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Original Article

Measurement of professional identity in Chinese nursing students

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ABSTRACT

Objectives: Chinese nurses continue to display low professional identity. It is becoming an emergent issue in China how to help nurse students develop their positive professional identity. This paper is to develop the Professional Identity Scale for Nursing Students (PISNS).

Methods: Literature review, and interviews with students and experts were adopted to develop initial item. Reliability and validity of the scale were respectively examined by computing internal consistency coefficient alpha and split-half Spearman Brown for equal length, and Exploratory Principle Component Factor Analysis.

Results: Five factors with 17-item were obtained explaining 58.9% of the total variance. Cronbach's alpha, and split-half reliability was 0.83 and 0.84 respectively.

Conclusions: Given its high reliability and validity, PISNS could be used as a measurement tool for educators to evaluate the developing level of professional identity in nursing students and assess the effectiveness of corresponding interventions and strategies.

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1. Introduction

Professional identity is the professional self or self-concept of nursing that represents how nurses or nurse students

perceive the nursing profession [1–3] or the values and beliefs that guide how nurses or nurse students think, act and interact with patients [1]. It is the most important process of professional socialization, which as a significant topic of personal development, is the process of the internalization of

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professional values, norms and ethical requirements into the students behavior and self-concept [4].

Nursing professional identity in China has different meaning and emphasis due to history of nursing higher education, the influence of cultural and economic condition. The first baccalaureate nursing program in China was developed at Peking Union Medical College in 1920 [5]. The higher nursing education program was closed in 1951, keeping only the secondary training program. Nursing education was totally stopped during the Cultural Revolution (1966–1975) [5]. Higher nursing education was reestablished in 1984 [5]. At present, there are secondary diploma, associate degrees, baccalaureate and master's degree, and doctoral programs in Chinese nursing educational system. There are two types of baccalaureate nursing program, 4-year and 5-year curriculum. There were 2.18 million registered nurses by May 2010 [6,7], who were supposed to have secondary diploma or above and to have gotten RN license after they had passed the qualification test for RN. The scale of nursing education expanded fast, the total recruitment was 391,000 in 2007. Among them, 6.68% was for baccalaureate programs, whose number is increasing significantly [8]. By 2010, enrollment of nursing students will increase at the level of baccalaureate degree or above by 20% [9]. It was showed in phenomena observation and literature that Chinese nursing students was confronting crisis of professional identity [10–13], becoming the most significant reason of their future turnover [9–11,13]. It was counted that 1/3 of nurses with baccalaureate degree leave their posts or immigration to developed countries for seeking adequate pay and good working condition in recent 10 years [14], due to their low social and economic status, poor self-achievement in China [9,14], Which was a big loss for Chinese government and strengthen nurse shortage of China [9]. It was showed that early conceptualization of professional identity may contribute to student's future success and the future quality of nursing [13,15]. Therefore, studying professional identity was becoming a significant and emergent issue for nursing educators in China.

Literature review showed that most of articles focused on the analysis of the concept and dimensions of professional identity [1,2,4,16–18]. Some articles emphasized on exploration of its development process [17,19,20]. Self-developed instrument was used to identify the difference in the process of establishing the professional identity between nursing students and nurses [20]. Some studies focused on measurement of related concept such as professional self-concept, professional attitude and professional values [21–23]. Only two studies addressed the measurement of professional identity. One was doctorate dissertation focusing on the professional stage in English database [24], another focused on the state of the professional identity of nurse in Chinese database [25]. No mature instrument was designed for measuring the professional identity of nurse students. Therefore, the purpose of this paper is to develop the Professional Identity Scale for Nursing Students (PISNS) based on the Chinese nursing condition to provide a tool for evaluating the development level of professional socialization in nursing students, which will benefit the educators to help them immediately and efficiently.

2. Material and methods

2.1. The dimensions formation of PISNS

The dimensions formation of PISNS was based on literature review and interview with students, combining the history and current condition of Chinese nursing education and cultural factors. Three themes were formed in accordance to the view of Ohlen. Ohlen theoretically analyzed the concept and frameworks of professional identity following a modification of the hybrid model for concept development combined with empirical data gathered from semi-structured interviews [2]. Three dimensions were found including personal, interpersonal and socio-historical dimension, which were supported by literature and empirical data [2].

