The participants sent their fieldwork evaluation results to the author directly and no third parties were involved. In the thesis, only aggregate data and results of statistical analyses are presented when reporting the study results, and personal information of each participant is not revealed. The anonymity of participants and the confidentiality of information supplied by them were ensured.

To make the participation in this study a worthwhile experience for the participants, a briefing session was organized for them when the TTCT and Empathy Quotient test results were available. In the briefing session, participants were given their own TTCT and Empathy Quotient results in a sealed envelope and a short lecture on the interpretation of the test results was provided. It was believed that these test results could provide useful information for the personal and professional development of the participants. To avoid causing unnecessary anxiety in the participants, they were not informed of the hypotheses of this study and the results of the analyses, so that they did not get any ideas about the relationship between the test results and their performance in fieldwork training.

CHAPTER SUMMARY

In this chapter, the choice of paradigm for the present study was discussed. The positivist approach, which was found more compatible with the epistemological assumptions held by the author, was adopted and quantitative methods were employed in the present study. The definitions of different dimensions of creativity and

different areas of fieldwork performance to be examined in this study were presented. Then, the hypotheses to be tested were put forward. In a nutshell, it is hypothesized that social work students' fieldwork performance in problem solving is positively related to their competences in originality and fluency, and their fieldwork performance in application of theories is positively related to their competences in fluency and resistance to premature closure, while their fieldwork performance in empathy is positively related to their competence in elaboration but negatively related to their competence in originality.

52 final year students enrolling in the Higher Diploma in Social Work Programme of a university in Hong Kong participated in this study. Among the participants, there were 10 male students and 42 female students, aged between 20 and 26, with an average age of 21. Their participation in this study was on a voluntary basis. Creativity and empathy of them were measured by TTCT and Empathy Quotient respectively, while their fieldwork performance in problem solving and application of theories was assessed by their fieldwork supervisors according to the existing fieldwork evaluation mechanism of the selected university. Details of these measures were presented and their measurement reliability and validity were found to be satisfactory. Data collected were analyzed by conducting multiple regression analyses. Through examining the regression models generated by multiple regression analyses, the hypotheses concerning the relationships between different areas of fieldwork performance and different dimensions of creativity were tested. Steps were taken to check the underlying assumptions for the multiple regression analyses and the presence of multicollinearity to ensure the robustness of the analysis results.

The issue of research ethics was addressed in the final part of this chapter. Participation in this study was voluntary and the participants were expected to be able

to give informed consent for their participation. The data collected were not related to any sensitive topics and no prolonged or repetitive testing was involved. The data collection process was unlikely to give rise to any unpleasant experience. Sufficient flexibility was provided for the participants to attend the tests at their convenience to minimize the disruption caused. No excessive or inappropriate financial inducements were offered and data of individual participants were treated with complete confidentiality.

CHAPTER 4

FINDINGS

INTRODUCTION

The present study aims to investigate the specific relationships between social work students' competences in five dimensions of creativity and their fieldwork performance in three areas. Data regarding participants' competences in the five dimensions of creativity, which include fluency, originality, elaboration, abstractness of titles and resistance to premature closure were collected by the Torrance Tests of Creative Thinking (TTCT), while data about their fieldwork performance in empathy was collected by Empathy Quotient. Fieldwork evaluation results of the participants were collected, which provided data about their fieldwork performance in problem solving and application of theories. In this chapter, data collected and the findings of the present study will be reported. Data provided by TTCT, Empathy Quotient and the fieldwork evaluation results of the participants will be presented to give an overall picture of the profile of the participants. In order to test the hypotheses of this study, multiple regression analyses were conducted by inputting the data about fieldwork performance in each area, in turn, as the dependent variables, while the data about competences in different dimensions of creativity were input as the independent variables. Results of these multiple regression analyses will be presented to provide information for discussion of the possible relationships between social work students' fieldwork performance and their creativity in the next chapter.

CREATIVITY OF PARTICIPANTS

Table 6 MEAN SCORES OF FIVE DIMENSIONS OF CREATIVITY

Dimensions of Creativity	Mean Scores
Fluency	19.27
Elaboration	8.90
Originality	8.19
Abstractness of Titles	9.94
Resistance to Premature Closure	10.96

Participants' abilities in five dimensions of creativity, namely fluency, elaboration, originality, abstractness of titles and resistance to premature closure, were measured by TTCT. A simple illustration of the assessment of the five dimensions of creativity by TTCT is shown in Appendix C, in which two copies of TTCT Figural Form A completed by two participants are used to show how one scored higher than the other in all five dimensions of creativity. Altogether, 52 participants attended the TTCT and their mean scores of the five dimensions of creativity are shown in Table 6.

FIELDWORK PERFORMANCE OF PARTICIPANTS

Participants' fieldwork performance in problem solving and application of theories was rated by their fieldwork supervisors. Out of the 52 participants, one dropped out of the Higher Diploma Programme before the end of the fieldwork training. Finally, fieldwork performance data of 51 participants were collected. Their mean grade points of fieldwork performance in the two areas are shown in Table 7.

Table 7 MEAN GRADE POINTS OF FIELDWORK

PERFORMANCE

Areas in Fieldwork Performance	Mean Grade Points
Problem Solving	3.11
Application of Theories	2.91

On the other hand, participants' fieldwork performance in empathy was measured by Empathy Quotient. 52 participants attended the test. The mean score of the participants was 39.19.

RESULTS OF MULTIPLE REGRESSION ANALYSES (PROBLEM SOLVING AS DEPENDENT VARIABLE)

Multiple regression analysis was conducted, using fieldwork performance in problem solving as the dependent variable. No linear regression models were generated when the five dimensions of creativity were used as the independent variables. Hence, second-order regression models were explored by using the five dimensions of creativity and their squares and interactions as the independent variables. Finally, two independent variables, namely Square of Originality and Interaction of Originality and Fluency, remained in the final regression equation. As shown in Table 8, the results of t-tests indicate that the relationships between the dependent variable and the two remaining independent variables are significant ($p = 0.013$ and 0.011). The F-test results, which are shown in Table 9, indicate that this model is a significant one ($p = 0.022$), which can account for the variation of the dependent variable.

**Table 8 INDEPENDENT VARIABLES IN THE REGRESSION EQUATION
(PROBLEM SOLVING AS DEPENDENT VARIABLE)**

Variables	Standardized Regression Coefficient (β)	Significance (p)
(Originality) ²	-0.460	0.013
(Originality x Fluency)	0.473	0.011

**Table 9 STATISTICS OF THE REGRESSION MODEL (PROBLEM SOLVING
AS DEPENDENT VARIABLE)**

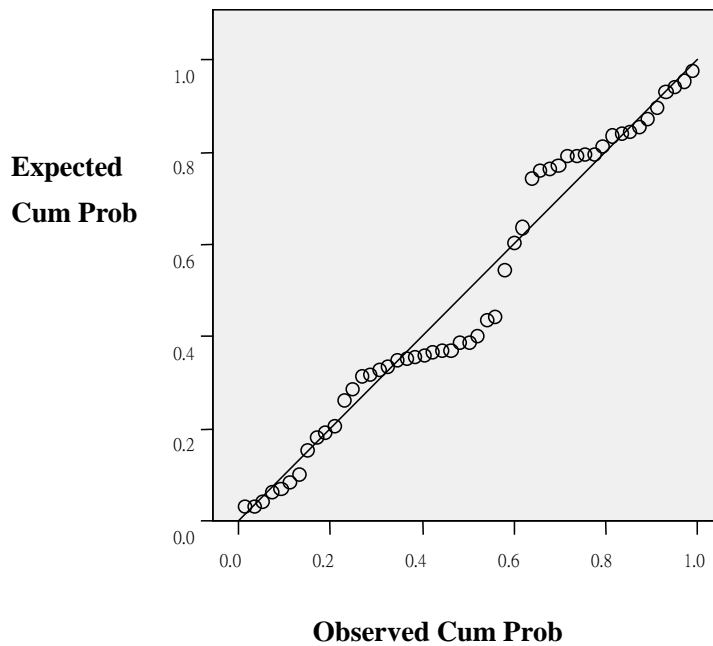
R	Adjusted R Square	F	Significance (p)
0.384	0.112	4.150	0.022

Checking of Multicollinearity and Underlying Assumptions

Since there are more than one independent variable in the final regression equation, Variance Inflation Factor (VIF) of the independent variables was generated to check the presence of multicollinearity. In general, a VIF of 10 and above indicates a multicollinearity problem (Belsley et al, 1980). The VIF was found to be 1.781, which was much less than 10. It indicates that there are no multicollinearity problems in this regression model.

In order to check the underlying assumption of normality, a Normal P-P Plot of Regression Standardized Residual was generated. If the points in the Normal P-P Plot lie around the diagonal line from bottom left to top right, it would suggest that no major deviations from normality. As shown in Fig. 3, the points cluster around the diagonal line from bottom left to top right, and it indicates that the assumption of normality is satisfied.

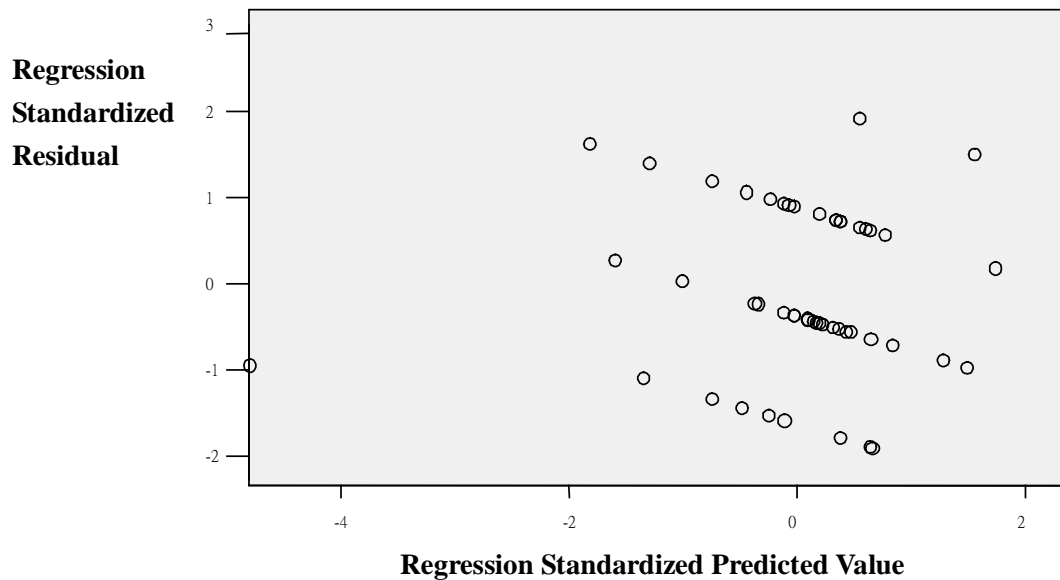
**Fig. 3 NORMAL P-P PLOT OF REGRESSION STANDARDIZED
RESIDUAL (PROBLEM SOLVING AS DEPENDENT
VARIABLE)**



A Kolmogorov-Smirnov Test was also conducted to check the assumption of normality. The results of the test show that the p-value is equal to 0.369, which is greater than 0.05. Hence, the null hypothesis that the residuals are normally distributed is accepted, and the assumption of normality is satisfied.

A Standardized Residual Scatterplot was generated to check the underlying assumption of homoscedasticity. The results are shown in Fig. 4. The Standardized Residual Scatterplot shows a random scatter of points and no obvious change of variability is detected, which indicates the assumption of homoscedasticity is satisfied.

Fig. 4 STANDARDIZED RESIDUAL SCATTERPLOT (PROBLEM SOLVING AS DEPENDENT VARIABLE)



Levene's test was also conducted to check the assumption of homoscedasticity. A median split based on the standardized predicted values of the dependent variable (values of the x-axis in Fig. 4) was created to divide the points into two groups of almost the same size. An independent samples t-test was conducted to examine the difference in variance between the two groups (the left and right halves along the x-axis). Levene's test output, included in the results of the t-test, shows that the difference is not significant ($p = 0.561, > 0.05$). Therefore, the null hypothesis that the variances of the two groups are equal stands, and the assumption of homoscedasticity is satisfied.

In order to test the assumption of linearity, the Partial Regression Plot for each independent variable was generated. As shown in Fig. 5, the data points in the plot for the independent variable, Square of Originality, show roughly a linear pattern, and it supports the assumption that there is a linear relationship between the dependent variable and this independent variable.

