

The Effect of Problem-Based Learning on Nursing Students' Perceptions of Empowerment

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ABSTRACT

This study tested Kanter's structural empowerment theory within a university nursing student population. Differences in perceptions of empowerment among nursing students enrolled in either a problem-based learning (PBL) or a conventional lecture learning (CLL) program were examined, as well as the relationship between perceptions of structural empowerment in the learning environment and feelings of psychological empowerment.

Participants completed measures of structural and psychological empowerment adapted to educational settings, as well as measures related to exposure to various learning strategies in their programs and clinical problem-solving abilities. Students in the PBL program ($n = 41$) had significantly higher perceptions of structural and psychological empowerment than students in the CLL program ($n = 67$). Regardless of academic program, structural empowerment was strongly positively related to psychological empowerment. The results of this study are the first to support the applicability of Kanter's theory to nursing education settings.

Nurse educators are challenged to prepare competent graduates for employment in a constantly changing health care system. In part, the chal-

lenge is to equip graduates to be effective in work environments where patient acuity levels are rising, resources are in short supply, workloads have increased, the quality of nursing care is declining, and new technology is continuously being introduced (Bowen, Lyons, & Young, 2000; Dussault et al., 2001). These conditions underscore the importance of preparing graduates to be confident change agents, involved in creating healthier systems of care.

However, nurses will be able to create change only when they are empowered to do so within their work environments (Havens & Mills, 1992). Similarly, to prepare nurses for roles in which they may successfully exercise the power to create change, they need to first experience the process of empowerment during their education (Clay, 1992; Hawks, 1992; Roberts & Chandler, 1996). Thus, nurse educators must create learning environments with structures that empower students to effectively develop autonomous professional practice skills and strategies for influencing change in a variety of practice settings.

In her structural theory of workplace empowerment, Kanter (1993) maintained that work behaviors and attitudes are determined by the amount of power to which individuals have access within their work settings. Those in positions to access structures of support, information, resources, and opportunities feel a greater sense of empowerment, and consequently, are enabled to work productively. Kanter's theory has potential applications to nursing educational settings, particularly considering recent education initiatives mandating that curricula be transformed in ways that prepare graduates for continuously evolving nursing roles (Canadian Association of Schools of Nursing, 2003; Canadian Nursing Advisory Committee, 2002; Romanow, 2002).

The curriculum revolution in nursing education calls for a shift from conventional learning methods (e.g., didactic lectures) toward approaches that empower both students and teachers (Middlemiss & Van Neste-Kenny, 1994), one of which is problem-based learning (PBL). In PBL, student learning is organized around small group and self-directed work, which is intended to empower stu-

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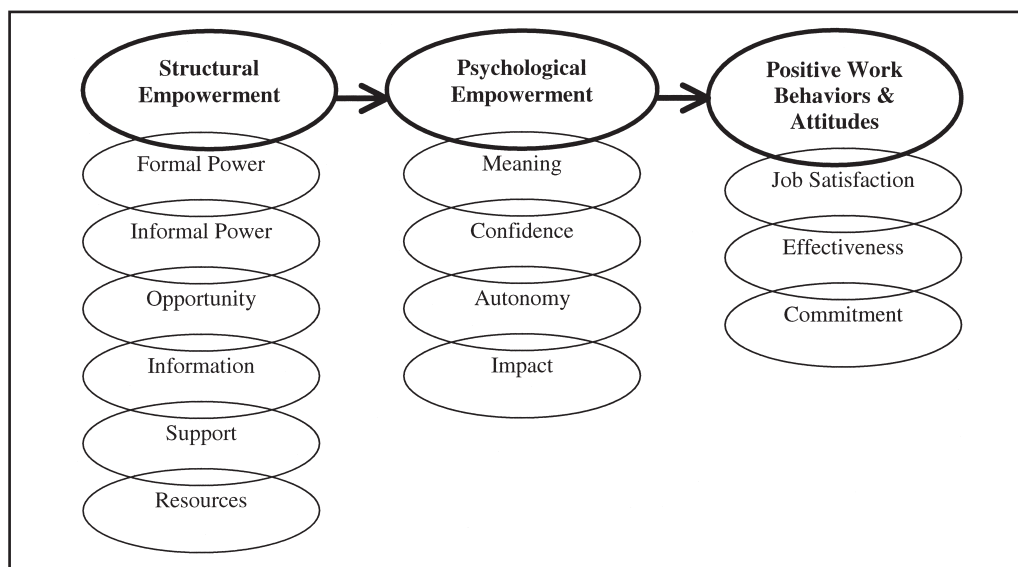


Figure. Tenets of Kanter's (1993) structural empowerment theory.

dents to develop the critical thinking and reflective practice skills needed by autonomous professionals (Barrows & Tamblyn, 1980; Biley & Smith, 1998; Rideout & Carpio, 2001). This pedagogical approach is consistent with Kanter's (1993) description of empowering organizational environments. Thus, Kanter's (1993) theory may be a useful educational research framework for evaluating the empowering potential of such educational approaches, thereby affording greater insight into the structural determinants of student empowerment in nursing education environments.