2.1.1. Dimension one: professional self-image as the core of professional identity (personal dimension)

How nurses or nurse students perceive nursing profession was regards as a significant source of problems relating to professional identity [1–3]. Self-confidence nurses can clearly evaluate the benefit of professional retention and the risk of turnover, and believe in themselves and their career, which was presumed to develop further personal and professional empowerment [26]. Nurse interview also showed that self-knowledge; trust in one's capacity and feeling were the personal attributes of a nurse with well-developed professional identity [2]. A positive self-image is a reflection of the professional identity, and is regards as a prerequisite for nurse to achieve in work field [2]. Therefore, positive professional self-image is a key of for nurse students to develop their professional identity.

Studies showed that Chinese nurses still suffered from low professional identity, low self-esteem and poor self-image, predominately due to lack of public respect [10,11,27–29] and opportunity of professional development [10,28,29]. Interview with students also showed the same results. Many students hope to continue her education of master degree aiming to quickly move into management or education position instead of clinical work because of above reasons [9,15].

2.1.2. Dimension two: the autonomy of career choice and career persistence (social and historical aspect)

There are some social-historical factors influencing the autonomy of career choice and persistence of nursing students.

The content of autonomy of career choice is different in college students between western and eastern cultural background. Western education pays more attention to foster the ability of autonomy and independence [30]. Students contact society early, think of career planning early and incline to make choice by their own will. But eastern education attaches importance to obedience and modesty. Students have less opportunity to experience in real society due to the over-protection from parents. The decisions to choose nursing as a major are usually made by their parents [30], or influenced by other people [15]. Some students even study nursing as a major due to being transferred from other majors [15]. This situation leaves hints for the future professional persistence

in nurse students. Interview with students showed that the freshmen's early beliefs and concepts about nursing were obscure, and most of them didn't spontaneously want to be a nurse, but they showed more positive attitude and professional identity for being a nurse after they learned more ideal norms and values of the profession. On the contrary, the seniors had more negative opinions about nursing after they experienced clinical reality, which was called reality shock [31].

Professional persistence of senior nurse students, which means they decide to choose nursing as their career after graduation and pursue it all their life, is influenced by the public image of nurses and current condition of nursing career [2]. Social prejudices that making nursing patients seem to be the work of servant are still exist in China, which was deeply rooted in the mind of people including doctors, patients, and their relatives [32]. Nursing work was always ignored and paid less attention to by patients and their relatives and was considered as dependent on doctors, less intelligent than doctors, powerless [15]. Clinical nurses in China are predominantly busy with bundle of tasks in helping physicians implement their treatment regimens [32]. But, following physicians' orders blindly and doing task-oriented job routinely is not qualities connected with professionalism and nurse autonomy [17]. Nurses with low self-esteem had difficulties defending, advocating and getting the work done in the way they desired [18], which prevent their development of professional autonomy and persistence.

In addition, strongly influenced by the medical education model, nurse students take the same basic courses in first 2 year as medical students, and are taught by same medical teachers [15]. There is a shortage of qualified clinical faculties in China. Either the school-based nurse faculties with less clinical experience but higher level degree or staff nurses who usually have secondary diploma or associate degree serve as the clinical instructors for students. No matter medical teachers or school-based nurse faculties or staff nurses have weakness in helping students to develop their professional perceptions. Medical teachers focus on physical issues, and school-based faculties introduce more information of modern role of nursing to students, while staff nurses teach more clinical reality, which result in confusion and dissonances between professional ideal and working reality.

Due to the gap between professional ideal and reality, and the career choice being usually made by parents [31], or being done under the influence of friends or media [15], or being done by the arrangement of university [15], nurse students are lack of proper motivation in pursuing nursing degree, and easily shake their beginning career choice under the influence of public bias and nurse mentors with low-esteem or stressful and complex clinical environment [11,30,33].