Fig. 5 PARTIAL REGRESSION PLOT (PROBLEM SOLVING VS SQUARE OF ORIGINALITY)

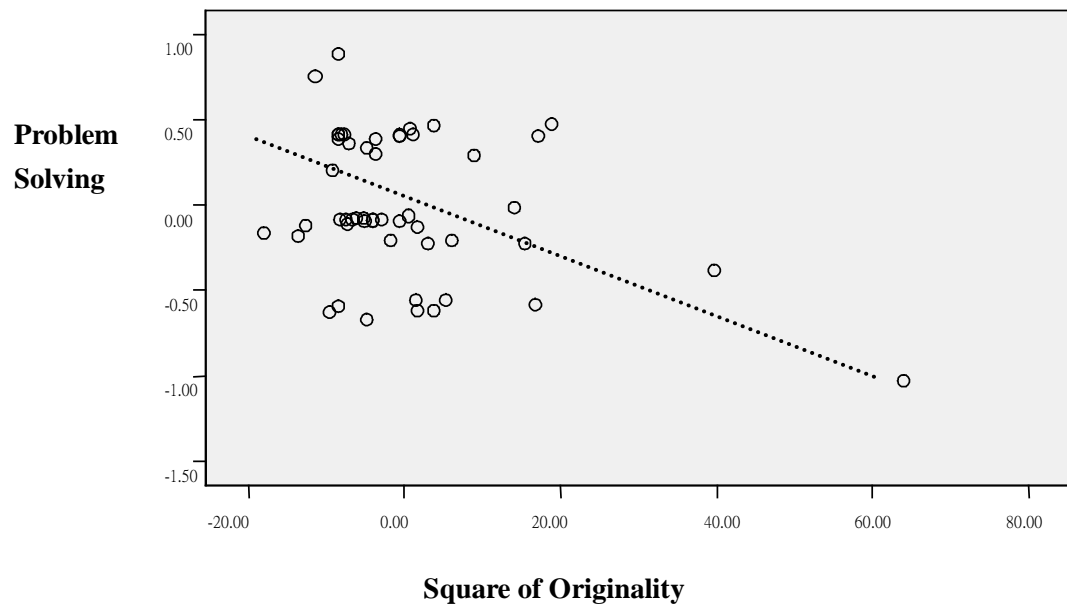
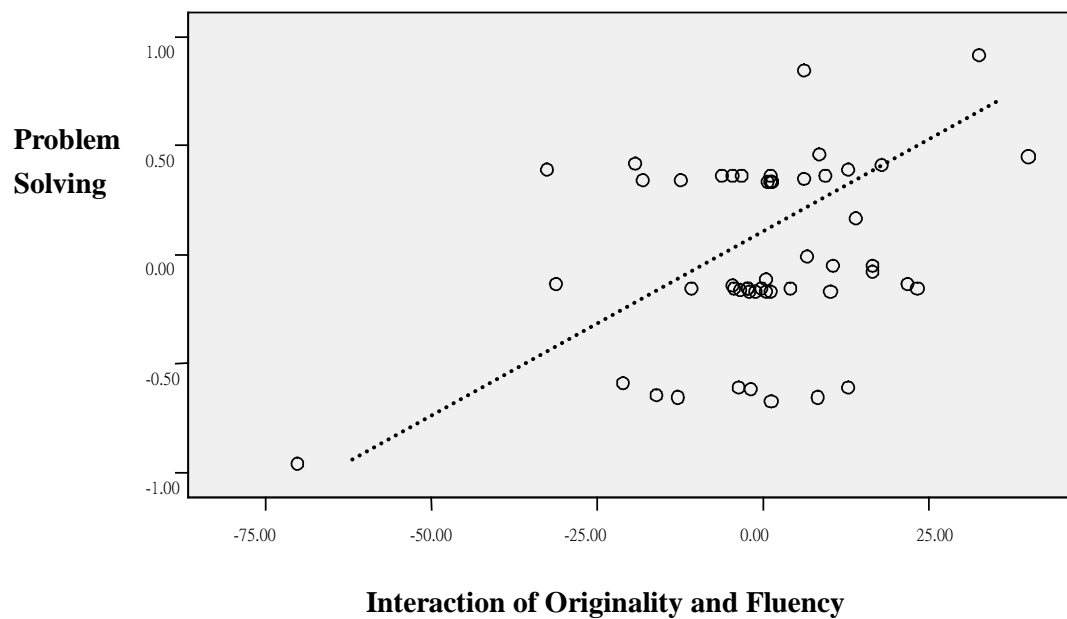


Fig. 6 PARTIAL REGRESSION PLOT (PROBLEM SOLVING VS INTERACTION OF ORIGINALITY AND FLUENCY)



On the other hand, as shown in Fig. 6, the data points in the plot for the independent variable, Interaction of Originality and Fluency, show roughly a linear pattern, and it supports the assumption that there is a linear relationship between the dependent variable and this independent variable.

In a nutshell, according to the Variance Inflation Factor generated, there are no multicollinearity problems in this regression model. Based on the Normal P-P Plot, the Partial Regression Plot for each independent variable and the Standardized Residual Scatterplot generated, as well as the results of Kolmogorov-Smirnov Test and Levene's test, it is satisfied that the underlying assumptions of normality, homoscedasticity and linearity for multiple regression analysis are met. Hence, the results of this analysis were found to be robust and were used to test the relevant hypotheses of this study.

RESULTS OF MULTIPLE REGRESSION ANALYSES (APPLICATION OF THEORIES AS DEPENDENT VARIABLE)

Multiple regression analysis was conducted, using fieldwork performance in application of theories as the dependent variable. No linear regression models were generated when the five dimensions of creativity were used as the independent variables. Hence, second-order regression models were explored by using the five dimensions of creativity and their squares and interactions as the independent variables. Finally, one independent variable, Square of Fluency, remained in the final regression equation. As shown in Table 10, the results of t-test indicate that the relationship between the dependent variable and the independent variable is significant ($p = 0.024$). The F-test results, which are shown in Table 11, indicate that this model is a significant one ($p = 0.024$), which can account for the variation of the

dependent variable.

**Table 10 INDEPENDENT VARIABLE IN THE REGRESSION EQUATION
(APPLICATION OF THEORIES AS DEPENDENT VARIABLE)**

Variable	Standardized Regression Coefficient (β)	Significance (p)
(Fluency) ²	0.317	0.024

**Table 11 STATISTICS OF THE REGRESSION MODEL (APPLICATION OF
THEORIES AS DEPENDENT VARIABLE)**

R	Adjusted R Square	F	Significance (p)
0.317	0.082	5.467	0.024

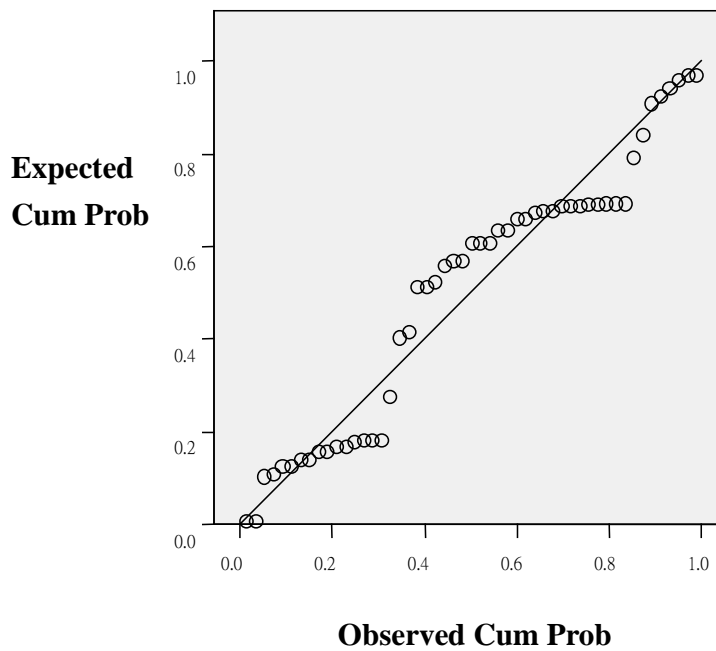
Checking of Underlying Assumptions

In order to check the underlying assumption of normality, a Normal P-P Plot of Regression Standardized Residual was generated. As shown in Fig. 7, the points cluster around the diagonal line from bottom left to top right, and it indicates that the assumption of normality is satisfied.

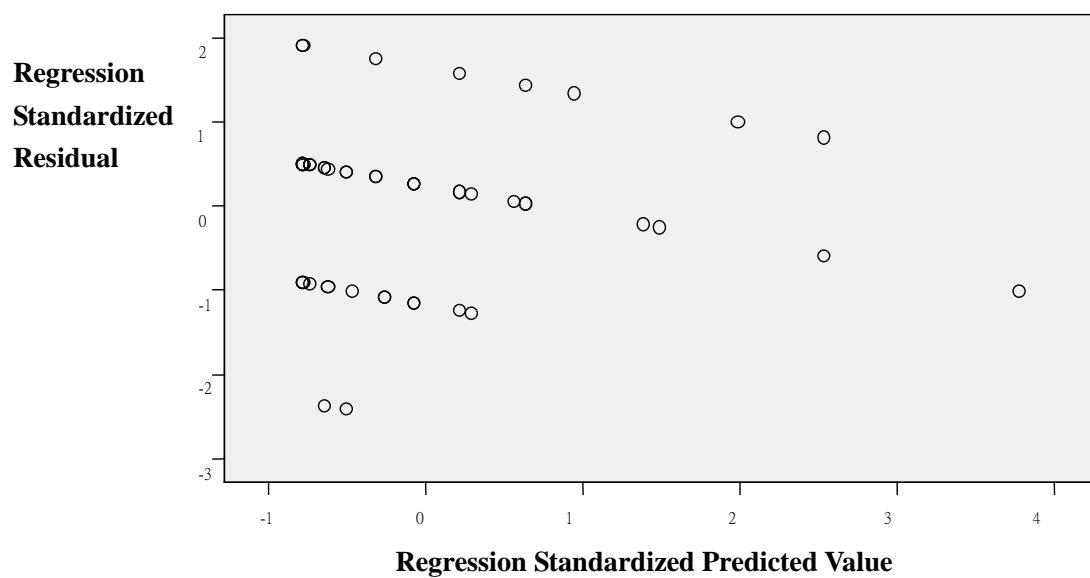
A Kolmogorov-Smirnov Test was also conducted to check the assumption of normality. The results of the test show that the p-value is equal to 0.222, which is greater than 0.05. Hence, the null hypothesis that the residuals are normally distributed is accepted, and the assumption of normality is satisfied.

A Standardized Residual Scatterplot was generated to check the underlying assumption of homoscedasticity. The results are shown in Fig.8.

**Fig. 7 NORMAL P-P PLOT OF REGRESSION STANDARDIZED
RESIDUAL (APPLICATION OF THEORIES AS
DEPENDENT VARIABLE)**

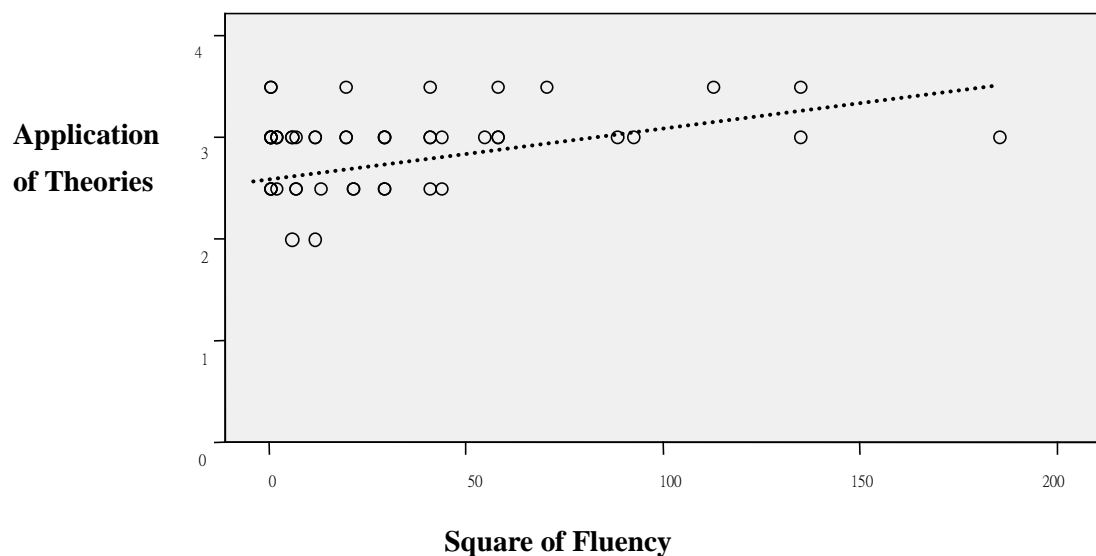


**Fig. 8 STANDARDIZED RESIDUAL SCATTERPLOT (APPLICATION OF
THEORIES AS DEPENDENT VARIABLE)**



The Standardized Residual Scatterplot seems to show a decrease in variability with the increase in the standardized predicted value of the dependent variable. However, the decrease in variability may be due to the fact that there are far fewer points in the right half of the scatterplot, which may lead to less room for variability. Hence, Levene's test was also conducted to check the assumption of homoscedasticity. A median split based on the standardized predicted values of the dependent variable (values of the x-axis in Fig. 8) was created to divide the points into two groups of almost the same size. An independent samples t-test was conducted to examine the difference in variance between the two groups. Levene's test output, included in the results of the t-test, shows that the difference is not significant ($p = 0.206, > 0.05$). Therefore, the null hypothesis that the variances of the two groups are equal stands, and the assumption of homoscedasticity is satisfied.

Fig. 9 SCATTERPLOT (APPLICATION OF THEORIES VS SQUARE OF FLUENCY)



In order to test the assumption of linearity, a scatterplot of the dependent and independent variables was generated. As shown in Fig. 9, data points in the plot show roughly a linear pattern, and it supports the assumption that there is a linear relationship between the dependent variable and the independent variable.

In a nutshell, based on the Normal P-P Plot, the scatterplot of the dependent and independent variables and the Standardized Residual Scatterplot generated, as well as the results of Kolmogorov-Smirnov Test and Levene's test, it is satisfied that the underlying assumptions of normality, homoscedasticity and linearity for multiple regression analysis are met. Hence, the results of this analysis were found to be robust and were used to test the relevant hypotheses of this study.

RESULTS OF MULTIPLE REGRESSION ANALYSES (EMPATHY AS DEPENDENT VARIABLE)

Multiple regression analysis was conducted, using fieldwork performance in empathy as the dependent variable and the five dimensions of creativity as the independent variables. One independent variable, Originality, remained in the final regression equation. As shown in Table 12, the results of t-test indicate that the relationship between the dependent variable and the independent variable is significant ($p = 0.017$). The F-test results, which are shown in Table 13, indicate that this model is a significant one ($p = 0.017$), which can account for the variation of the dependent variable.