Although there is a consensus that empowerment should be fostered in nursing educational programs, limited research has been conducted in this area. In addition, while advocates of PBL suggest the approach creates an empowering learning environment for students (Biley & Smith, 1998), little evidence has supported this claim. The current study used Kanter's theory as a basis of understanding how a PBL approach differs from a lecture-based learning approach in fostering student empowerment. Thus, the purpose of this study was to test Kanter's theory of structural empowerment in nursing education by comparing differences in students' perceptions of structural and psychological empowerment in a PBL and a conventional lecture learning (CLL) program.

THEORETICAL FRAMEWORK

Kanter (1977) contended that power is "the ability to get things done, to mobilize resources, and to get and use whatever it is that a person needs for the goals he or she is attempting to meet" (p. 166). In contrast to common conceptions of power as control over others, Kanter's notion of power resembles that of mastery or autonomy over one's own actions. According to Kanter, power is derived from access to formal and informal systems in an organization (**Figure**).

Work roles that allow discretion for decision making, have high visibility, and are relevant to organizational purposes provide access to formal power (Kanter, 1993). Informal power derives from long-term and stable connections with sponsors, peers, and subordinates, who provide approval, support, or information, so individuals may meet goals within collaborative work environments that promote success. Kanter (1993) asserted that people with high degrees of formal and informal power in their organizations have increased access to

the workplace empowerment structures of opportunity, resources, information, and support. Access to these empowerment structures shape work attitudes or behaviors and, ultimately, work effectiveness (**Figure**).

The structure of opportunity refers to individuals' capacity for upward mobility within an organization, as well as their potential for knowledge and skill development. Having access to resources for accomplishing organizational goals (e.g., materials, money, rewards) is another important source of power. The information structure refers to the technical knowledge or expertise required to function effectively in one's position, as well as informal information about ongoing activities within the larger organization. Finally, access to support involves the ability to make decisions with discretion within job parameters, as well as receive the encouragement of one's peers and other influential organizational figures for one's work activities and performance. Employees who have access to empowering work structures are enabled to work productively, are more likely to motivate and empower others to work effectively, and thus, are better able to achieve organizational goals (Kanter & Brown, 1982).

Kanter's (1993) theory was recently expanded to include psychological empowerment as both an outcome of structural empowerment and as an intervening variable between empowerment and effective work behaviors (Kluska, Laschinger & Kerr, 2004; Laschinger, Finegan, Shamian, & Wilk, 2001). According to Spreitzer (1995a), psychological empowerment, defined as an intrapersonal process by which individuals gain control or power over their lives, consists of four dimensions:

- The personal meaning individuals find in their work.
- The confidence they have in doing their work skillfully.
- The self-determination they have in initiating and regulating their work behaviors.

- The effect they believe they have within their work organization.

Individuals who respond positively to empowering work conditions with these four cognitive dimensions feel psychologically empowered to do their work more effectively (Spreitzer, 1995a).

Research on Kanter's Theory in Nursing

Numerous nursing studies have supported Kanter's (1993) theory in work settings, linking structural empowerment to autonomy (Laschinger & Havens, 1996; Sabiston & Laschinger, 1995; Tuer-Hodes, 2002), self-efficacy (Avolio, 1998; Laschinger & Shamian, 1994; Williams, 2001), job satisfaction (Manojlovich & Laschinger, 2002; Sarmiento, Laschinger, & Iwasiw, 2004), and work effectiveness (de Vries-Rizzo, 2001; Laschinger & Wong, 1999). Psychological empowerment has been empirically linked to various constructive work behavior outcomes, including job satisfaction (Manojlovich & Laschinger, 2002), innovativeness (Spreitzer, 1995b; Spreitzer, de Janasz, & Quinn, 1999), transformational leadership (Morrison, Jones, & Fuller, 1997), and work effectiveness (Koberg, Boss, Senjem, & Goodman, 1999; Spreitzer, Kizilos, & Nason, 1997).

