Work beliefs and experiential learning among proficient physical therapists in Japan: developing a method to support belief formation

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Abstract. [Purpose] This study aimed to elucidate the content of work beliefs related to proficiency among physical therapists in Japan. [Participants and Methods] Participants included 50 therapists who met the definition of proficiency to participate in a questionnaire survey conducted between October 2017 and March 2019. Participants were asked to freely describe their daily work beliefs, including their thoughts, values, and ideals. This content was coded and categorized using open coding; a hierarchical cluster analysis (Ward’s method) was conducted of the proficient therapists with the individuals and belief categories as the variables. All belief categories were classified into three groups. [Results] Three work beliefs were identified as follows: 1) practices that emphasize building relationships in the field, 2) broad practices with physical therapist pride (responsibility and enthusiasm), and 3) practices with awareness of treatment outcomes and social benefits. [Conclusion] A better understanding of the three aforementioned work beliefs would facilitate good support for and development of physical therapists. We recommend continuing to elucidate the three work beliefs identified among proficient therapists and verify their educational effects.

Key words: Work beliefs, Physical therapists, Experiential learning

INTRODUCTION

Many professionals, including physical therapists (PTs), grow through experiential learning¹. Thus, experiential learning has often been studied in the context of human resource development². According to Kolb¹, experiential learning takes place in the following cycle: (1) concrete experience (experience), (2) reflective observation (reflection), (3) abstract conceptualization (lesson), and (4) active experimentation (application). Further, reflection allows individuals to find meaning in their own experiences. The function of work beliefs in this meaning-making process is to filter how individuals see the world, thereby influencing knowledge formation³. Additionally, work beliefs are said to play a top-down role in guiding how people interpret new experiences and in directing their behavior to be consistent with their beliefs⁴, ⁵. Further, work beliefs play a role in enhancing experiential learning capacity and maintaining long-term experiential learning among professionals⁶. However, work beliefs also have the potential to stall growth, as they can function as both positive and negative signifiers, metaphorically referred to as “lenses that refract our worldview”⁷, ⁸. A study on physical education teachers’ growth and beliefs⁹ revealed that beliefs change during the proficiency process and influence job content and performance; however, the content of work beliefs in each profession, how they work, the transformation process, and their relationship to job
performance remain unclear. In recent years, research has elucidated the content of work beliefs for professionals in Japan who are considered successful or skilled\(^{6-9}\). Furthermore, it is believed that there are universal parts of work beliefs that transcend occupational differences, and there are specific parts that are specific to each occupation\(^6\).

A survey of salespeople and information technology consultants\(^6\) elucidated two work beliefs: (1) “self-achievement orientation” and (2) “customer orientation”. A survey of public health physicians\(^8\) elucidated four beliefs as follows: (1) “patient-related”, which is related to primary care, (2) “society-related”, which is related to the desire to solve fundamental social problems, (3) “organization-related”, which is related to network orientation, and (4) “self-related”, which is related to the desire to try something new and continue learning. Furthermore, a survey of physical education teachers\(^\) highlighted the following five types of beliefs: (1) “self-actualizing”, (2) “student-oriented”, (3) “open-minded”, (4) “self-righteous”, and (5) “closed-minded”. In a survey of care workers and licensed practical nurses\(^9\), two beliefs were identified as follows: (1) “orientation toward improving one’s own competence” and (2) “orientation toward the care recipient”. Thus, the content of work beliefs differs among professions; however, if we can elucidate the work beliefs of each profession, we can contribute to the development of human resources in each profession by supporting the formation of work beliefs.

However, although the professionalism, leadership, and identity required for PTs have been reported\(^{10-12}\), the content of PTs’ work beliefs, which are related to their ability to gain knowledge through experiential learning\(^6\), and the formation process for these beliefs, have not been clarified in several countries, including Japan\(^13\). Therefore, a method to support the formation of PT work beliefs has not been developed. If we can elucidate the content and formation process of PT work beliefs and provide support for their formation, we could be able to train PTs who are able to develop themselves such that they enhance their experiential learning abilities in the field to enable long-term experiential learning.

This study aimed to identify the content of PT work beliefs in Japan and, accordingly, propose a method to support the formation of work beliefs at the workplace of PTs where these beliefs are formed.