**Table 12 INDEPENDENT VARIABLES IN THE REGRESSION EQUATION
(EMPATHY AS DEPENDENT VARIABLE)**

Variable	Standardized Regression Coefficient (β)	Significance (p)
Originality	-0.334	0.017

**Table 13 STATISTICS OF THE REGRESSION MODEL (EMPATHY AS
DEPENDENT VARIABLE)**

R	Adjusted R Square	F	Significance (p)
0.334	0.093	6.145	0.017

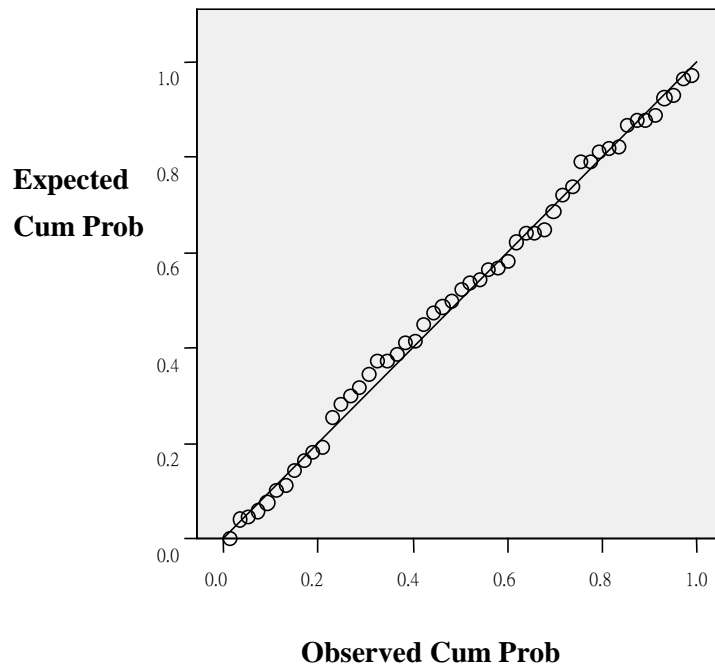
Checking of Underlying Assumptions

In order to check the underlying assumption of normality, a Normal P-P Plot of Regression Standardized Residual was generated. As shown in Fig. 10, the points cluster around the diagonal line from bottom left to top right, and it indicates that the assumption of normality is satisfied.

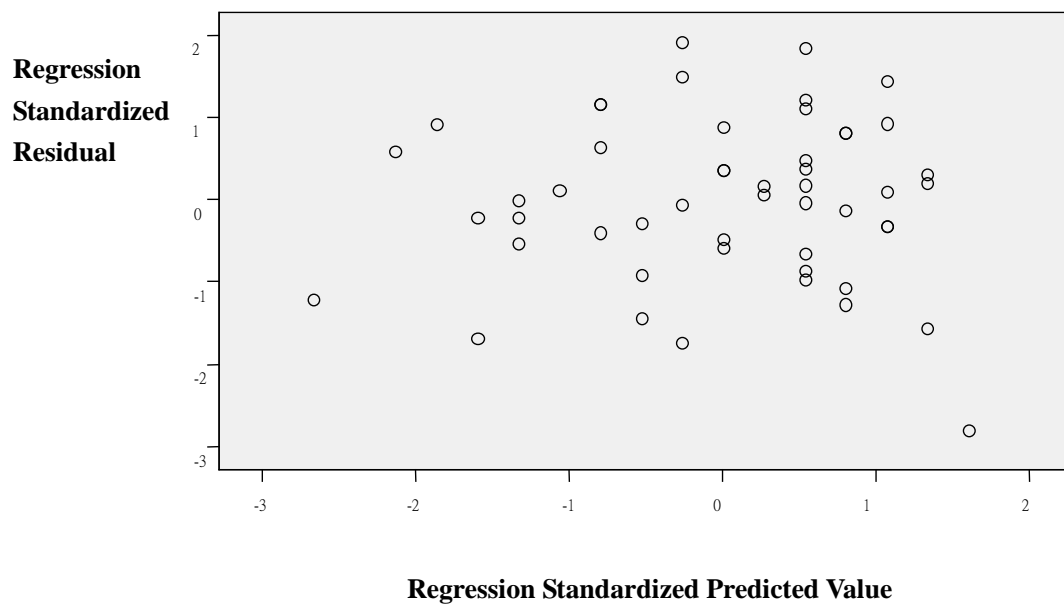
A Kolmogorov-Smirnov Test was also conducted to check the assumption of normality. The results of the test show that the p-value is equal to 0.995, which is greater than 0.05. Hence, the null hypothesis that the residuals are normally distributed is accepted, and the assumption of normality is satisfied.

A Standardized Residual Scatterplot was generated to check the underlying assumption of homoscedasticity. The results are shown in Fig. 11. The Standardized Residual Scatterplot shows a random scatter of points and no obvious change of variability is detected, which indicates the assumption of homoscedasticity is satisfied.

**Fig. 10 NORMAL P-P PLOT OF REGRESSION STANDARDIZED
RESIDUAL (EMPATHY AS DEPENDENT VARIABLE)**



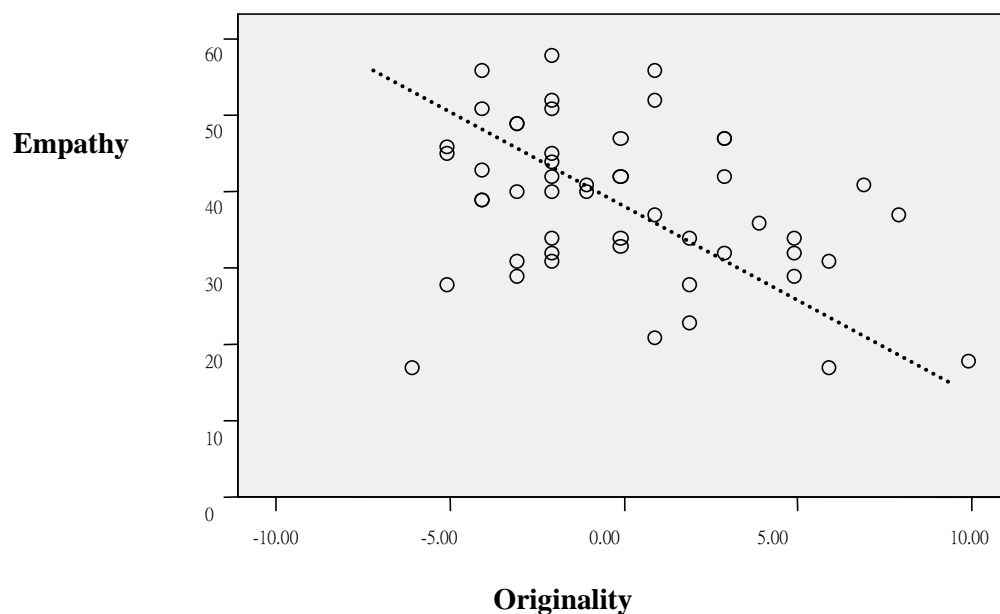
**Fig. 11 STANDARDIZED RESIDUAL SCATTERPLOT (EMPATHY AS
DEPENDENT VARIABLE)**



Levene's test was also conducted to check the assumption of homoscedasticity. A median split based on the standardized predicted values of the dependent variable (values of the x-axis in Fig. 11) was created to divide the points into two groups of almost the same size. An independent samples t-test was conducted to examine the difference in variance between the two groups. Levene's test output, included in the results of the t-test, shows that the difference is not significant ($p = 0.995, > 0.05$). Therefore, the null hypothesis that the variances of the two groups are equal stands, and the assumption of homoscedasticity is satisfied.

In order to test the assumption of linearity, a scatterplot of the dependent and independent variables was generated. As shown in Fig. 12, data points in the plot show roughly a linear pattern, and it supports the assumption that there is a linear relationship between the dependent variable and the independent variable.

Fig. 12 SCATTERPLOT (EMPATHY VS ORIGINALITY)



In a nutshell, based on the Normal P-P Plot, the scatterplot of the dependent and independent variables and the Standardized Residual Scatterplot generated, as well as the results of Kolmogorov-Smirnov Test and Levene's test, it is satisfied that the underlying assumptions of normality, homoscedasticity and linearity for multiple regression analysis are met. Hence, the results of this analysis were found to be robust and were used to test the relevant hypotheses of this study.

SAMPLE SIZE

Different authors gave different guidelines concerning the number of participants required for multiple regression analyses. Stevens (1996) recommended that for social science research, the requirement should be 15 participants per independent variable in the regression equation. Dancey and Reidy (2004) found that the ratio recommended by authors of different statistical textbooks ranges from 15 to 40 participants per independent variable in the regression equation. Hence, in general, a ratio of 15 participants per independent variable is accepted as the minimum requirement.

In this study, there were 52 participants, including 10 males and 42 females. According to the results of the multiple regression analyses presented above, the regression equations generated contain either one or two independent variables. Hence the minimum number of participants required was 30. This requirement was met for all the multiple regression analyses conducted.

CHAPTER SUMMARY

In this chapter, findings of this study were presented. Results of

measurement of creativity and fieldwork performance of the participants were provided to give a general profile of the participants in these two areas. Then, the results of multiple regression analyses conducted to test the relationship between fieldwork performance and creativity were presented.

In the final regression equation for fieldwork performance in problem solving, there were two independent variables, namely Square of Originality and Interaction of Originality and Fluency, while only one independent variable, Square of Fluency remained in the final regression equation for fieldwork performance in application of theories. Concerning the multiple regression analyses using fieldwork performance in empathy as the dependent variable, only one independent variable, Originality, remained in the final regression equation.

Results of checking of multicollinearity and underlying assumptions of each multiple regression analysis were all satisfactory. The number of participants involved in each analysis was sufficient to meet the minimum requirement. Hence, the results of all these analyses were found to be robust and were used to test the hypotheses of this study.

CHAPTER 5

ANALYSIS AND DISCUSSION

INTRODUCTION

According to the literature reviewed in Chapter 2, it was proposed that social workers' creativity is important for their performance in professional practice. Creativity is taken as an influential factor contributing to the artistic ability of the practitioners to apply what they have learned to different unique situations of their clients (Rapoport, 1968). Since clients' situations and the circumstances of social work intervention are very complex and full of ambiguity, indeterminacy and uncertainty, a creative mind is required in social work practice to flexibly and spontaneously take into consideration various aspects of clients' situations, to make professional judgments and to develop sophisticated responses (Eadie and Lymbery, 2007). In this connection, it is expected that there is a relationship between social work students' creativity and their fieldwork performance.

Based on the literature on creativity theories reviewed, creativity is defined as divergent thinking with five dimensions, namely fluency, originality, elaboration, abstractness of titles and resistance to premature closure, in this study. In order to achieve better understanding of the relationship between social work students' creativity and fieldwork performance, the present study has been designed to investigate how different dimensions of creativity are related to fieldwork performance in different areas. The literature reviewed suggests that creativity of social work students is related to their fieldwork performance in three areas, which are problem solving, application of theories and empathy. Six hypotheses have been developed according to the discussion on the relevant literature. Data from 52 social work students were collected to test the

hypotheses, and the findings were presented in the previous chapter. In this chapter, the meaning of the findings will be analyzed; their implications to the hypotheses will be examined and possible accounts of the findings will be discussed. In the following sections, the hypotheses and findings related to the same area of fieldwork performance will be reviewed and discussed together.

FIELDWORK PERFORMANCE IN PROBLEM SOLVING

As discussed in Chapter 2, problem solving is taken as the common process of social work practice across different service settings (Johnson, 2001). Stages in the social work problem solving process were found similar to that in the creative problem solving process as proposed by some creativity theories, and practitioners' creativity was suggested to be related to their performance in the stages of defining problems and generating solutions (Heppner et al, 1989). Hence, it was expected that there is a relationship between social work students' creativity and fieldwork performance in problem solving, and this relationship has been investigated in detail in the present study.

Hypotheses and Findings

Based on the literature reviewed, two dimensions of creativity, namely originality and fluency, were suggested to be related to the fieldwork performance in problem solving. Social work students with high originality ability were expected to be able to generate more new perspectives to minimize the influence of stereotypes, and more capable of using the technique of reframing to appropriately define clients' problems. They are less likely to stick to habitual ways of handling problems or resort to standard procedures, and can generate innovative solutions to clients' problems. On

the other hand, those with high fluency ability were expected to be able to generate more ideas of possible problem definitions and treatment strategies. This brings them greater chance of finding the appropriate problem definitions and effective solutions. Hence, the first two hypotheses of the present study, regarding the relationships between these two dimensions of creativity and fieldwork performance in problem solving, were put forward as follows:

Hypothesis 1

There is a positive relationship between social work students' competence in originality and their fieldwork performance in problem solving.

Hypothesis 2

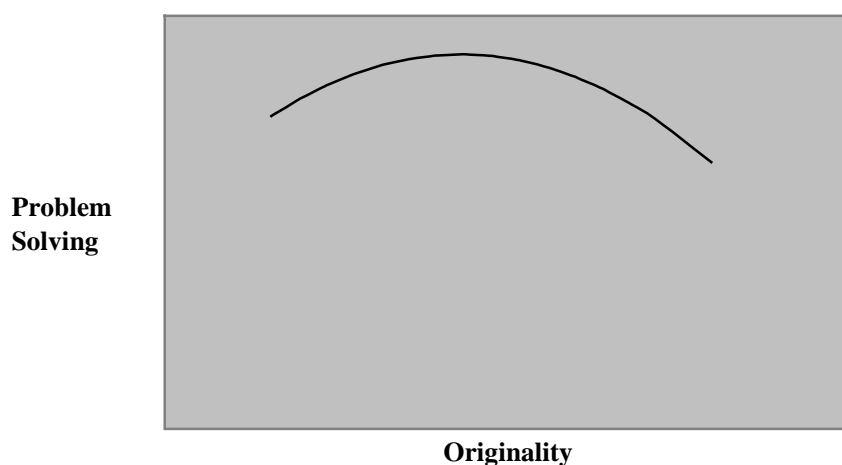
There is a positive relationship between social work students' competence in fluency and their fieldwork performance in problem solving.