Empowerment in Nursing Education

Few studies have tested Kanter's theory in nursing education, and only three with nursing students. Avolio (1998) found that students perceived their clinical learning environments to be more empowering when their preceptors facilitated their access to opportunity, information, support, and resources, which led to increased self-efficacy for professional nursing behaviors. In a qualitative study, Sinclair (2000) found that nursing students' descriptions of empowering clinical learning environments reflected Kanter's notion of empowerment. Almost and Anthony (2002) found that psychological empowerment was related to nursing students' self-efficacy for caring and had an important influence on their professional practice behaviors. These studies offer preliminary support for the usefulness of Kanter's (1993) theory in understanding the factors that contribute to learning effectiveness in nursing education settings.

Problem-Based Learning Versus Conventional Lecture Learning and Nursing Student Empowerment

Problem-based learning is characterized by students' working in small groups to increase knowledge by identifying learning objectives, engaging in self-directed work, and participating in discussions (Barrows & Tamblyn, 1980). On the other hand, the conventional lecture approach is characterized by teachers' verbally transmitting information directly to large groups of learners (Fitzgerald, 1997). Although studies comparing PBL and more traditional approaches have been conducted, only one was found in nursing education literature (Rideout et al., 2002). Findings from this body of research have shown PBL is more effective

than conventional approaches in facilitating greater student motivation, breadth of interest, learning satisfaction, confidence with clinical functioning, knowledge acquisition, use of a variety of learning resources, and self-directed work (Colliver, 2000; Enarson & Cariaga-Lo, 2001; Finch, 1999; Hmelo, 1998; Kaufmann & Mann, 1999; Norman & Schmidt, 2000; Rideout et al., 2002; Willis et al., 2002). From the perspective of Kanter's structural empowerment theory, these findings suggest PBL is a more empowering approach than conventional lecture.

According to Kanter's (1993) theory, the small group organization and self-directed learning used in the PBL approach would enhance individual students' formal power in the group. First, each student's role is visible and relevant because the collective group's learning is dependent on each student completing his or her own work. In addition, students are expected to autonomously identify and address their own learning needs, which allow them to decide what they need to learn and the means by which they will achieve that learning (Barrows & Tamblyn, 1980). The PBL approach also encourages the development of informal power, as students form collegial alliances with their peers and teachers to accomplish the group's learning objectives (Rideout & Carpio, 2001). Connections outside the small group are also made as students seek information from external resources to facilitate the group's knowledge development. Theoretically, high levels of formal and informal power result in greater access to opportunity, information, support, and resources for learning (Kanter, 1993).

By contrast, the didactic approach of conventional lectures can limit students' formal and informal power. With knowledge development usually organized around a particular subject of interest, the lecture learning experience is teacher centered because they determine the lecture content (Fitzgerald, 1997). Consequently, student discretion and flexibility for learning is limited (Cunningham & Cordeiro, 2003). The passive role of students in this learning environment further decreases the visibility of their participation in the knowledge generation process, thereby decreasing their formal power within the classroom. Finally, the large group structure of lectures minimizes opportunities for students to interact with the teacher and their peers, which further compromises their informal power.

Arguably, PBL environments provide students with greater access to information, support, resources, flexible approaches to learning, collaborative learning activities, and opportunities for self-development, and greater access to these conditions in the learning environment results in higher levels of structural empowerment. Theoretically, structurally empowering learning environments lead to feelings of psychological empowerment (i.e., greater meaning, autonomy, confidence, and ability to affect personal learning). Therefore, it is reasonable to expect that students in PBL environments are more likely to experience higher levels of psychological empowerment than those in conventional lecture learning environments.

TABLE 1
Observed Means (*SD*) and Cronbach's Alpha Reliability Estimates of Major Study Variables

| Variable | PBL Program | | CLL Program | |
|---|--------------------|-------|--------------------|-------|
| | Mean (<i>SD</i>) | Alpha | Mean (<i>SD</i>) | Alpha |
| Structural Empowerment* | 22.80 (2.97) | 0.90 | 18.49 (2.92) | 0.91 |
| Opportunity | 4.14 (0.50) | 0.76 | 3.12 (0.61) | 0.75 |
| Information | 3.99 (0.51) | 0.70 | 3.33 (0.56) | 0.73 |
| Support | 4.14 (0.49) | 0.74 | 3.22 (0.51) | 0.68 |
| Resources | 3.72 (0.52) | 0.60 | 3.43 (0.60) | 0.76 |
| Formal Power | 3.68 (0.66) | 0.44 | 2.65 (0.78) | 0.75 |
| Informal Power | 3.52 (0.76) | 0.78 | 2.84 (0.62) | 0.55 |
| Psychological Empowerment† | 4.23 (0.48) | 0.87 | 3.82 (0.59) | 0.86 |
| Meaning | 4.45 (0.59) | 0.79 | 4.30 (0.66) | 0.79 |
| Confidence | 4.37 (0.54) | 0.76 | 4.15 (0.56) | 0.81 |
| Autonomy | 4.22 (0.70) | 0.85 | 3.82 (0.87) | 0.86 |
| Impact | 3.89 (0.69) | 0.84 | 3.03 (1.10) | 0.90 |
| Global Empowerment§ | 4.29 (0.91) | 0.91 | 2.85 (0.74) | 0.80 |
| Exposure to Teaching-Learning Strategies‡ | 4.40 (0.26) | — | 3.22 (0.44) | — |
| Small group learning | 4.90 (0.30) | — | 3.79 (0.86) | — |
| Lecture learning | 3.02 (0.85) | — | 3.94 (0.90) | — |
| Self-directed learning | 4.90 (0.30) | — | 3.60 (0.76) | — |
| Teacher as facilitator | 4.83 (0.44) | — | 3.43 (0.78) | — |
| Clinical Problem-Solving Skills** | 4.38 (0.52) | 0.86 | 3.95 (0.54) | 0.82 |