2.1.3. Dimension three: exploration behaviors of the balance of expectations and experiences, ideal and reality (interpersonal dimension)

Nurse students or new nurses often find that their working experience dissonant with their professional ideal, and are easy to feel stressful [17]. It was result from three reasons in China. Firstly, public image including doctors and nurses following old nursing education still identify nurses as

medical assistants [32], while only nurses graduated from university identify themselves as nursing care experts [2], due to internalizing the norm of modern nursing. Secondly, theory-practice dissonance exists in the rules and objectives between clinic and education establishment [17]. Thirdly, they struggle with excessive volume, complex and uncertain working environment and find the adjustment experience stressful [17]. But students have no enough preparation for confronting such situation.

However, students play an active, rather than passive, role in the development process of professional socialization [4]. Mastery experience, social modeling from successful and experienced nurses and verbal persuasion from self or others has positive effect on self-efficacy which as a core concept of self-regulation theory can impact goal choice, goal and task persistence, goal revision and goal-striving behaviors [34]. Nurse students can improve their professional identity by exploration a series of self-regulation behaviors [35]. Interpersonal relationships are clearly the most important facet of professional socialization [4]. Positive information from experienced nurses can help nursing students transition into nursing during education [36]. Social activities had effect on their self-confidence and self-esteem [35]. It was showed that peer mentoring have a positive influence on students' personal and professional growth [37]. Team work, a sense of self-esteem, good fellowship, acceptance [17], and self-reflection behaviors [1], promote the development of professionalism and nurse autonomy and narrow the distance between expectations and experiences, ideal and reality.

2.2. Instrument development

2.2.1. Method

Methods of literature review, interview with students, experts review based on Chinese cultural background were adopted to develop Professional Identity Scale for Nursing Students.

2.2.2. The formation of draft instrument

The initial item pool was generated based on literature review and experiences of communication with nursing students and referred to existing instrument. The structure of PISNS was based on Ohlen' theory framework of profession identity [2], and the nursing condition of China. Three open questions were formed corresponding to the framework, including "how do you perceive nursing career?", "Why and how did you choose nursing as major?" and "what did you do related to your development of professional socialization?" Then 30 nurse students were interviewed using three questions above. The following terms were mentioned in answering the first question, social status, less development opportunity, burnout, hard work, turnover and loss of turnover. As for second question, easiness of getting job, and following the opinions of parents, other relatives or teachers were frequent answer. Talking with peer, getting information from nurses, joining volunteer work, anticipating professional activities was repeatedly referred to in replying the third question. We also extracted ideas from Professional Identification Scale for Nurses [25], and Professional Attitude Questionnaire for Nursing Students [11]. A joint pool of 29 items were generated

and modified by research team for presumed appropriateness for nursing students.

Two psychologists and two nursing experts were invited to review the scale with regard to item content, congruence of the rating scale to each item, clarity, readability and format. At the end of this process, three items were dropped, and the wording of three items was modified.

10 nursing students were invited to complete the scale and then asked to comment on scale instructions, item format, clarity of items, level of readability and response options.

Ultimately, 26 item draft instrument was formed with 5-point rating, with 1 = strongly disagree, 2 = disagree, 3 = equally disagree and agree (neutral), 4 = agree, and 5 = strongly agree. The higher the individual score is, the more positive the professional identity is.

2.2.3. Investigation sample

With approval of the university research organization, the research participants were 815 nurse students from two nursing schools of Beijing. Two classes from every grade in two schools were randomly recruited.

2.2.4. Data collection

Data collection was conducted between December 2008 and December 2009. At class meeting occasion, students were firstly informed about the characteristic of study, the participation was voluntary, and nonparticipation didn't influence anything. Then, the students were instructed to complete the draft instrument of PISNS in 20 min.

2.2.5. Data analysis

Reliability and validity, the most common technical qualities in measurement, were assessed. Reliability of the scale was determined by Cronbach's alpha and split-half coefficient. Cronbach's alpha, the most common internal consistency measure, is calculated from the pairwise correlations between items. Split-half coefficient, another index of internal consistency, is calculated by splitting the test in half (odd and even numbered items) and correlating the two parts with adjustment by Spearman Brown formula for the test length. Cronbach's alpha of every subscale was also computed.

Content validity, referring to the extent to which a measure represents all facets of a given social construct, was determined through expert reviews. Construct validity, referring to whether a scale measures or correlates with the theorized psychological construct, was determined through Exploratory Principal Component Factor Analysis and rotation method of Varimax with Kaiser Normalization. Exploratory factor analysis is used to uncover the underlying structure of a relatively large set of variables. Principal component analysis is the most common form of factor analysis. Rotation approach of Varimax, as the most common rotation option, was chosen because the factors were theoretically considered to be independent and was used in surveys to see how groupings of items measure the same concepts. Statistical analysis was performed by SPSS version 13.0.