According to the results of the multiple regression analysis using fieldwork performance in problem solving as the dependent variable, presented in the previous chapter, there is one quadratic term, Square of Originality ($\beta = -0.460$), and one interaction term, Interaction of Originality and Fluency ($\beta = 0.473$), in the final regression equation, and their relationships with the dependent variable are significant. The regression model is also significant.

The two hypotheses regarding fieldwork performance in problem solving are not supported by the findings of this study. However, the findings do show that there are significant relationships between the two dimensions of creativity, namely originality and fluency, and fieldwork performance in problem solving, but the relationships found are much more complex than what were postulated in the two hypotheses. Concerning the first hypothesis, a simple positive relationship between fieldwork performance in problem solving and originality was not found. The findings show that there is a significant relationship between the two variables, but the nature of this relationship is

influenced by a third variable, fluency. For a given value of fluency, the interaction term becomes a linear term containing only one independent variable (Originality), and the relationship between fieldwork performance in problem solving and originality becomes a quadratic one, which can be represented by a curve opening downward, since the standardized regression coefficient (β) of the quadratic term, Square of Originality, is negative (McClave and Sincich, 2003). Based on the regression equation, the plot of fieldwork performance in problem solving versus originality for the mid-value of fluency, the average of the maximum and minimum values of fluency in the data, is shown in Fig. 13.

Fig. 13 PLOT OF PROBLEM SOLVING VS ORIGINALITY (FOR MID-VALUE OF FLUENCY)



The shape of the curve will gradually change with the change in the value of fluency. However, the main features of the curve will not change within the range of fluency of the data collected, that the fieldwork performance in problem solving increases with the increase in originality up to a peak point, and then it heads downward. The positions of the peak points of the curves for different values of fluency may not be the same, but must fall between the two ends of the curves. Since the standardized regression

coefficient (β) of the interaction term, Interaction of Originality and Fluency, is positive, while that for the quadratic term, Square of Originality, is negative, it can be calculated that the value of originality at the peak point will increase with the increase in the value of fluency. In a nutshell, for any given value of fluency, the relationship between fieldwork performance in problem solving and originality is positive, as postulated in the first hypothesis, only when the value of originality is less than that at the peak point. The relationship will become negative when the value of originality is greater than that at the peak point. The value of originality at the peak point is determined by the value of fluency, since the former will increase with the latter.

Regarding the second hypothesis, a simple positive relationship between fieldwork performance in problem solving and fluency was not found. The findings show that there is a significant relationship between the two variables but the nature of it depends on the value of a third variable, originality. For a given value of originality, it was found that there is a significant linear relationship between fieldwork performance in problem solving and fluency, since the quadratic term, Square of Originality, becomes a constant and the interaction term, Interaction of Originality and Fluency, becomes a linear term containing only the independent variable, Fluency. According to the multiple regression analysis results, the standardized regression coefficient (β) of the interaction term is positive. Hence, for a given positive value of originality, the coefficient of the linear term, Fluency, is positive, which indicates a positive linear relationship between fieldwork performance in problem solving and fluency. However, for a given negative value of originality, the coefficient of the linear term becomes negative, which indicates a negative linear relationship between the two variables.

The raw data of originality are all having positive values. However, before conducting the multiple regression analysis, the data of the five dimensions of creativity had been centered by subtracting each of them by their respective means, in order to

avoid the problem of multicollinearity. Hence, for raw data of originality which are less than the mean of originality, their values become negative after centering, while for those greater than the mean of originality, their values remain positive after centering. In this connection, the findings indicate that there is a significant positive linear relationship between fieldwork performance in problem solving and fluency, provided that the value of originality is greater than the mean of originality. When the value of originality is less than the mean of originality, this relationship becomes a negative one.

Discussion

Originality and Problem Solving

As discussed in Chapter 2, high originality ability may help social work students perform well in two stages of the problem solving process, which are defining problems and generating solutions (Heppner et al, 1989). When defining clients' problems, social work students are vulnerable to adverse influence of preexisting views, perspectives and even stereotypes held by them (Kurtz et al, 1989). It is expected that social work students with high originality ability are more capable of generating innovative ideas which help minimize the influence of preexisting views and stereotypes. Moreover, from a systems perspective, the clients' problems can only be understood in context, and it is not easy for people involved to realize the contextual meaning of clients' problems (Montgomery et al, 2001). In this connection, social work students with high originality ability, who are more competent in looking at clients' problems from new perspectives, are expected to be more capable of discovering the purposes which these problems are serving in the context and using the technique of

reframing to help their clients and other people involved to perceive the problems from new perspectives to facilitate the problem solving process. On the other hand, social work students with high originality ability are also expected to have better performance in generating effective solutions. Since they can generate more innovative solutions to clients' problems and are less likely to stick to standard procedures and ineffective ways of problem solving. Moreover, clients who approach social workers for assistance usually have already tried to tackle their problems themselves for some time. In many cases, the clients and people around them had already tried all the strategies they could think of but still could not cope with the problems. So, many problems handled by social workers are those which cannot be resolved by common strategies and ideas which ordinary people may think of. These problems are usually rather complex and difficult, and there is a need for the practitioners to have a good competence in generating innovative solutions (Clark, 1995). Based on these, the first hypothesis was developed. However, the findings show that increase in originality ability is only accompanied by increase in fieldwork performance in problem solving up to a certain level of originality, which is represented by the upward climbing portion of the curve in Fig. 13. Although for different values of fluency, the curves may be a bit different, there is always such an upward climbing portion corresponding to some lower values of originality. It shows that it is possible for social work students with comparatively poor competence in originality to enhance their fieldwork performance in problem solving by improving their originality ability.

As shown by the curve in Fig. 13, there may be an optimal point for social work students to improve their fieldwork performance in problem solving through improving their competence in originality. In Fig. 13, the curve turns downward after the peak point and it may indicate that after reaching an optimal point, further increase in originality may bring negative impact on the fieldwork performance in

problem solving. There are some possible explanations for the positive relationship postulated in the first hypothesis to be found only among lower values of originality. First, it is suggested that for social work students, the positive impact of having higher originality ability will be lessened beyond certain level of originality. Second, it is likely that increase in originality ability may also have negative influence on fieldwork performance in problem solving, which probably is not so great when the value of originality is comparatively small but will increase substantially with the increase in originality ability. These possible explanations will be elaborated in detail in the following paragraphs.

As discussed above, one of the reasons for hypothesizing that there is a positive relationship between originality ability and fieldwork performance in problems solving is that the problems of clients who seek help from social workers are usually rather complex and difficult. The clients probably have tried many strategies they can think of in vain and there is a demand for the social workers to generate innovative solutions. It is assumed that the same applies to social work students. However, the findings of this study may suggest that the situations faced by social work students may not be completely the same as that faced by social workers. Due to the limited experience, skills and knowledge acquired by social work students and the learning purposes of fieldwork training, cases assigned to social work students in fieldwork training are usually not too difficult or too complex, in order to avoid undesirable outcomes for the clients and the students. Hence, very high originality ability may not be required for generating effective solutions to the problems of these clients. Furthermore, since these cases are not too complex, it may not be too difficult to generate appropriate definitions for their problems and these problems probably need not be defined in very unusual ways. It may be comparatively easy to figure out the meaning of these problems from a system

perspective. As a result, very high originality ability may not be required for generating appropriate definitions for the problems of these clients, too. After all, helping these clients solve their problems may still require a certain level of originality ability, but probably very good competence in originality may not be necessary. In other words, it is likely that although increase in originality ability may bring enhancement of fieldwork performance in problem solving, the positive impact may gradually diminish beyond certain level of originality and finally completely fade out. It is a possible reason for the positive relationship to gradually disappear with the increase in originality ability.

On the other hand, increase in originality ability may have some drawbacks. It is possible that people with very high originality ability are more likely to put forward ideas which sound quite unusual and even strange to the others. Many people respond to highly original ideas with resistance and reservation (Proctor, 2005). Runco and Chand (1994) pointed out that many original ideas are poorly rated because sometimes only the person who generates the original ideas knows how the ideas fit the situation. It may be too subtle for others to recognize the relevance and appropriateness of original ideas, and this is especially true for extremely original ones. Hence, it is important for social work students with high originality to be sensitive to others' responses to their original ideas and to further explain the relevance and appropriateness of their ideas when necessary, in order to gain the acceptance from the others. However, as discussed in Chapter 2, students with high originality ability are likely to be more self-centered (Millon, 1990; Helson and Wink, 1996). In other words, although there is a greater need for them to be aware of others' responses, on the contrary, it is likely that they are relatively more insensitive to the resistance and reservation of the others. As a result, the increase in originality ability of social work students, especially at some high levels, may be associated with

an increase in challenge in gaining acceptance for their views and ideas from clients, and therefore it may affect clients' involvement during the problem solving process. It is likely that this negative impact of increasing originality ability is minimal at low levels of originality ability, but becomes greater and greater with the increase in originality ability. This may explain the change of the relationship between competence in originality and fieldwork performance in problem solving from positive to negative as indicated by the downward turn of the curve after the optimal point in Fig. 13.

As shown by the regression equation, the downward turn of the curve after the optimal point takes place at a higher value of originality for social work students with better fluency ability. One possible explanation is that the increase in fluency ability may mitigate the negative influence of increase in originality ability. As mentioned above, increase in social work students' originality ability may result in greater difficulty in gaining acceptance for their views and ideas from clients. However, it is expected that increase in social work students' ability to generate more alternatives may bring a better chance of finding suitable options which are acceptable to both the clients and the social work students. It is possible that in this way the negative impact of increase in originality ability can be lessened by increase in fluency ability, which will postpone the change of the relationship between competence in originality and fieldwork performance in problem solving, from positive to negative, to a higher level of originality ability.

Fluency and Problem Solving

Originally, based on the literature, it was expected that social work students with better fluency ability have better fieldwork performance in problem solving since

they can generate more alternatives in defining clients' problems and finding solutions. As discussed in Chapter 2, due to the fact that many clients do not have sufficient verbal skills to express themselves well, information about their problems is always provided by them in piecemeal fashion and very often is incomplete (Holland, 2000). Limitations in verbal communication between social workers and clients make it difficult for the former to grasp all significant information of the latter's problems (Sherman and Skinner, 1988). It is important for social workers to have the ability to generate more ideas about what might have happened based on the incomplete information provided by clients to facilitate further enquiries and development of appropriate definitions of clients' problems. On the other hand, according to the solution-focused approach, many people cannot solve their problems because they stick to some ineffective solutions and fail to generate more alternatives (Bucknell, 2000). Hence, social workers who can produce a lot of alternatives may give more choices to their clients, and increase the chance of finding effective solutions. In this connection, social work students with higher fluency ability are expected to have a higher chance of finding appropriate definitions of and effective solutions to their clients' problems. This is the ground for generating the second hypothesis which postulates a positive relationship between fieldwork performance in problem solving and competence in fluency. However, the findings of this study show that it is only true for social work students with above average competence in originality. The findings may indicate that simply by increasing the quantity of ideas, it may not be sufficient to enhance the fieldwork performance in problem solving unless the general originality of the ideas generated can reach a certain level. Otherwise, generating more and more ideas may not help solve clients' problems and on the contrary may even have adverse impact on the fieldwork performance in problem solving.

The discrepancy between the findings and what postulated in the second

hypothesis may indicate that there is some basic requirement concerning the originality of the problem definitions and solutions generated. As suggested above when discussing the findings regarding the relationship between competence in originality and fieldwork performance in problem solving, although cases assigned to social work students in fieldwork training are usually not too difficult or too complex, tackling the problems of these clients may still require a certain level of originality ability. Although better fluency ability will help provide more alternatives for possible problem definitions and solutions to clients' problems, if the ideas generated are mainly ordinary views and common ideas, it may not increase the chance of solving the problems too much. In this case, higher fluency ability may only bring more choices of low usefulness, which conversely may cause confusion and frustration, and do more harm than good to the problem solving process. For social work students with above average competence in originality, better fluency ability not only means greater capacity for generating more ideas but also more ideas of high originality can be found among the ideas generated. It will give a better chance of solving clients' problems, and this provides a possible explanation for the results of the analysis.

As reviewed in Chapter 2, Fortune's (1984) study generated inconclusive findings regarding social work students' competence in fluency and their performance in defining problems and generating solutions. The findings of this study may help account for the results of Fortune's study. Similar to the present study, Fortune designed a study to investigate the relationships between social work students' competence in fluency and their performance in problem solving, specifically the performance in defining problems and generating solutions. The competence in fluency was measured by six stories of the Means-End Problem-Solving test (MEPS). Correlations between the scores of each MEPS story and the grades on defining

problems were computed but no significant relationships were found. On the other hand, in all six MEPS stories, positive significant relationships between scores in fluency and grades on generating solutions were found only in two MEPS stories. The results of Fortune's study were inconclusive. The findings of the present study, which show that social work students' competence in originality may have influence to the relationships studied in Fortune's study, provide a possible explanation for the inconclusive results of it. It is possible that the differences in originality ability of the participants, which was not taken into consideration in Fortune's study, was one of the factors causing the inconsistent results. Moreover, the variation in levels of difficulty of the problems used in the written exercises to test the participants' ability to define problems and generate solutions might also have impact on the relationship studied, since it might demand for different levels of originality ability on the part of the social work students as discussed above. Hence, the interaction effect of fluency and originality abilities on the performance in problem solving, which is found in the present study, provides a possible explanation for the results of Fortune's study.

FIELDWORK PERFORMANCE IN APPLICATION OF THEORIES

As revealed by the literature in Chapter 2, application of theories in social work practice has long been an issue. It is no easy task for social work students to realize how to apply different theories which they have learned to various possible intervention points in the complex situations of their clients. It is suggested that in order to perform well in theory application, social work students have to use their imaginative mind to generate all possible linkages between various aspects of clients' situations and different elements of the relevant theories which they have learned. Social work students' creativity is proposed to be an influential factor in the process.