Note: PBL = problem-based learning; CLL = conventional lecture learning.

* Measured by the Conditions for Learning Effectiveness Questionnaire. Score range (total scale) = 6 to 30. Score range (subscales) = 1 to 5.

† Measured by the Psychological Empowerment Scale. Score range = 1 to 5.

§ Measured by a 2-item global empowerment measure. Score range = 1 to 5.

‡ Measured by the Teaching-Learning Strategies Questionnaire. Score range = 1 to 5.

** Measured by the Clinical Problem-Solving Scale. Score range = 1 to 5.

RESEARCH HYPOTHESES

This study tested two hypotheses:

- Nursing students enrolled in a PBL program have higher perceptions of structural and psychological empowerment than those in a CLL program, controlling for exposure to various learning activities and student problem-solving skills.
- Nursing students with high levels of structural empowerment in their learning environment will have high levels of psychological empowerment.

METHOD

Design and Sample

We used a descriptive correlational survey design to test the study hypotheses. Data were collected from full-time nursing students enrolled in the final year of a basic baccalaureate nursing program at two Ontario universities—one based on PBL principles, the other based on traditional learn-

ing approaches. We attempted to survey all eligible nursing students from both universities to allow for the possibility of a low response rate, characteristically found with research with students (Krathwohl, 1997). Of the 83 nursing students enrolled in the PBL program, 41 returned usable questionnaires (49.4%); of the 70 students enrolled in the CLL program, 67 returned usable questionnaires (95.7%).

Participants from both programs were demographically similar. They were primarily women (PBL = 92.7%, CLL = 89.6%), age 22 to 23 (PBL mean = 22.46, *SD* = 2.58; CLL mean = 22.95, *SD* = 2.08), had entered their programs after completing high school (PBL = 90.2%, CLL = 86.6%), and had no prior nursing-related work experience (PBL = 68.3%, CLL = 74.6%).

Instruments

Four instruments were used to measure the primary study variables. The alpha reliability coefficients for these measures are reported in **Table 1**.

Conditions for Learning Effectiveness Questionnaire. The Conditions for Learning Effectiveness Questionnaire (CLEQ), a modification of the Conditions of Work Effectiveness Questionnaire (Laschinger et al., 2001), was developed to assess students' perceptions of structural empowerment in this study, based on the tenets of Kanter's (1993) theory and Sinclair's (2000) qualitative study of nursing students' empowerment. Items were generated to tap the six components of Kanter's conception of empowerment: formal and informal power, access to information, support, and resources, and opportunity to learn and develop. Separate exploratory factor analyses were conducted for items related to each of the six subscales. Items were retained that loaded meaningfully on each empowerment dimension (factor loadings $>.40$). The final version of the CLEQ included six subscales:

- Access to support (7 items).
- Opportunity to learn and develop (6 items).
- Access to information (6 items)
- Access to resources (5 items)
- Informal power (4 items).
- Formal power (2 items).

Each item is rated on a 5-point Likert scale, and an overall measure of structural empowerment is obtained by summing the six mean subscale scores. The total CLEQ had excellent internal consistency reliability (**Table 1**).

Psychological Empowerment Scale. Students' perceptions of psychological empowerment were measured by an adaptation of the Psychological Empowerment Scale (PES) (Spreitzer, 1995b). This 12-item questionnaire consists of four subscales that measure aspects of psychological empowerment: meaning, competence, self-determination, and impact (3 items each). Convergent and discriminant validity of the four components as an overall measure of psychological empowerment have been verified by two separate confirmatory factor analyses of the proposed factor structure (Laschinger et al., 2001; Spreitzer, 1995b). Cronbach's alpha reliability for the PES has ranged from 0.72 to 0.89 (Koberg et al., 1999; Laschinger et al., 2001; Spreitzer, 1995b), similar to those found in this study (**Table 1**).