2.2.6. Ethical consideration

Approval for the study was obtained from nursing school. Informed consent was gathered for the survey. Confidentiality

was ensured as the only identification code used was a number written in the questionnaire in order.

3. Results

All the participants were female. Age ranged from 18 to 23.

3.1. Item analysis

Reversed the score of the reversal item, and counted critical ratio (CR) of every item, and then deleted one item which had no significant difference in CR between the groups of high-score and low-score (high-score group means the top 27% of participants in total score, while low-score group means the bottom 27%). That meant that item couldn't discriminate the response level of different participants.

3.2. Factorial construct validity

A Kaiser–Meyer–Olkin criterion equals to 0.897 and significant chi-square value (.000) of the Bartlett test of sphericity indicated a meaningful factor analysis.

Selection of items was based on two criteria on factor loading recommended by Corsuch (1983) and Nunnally (1978), which are the correlation coefficients between the variables and factors: "① a minimum primary factor loading of .40 for each retained item and ② at least a difference of .15 between the primary loading and any secondary loading for an item" [23]. 17 items were retained (Table 1), after deleting 4 items with double-factor loading, 3 items with difficult explanation by professional knowledge, and 1 item that was the only one item in one factor.

Determining the number of factors is based on the Kaiser rule and variance explained criterion. The Kaiser criterion is to drop all components with eigenvalues under 1.0, which measure the amount of variation in the total sample accounted for by each factor. Variance explained criterion could be the rule of keeping factors to account for as low as 50.0% of the variation.

Principal Component Analysis and rotation method of Varimax with Kaiser Normalization confirmed 17 items loaded on five factors (Fig. 1), which explained 58.9% of the variance with respective eigenvalues of 1.0 and larger. From first factor to fifth factor, they explained respectively 29.2%, 12.0%, 6.9%, 5.5% and 5.3%, and were named respectively "professional self-image", "benefit of retention and risk of turnover", "social comparison and self-reflection", "independence of career choice" and "social modeling". Item communalities, the sum of the squared factor loadings for all factors for a given item, meant the variance in that variable accounted for by all the factors, ranged in value between .48 (item 2) and .69 (item 15) (Table 1).

3.3. Descriptive statistics for five factors

The average mean scores and standard deviation of all items in five factors were respectively 3.28–3.84 and 0.71–0.94. The average percentages of "disagree and strongly disagree", "neutral", "agree and strongly agree" of every item in five

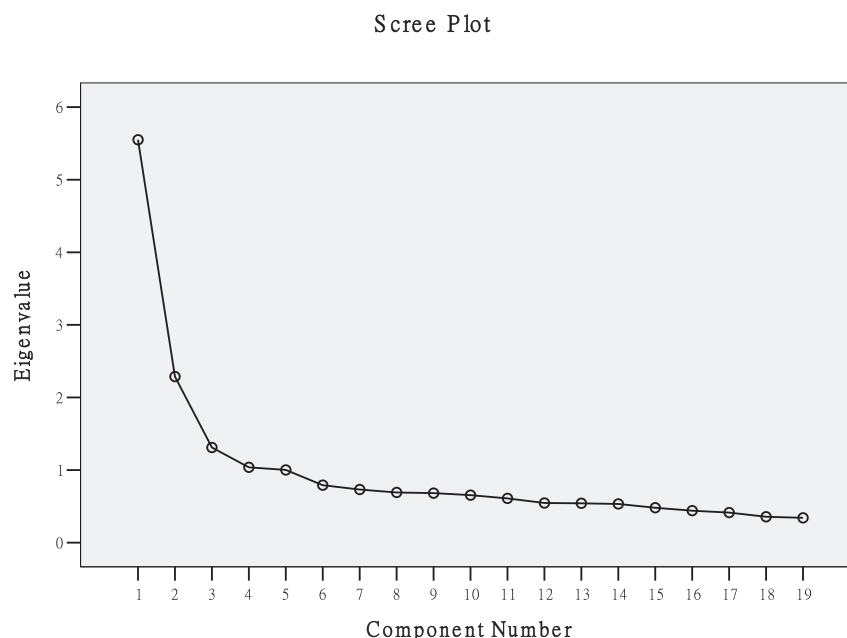


Fig. 1 – The screen plot of scale.

factors were calculated respectively, which were shown in [Table 2](#).