Hypotheses and Findings

Based on the literature reviewed, two dimensions of creativity, namely resistance to premature closure and fluency, were suggested to be related to the fieldwork performance in application of theories. Social work students who score high in resistance to premature closure are expected to be more capable of maintaining an open attitude to choose the appropriate theories to fit their clients' situations, instead of fitting people and their situations into the theories they select. They may monitor the application of theories with an open mind and are more capable of using constant reflection to guide themselves through the process. On the other hand, better fluency ability may enable social work students to generate a wide range of possible relevant theories and concepts to be applied in practice situations. It is believed that the more the choices, the greater the chance of identifying and applying the appropriate theories in practice. Hence, the third and the fourth hypotheses of the present study, regarding the relationships between these two dimensions of creativity and fieldwork performance in application of theories, were put forward as follows:

Hypothesis 3

There is a positive relationship between social work students' competence in resistance to premature closure and their fieldwork performance in application of theories.

Hypothesis 4

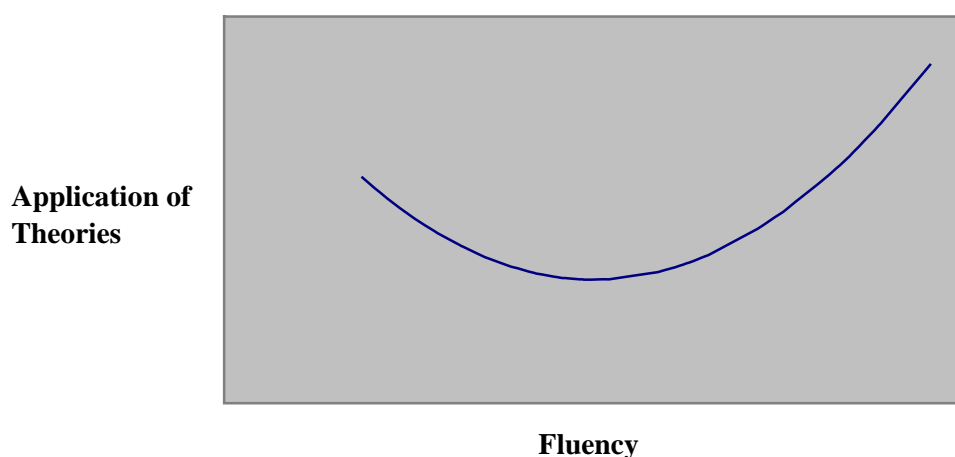
There is a positive relationship between social work students' competence in fluency and their fieldwork performance in application of theories.

According to the results of the multiple regression analysis using fieldwork performance in application of theories as the dependent variable presented in the

previous chapter, there is only one quadratic term, Square of Fluency ($\beta = 0.317$), in the final regression equation, and its relationship with the dependent variable is significant. The regression model is also significant.

The results of the multiple regression analysis show that the variable, Resistance to Premature Closure, is not included in the final regression equation generated. It is also not included in any second order terms remaining in the equation. It means that no significant relationships were found between fieldwork performance in application of theories and the competence in resistance to premature closure. Hence the third hypothesis is not supported by the findings of the present study.

Fig. 14 PLOT OF APPLICATION OF THEORIES VS FLUENCY



The positive relationship between fieldwork performance in application of theories and the competence in fluency postulated in the fourth hypothesis is also not supported by the findings of this study. Instead, a significant quadratic relationship between the two variables was found. Since the standardized regression coefficient (β) of the quadratic term, Square of Fluency, is positive, the relationship between the two variables can be represented by a curve opening upward (McClave and Sincich, 2003). Based on the regression equation generated by the multiple regression analysis, the

relationship found can be represented by the curve in Fig. 14, which shows the plot of application of theories versus fluency for the range of values of fluency found in the data collected.

As shown in Fig.14, the increase in fluency is initially accompanied by a decrease in fieldwork performance in application of theories. However, after passing a bottom point, where the fieldwork performance in application of theories is at its minimum value, the increase in fluency is associated with an increase in fieldwork performance in application of theories. It can be calculated that at the bottom point the value of fluency is equal to zero. Originally, the raw data of fluency are all having positive values. However, before conducting the multiple regression analysis, the data of the five dimensions of creativity had been centered by subtracting each of them by their respective means. Hence, the original value of fluency at the bottom point is equal to the mean value of fluency in the data collected. In this connection, the findings indicate that there is a significant negative relationship between fieldwork performance in application of theories and competence in fluency, when the value of fluency is less than its mean. The negative relationship between the two variables becomes weaker and weaker when the value of fluency approaches its mean, as indicated by the slope of the curve in Fig. 14. When the value of fluency is greater than its mean, the relationship between the two variables turns into a positive one and this positive relationship becomes stronger and stronger with the increase in the value of fluency.

According to the regression equation, if the value of fluency of every participant of the present study increases to the maximum value of fluency in the data, all of them will eventually have their fieldwork performance in application of theories enhanced. As indicated by Fig. 14, some may first experience a drop in fieldwork performance in application of theories with the increase in fluency ability, but finally

what they gain will outweigh what they initially lose when the value of fluency is approaching its maximum value in the data.

Discussion

Resistance to Premature Closure and Application of Theories

According to the literature reviewed in Chapter 2, it was suggested that one of the problems in application of theories in social work practice is the common tendency of social workers to fit clients and their situations into the theories they select (Gitterman, 1988). This tendency may give rise to premature conclusions and stubborn reliance on some favorite theories. Hence, it is essential for social workers to have an open mind in theory application so that they will be able to identify and apply appropriate theories which fit their clients' situations. Moreover, from a reflective practice perspective, it is expected that social workers with an open mind are more capable of making use of new information, observations and feedback during the intervention process to monitor the application of theories and make changes when necessary (Reay, 1986). Based on this, the third hypothesis of this study was developed and a positive relationship between fieldwork performance in application of theories and competence in resistance to premature closure was postulated. However, the findings show that this may not be the case among social work students.

There may be two preconditions for social work practitioners to develop a tendency to fit clients and their situations into some favorite theories and a stubborn reliance on them. First, they should have already found some theories which they think are very useful and much better than the others. Second, they should have developed certain level of self-confidence in theory application, which is sufficient to support their

belief that it is unlikely for them to make the wrong choice. It is possible that for most of the social work students, these two preconditions are not met and these students probably have not developed a stubborn reliance on favorite theories yet.

Social work students who participated in this study were Year 2 students of a higher diploma programme. Probably they had learned the theories related to social work practice within one to two years before they took part in this study. It is unlikely that they could achieve a very good understanding of these theories. It is expected that most of them were still exploring the meaning of various concepts put forward by different theories, and were in the process of learning how to put them to good use in social work practice. They probably were not ready to determine at this stage which theories were more useful and could guide their practice better than the others. Most of them had yet to decide which were their favorite theories, and probably had not developed any habitual use of any theories in practice. On the contrary, social work students are usually keen to learn more about different theories, and so most of them may be willing to try out many of them, instead of sticking to just a few.

On the other hand, the fieldwork training involved in this study is the second one in the syllabus of the higher diploma programme concerned. It is likely that most of participants did not have much experience in applying theories in social work practice, and perhaps the only relevant experience they had was that in the first fieldwork training. Hence, it is unlikely for them to have built a strong confidence in their ability to apply the suitable theories in their practice. Instead, as students, probably most of them believed that there was still room for improvement concerning their performance in theory application, and were ready to make changes to their use of theories in practice.

As discussed above, it is possible that very few social works students have already developed a stubborn reliance on some favorite theories or a tendency to fit people and their situations into the theories selected. Therefore the competence in

resistance to premature closure may not be so important to them during the theory application process. This provides a possible explanation for why the relationship proposed by the third hypothesis was not found in the present study.

Fluency and Application of Theories

The literature reviewed in Chapter 2 suggested that from a systems perspective, social work students are required to consider how to apply different theories to various possible intervention points in the complex situation of the clients (Compton et al, 2005). In this connection, social work students who can generate more ideas about how to link up different theories with the circumstances they are facing in social work intervention are expected to be more capable of identifying and applying the suitable theoretical concepts in their practice. Based on this, the fourth hypothesis of this study was developed, postulating a positive relationship between fieldwork performance in application of theories and competence in fluency. However, the findings show that although there is a significant relationship between the two variables, the relationship is not always positive and the nature of it depends on the fluency ability of the social work students.

The relationship between fieldwork performance in application of theories and competence in fluency is represented by the curve in Fig. 14, which demonstrates a quadratic relationship. A possible explanation for the quadratic relationship found is that increase in fluency ability may bring both positive and negative influences on fieldwork performance in application of theories. The strength of these two opposite influences may vary separately with the change of the fluency ability of the social work students. Hence, the resultant impact is sometime positive while sometime negative.

Indeed, according to the literature review in Chapter 2, it was suggested that besides positive impact, increase in fluency ability may also have negative impact on social work students' fieldwork performance in application of theories. On the one hand, students with better fluency ability may have more ideas about how to apply different theoretical concepts in practice situations, and it increases the chance for them to identify and apply the appropriate ones (Compton et al, 2005). However, on the other hand, it is possible that many students may not have assimilated well the theories they have learned. Having too many ideas about how to apply different theoretical concepts may become a burden to them in making a choice and make them confused during the process (Reay, 1986). Both the positive and negative impacts are supposed to increase with the increase in fluency ability but at different rate. If the positive impact is less than that of the negative impact, the outcome will be a drop in fieldwork performance in application of theories, which is probably the case before the value of fluency reaches its mean value, the bottom point of the curve in Fig. 14. On the other hand, the curve in Fig.14 seems to indicate that the positive impact picks up gradually with the increase in the fluency ability that it becomes the same as that of the negative impact at the bottom point and outweighs it afterwards. Indeed, the curve in Fig. 14 probably shows that the increase in the positive impact gains more and more momentum as the value of fluency increases from its minimum value to its maximum value of the data. This provides a possible explanation for the relationship between fieldwork performance in application of theories and competence in fluency to change from negative to positive and then become stronger and stronger with the increase in fluency ability.

A possible explanation to the greater increasing rate of the positive impact than that of the negative impact when the fluency ability increases is that the increase in fluency ability probably not only affects the quantity of the ideas generated but also

the quality of the ideas generated. In other words, increase in fluency ability not only helps provide more choices to fit the situations but at the same time provide more choices of better quality. As Mednick (1962) suggested that people usually generate obvious and common ideas first. It is possible that many good ideas come after most of the common ideas are depleted, and better ideas may come even later. People with low fluency ability may generate mainly obvious and common ideas. Altshuller conducted a study on inventions associated with patents and he found that the quality of inventions was related to the number of ideas the inventors had tried (McGraw, 2004). He found that inventors of routine improvements considered about 10 solutions to their problems; those of fundamental improvements considered between 10,000 and 100,000 solutions and rare scientific discoveries required one million possible solutions to be considered. These findings show the likelihood that people who can generate more ideas may find more ideas of better quality. It is possible that ideas of better quality in theory application may fit the clients' situations better and can bring more benefits to the social work intervention process. Hence, having more ideas of better quality will probably increase the chance of achieving much better results in theory application.

On the other hand, it is also possible that when more ideas of better quality were generated by better fluency ability, the negative impact brought by the increase in fluency ability will be mitigated. Compton et al (2005) commented that too many options may lead to confusion if the choices are all of similar benefit-risk ratios. It may imply that generating more options may not lead to confusion, if the benefit-risk ratios of them are not the same. It is likely that only those options with better benefit-risk ratios will be taken into consideration when making decisions, and the amount of other options does not matter. In this connection, it is likely that generating more quality ideas with more benefit and less risk may help minimize the

confusion caused by too many choices, since those of low quality with poor benefit-risk ratio will easily be screened out and not be taken into consideration. It provides a possible explanation for the diminishing influence of the negative impact with the increase in fluency ability, as compared with the positive impact.

In a nutshell, it is possible that when the social work students' fluency ability increases, the social work students may generate more and better ideas about how to apply different theories in practice. Having more good quality ideas may lead to much better results in theory application and minimize the negative impact brought by the increase in fluency ability, as discussed above. This is probably one of the factors contributing to the rapid growth of the positive impact, in comparison with the negative impact, associated with the increase in fluency ability. It provides an explanation for the change of the relationship between fieldwork performance in application of theories and competence in fluency with the increase in fluency ability. Although a simple positive relationship between the two variables was not found in this study, the findings do show that if the social work students can persistently improve their fluency ability, they may eventually improve their fieldwork performance in application of theories.

FIELDWORK PERFORMANCE IN EMPATHY

As discussed in Chapter 2, empathy was suggested to be an important element of the helping relationship between social work students and their clients, and one of the essential facilitating conditions for positive intervention outcomes. Empathy is the ability to realize clients' inner feelings and express this understanding in ways attuned to the clients. As suggested by the literature reviewed, good imagination is very important for good performance in empathy, and it points to the possible relationship

between fieldwork performance in empathy and social work students' creativity.

Hypotheses and Findings

The literature reviewed suggested that two dimensions of creativity, namely elaboration and originality, may have very different relationships with fieldwork performance in empathy. It is expected that social work students with good elaboration ability are more capable of elaborating different feelings into various possible expressions that can be seen, heard or sensed, which can help them make sense of the verbal and nonverbal cues received from the clients. Moreover, it is expected that social work students who lack elaboration ability may easily limit themselves to a few ways of communicating their empathic understanding and face more difficulties in finding different ways to elaborate their understanding of clients' feelings. On the other hand, study findings show that people with high originality ability are likely to be more self-centered. It may not be easy for them to set aside their egocentric views, and probably their perceptions of others' feelings may be much affected by their internal frame of reference, leading to biased views. Therefore, the fifth and the sixth hypotheses of this study, regarding the relationships between these two dimensions of creativity and fieldwork performance in empathy, were developed as follows:

Hypothesis 5

There is a positive relationship between social work students' competence in elaboration and their fieldwork performance in empathy.