As a validation index for the PES and CLEQ empowerment measures, a 2-item measure of global empowerment in the workplace was included. The Cronbach's alpha reliability coefficient was 0.91 in this study.

Teaching-Learning Strategies Questionnaire and Clinical Problem-Solving Scale. Two additional researcher-developed tools derived from the PBL literature, used as covariates in the analysis, measured characteristics of the learning environment that could influence the study results. The Teaching-Learning Strategies Questionnaire (TLSQ) measured students' exposure to both PBL and conventional learning approaches in their programs. On a 5-point Likert scale, students rated the frequency of the following elements in their programs: small group learning; self-directed work; the teacher's acting as a facilitator, as opposed to an information giver; and lecture learning. The Clinical Problem-Solving Scale (CPSS) contains 7 items

that ask students to rate, on a 5-point Likert scale, their ability to solve problems that arise in a learning situation. Items are summed and averaged to create a total CPSS score. Cronbach's alpha reliability coefficients for the TLSQ and CPSS were 0.73 and 0.86, respectively.

Data Collection

After obtaining ethical approval from both universities, all eligible nursing students were invited to participate by taking 15 minutes to complete a questionnaire. In both programs, coded questionnaire packages containing a letter of information, the questionnaires, and a stamped, researcher-addressed return envelope were distributed during class time. Students completed the questionnaire either at the end of the class or at home. Questionnaire packages were mailed to students who were absent from the class.

The Total Design Method (Dillman, 1978) for increasing mail survey response rates was used, such that reminder letters were mailed to nonrespondents after 2 weeks. Four weeks after the initial mailing, a second reminder letter and replacement questionnaire package were mailed to those who had yet responded. In addition, students from the PBL program were recruited at a nursing job fair held at their university.

Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 10.1. Separate analyses of covariance (ANCOVA) were performed to compare student groups on perceptions of structural and psychological empowerment, after controlling for the effects of their exposure to various learning approaches in their program and their clinical problem-solving abilities.

RESULTS

Descriptive Results

The means and standard deviations for the major study variables by students' program type are displayed in **Table 1**. Generally, students in the PBL program perceived their learning environment to be structurally empowering at a moderately high level (mean = 22.80, $SD = 2.97$), on a scale ranging from 6 to 30, which was significantly higher than students in the CLL program (mean = 18.49, $SD = 2.92$) ($t = 7.41$, $p = 0.001$). Students in the PBL program were also significantly more psychologically empowered (mean = 4.23, $SD = 0.48$) than their counterparts in the CLL program (mean = 3.82, $SD = 0.50$) ($t = 3.74$, $p = .001$). Specifically, students in the PBL program believed their learning environment allowed them greater autonomy for their learning and that they had a greater effect on the learning of others (**Table 1**). Problem-based learning students in this study were more empowered than students from a traditional university program in Almost and Anthony's (2002) study as well. These group empowerment differences were corroborated by significant differences on

TABLE 2
Adjusted Means and Standard Errors (SE) for Structural and Psychological Empowerment

| Outcome Variable | Structural Empowerment | | Psychological Empowerment | |
|---------------------------------|------------------------|--------------|---------------------------|-------------|
| | PBL | CLL | PBL | CLL |
| | Mean (SE) | Mean (SE) | Mean (SE) | Mean (SE) |
| Adjusted for: | | | | |
| Small group learning | 21.73 (0.50) | 19.15 (0.37) | 4.44 (0.22) | 3.86 (0.08) |
| Self-directed work | 23.04 (0.49) | 18.35 (0.38) | 3.90 (0.24) | 3.90 (0.08) |
| Teacher as facilitator | 21.98 (0.58) | 18.99 (0.42) | 4.23 (0.48) | 3.82 (0.58) |
| Lecture learning | 21.38 (0.55) | 19.36 (0.40) | 4.20 (0.10) | 3.82 (0.07) |
| Clinical problem-solving skills | 22.66 (0.48) | 18.58 (0.37) | 4.13 (0.09) | 3.85 (0.07) |

Note: PBL = problem-based learning; CLL = conventional lecture learning.