3.4. Reliability

We determined the degree of consistency for the 17 items by computing test–retest reliability, Cronbach’s alpha and split-half reliability. The test–retest reliability, Cronbach’s alpha, and the split-half reliability of 17-item scale was respectively 0.74, 0.83 and 0.84 (Equal-Length Spearman–Brown, $n = 815$). A reflected consequently a high degree of internal consistency among items. Internal consistency of five subscales was computed by Cronbach’s alpha, which was .83, .66, .63, .46, .51 respectively from factor 1 to factor 5.

4. Discussion

Professional self-image factor accounted for almost half (29.2%) of the variance (totally explained 58.9%). This finding confirmed the importance placed on self-image as core concept of professional identity, which was highly consistent with literature [1–3]. Although benefit of retention and risk of turnover was less important as a factor in explaining 12.0% of the variance, it is a critical component of professional identity, and has theoretically tight connection with first factor, as it was described in the part of background in this paper. High self-image nurse students can clearly identify the benefit of retention and the risk of turnover [26]. First and second factors belong to the personal dimension of professional identity.

The third factor named social comparison and self-reflection and the fifth factor named social modeling respectively accounted for 6.9% and 5.3% of the variance. Both factors belong to interpersonal dimension. Nurse students can improve their development of professional identity by

behaviors of social comparison and self-reflection and the effect of social modeling [4,34,35,37].

The fourth factor named independence of career choice accounted for small percentages of the variance (5.5%). However, it is of conceptual relevance to professional identity in Chinese nursing students, which belongs to social-history dimension.

Preliminary findings indicate that the PISNS instrument is a valid and reliable measure with internal consistency and scale integrity. Its validity was established through content validity and construct validity. Content validity was assessed by 4 experts, the result was satisfactory. Construct validity was evaluated by exploratory factor analysis. As above discussion, the five-factor framework of PISNS had high consistency with literature review and Chinese nursing situation. Its reliability was established by Cronbach’s alpha, and the split-half reliability, both indicated that 17 items of this new scale were consistently measure the same construct, which highly supported its internal consistency reliability. Internal consistency of subscale was computed by Cronbach’s alpha ranged from .46 to .83, which showed that items of subscale had mediate or strong correlation.

In descriptive statistics for five factors, the average mean scores of all items in five factors were between the rating of “neutral” and “agree”. Among them, the mean scores in the factors 2 (3.28) and 4 (3.38) were close to the rating of “neutral”. Less than half of them could balance benefit of retention and risk of turnover (42.9%) and choose career independently (48.3%), and a substantial proportion of participants were negative in factor 2 (21.8%) and factor 4 (27.2%), which meant the ability of nurse students in China were weak in balancing “benefit of retention and risk of turnover” and in “independence of career choice”. 55.5% of participants had positive professional self-image, 33.9% of them had no clear idea, and 10.65% had negative attitude. Therefore, it is necessary for

Table 1 – Five-factor pattern matrix with factor loadings and communalities.

Items	Communalities	Factors				
		1	2	3	4	5
6. I have no plan to change my career direction	.629	.716	.015	.053	.153	.299
9. I like my major and am positively preparing for my future work	.667	.706	.151	.243	.270	.122
1. I like to be a nurse	.536	.688	.072	.019	.227	.074
16. Being a nurse makes me happy	.660	.685	.294	.273	.171	.003
11. I am proud of working in the field of nursing	.594	.627	.375	.044	.015	.240
17. I am sure I will success in nursing field	.502	.547	.215	.362	.126	.099
14. Being a nurse can bring my creativity into play	.610	.100	.685	.198	.296	.060
10. Turnover will cause me emotional wounds	.512	.299	.618	.011	.195	.045
8. Being a nurse make good use of my competence and advantage ^a	.560	.437	.583	.024	.137	.105
5. I have already devote too much to nursing career including economic aspect and effort, so I don't want to leave the field of nursing	.536	.289	.498	.091	.346	.278
15. Both one's own ideal and surrounding factors should be considered during the process of career choice.	.694	.250	.243	.749	.105	.018
13. I try to know the condition of other career field so that I can make my professional belief more strong	.622	.006	.115	.739	.123	.219
7. I often explore my professional development by reflecting my interest, personality and values on myself	.586	.012	.212	.654	.330	.065
12. My knowledge about nursing career mainly came from parents, teacher and other relatives ^b	.675	.122	.112	.021	.798	.103
4. I will choose the job I like no matter what other person say	.487	.215	.026	.317	.559	.165
3. I like to communicate with predecessors of nursing field	.628	.264	.046	.206	.074	.713
2. I like to know more professional developing stories of some successful persons in nursing field	.480	.260	.108	.136	.164	.596