Hypothesis 6

There is a negative relationship between social work students' competence in originality and their fieldwork performance in empathy.

According to the results of the multiple regression analysis using fieldwork

performance in empathy as the dependent variable presented in the previous chapter, there is only one linear term, Originality ($\beta = -0.334$), in the final regression equation, and its relationship with the dependent variable is significant. The regression model is also significant.

According to the results of the multiple regression analysis, the variable, Elaboration, was not included in the final regression equation generated. It means that no significant relationships are found between fieldwork performance in empathy and competence in elaboration. Hence the fifth hypothesis is not supported by the findings of the present study. On the other hand, as the variable, Originality, remains in the final regression equation and the standardized regression coefficient (β) of it is negative, it means that there is a negative linear relationship between fieldwork performance in empathy and competence in originality as postulated in the sixth hypothesis of this study, and the relationship is significant. Hence, the sixth hypothesis is supported by the findings of this study.

Discussion

Elaboration and Empathy

According to the literature reviewed, it was suggested that social work students have to interpret the verbal and nonverbal cues sent by the clients in order to understand their feelings. It involves a process of linking the cues received with different possible expressions of various feelings (Blonder et al, 1991). Hence, social work students' ability in elaborating various feelings into different ways of expression will likely affect their fieldwork performance in empathy. Furthermore, in transforming their understanding of clients' feelings into empathic responses, social work students have to

find ways to elaborate their understanding into different verbal and non-verbal responses (Miller, 1989), and their elaboration ability is also expected to be an influential factor in this process. However, the findings show that the postulated relationship between fieldwork performance in empathy and competence in elaboration is not found among the participants. One possible explanation is that the male participants are rather atypical, concerning their fieldwork performance in empathy, that they cannot represent other male social work students who have not participated in this study.

According to the Empathy Quotient scores of the participants in this study, it is likely that the male participants in this study are rather atypical in comparison with other male social work students, with regard to their Empathy Quotient scores. Reviewing the literature, a sex difference in Empathy Quotient scores was found by many studies, and males were found scoring significantly lower than females in all of them (Baron-Cohen et al, 2003; Baron-Cohen and Wheelwright, 2004; Wakabayashi et al, 2007). However, completely different results were found in the present study that the mean score of male participants was found higher than that of female participants.

The findings of another study about the empathy of students in Hong Kong show that a significant sex difference was found among the students (Caritas Hong Kong, 2006), just like those which were found in other countries. In this study, the Questionnaire Measure of Emotional Empathy was administered to 659 students, aged between 10 and 16, to measure their empathy. The mean scores on empathy for the male and female students were 9.21 and 24.92 respectively, and the difference was significant. The findings show that male students score much lower than female students in empathy. Based on these results, it is expected that the same sex difference will be found among the social work students in Hong Kong. However, the findings of the present study show that male participants scored higher in empathy

than the female participants, and these findings contradict what are expected.

Moreover, in comparison with the findings of a study conducted on university students in Japan, the male participants of the present study scored much higher. In Japan, the Empathy Quotient was administered to 1250 university students, and the mean scores for the male and female students were 30.6 and 36.1 respectively (Wakabayashi et al, 2007). The mean score for female Japanese students is similar to the female participants' mean score (37.9) found in this study, and it may be due to the similar East-Asian cultural background of the participants in the two studies. Based on this, it is expected that the mean score of male participants of the present study is similar to that of the Japanese male students. However, it was found that the mean score of male participants in the present study is 44.4, which is much higher than that of the Japanese male students. The great difference found between the mean scores of male students in these two studies reflects the likelihood that the male participants of this study are atypical in comparison with other male social work students. If the male participants of this study are very different from other male social work students who have not joined this study, with regard to their fieldwork performance in empathy, including their data in the multiple regression analysis might obscure the relationship between fieldwork performance in empathy and competence in elaboration. This may be the reason why the relationship postulated in the fifth hypothesis is not found among the participants.

Originality and Empathy

The findings of this study show that social work students who score high in originality are more likely to be rated low in fieldwork performance in empathy. These results support the postulation generated from the literature review that social work

students with high originality ability are likely to be more self-centered (Millon, 1990). The more self-centered the social work students are, the more difficult it is for them to put themselves into others' shoes to perceive accurately others' thinking and feelings. It is also difficult for them to express their empathic understanding in ways attuned to their clients, due to their limitations on perceiving things from their clients' perspective.

As discussed above, it is possible that high competence in originality does not have direct influence on the performance in empathy. Instead, the self-centered personality may play a significant role in the process. There may be different factors affecting the relationship between originality ability and self-centered personality, and some may strengthen this relationship while some may weaken it. If this is the case, there is a possibility that under some conditions, high competence in originality may not have any adverse impact on the performance in empathy. Knowledge in this aspect may be worth further exploring, in order to enrich our understanding of the relationship between fieldwork performance in empathy and social work students' competence in originality.

CONCLUSION

The findings of this study have made a significant contribution to our understanding of the relationship between social work students' creativity and their fieldwork performance. Many scholars have commented on the general relationship between creativity and social work practice, but very little has been done to investigate the specific relationships between different dimensions of creativity and performance in different areas of social work practice. This study has provided valuable information about these specific relationships in the fieldwork training

setting, and has made contribution to knowledge in this subject area.

The results of this study show that the relationships found between social work students' fieldwork performance in different areas and their competences in various dimensions of creativity are more complex than what were postulated by the hypotheses of this study. Besides linear relationships, quadratic relationships were also found. Moreover, different dimensions of creativity were also found interacting with each other in affecting fieldwork performance of the students. From a systems perspective, findings of this study reveal more details about the complex interaction between various subsystems in the larger system of social work intervention in the fieldwork setting. The findings of this study suggest the possibility that more subsystems than expected are involved in the relationship between social work students' creativity and their fieldwork performance. For example, as discussed above, it is possible that the level of difficulty of the cases handled by the social work students may have influence to the relationship between fieldwork performance in problem solving and competence in originality. Also, social work students' limited knowledge of theories and their lack of experience in using them may make the students less likely stick to some favorite theories, and render the competence in resistance to premature closure not a significant factor in fieldwork performance in application of theories. The results of this study help produce a comprehensive picture of the complex dynamics of interaction among various elements in the social work intervention system in the fieldwork setting, which are probably involved in the relationship between social work students' creativity and their fieldwork performance.

CHAPTER SUMMARY

The findings and their meanings related to fieldwork performance in three

areas, namely problem solving, application of theories and empathy, were analyzed and discussed. With reference to the hypotheses of this study, the relationships between fieldwork performance in these three areas and some dimensions of creativity were examined in detail.

The findings of this study show that there is a nonlinear relationship between fieldwork performance in problem solving and competence in originality, provided that the competence in fluency is kept constant. For those with low competence in originality, an increase in originality ability is associated with an increase in fieldwork performance in problem solving, but after passing an optimal point, an increase in the former is accompanied by a decrease in the latter. It was suggested that the problems handled by social work students in fieldwork training are not so difficult that increase in originality ability is only conducive to better performance in problem solving up to a certain level of originality ability. On the other hand, people with very high originality ability are more likely to produce ideas which sound unusual or even strange to the others and may easily trigger resistance and reservation. There is a need for them to be sensitive to others' responses but, on the contrary, students with high originality ability are likely to be more self-centered. It provides a possible explanation to the drop in fieldwork performance in problem solving associated with the increase in originality ability after the optimal point. It was also suggested that the increase in fluency ability may mitigate the negative influence of increase in originality ability, and may cause the optimal point to take place at a higher value of originality ability. On the other hand, for a given value of originality ability, the hypothesized positive relationship between fieldwork performance in problem solving and competence in fluency was found among social work students whose competence in originality was above average. It may indicate that some basic ability to generate innovative ideas is very important for good fieldwork performance in problem solving.

For social work students with above average competence in originality, better fluency ability may provide not only more alternatives but also more innovative ideas, which may give rise to a better chance of solving clients' problems.

Concerning the fieldwork performance in application of theories, the hypothesized positive relationship between performance in this area and the competence in resistance to premature closure was not found. Social work students may be too green to have developed stubborn reliance on some favorite theories and a tendency to fit people and their situations into the theories selected. Hence, for them, competence in resistance to premature closure may not be an important factor contributing to good fieldwork performance in application of theories. On the other hand, a nonlinear relationship was found between fieldwork performance in this area and the competence in fluency and the relationship can be represented by a U-shape curve. It was suggested that better fluency ability may lead to more choices and better ideas about how to apply different theories. However, it is also possible that having too many ideas may confuse the inexperienced social work students. The results suggest the possibility that, with the increase in fluency ability, both the positive and negative impacts will increase, but the former will gradually outweigh the latter, and eventually lead to better and better fieldwork performance in application of theories.

Fieldwork performance in empathy was found negatively correlated with the competence in originality as hypothesized. The results of this study support the postulation that social work students with high originality ability are comparatively more self-centered, which may have negative impact on their fieldwork performance in empathy. The analysis results show that the hypothesized positive relationship between fieldwork performance in empathy and competence in elaboration was not found. Analysis of the participants' Empathy Quotient scores shows the possibility that the male participants in this study are rather atypical, with regard to their

fieldwork performance in empathy. The presence of these atypical male participants in the sample may obscure the positive relationship between fieldwork performance in empathy and competence in elaboration among the social work students in general.

The findings of this study provide detailed information about the specific relationships between some dimensions of creativity and fieldwork performance in certain areas. They make a contribution to the existing knowledge about the relationship between creativity and fieldwork performance, since little has been done before to investigate these specific relationships. From a systems perspective, the results of this study help figure out how different elements in the social work intervention system in the fieldwork setting interact with each other and affect the relationship between social work students' creativity and their fieldwork performance.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

In this chapter, the main findings of this study will be reviewed and the strengths and limitations of this study will be discussed. Following some highlights of the contribution that this study has made to theoretical knowledge, the implications of the results of this study for social work education will be explored. Finally, suggestions for future research based on the results of this study will be put forward.

MAIN FINDINGS OF THIS STUDY

The purpose of this study is to investigate the specific relationships between social work students' competence in five dimensions of creativity and their fieldwork performance in three areas. Concerning the fieldwork performance in problem solving, the findings of this study show that for a given value of fluency ability, a significant quadratic relationship between competence in originality and fieldwork performance in problem solving was found, and this relationship can be represented by a curve opening downward. The value of the originality ability at the peak point of the curve increases with the increase in the value of fluency ability. On the other hand, for a given value of originality, a significant linear relationship between competence in fluency and fieldwork performance in problem solving was found. Such a linear relationship is positive when the value of originality ability is above average, while it becomes negative when the value of originality ability is below average.

Regarding the fieldwork performance in application of theories, the findings

indicate that no significant relationships were found between competence in resistance to premature closure and fieldwork performance in this area. However, a significant quadratic relationship between competence in fluency and fieldwork performance in application of theories was found, and this relationship can be represented by a curve opening upward. At the bottom point of the curve, the value of fluency ability is at its mean value. Hence, this relationship is a negative one when the value of fluency ability is below average, while it becomes a positive one when the value of fluency ability is above average.

For fieldwork performance in empathy, the findings show that a significant positive relationship between competence in elaboration and fieldwork performance in this area was not found among the participants. On the other hand, a significant negative linear relationship between competence in originality and fieldwork performance in empathy was found among the participants.

STRENGTHS AND LIMITATIONS OF THIS STUDY

This study has its own strengths and limitations, and when using the results of it, attention should be paid to them, especially the latter. The strengths and limitations of this study are elaborated in detail in the following paragraphs.

Strengths of This Study

Influence from Extraneous Variables Minimized

All the participants came from the same university and indeed they were enrolled in the same higher diploma programme. Although this arrangement may have some drawbacks, it helps minimize the influence from many extraneous

variables. First, the fieldwork evaluation of all the participants was conducted according to the same evaluation system of the selected university, and it helps ensure differences in fieldwork evaluation results found among the participants were not due to differences in the methods used to evaluate the fieldwork performance of the participants. Second, this arrangement can ensure that all participants had received similar social work training before they participated in this study, since they were enrolled in the same course and were all final year students. Hence, it ensures that differences found in participants' fieldwork performance were not caused by the differences in curriculum of the programmes attended by the participants. Without this arrangement, it will be hard to draw any conclusions about the relationship between creativity and fieldwork performance based on the findings of this study.

Robust Analysis Results

There are some underlying assumptions for multiple regression analysis. Although failure of these underlying assumptions does not invalidate the analysis so much as weaken it (Tabachnick and Fidell, 2007), in the present study, steps have been taken to check all these underlying assumptions in order to ensure the robustness of the analysis results. Relevant graphic plots have been analyzed and suitable statistical tests have been conducted to check the underlying assumptions of linearity, normality and homoscedasticity for the multiple regression analyses conducted in this study. Satisfactory results have been obtained from all these checking procedures. In other words, the analysis results of this study were found to be robust in all these aspects.

Limitations of This Study

Generalizability of Findings

In this study, due to the limited resources available and lack of support from universities, only social work students from the same university were invited to participate, and all the participants were voluntary. This arrangement might cause selection bias and bring limitations to generalizability of the study findings. There is a possibility that students in the selected university are different from students in other universities in some aspects that they cannot completely represent the social work students in general. On the other hand, there are only 42 female students and 10 male students participated in this study. If data can be collected from more social work students, especially male students, there will be greater confidence that the study findings can be generalized to other social work students.

Control of Unknown Factors

Although reasonable steps have been made to take into account possible extraneous variables which may affect the results of this study, similar to many social science studies, it is practically impossible for the present study to completely control the influence of all possible factors in human situations on the study outcomes. For example, it was not feasible to arrange for all participants to be supervised by the same field supervisor, to have their fieldwork training arranged in the same social service agency, to serve the same target group of clients and to deal with the same kind of problems. Although through implementation of the standardized fieldwork training procedures and requirements of the selected university, the impacts of many

possible factors have been minimized, the presence of unknown extraneous variables cannot be completely ruled out. Nevertheless, it is not always possible to take all variables into consideration in a single study, and those who use the results of this study should bear in mind this limitation and keep an open mind on possible impact of other variables.