### PARTICIPANTS AND METHODS

In this study, proficiency was defined based on the 10 year rule\(^{14}\): clinical experience of 10 years or more; educational experience as a clinical, part-time, or full-time instructor; and research experience from obtaining a master’s or doctoral degree or participating in a conference or paper presentation. Participants were recruited through convenience sampling\(^5\) between October 2017 and March 2019. In total, 50 PTs who fulfilled the criteria were invited to participate in the study. The study’s purpose was explained to potential participants both verbally and on paper, and only those who provided their informed consent and approval were considered for inclusion.

Responses were obtained from 44 of the 50 PTs who were invited to participate in the study (response rate: 88%). One respondent did not complete the questionnaire, and one respondent was found not to meet the criteria for PT proficiency after answering the questionnaire; thus, two respondents were excluded from the study.

The recommended sample size for qualitative research dealing with codes and categories varies depending on the study purpose. However, a sample size between 30 and 50 is usually recommended\(^6\). Moreover, for research dealing with experiences, approximately 50 experience descriptions are considered necessary. Therefore, the sample size for this study was set at 50\(^6\). Further, the belief data was theoretically saturated.

This study was conducted with the approval of the Ethics Committee of the Osaka Yukioka College of Health Science (Approval No. 290001), and all participants provided written informed consent in accordance with the Declaration of Helsinki before participating.

A questionnaire survey method was utilized for data collection. The questionnaire was created in Excel and sent to participants via e-mail. In addition to basic information (gender, age, years of PT experience, and workplace characteristics), the participants were asked to freely describe their work beliefs, such as the “thoughts”, “values”, and “ideals” that are important to them on a daily basis in relation to work.

Data were analyzed through open coding\(^{17, 18}\), which is a technique used in qualitative research. We extracted conceptually relevant parts from the content of the free statements on the questionnaire, coded them, aggregated them based on the similarity of the codes, and categorized them in an inclusive manner.

In Analysis 1, the generated categories were arranged in order of the number of codes, and the top five categories were used to identify the work beliefs most frequently shared by proficient PTs. In Analysis 2, we conducted a hierarchical cluster analysis (Ward’s method) with the proficient PTs as individuals and work belief categories as variables and classified all belief categories into three groups. Bell Curve for Excel (Social Survey Research Information Co., Ltd., Tokyo, Japan) was used for the hierarchical cluster analysis.

### RESULTS

The study included data from 42 proficient PTs; 30 males and 12 females, with a mean age of 36.9 ± 4.5 years and clinical experience of 14.1 ± 4.4 years. Among the proficient PTs, 28% worked in acute care, 27% in convalescent care, 28% in maintenance and nursing care, and 17% in other areas (multiple responses). The free statements on work beliefs obtained from the 42 participants were used as the data for analysis.

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From the analyzed data, 110 codes were obtained, and 30 categories were generated. Table 1 shows the obtained belief categories in order of the number of codes with the same number and rank. The top five categories were as follows: (1) building relationships in the field, (2) physical therapy practice tailored to individual characteristics, (3) patient and family-centered and rapport building, (4) broad-based practice with pride in physical therapy, (5) a sense of support for the patient.

Figure 1 shows a tree diagram drawn based on the results of the stratified cluster analysis. The three belief groups were as follows: Group I, practices that emphasize building relationships in the field; Group II, broad practices with physical therapist pride (responsibility and enthusiasm); and Group III, practices with awareness of treatment outcomes and social benefits.

**DISCUSSION**

There are two types of work beliefs: core beliefs, which are the foundation of behavior and do not change easily, and peripheral beliefs, which are located at the periphery of core beliefs. The 110 codes and 30 categories obtained from proficient PTs can be considered as part of their core and peripheral work beliefs. Since beliefs are influenced by personal values, various experiences, and the institutions and organizations to which individuals belong, we can assume that every PT forms a variety of beliefs. As shown in Table 1, interpersonal skills were highly ranked, possibly implying that Japanese proficient PTs emphasize human skills more than technical skills.