^a The difference between the primary loading .583 and secondary loading .437 in item 8 is .146, near the standard of .15. It was retained under consideration of the integrity of factor content.

^b Reversed item.

almost 45% of nursing student to strengthen their professional self-image, which is the base of development of their professional identity. 61.2% of participants could explore their professional development by reflecting their interest, personality and values on themselves and comparing with other career field. Much more than half of them (67.3%) liked to communicate with predecessors of nursing field and hope to learn more from them. The last two results were due to influence of Chinese culture, in which people like to compare with others and the young are supposed to follow the steps of successful old generation.

Given the current weakness of professional identity nurse students, some recommendations can be drawn from this study. It have found that media plays an important role in improvement of image [9,20]. So, skillfully shaping the image of nursing on media and regularly reporting some significant and positive activities to the press is supposed to be done; It

was showed that professional development courses could help to enhance the professional identity of college students [20] and that early presence of foundational idea on how students envision their future career may contribute to their career persistence [16], and future success [35]. Therefore, courses should be designed according the developing process of professional identity in different grade levels, focusing on developing of independence of career choice and balancing benefit of retention and risk of turnover for the senior, and strengthening professional self-image for the freshman; School-based faculties should richen their clinical experiences and nurse staff should enhance their level of graduation. So they can combine theory and practice or professional ideal and reality together, and can help students properly and be a good model; Reform in organization structure of nursing is necessary and urgent in China, which is helpful for nurses to undertake more autonomy, leadership and academic role.

Table 2 – Descriptive index for five factors.

Factors	Disagree (%) ^a	Neutral (%) ^a	Agree (%) ^a	Mean (\bar{x})	Standard deviation (SD)
1. Professional self-image	10.7	33.9	55.4	3.61	.75
2. Benefit of retention and risk of turnover	21.8	35.3	42.9	3.28	.75
3. Social comparison and self-reflection	13.7	25.2	61.2	3.65	.75
4. Independence of career choice	27.2	24.6	48.3	3.38	.94
5. Social modeling	9.1	23.7	67.3	3.84	.75

^a Disagree represents the average proportion of "disagree and strongly disagree" group in every factor; agree represents the average proportion of "agree and strongly agree" group in every factor; and neutral represents the average proportion of "equally agree and disagree" group in every factor.

However, due to limited financial and human resources, the participants only came from Beijing. The instrument warrants further testing all over the country. Besides, the opinions from patient or members of interdisciplinary team were not included during the process of scale development, which should be considered in further study.

5. Conclusions

Chinese nurses still suffered from low professional identity, low self-esteem and poor self-image, predominately due to lack of public respect and opportunity of professional development. It is becoming emergent issue in China how to help nurse students develop their positive professional identity. Literature review showed that no mature instrument was designed for measuring the professional identity of nurse students. This study developed a scale of professional identity for Chinese nursing students based on Chinese cultural background, literature review, and interview with students and experts. With its consistency with the existing theory, high reliability and validity, PISNS could be used as a measurement tool for educator to evaluate the developing level of professional identity in nursing students and assess the effectiveness of corresponding intervention and strategies. From descriptive statistics for five factors in this study, the status of professional identity in 815 nurse students was shown. It is also can be used to compare the differences among students from different area. Implication and innovative solutions can be drawn from the result, just like above discussion in this study.

Conflicts of interest statement

The authors declare that they have no conflicts of interests.

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