Relationships found by Multiple Regression Analysis

Based on the findings of this study, it is proposed that some dimensions of creativity may have impact on fieldwork performance in certain areas. However, the results of multiple regression analyses conducted actually show only correlations or associations between dependent and independent variables, instead of causal relationships. In other words, the analysis results only indicate which dimensions of creativity are related to which areas of fieldwork performance, but they cannot prove that changes in any dimension of creativity will cause variations in fieldwork performance in certain areas. Nonetheless, findings of this study do offer support to the suggested causal relationships, but further studies are required for confirmation.

Measuring Instruments

The Torrance Tests of Creative Thinking and Empathy Quotient used in this study were not developed in Hong Kong. Efforts had been made to explore relevant literature about their use among social work students or university students in Hong Kong, but little was found. Although there are many study findings supporting the validity and reliability of the two tests, only limited amount of them were based on data from Asian subjects and none of them came from relevant studies in Hong Kong.

There is a need to conduct more studies regarding the use of these two tests to assess university students in Hong Kong in order to provide more information about their validity and reliability.

On the other hand, the norms of these two tests have not been established in Hong Kong yet. It would be more desirable for the scoring of originality to be based on the relevant norm of TTCT in Hong Kong. However, as the norms of TTCT have yet to be developed in Hong Kong, in this study the scoring of originality had to be modified that the rarity of responses was determined by comparing with all other responses received. On the other hand, lack of information about the norms of Empathy Quotient in Hong Kong makes it difficult to determine whether the Empathy Quotient scores of the male participants in this study deviate greatly from the norm, and reference can only be drawn from data on Empathy Quotient scores of Japanese students and data on Hong Kong students generated by other empathy tests. All of these bring limitations to the findings and conclusions of this study.

CONTRIBUTION TO THEORETICAL KNOWLEDGE

Bearing in mind the limitations of this study presented above, this study still has made a contribution to the theoretical knowledge. A significant contribution that this study has made is that it provides very detailed information about the possible relationship between social work students' creativity and their fieldwork performance. Instead of investigating the general relationship between the two variables, this study examined specifically how each dimension of social work students' creativity is related to their fieldwork performance in certain areas. This is especially important when some of these specific relationships may be positive while some may be negative. These relationships in opposite directions may cancel each other out and can hardly be

identified if only the general relationship between social work students' creativity and their fieldwork performance is studied. Indeed, this study has been successful in finding some specific relationships between some dimensions of creativity and fieldwork performance in certain areas, which is a discovery that could add a new piece to the theoretical knowledge in this area.

In a nutshell, the findings of this study show the possibility that increase in originality ability may bring improvement in their fieldwork performance in problem solving only up to a certain level of originality ability. It may be due to the fact that the cases assigned to social work students in fieldwork training are not too difficult and hence very high originality ability is not required. On the other hand, for social work students with above average originality ability, increase in fluency ability probably helps generate more alternatives and better ideas and may bring improvement to fieldwork performance in problem solving, provided that their originality ability remains unchanged. Social work students may enhance their fieldwork performance in application of theories by improving their fluency ability to generate more ideas about how to apply theories, although those with below average fluency ability may experience a drop in performance first before achieving improvement in the long run. It is possible that social work students are too green to have developed a tendency to rely on some favorite theories, and it may be the reason why their competence in resistance to premature closure was not found related to their fieldwork performance in application of theories. Finally, social work students who score high in originality are less likely to have good fieldwork performance in empathy, since they are likely to be more self-centered.

The results of this study show that the relationships between social work students' creativity in different dimensions and their fieldwork performance in different areas are rather complex. From a systems perspective, these are the outcomes of

interactions among many subsystems found in the larger system of social work intervention in fieldwork training. The results of this study reflect the dynamics of interplay among all those elements which should be taken into consideration when investigating the relationship between social work students' creativity and their fieldwork performance. This study sets the foundation and provides insights into the directions for further studies in this area.

IMPLICATIONS FOR SOCIAL WORK EDUCATION

As discussed above, relationships have been found between some dimensions of creativity and fieldwork performance and these findings may have different implications for social work education. The relationships found imply that changes in some dimensions of creativity may have impact on fieldwork performance. Findings of this study show the possibility that social work students' creativity may be one of the factors affecting their fieldwork performance. They may bring useful ideas to social work educators concerning the future development of social work education.

The findings of this study have implications for social work education mainly in two aspects. First, they provide useful information for social work educators about some potential ways to further improve the fieldwork performance of social work students through enhancing their competences in some dimensions of creativity. Second, the findings may help social work educators realize the possibility that students with high competences in some dimensions of creativity are more likely to encounter difficulty in certain areas of fieldwork training, and they may consider whether it is desirable to take precautionary measures to facilitate learning and ensure smooth progress of these students. In this section, the implications of the

findings in these two aspects will be discussed in detail. However, as shown by the literature reviewed, not many studies have been done in this area before and the relationships found in this study have yet to be further confirmed by other studies. In this connection, the implications of the findings of the present study for social work education should be taken as tentative at this stage and further studies on them are recommended to provide further information for social work educators to determine how to make use of study findings in this area to further develop social work education programmes.

Creativity and Improvement in Fieldwork Performance

According to the findings of this study, creativity training in two dimensions, namely fluency and originality, may have a positive impact on fieldwork performance of some social work students. It is possible that including relevant training in these two dimensions of creativity in the curriculum for social work students may help the students further improve their performance in fieldwork training. In the following paragraphs, some tentative suggestions regarding how to include creativity training in social work curriculum to enhance students' fieldwork performance are put forward. In the light of further research findings on this area, social work educators may take these suggestions into consideration when exploring future development of social work education.

First, social work teachers may consider providing training in fluency for students with above average scores in originality. It is expected that the originality scores of these students will remain more or less the same during the training period and under this condition, as indicated by the findings of this study, improvement in the students' fluency ability may lead to better fieldwork performance in problem

solving. In addition, their fieldwork performance in application of theories may also be enhanced. For those with above average scores in fluency, improvement in fluency ability may cause better performance in application of theories. For those with below average scores in fluency, they may experience some drop in performance in application of theories first, but if they can persevere with steady improvement in fluency ability, it is likely that their performance in this area will eventually improve with the increase in fluency ability and will be better than before.

As discussed in the previous chapter, for students with below average fluency scores, the initial drop in fieldwork performance in application of theories, associated with increase in their fluency ability, may be caused by the confusion brought by too many ideas. Indeed, it is possible that those with above average fluency scores are also facing such challenge, but in their cases, the benefit of having better fluency ability probably outweighs such adverse impact and so the latter is not so noticeable. In this connection, it may be desirable if some training in decision-making, especially when facing a large number of choices, can be integrated into the training in fluency ability. For example, training in analysis of benefits and risks of different choices will probably be useful to students when they are learning to generate more and more ideas. It is possible that for those with below average scores of fluency, with the assistance of the decision-making training, the expected drop in fieldwork performance in application of theories when the fluency ability improves will be much minimized and may even disappear.

On the other hand, social work educators may also consider whether it would be desirable to provide some basic originality training for social work students with below average originality scores. There may be advantages and disadvantages of this arrangement. It may help these students improve their originality ability up to a level allowing them to join and benefit from the training in fluency ability proposed

above for those with above average originality scores. Moreover, as discussed in the previous chapter, some of the students with below average originality scores may improve their fieldwork performance in problem solving when their originality ability improves. However, there is a potential problem that these students may improve their performance with the increase in originality ability only up to a peak point and then their performance will drop afterwards. Social work educators may consider adopting some measures to avoid or minimize this drawback. First, they may offer only some basic training in originality ability to these students, aiming to enhance their competence in originality from below average to the average level only. In this way, the originality ability may only be raised to a point close to the peak point, and the negative impact, if any, will be minimized. Second, since this drawback is suggested to be associated with the problems in getting acceptance from the others for the original ideas generated, as discussed in the previous chapter, it is expected to be useful if training is provided to equip these students with relevant skills in dealing with this kind of problems. Indeed, the need for such kind of skills in creative problem solving has been postulated by Proctor (2005), and he included “Acceptance Finding” as one of the important stages in the creative problem solving process. He suggested that appropriate communication skills in presenting innovative ideas and good skills in analyzing sources of resistance are useful for soliciting acceptance from the others. It is likely that having better “Acceptance Finding” skills can help the students put their original ideas across more successfully, and minimize or even avoid the drawback of having very high originality ability.

Concerning the development of creativity training programmes for social work students, there are different options open to social work educators. Social work educators may develop new core or elective courses specifically for creativity training. Many exercises have already been developed for cultivating the abilities in

different dimensions of creativity (Torrance, 1979; Torrance and Safter, 1990) and appropriate ones can be selected for use in these creativity training courses. However, it may be more effective if social work teachers can develop their own creativity training programmes with materials and examples drawn from social work settings by either modifying the existing creativity training exercises or developing new ones suitable for social work students. In this way, the creativity training exercises not only help develop the appropriate creative abilities but also facilitate students' understanding of the relationship between creative thinking and their work in the future. On the other hand, creativity training can also be incorporated into some existing social work courses to develop creative abilities of social work students. A successful example was demonstrated by Gelfand (1982b), who incorporated creativity training programmes in his course "Contemporary Social Issues" to enhance students' ability to invent solutions for some social problems and to design evaluative studies for their inventions.

Impact of High Originality Ability

The findings of this study show that improvement in different dimensions of creativity may have different impacts on fieldwork performance of social work students. Besides positive relationships, a negative relationship between competence in originality and fieldwork performance in empathy was also found. However, it is believed that good competence in originality is helpful in generating innovative solutions to clients' problems. In fieldwork training, clients' problems are not so difficult that a very high level of competence in originality may not be required. However, in order to prepare social work students for the difficult problems they may encounter in their future professional practice, it may be inappropriate for them not to

further develop their competence in originality. As an alternative, social work educators may consider taking steps to minimize the negative impact associated with high originality ability when they find it necessary, to help their students gain the benefit of it without experiencing any drawback. Some possible options are suggested in the following paragraphs for the consideration of social work educators when necessary.

Social work educators may consider helping their students realize that having high originality ability may have negative impact on their practice performance so that they will be alert to it. Probably, it would be helpful if the students are aware of the difficulty in gaining acceptance from the others for highly original ideas and the tendency of people with high originality ability to be more self-centered. It may help the students, especially those with high originality ability, be more conscious and cautious in handling interpersonal relationship with others and avoid getting into difficulties inadvertently.

On the other hand, social work educators may consider providing appropriate training for social work students, especially those with high originality scores, to minimize or prevent the possible problems associated with high originality ability. As discussed above, training in skills at gaining acceptance from the others for original ideas may help social work students be more tactful and skillful in putting forward their views and handling others' resistance. In addition, training in sensitivity to others' feelings may also be provided to counteract the tendency of being self-centered, so that they will pay more attention and grasp more accurately the inner states of the others. It may also be desirable for social work teachers and fieldwork supervisors to realize the possible adverse impact of having high originality ability, so that they may pay special attention to those students scoring high in originality and provide appropriate guidance for them no matter in the class or during

fieldwork training when it is necessary. These students may need more assistance and guidance in order to fulfill the requirements of the training.

These suggested measures are some possible steps which may help minimize or prevent the negative impact associated with high originality ability. On the one hand, they may help students scoring high in originality turn their competence in originality from a liability into an asset. On the other hand, these measures may help students with low originality ability to get ready for further improvement in originality ability, as a means to enhance fieldwork performance in problem solving, without worrying about its drawback. Based on the circumstances, social work educators may consider whether it would be desirable to adopt any of these suggestions.

SUGGESTIONS FOR FURTHER RESEARCH

In order to further confirm the findings of this study and explore whether they can be generalized to social work students studying in other universities, it is recommended that this study should be replicated by inviting social work students from other tertiary institutions to be the participants. Also, there will be greater confidence that the study findings can be generalized to social work students in general, if more participants can be recruited. The present study can be replicated in two alternative ways. First, this study can be replicated in other tertiary institutions, one after another. For each of these further studies, only social work students from one tertiary institution are invited to be the participants. In this way, it can be ensured that the participants have received the same social work training and are assessed by the same fieldwork evaluation system, so that there will be greater certainty over the relationships found between variables in each of them.

As an alternative, the present study can be replicated by involving social work students from different tertiary institutions at the same time. Probably, it will be very difficult to have all the participants receive the same social work training, but it is expected that the training provided by different universities should not be too different from each other since all of them have to comply with the requirements set by the relevant professional authorities. However, efforts should be made to seek the cooperation from the universities involved to arrange for their fieldwork supervisors to complete an additional fieldwork evaluation form for each of the participants, according to some standardized guidelines. This arrangement makes it possible that the fieldwork evaluation results of participants from different universities can be compared with each other. If this study can be replicated with participants from different universities, we may collect further information about the relationships between creativity and fieldwork performance and know better the possibility that the relationships found can be generalized to social work students in general.

When social work students from different tertiary institutions are recruited to replicate the present study, it is possible to make arrangements to take into account the influence of some other variables which may have impact on the study results. Since the number of target participants will increase substantially when social work students from different tertiary institutions are involved in the study, it is possible to include only social work students who have their fieldwork training arranged in certain settings, such as family counseling service or outreach youth work, or recruit only those who are required to use certain types of methods of assistance during their fieldwork training, such as case work or group work methods. As social work students from more tertiary institutions are involved in comparison with the present study, it is expected that these additional selection criteria will not cause problems in recruiting sufficient participants. Probably these further studies will provide more

information about the relationship between social work students' creativity and their fieldwork performance and the possible factors in it.