Table 2 shows the three work belief groups obtained by analyzing the data from proficient PTs. Group I reflects the belief that practice should emphasize building relationships in the field. Participation from and collaboration with patients and their families are essential for on-site physical therapy. Additionally, it is essential to collaborate with members of other profes-

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**Table 1.** Belief categories and number of codes for proficient physical therapists

| No. | Category name                                      | Number of codes |
|-----|----------------------------------------------------|-----------------|
| 1   | Building relationships in the field                | 13              |
| 2   | Physical therapy practice tailored to individual characteristics | 10              |
| 3   | Patient and family-centered and rapport building | 9               |
| 4   | Broad-based practice with pride in physical therapy | 8               |
| 5   | A sense of support for the patient                | 6               |
| 6   | Achieving therapeutic outcomes                    | 5               |
| 7   | Connection and balance between clinical practice, education, and research | 5               |
| 8   | Identifying and acting on one's own limitations   | 5               |
| 9   | A balanced mindset                                | 4               |
| 10  | Giving back to society                            | 4               |
| 11  | Objective perspective                              | 4               |
| 12  | Sense of responsibility                           | 4               |
| 13  | Enjoying my work                                  | 3               |
| 14  | Enthusiasm                                        | 3               |
| 15  | Physical Condition                                | 3               |
| 16  | Evidence-based practice                           | 3               |
| 17  | Practicing with ADL and QOL in mind               | 2               |
| 18  | Providing enjoyable physical therapy               | 2               |
| 19  | A supportive presence behind the scenes           | 2               |
| 20  | The importance of experience and its limitations  | 2               |
| 21  | Humanity as a medical and social person            | 2               |
| 22  | Humility and sincerity                            | 2               |
| 23  | Recognizing and practicing the importance of communication | 2               |
| 24  | Calmness                                          | 1               |
| 25  | Never give up                                     | 1               |
| 26  | A clear sense of purpose                          | 1               |
| 27  | Importance of moving from thoughts and feelings to action | 1               |
| 28  | Normalization                                     | 1               |
| 29  | Not concentrating too much                        | 1               |
| 30  | Careful work                                      | 1               |
|     | **Total**                                         | **110**         |

ADL: activities of daily living; QOL: quality of life.
sions to solve patients’ increasingly complex problems. Therefore, building interpersonal relationships in the field can be considered fundamental support for physical therapy practice. As noted above, the top work belief category was human skills, which can be interpreted to indicate that proficient PTs in Japan place the highest importance on interpersonal relationships. Thus, the beliefs in Group I are likely among the core beliefs of PTs in Japan.

Group II reflects the belief in broad practice with PT pride (responsibility and enthusiasm). To solve patients’ increasingly complex problems, PTs are required to perform not only physical therapy techniques but also a wide variety of other practices. For example, PTs can talk to patients to improve low motivation and have pleasant conversations with them, or they can provide lifestyle counseling and information on social systems to help patients return to society. However, training in these practices is not an active part of the physical therapy education curriculum. Moreover, these practices may apparently not seem to be directly related to physical therapy. However, these practices all indirectly support physical therapy outcomes and can be considered necessary and important practices in the field of medical and nursing care in Japan. However, this does not imply that PTs should engage in every practice possible. The beliefs in Group II are realistic and can be interpreted as the beliefs necessary to be an active professional in the medical and nursing care field in Japan.

Group III reflects practice that is conscious of treatment outcomes and social benefits. This is a belief that expresses one’s commitment to contribute to society through physical therapy treatments and corresponds with assistance to others and public service among the dimensions of professionalism. Thus, Group III beliefs can be interpreted as the beliefs necessary to be an active professional in the medical and nursing care field in Japan.

Fig. 1. Tree diagram by cluster analysis.

Matsuo6) posited that there are two universal beliefs in the service industry from information technology consultants and salespeople—goal-achievement orientation (enthusiasm, effort, and goal setting) and customer orientation (satisfaction, trust, learning from customers)—and that the balance between these two beliefs affects growth. Considering that physical therapy is also a medical service, the former would fall under Group II beliefs and the latter under Group III beliefs. While holding these two beliefs, PTs in Japan are considered to hold Group I beliefs in their practice, which emphasize building relationships in the field.

Similar to PTs, public health physicians also engage in medical service, and their beliefs can be characterized as either self-related (Group II) or patient-related (Group III), as well as social and organizational relatedness. The beliefs of physical education teachers7, who engage in educational service, are self-actualizing (Group II) and student-oriented (Group III) and
are characterized by self-righteousness and open-mindedness (such as openness to new information) and closed-mindedness (such as performing duties without hesitation). Both healthcare and education, which are interpersonal services, are self-actualizing (Group II) and customer-focused (Group III). Therefore, the practice of PTs in Group I, which emphasizes building relationships in the field, can be considered a characteristic belief of PTs in Japan. This suggests that PTs in Japan work with the greatest emphasis on building relationships in the field.