TABLE 3
Intercorrelations Among Structural and Psychological Empowerment by Program

| Structural Empowerment Factors | Psychological Empowerment Factors | | | | |
|---------------------------------------|-----------------------------------|---------|------------|----------|--------|
| | Total | Meaning | Confidence | Autonomy | Impact |
| Problem-Based Learning Program | | | | | |
| Total | 0.58** | 0.60** | 0.16 | 0.50** | 0.45** |
| Opportunity | 0.53** | 0.56** | 0.08 | 0.36* | 0.55** |
| Information | 0.45** | 0.40** | 0.30* | 0.36* | 0.29* |
| Support | 0.59** | 0.56** | 0.18 | 0.41** | 0.58** |
| Resources | 0.45** | 0.39** | 0.27* | 0.42** | 0.27* |
| Formal Power | 0.48** | 0.37** | 0.12 | 0.48** | 0.44** |
| Informal Power | 0.23 | 0.24 | -0.08 | 0.23 | 0.26 |
| Conventional Lecture Learning Program | | | | | |
| Total | 0.40** | 0.28* | 0.17 | 0.46** | 0.25* |
| Opportunity | 0.36** | 0.30** | 0.17 | 0.32** | 0.26* |
| Information | 0.25* | 0.20 | 0.17 | 0.23* | 0.16 |
| Support | 0.27* | 0.20 | -0.01 | 0.28* | 0.25* |
| Resources | 0.45** | 0.35** | 0.21* | 0.49** | 0.26* |
| Formal Power | 0.33** | 0.25* | 0.04 | 0.37** | 0.24* |
| Informal Power | 0.33** | 0.22* | 0.19 | 0.33** | 0.21* |

* $p < 0.05$ (one tailed).

** $p < 0.01$ (one tailed).

global empowerment scores (PBL mean = 4.29, $SD = 2.85$; CLL mean = 2.85, $SD = 0.74$).

Students in the PBL program reported significantly more exposure to small group learning, self-directed work, interactions with their teacher as a facilitator rather than an information provider, and less exposure to lecture

learning than students in the CLL program. Given the nature of the two programs, this is not surprising. However, it should be noted that students in the CLL program reported being exposed to all of the learning activities associated with PBL, although to a lesser extent than students in the PBL program. Students in the PBL program

also perceived themselves as having significantly greater clinical problem-solving abilities than students in the CLL program (**Table 1**).

Tests of Hypotheses

After controlling for exposure to each of four types of learning strategies, students in the PBL program had significantly higher perceptions of structural empowerment in their learning environments than students in the CLL program (**Table 2**). Program type also affected structural empowerment, after controlling for students' self-rated clinical problem-solving skills [$F(1,105) = 41.92, p = 0.001$, effect size = 0.33]. Significant group differences were found for psychological empowerment as well, although only after controlling for students' perceived degree of exposure to their teacher as facilitator rather than information provider (**Table 2**). Thus, partial support for the first hypothesis was established.

As predicted in the second hypothesis, nursing students who reported high levels of structural empowerment in their learning environments also reported high levels of psychological empowerment (PBL program: $r = 0.58, p = 0.001$; CLL program: $r = 0.40, p = 0.001$).

A further analysis was conducted to examine intercorrelations among the components of structural and psychological empowerment (**Table 3**). Among students in the PBL program, all structural empowerment subscales were significantly related to overall psychological empowerment, except for informal power. Access to support was most strongly related to psychological empowerment ($r = 0.59, p = 0.001$), suggesting that greater encouragement from others for effective learning was associated with greater psychological empowerment. Similar relationships were found among students in the CLL program, with resources having the strongest relationship ($r = 0.45, p = 0.001$). In addition, students with greater access to time and human resources for learning experienced greater psychological empowerment.

Among students in both groups, overall perceptions of structural empowerment were significantly related to all dimensions of psychological empowerment subscales, except confidence (**Table 3**), which is consistent with previous studies of staff nurses (Cline, 2001; Laschinger et al., 2001). Among students in the PBL program, structural empowerment was most strongly related to their finding more meaning in their learning ($r = 0.60, p = 0.001$). Among students in the CLL group, structural empowerment was most strongly related to their autonomy ($r = 0.46, p = 0.001$), which suggests the importance of empowerment to self-directed learning.

Few demographic variables were significantly related to the major variables in this study. Students with greater nursing-related work experience prior to entering their programs experienced greater access to support in their learning environments ($r = 0.54, p = 0.01$). It is possible that these students may have mobilized informal alliances, resources, or information previously gained outside of their learning environment as additional sources of support.

DISCUSSION

The results of this study support propositions from Kanter's (1993) theory within the nursing education environment. Students in the PBL program experienced significantly greater structural empowerment within their learning environment than did students in the CLL program. The pattern of results found in this study support the argument that PBL creates empowering conditions for student learning through greater access to opportunity, information, support, and resources. These findings corroborate those of Sinclair's (2000) qualitative study, in which students described effective learning environments in terms of the structural empowerment elements proposed by Kanter (1993).