On the other hand, longitudinal studies to collect information about the relationships between social work practitioners' creativity and their performance in social work practice, and the changes of these relationships over time are also recommended. These longitudinal studies may cover the period from the time when the participants are receiving basic social work training in universities to the time when they have been practicing as social workers for a number of years. It is possible that the relationships between creativity and practice performance of the participants may not be the same at different stages of the period. For example, experienced social workers may be more capable of handling a large number of ideas about theory application than social work students and they are less likely to be confused by them. Hence the relationship between their fluency ability and performance in theory application may be different from that of the social work students. Moreover, there is a possibility that some relationships between creativity and practice performance which are not found among social work students may gradually emerge after the students have graduated and accumulated some working experience. Longitudinal studies can provide detailed information about the possible relationships between creativity and practice performance and their changes with the accumulation of experience in social work practice over time. They may provide social work teachers and supervisors in social service agencies with useful information about factors influencing development and improvement of practice competence of social work students and social workers. The findings of these longitudinal studies may have profound implications for the basic and in-service training for social work practitioners.

As suggested by the findings of this study, training in the abilities of some

dimensions of creativity may help some social work students improve their fieldwork performance in certain areas. Social work educators may launch pilot studies to investigate the effects of these creativity training programmes on their students, and examine the differences in fieldwork performance between social work students who have received creativity training and those who have not. On the one hand, results of these studies may verify whether offering relevant creativity training is an effective way to enhance social work students' fieldwork performance and provide useful data regarding the causal relationship suggested. On the other hand, they may provide social work teachers with information about the effects of different training methods used in different creativity training programmes. This information will be very useful to them for selecting suitable and effective training methods for their creativity training programmes.

CONCLUSION

The systems theory provided a conceptual framework for the present study, to account for the complex and unpredictable circumstances of social work practice, and point out the importance of practitioners' creativity to effective social work intervention. From a systems perspective, the circumstances of social work intervention and the clients' situations are perceived as systems which consist of subsystems interacting constantly with each other. Clients' problems have to be understood in their context and good diagnoses cannot be achieved without good understanding of the relevant subsystems and their dynamic interactions taking place in the context. A creative mind, which can flexibly and spontaneously take into account different elements of the systems to generate all possible and relevant meanings, is suggested to be important to the diagnosis process. Moreover,

according to the systems theory, an intervention directed at any one point in a system may affect the whole system, due to the dynamic interactions among the elements within it. It provides a theoretical base for the need to develop a wide range of intervention strategies targeted at different intervention points to achieve the intended changes directly or indirectly. Again, it points to the importance of a creative mind which can generate many alternatives during social work intervention process.

Based on the conceptual framework provided by the systems theory, the present study was designed. Different concepts of systems theory were also used to account for the possible specific relationships between some dimensions of creativity and fieldwork performance in certain areas, and hypotheses to be tested in this study were developed. The results of this study provided useful information about some specific relationships between creativity and fieldwork performance, and made a contribution to the knowledge in this area. However, the findings also included results which were not in line with the hypotheses of this study. The systems theory was again found useful in providing a framework to account for these unexpected results. From a systems perspective, the unexpected results of this study show that probably more subsystems than expected are involved in the specific relationships between creativity and fieldwork performance. In other words, the findings reveal the possibility that there are other elements in the social work intervention systems, which have not been taken into consideration in this study but may affect the relationships under study. Due to the interaction between these elements and the relationships investigated, a change of the former may affect the nature of the latter, and in some cases may even make the latter disappear. For example, the relationship between fieldwork performance in problem solving and competence in originality was found more complex than expected. As discussed above, it may be due to the fact that the nature of the cases assigned to social work students during fieldwork training is usually not too difficult. On the other hand,

the hypothesized relationship between fieldwork performance in theory application and competence in resistance to premature closure was not found in this study, and as suggested above, it may be a result of the students' limited knowledge of theories and lack of experience in professional practice. From a systems perspective, these factors which were not taken into consideration in formulating the related hypotheses, may be some subsystems having an influential impact on the relationships studied in the fieldwork settings.

In a nutshell, the results of the present study help produce a comprehensive picture showing how social work students' creativity is related to their fieldwork performance from a systems perspective. This study can be taken as an initial endeavour to develop specific knowledge in this area. It is hoped that with more studies conducted in this area, social work educators will be able to achieve better understanding of different possible relationships between social work students' creativity and their fieldwork performance, as well as the possible factors in fieldwork settings which may have a significant impact on these relationships.

As an initial endeavour to explore the relationship between social work students' creativity and their fieldwork performance, this study has its strengths and limitations. Concerning its strengths, having all participants receive the same social work training helps minimize the influence of extraneous variables on the findings, and also the satisfactory results of tests of underlying assumptions for the multiple regression analyses conducted demonstrate that the results of this study are robust. However, this study also has its limitations, such as the restricted generalizability of findings, difficulty in controlling all possible extraneous variables, results showing only correlations instead of causal relationships and the lack of local data regarding the use of TTCT and Empathy Quotient in Hong Kong. As a lone doctorate student of an overseas university, the author experienced great difficulty in tackling these

limitations. Nevertheless, reflecting on the whole process, the author reckoned that there might be some smarter ways to deal with some of these limitations.

For example, concerning the recruitment of participants, much time and effort had been spent on soliciting support for the present study from local universities in Hong Kong, and when all these efforts were in vain, the schedule for this study became extremely tight. Eventually, the author could only manage to recruit participants from a university through a student association of it. Perhaps, if more different strategies for recruiting participants were tried earlier, there might be a chance to recruit participants from different universities, and the generalizability of findings of this study could be further enhanced. Moreover, if participants could be recruited from different universities, there would be a greater pool of potential participants, which might make it possible to control the influence of more possible extraneous variables, such as the type of social work services provided in fieldwork training, by employing additional selection criteria for recruiting participants.

Regarding the assessment of participants' empathy, inviting participants' fieldwork supervisors to conduct relevant assessment on a voluntary basis might be a possible alternative to using the Empathy Quotient. Indeed, this could be used as an extra way to measure the participants' empathy in addition to the use of Empathy Quotient. Depending on the number of fieldwork supervisors who are willing to participate, the results of their assessment might be used as one of the measures of participants' empathy. Moreover, these assessment results could be used to provide information about the measurement validity of Empathy Quotient in Hong Kong, which are definitely useful to the present study.

All in all, besides generating findings regarding the relationship between social work students' creativity and their fieldwork performance, this study also provided a useful experience in conducting a study in this area, pointing out the

possible challenges that researchers need to pay attention to. It is hoped that the experience as well as the findings of this study could contribute to further meaningful research on this subject area, generating more useful knowledge for future development of social work education.

CHAPTER SUMMARY

The main findings of this study regarding the relationships between social work students' competence in different dimensions of creativity and fieldwork performance in problem solving, application of theories and empathy were presented. In a nutshell, relationships were found between social work students' fieldwork performance in problems solving and competences in fluency and originality, between fieldwork performance in application of theories and competence in fluency, and between fieldwork performance in empathy and competence in originality. Among the relationships found, there are linear as well as quadratic relationships and both positive and negative linear relationships were found.

Strengths and limitations of this study have also been discussed. In this study, participants were selected from the same university, and they were all final year students enrolling in the same social work higher diploma programmes. It helped minimize the influence of extraneous variables. The satisfactory results of various tests for underlying assumptions for the multiple regression analyses conducted in this study show that the findings of this study are robust. On the other hand, only 52 voluntary social work students from the same university participated in this study and it may bring limitations to generalizability of the study findings. Moreover, despite the efforts which have been made to minimize the influence of some possible extraneous variables, it is still possible that the study outcomes were influenced by

some unknown factors. Furthermore, results of the multiple regression analyses conducted in this study indicate that correlations or associations exist between some variables. However, these findings can only provide support to the causal relationships suggested but cannot be taken as proof of them. Also, study findings regarding the validity and reliability of TTCT and Empathy Quotient in Hong Kong are not available and the norms of these two tests have yet to be established in Hong Kong. These further add to the limitations of this study.

A significant contribution that this study has made to the theoretical knowledge is that specific information about how each dimension of social work students' creativity is related to their fieldwork performance in certain areas has been produced. The findings of this study show the possible interactions between different variables involved in the relationship between social work students' creativity and their fieldwork performance and set a foundation for further studies in this area.

Based on the findings of this study, implications for social work education have been discussed. Tentative suggestions regarding possible ways to improve fieldwork performance of social work students through offering appropriate creativity training and other relevant training have been discussed. Moreover, some possible options of helping students avoid problems associated with high originality ability and facilitate their learning during social work training were explored.

It is recommended that the present study should be replicated on social work students from other tertiary institutions to verify the findings of this study. Longitudinal studies are also recommended to collect information about the relationships between social work practitioners' creativity and their performance in social work practice, and the changes of these relationships over time. Finally, studies of the effects of creativity training programmes on social work students are also recommended to further investigate the relationships suggested by the present

study. It is believed that findings of all these further studies recommended will provide valuable information for further enhancement of the basic and in-service training for social work practitioners.

The systems theory provided a conceptual framework for the present study, and was also found useful in accounting for the unexpected results of it, showing that more subsystems than expected are probably involved in the specific relationships between creativity and fieldwork performance. Given the strengths and limitations of this study, it is hoped that the findings of it could contribute to further studies in this area and be useful to future development of social work education.

Appendix A: Torrance Tests of Creative Thinking Figural Form A

The contents of Appendix A have been removed from the electronic version of this thesis, since they contain third party copyright materials.

Appendix B: Empathy Quotient (Chinese Version)

The contents of Appendix B have been removed from the electronic version of this thesis, since they contain third party copyright materials.

Appendix C: Examples of Torrance Tests of Creative Thinking

Figural Forms with Low and High Creativity Scores

In order to give some general ideas about the assessment of the five dimensions of creativity by Torrance Tests of Creative Thinking (TTCT), two copies of TTCT Figural Form A completed by two participants, Participant A and Participant B, are shown in Annex 1 and Annex 2 of this appendix. Participant B scored higher than Participant A in all five dimensions of creativity, namely fluency, originality, elaboration, resistance to premature closure and abstractness of titles. There are three activities in the TTCT Figural Form A, which are 1) Picture Construction Activity, 2) Picture Completion Activity and 3) Lines Activity. In these three activities, the participants were required to draw pictures and give titles, either Chinese or English, to their drawings. In this study, the scoring of TTCT Figural Form A was mainly based on the scoring guide developed by Torrance et al (1992), with some adjustments made to the scoring method for “originality” as discussed in Chapter 3. Details of the scoring methods specified in the scoring guide will not be reproduced in this appendix. Instead, a brief discussion on the differences between the two participants in the five dimensions of creativity as shown in Annex 1 and Annex 2 will be presented to give some general ideas about how the five dimensions of creativity are assessed by TTCT.

FLUENCY

The scoring of fluency is based on the number of ideas a person can express through their responses. Participant A completed five incomplete figures in Activity 2 and made seven pictures out of the pairs of straight lines given in Activity 3. On

the other hand, Participants B completed all ten incomplete figures in Activity 2 and made nineteen pictures out of the pairs of straight lines given in Activity 3. Obviously, Participants B generated more drawings in these two activities and hence scored higher in fluency.

ORIGINALITY

The scoring of originality is based on the statistical infrequency and unusualness of the responses. Compared with Participants A, Participant B made more drawings that were quite unique and no other participants made. For example in Activity 2, out of the incomplete figures, Participant B drew a balance (No. 1), an old man (No. 6), a pet (No. 8), and in Activity 3, Participant B made use of the pairs of lines given to draw a sword and a shield (No. 9), a Japanese temple (No. 16) and a finish line of a race (No. 6). These results show that Participant B generated more original ideas than Participant A and hence was given a higher originality score.

ELABORATION

In scoring elaboration, the details given to each response are assessed. The more details given to the responses, the higher the elaboration score awarded. Participant A drew a picture titled “A Clown’s Face” with only some simple features in Activity 1, while Participant B drew a picture titled “Social Work Students’ Concerns” with much more details, elaborating different relevant aspects. Similarly, Participant A’s drawings in Activity 2 and Activity 3 were presented with less details than Participant B’s drawings in those two activities in general. As a result, the elaboration score of Participant B is higher than that of Participant A.

RESISTANCE TO PREMATURE CLOSURE

People score low in resistance to premature closure are those who tend to close the incomplete figures with simple straight or curved lines in responding to Activity 2. As shown in Annex 1, Participant A closed four incomplete figures with simple lines among the five pictures drawn in Activity 2. Among the ten pictures drawn by Participant B in Activity 2, many of the incomplete figures were not closed with simple lines. Hence, Participant B scored higher than Participant A in resistance to premature closure.

ABSTRACTNESS OF TITLES

The titles produced for the responses in Activity 1 and Activity 2 are assessed in scoring abstractness of titles. Those who produce concrete titles are given lower scores while those produce abstract titles are given higher scores. For example, in Activity 1, the title produced by Participant A, “A Clown’s Face”, is at a concrete level, while the title produced by Participant B, “Social Work Students’ Concerns”, which goes beyond what is seen, is at an abstract level. Also, in Activity 2, many titles given by Participant B, such as “My view of balance” (No. 1), “Fly to the sky” (No. 2) and “My ladder to success” (No. 3), are at abstract level, while all the titles produced by Participant A, “Fruit Punch” (No. 1), “Kimono” (No. 2), “Percian Cat Couple” (No. 3), “Gingerbread Man” (No. 8) and “Angel” (No. 10), are at a concrete level. As a result, Participant B scored higher in abstractness of titles than Participant A.

Annex 1: TTCT Figural Form A of Participant A

The contents of Annex 1 have been removed from the electronic version of this thesis, since they contain third party copyright materials.

Annex 2: TTCT Figural Form A of Participant B

The contents of Annex 2 have been removed from the electronic version of this thesis, since they contain third party copyright materials.

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ADDENDUM

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