Table 3 shows the proposed methods to support the formation of PTs’ beliefs. If we can effectively support the formation of work beliefs for PTs in Groups I, II, and III, we can envisage developing autonomous PTs with the ability to enhance and continue experiential learning. For this purpose, seamless coordination of undergraduate and continuing education is important.

Regarding Group I beliefs in undergraduate education in particular, it is important to clarify that PTs need to be able to build relationships. For Group II, it will be necessary to convey that PTs in the field always need to think about what they can do for patients, sometimes practice a wide range of skills beyond physical therapy, and deepen their understanding of other professions. In addition, for Group III, actively guiding PTs in the field to understand that they are required to achieve therapeutic results and contribute to society through helping patients reintegrate into society will support the formation of work beliefs. Clinical practice education, where students can easily experience these things in the field, is, therefore, considered highly significant.

In continuing education, support for novices (with less than 3 years of clinical experience) and mid-career workers (with 3 to 10 years of clinical experience) whose work beliefs have not yet formed will become more important in the future since the independent growth of PTs can be enhanced through earlier and smoother formations of work beliefs.

The work beliefs of Group I are likely formed in the process of recognizing the importance of building interpersonal relationships in the field, as they experience hardships in the field and often need to consult with other members of the rehabilitation team. For example, for the formation of work beliefs in Group I, the experience of working with patients with severe disabilities or who are experiencing difficult situations and helping them to reintegrate into society may be effective. This is because such experiences provide opportunities to talk with patients, their families, and other professionals, making

| Table 2. Three work belief groups of proficient physical therapists |
|---------------------------------------------------------------|
| **Group I: Practices that emphasize building relationships in the field** | **Number of codes** | **Group II: Broad practices with PT pride (responsibility and enthusiasm)** | **Number of codes** | **Group III: Practices with awareness of treatment outcomes and social benefits** | **Number of codes** |
| Building relationships in the field | 13 | Broad-based practice with pride in physical therapy | 8 | Achieving therapeutic outcomes | 5 |
| Physical therapy practice tailored to individual characteristics | 10 | Identifying and acting on one's own limitations | 5 | Connection and balance between clinical practice, education, and research | 5 |
| Patient and family-centered and rapport building | 9 | Sense of responsibility | 4 | Giving back to society | 4 |
| A sense of support for the patient | 6 | Enthusiasm | 3 | Evidence-based practice | 3 |
| A balanced mindset | 4 | Normalization | 1 | A clear sense of purpose | 1 |
| Objective perspective | 4 | Calmness | 1 | | |
| Enjoying my work | 3 | Careful work | 1 | | |
| Physical condition | 3 | Not concentrating too much | 1 | | |
| Practicing with ADL and QOL in mind | 2 | | | | |
| Providing enjoyable physical therapy | 2 | | | | |
| A supportive presence behind the scenes | 2 | | | | |
| The importance of experience and its limitations | 2 | | | | |
| Humanity as a medical and social person | 2 | | | | |
| Humility and sincerity | 2 | | | | |
| Recognizing and practicing the importance of communication | 2 | | | | |
| Never give up | 1 | | | | |
| Importance of moving from thoughts and feelings to action | 1 | | | | |
| | | | | | |
| 68 | 24 | 18 | | | |

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Table 3. Three work beliefs of proficient physical therapists and how to support their formation

| Work beliefs                                      | Undergraduate education                                                                 | Continuing education                                                                 |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Group I Practices that emphasize building relationships in the field | Tell them that interpersonal skills are important in the field and make them realize it. | Provide the experience of struggling in the field, having difficulties, and consulting with others. Instructors will provide psychological care for stress. |
| Group II Broad practices with physical therapist pride (responsibility and enthusiasm) | Let them know and realize that they need to always think about what they can do for their patients. Communicate and realize that broad practices will be necessary. Teach them to deepen their understanding of other professions. | Communicate the need for a variety and breadth of practices that may not appear to be directly related to physical therapy. Encourage physical therapists in the field to accumulate successful experiences that improve the effectiveness of physical therapy through extensive practice. |
| Group III Practices with awareness of treatment outcomes and social benefits | Communicate and make people realize that PTs are expected to achieve therapeutic results and give back to society. | Encourage physical therapist to actively reflect on their cases and treatment outcomes. |

It is easy to realize the importance of building interpersonal relationships for improving the effectiveness of physical therapy. Therefore, providing PTs with opportunities for such experiences will help support work belief formation in the field. However, since individual PTs are exposed to stress in the process of accumulating difficult experiences, it is necessary for PT supervisors and administrators to provide PTs with mental health care.