According to Kanter's theory, higher levels of empowerment among students in the PBL program may be attributed to greater involvement with their own and their peers' learning. Their opportunity to develop stronger interpersonal networks (informal power) with faculty and peers within the PBL environment may also contribute to their empowerment. The positive effects of these networks on student motivation and learning outcomes have been shown in previous PBL research (Rideout et al., 2002; White, Amos, & Kouzekanani, 1999; Willis et al., 2002). In addition, the greater perception of access to opportunities, support, information, and resources for learning among students in the PBL program is a theoretically logical outcome of greater formal and informal power. This is also consistent with prior studies of nursing and medical students, which showed that PBL students believed the approach increased their proficiency at seeking, evaluating the effectiveness of, and appropriating a variety of resources and information for their learning (Amos & White, 1998; Blumberg & Michael, 1992; Duke, Forbes, Hunter, & Prosser, 1998; Lunyk-Child et al., 2001).

These results were further substantiated by significant group differences regarding student exposure to various learning approaches and self-ratings of clinical problem-solving ability. Students in the PBL program reported significantly greater exposure to small group and self-directed learning, their teacher acting as facilitator rather than information provider, and less exposure to lecture learning, compared to students in the CLL program. Students in the PBL program also perceived themselves to have greater clinical problem-solving abilities than their counterparts in the CLL program. Although both groups reported exposure to all types of learning approaches, when the effects of these variables were held constant, the perceptions of structural empowerment among students in the PBL program were significantly higher, suggesting an overall program effect. Perhaps the overall educational climate differed, based on the predominating philosophy of learning. The results of this study suggest a PBL approach may be more empowering than a conventional lecture approach.

Regardless of program type, students' structural empowerment was positively related to perceptions of psy-

TABLE 4

Teaching Strategies to Create Empowering Learning Environments**Strategies to Increase Students' Formal and Informal Power**

- Instill a shared governance approach to education with students.
- Encourage students to set goals and agendas for class sessions.
- Encourage students to decide educational content to explore in class.
- Facilitate the educational use of small-group projects or assignments.
- Encourage students to facilitate the learning of their peers and nursing faculty.

Strategies to Increase Students' Access to Opportunity

- Encourage students to be self-directed and autonomous in their learning.
- Encourage students to conduct self-assessments of their learning needs.
- Help students develop their own individualized learning plans.
- Explore with students creative learning opportunities, such as attending nursing conferences, conducting an educational inservice, or developing an educational pamphlet.

Strategies to Increase Students' Access to Resources

- Allow adequate class time for students to accomplish their learning objectives and to share their knowledge development with their peers.
- Be available to help students with their learning needs.
- Direct students to use other resources, such as the library, nursing experts, allied health care professionals, professional associations, and community agencies.

Strategies to Increase Students' Access to Information

- Share with students your teaching and learning values.
- Discuss with students your expectations of them.
- Offer students your nursing expertise and knowledge.
- Provide students with verbal and written feedback about their learning progress and performance.
- Encourage students to provide each other with verbal and written feedback about their learning progress.
- Challenge students to critique the effectiveness of their learning resources.

Strategies to Increase Students' Access to Support

- Foster an open-door philosophy.
- Take time to listen to students' learning needs and ideas.
- Recognize students' learning skills and accomplishments.
- Encourage students to assume roles and engage in learning activities that showcase their strengths.
- Encourage students to pursue their individualized learning needs.

chological empowerment, which supports Kanter's (1993) contention that individuals' attitudes and behaviors are influenced by the structure of the environment within which they find themselves. That is, empowering environments promote a stronger sense of meaningfulness in task accomplishment, greater self-confidence, greater personal control over the choice of strategies to accomplish learning goals, and a stronger belief that individuals can affect their personal learning (Kanter, 1993; Spreitzer, 1995a). Although this is the first study to make this empirical link with nursing students, similar links have been found in research with staff nurses (Cline, 2001; Kluska et al., 2004; Lasch-

inger et al., 2001). The results of this study suggest that empowering learning environments that provide students with greater access to information for knowledge synthesis, opportunities for self-development, resources to achieve identified objectives, and support for individualistic professional growth have a personal effect on students that enhances successful learning. In other words, structural empowerment increases student motivation, confidence, and self-direction for learning.

LIMITATIONS

The results of this study must be interpreted with caution, and generalization is limited because the sample included students from only two nursing programs. Therefore, the study should be replicated using a sample of students from several nursing programs. Social desirability bias to self-report questionnaires is also a potential problem.