The work beliefs in Group II are likely formed in the process of recognizing the necessity of a wide range of practices that may not appear to be directly related to physical therapy. However, supporting work belief formation in Group II may be somewhat difficult, as PTs are professionals who specialize in physical therapy techniques and may present a certain amount of resistance when asked to practice something other than physical therapy. Therefore, it is necessary to devise a way to support the work belief formation in Group II. Specifically, the first step is for senior PTs to effectively convey the importance of working with pride, responsibility, and enthusiasm to junior PTs. Depending on the situation, it may be necessary to convey to junior PTs the necessity and effectiveness of a wide range of practices that are beyond physical therapy, after which it may be necessary to describe successful experiences wherein a wide range of practices had a significant impact on the effectiveness of physical therapy. Repeating these steps to the extent possible, providing junior staff with opportunities to practice a wide range of skills, and having them gain experience that improves physical therapy effectiveness—in other words, having them experience success—will support work belief formation in Group II. Therefore, the role of PT leaders and administrators who guide these activities in the field is especially significant in the context of work belief formation.

The work beliefs of Group III are likely formed by reflecting on the effectiveness of the treatments individual PTs provide and communicating what they have learned. Therefore, having the participants actively experience reflection on cases and treatment outcomes will help support the formation of work beliefs in Group III. Specifically, to effectively support work belief formation in this group, it is important to allow these PTs to gain experience by actively reflecting on cases, accumulate and analyze data to examine treatment effects, and gain experience in disseminating this information to the outside world, such as at professional conferences.

According to Benner’s proficiency of nurses, proficient nurses are able to derive new knowledge and educate themselves, and from the perspective of proficiency, dissemination of knowledge and education are important. Furthermore, it has been reported that PTs generally have positive attitudes toward the use of evidence, and the act of reflecting on treatment outcomes is considered an important PT work belief. Therefore, PT instructors and administrators who can provide appropriate guidance regarding reflection on and dissemination of cases are considered essential for human resource development in the field.

However, while these are suggestions on how to support work belief formation among the three PT groups, regardless of the level of experience individuals have, they cannot form appropriate beliefs without proper introspection. Therefore, to foster work belief formation in Groups I, II, and III in recent years, it has been argued that introspection should not be left to individuals but conducted at the organizational level. In the field of PT education, it is necessary for PT leaders and managers to practice introspection with students or new PTs, rather than leaving them to develop this skill independently. From the human resource development perspective, the role of PT instructors and administrators in the field, as well as of the organization, is expected to increase in the future.

In Japan, there is a custom of respecting elders and working together as a group. It is also a characteristic that allows people to devote themselves to one profession (physical therapy) while not understanding others, exists among professionals. Therefore, it can be considered desirable that the formation of Group I and II work beliefs
occur at an early stage in Japan. In addition, since PTs in Japan often work under medical and long-term care insurance, it will also be necessary to form Group III work beliefs as early as possible for effective operation. Supporting the formation of these three PT work beliefs from an early stage will significantly contribute to school and lifelong education and human resource development of PTs in Japan.

In this study, we identified some work beliefs of proficient PTs, which are considered necessary in the field of physical therapy in Japan. However, it is difficult to generalize these findings, as they represent a small number of examples, and the content and balance of these beliefs are likely to vary regionally and internationally. They also vary by field and domain, and it is highly possible that they will change over time and according to social conditions. Therefore, PT work beliefs will need to continue to be explored in future research. Additionally, it will be necessary to continue examining the content and effectiveness of methods to support work belief formation.

In conclusion, we identified three work beliefs held by proficient PTs as follows: (1) practice that emphasizes building relationships in the field, (2) broad practice with PT pride (responsibility, enthusiasm), and (3) practice that is conscious of treatment outcomes and social return. We believe that a future challenge will be to continue to elucidate these three beliefs among proficient PTs and verify their educational effects.

**Conflicts of interest**

None.

**ACKNOWLEDGMENTS**

We acknowledged all the participants and staff members participated in this study. This work was also supported by JSPS KAKENHI (Grant Number JP17K01099).

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