In addition, it was difficult to control for the effect of students' self-selection into their respective nursing programs. Were the study findings a result of participants' educational experiences throughout the course of their nursing programs, or of their ability to attend their program of choice? Students in both programs preferred PBL approaches to strict didactic approaches. However, we do not know whether the students actually were enrolled in their program of choice. Many factors other than learning approach preferences determine students' choice of program. For example students in Ontario list their top three preferred programs but may not be admitted, depending on available seats.

A longitudinal investigation, tracking changes in students' empowerment from both programs for the duration of their nursing programs, would provide a better test of the relative effect of these differing approaches to learning

in nursing education. Nevertheless, support for a priori predictions from Kanter's (1993) theory in the nursing education population offset these limitations to a certain extent.

IMPLICATIONS FOR NURSING EDUCATION

Several educational strategies based on Kanter's (1993) theory can be derived from these findings (**Table 4**). Nurse educators can increase students' formal and informal power within their learning environments by implementing a participative or collaborative approach to education with students. This requires inviting students' active participation and decision making in all aspects of the program, including curriculum design, facilitation of classes, and evaluation processes. An educational approach that encourages students to take individual and collective accountability for their learning creates opportunities for them to form networks with each other that foster a sense of collegiality (Cooke & Moyle, 2002). This process enables students to develop effective communication, listening, problem-solving, and collaboration skills that increase their power within and outside of the classroom.

Nurse educators can further facilitate student empowerment by increasing students' ability to access structures of opportunity, resources, information, and support for learning and professional development within the educational environment (Sinclair, 2000). The results of this study suggest that access to these structures within the nursing program increases students' sense of personal empowerment.

Perhaps central to any nursing education effort is the provision of opportunities for students to develop their professional knowledge, while accepting their unique learning needs. Using the PBL approach, educators guide students to be self-directed and autonomous in creating their own learning opportunities (Crooks, Lunyk-Child, Patterson, & LeGris, 2001). Nurse educators can help students complete self-assessment exercises to determine their individualized learning needs and then help identify the appropriate learning behaviors, processes, and resources required to meet their needs (**Table 4**). In this study, students in the PBL program felt they had a great deal of discretion and flexibility (formal power). It is reasonable to expect that this would empower them to be motivated and invest in their professional growth.

Nurse educators can also provide students with access to appropriate resources within the learning environment to allow them to actively engage in their own learning (**Table 4**). This may include allowing students adequate class time to accomplish their learning objectives and to share knowledge with their peers. Educators may also enhance students' information-seeking skills by encouraging them to use resources beyond the classroom, such as the library, other health care experts, professional associations, and community agencies.

Obtaining the necessary information to build knowledge is particularly important to students, especially when that information enables them to achieve success more efficiently (Sinclair, 2000). Students often regard their

instructors as the most important source of information because they evaluate student performance. Knowledge of educators' teaching-learning values, their expectations of students, and their nursing expertise is important for students. Nurse educators can increase students' access to information by developing various communication channels with them (e.g., verbal and written feedback) and encouraging students to develop similar channels among themselves (**Table 4**).

The final structure of empowerment described by Kanter (1993) is support. In this study, students felt more empowered when faculty demonstrated interest in their needs within and beyond the classroom. Nurse educators can demonstrate their support by taking the time to listen to students' learning needs and ideas, and by maintaining an open-door philosophy so students feel comfortable approaching them. Recognizing students' skills and abilities, learning achievements, and professional development are also sources of student support (**Table 4**).

Finally, it is important for students to understand the structural sources of their empowerment. Students who can access the empowerment structures of opportunity, information, resources, and support can better mobilize these structures to further their learning and professional development. This understanding may serve them well in their future clinical work settings.

DIRECTIONS FOR FUTURE RESEARCH

Although this study provides preliminary support for Kanter's (1993) theory in nursing education, replication with a larger sample is necessary to further validate the results. Doing so would specifically yield information important for refining the measurement tools used in this study. In addition, testing the theory in the clinical learning environment would promote understanding of the structural determinants of nursing student empowerment. Ultimately, this would provide further insight into the use of Kanter's theory as an applicable, reliable, and valid model for nursing education research.

CONCLUSION

The results of this study support the applicability of Kanter's (1993) theory of structural empowerment to the nursing education setting, particularly related to the effects of different types of teaching-learning philosophies on students' perceptions of empowering learning environments. Problem-based learning environments appear to promote students' empowerment for learning to a greater extent than do conventional lecture learning environments. The PBL approach may help nurse educators better prepare their students to provide high-quality professional nursing care in a dynamic health care system. The results of this study offer encouraging empirical support for the value of Kanter's theory as a useful framework for guiding educational research on empowerment in nursing education.

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