

A Social Cognitive Investigation in the Context of Vocational Training Performance of People with Disabilities

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Abstract—The study reported here investigated social cognitive theory (SCT) in the context of Vocational Rehab (VR) for people with disabilities. The prime purpose was to increase knowledge of VR phenomena and make recommendations for improving VR services. The sample consisted of 242 persons with Spinal Cord Injuries (SCI) who completed questionnaires. A further 32 participants were Trainers. Analysis of questionnaire data was carried out using factor analysis, multiple regression analysis, and thematic analysis. The analysis suggested that, in motivational terms, and consistent with research carried out in other academic contexts, self-efficacy was the best predictor of VR performance. The author concludes that that VR self-efficacy predicted VR training performance.

Keywords—Social cognitive theory, vocational rehab, self-efficacy, proxy efficacy, people with disabilities.

I. INTRODUCTION

THERE are a number of challenges, which prevent people with disabilities becoming independent [1]. Rehabilitation services help people with disabilities to perform independent tasks and participate in society as active members, which in turn, help them become employed and enhance the quality of their life [1]. Vocational rehabilitation (VR), in particular, provides people with disabilities with better opportunities to become employed [2]. In general, the chance of being employed for people with disabilities who undertake VR has been found to be approximately 60% [3]. Employment provides benefits, but is not always available for people with disabilities [4], [5]. VR services generally assist people with disabilities to return to work or start a new job after being injured [6]-[8]. For the majority of people, employment provides a steady financial income, enables access to needed health services, and helps them to have a personal identity in their society [4], [8]. For people with disabilities, employment has been found to have a positive relationship with quality of life [4].

Finding an appropriate job for people with disabilities can be challenging [9]. One of these challenges is the quality of VR [9]. VR can help people with disabilities to overcome challenges and have better careers and jobs that suit them. The goal of VR for individuals with disabilities is to help people to find a job successfully or continue their education according to

their interests, in order to help them participate in society as active members [4], [8]. People with disabilities who cannot work in their previous jobs because of their new injuries often can enroll in VR courses in order to improve their skills [10]. Therefore, VR plays a vital role in equipping people with disabilities with the required occupational skills to find an appropriate job. In other words, VR is the main foundation for restoring, maintaining, and enhancing occupational skills for people with disabilities [5]. There is no clear understanding as to the quality of VR services provided in Saudi Arabia, and phenomena related to the functioning of people with disabilities and their VR trainers. Moreover, there appears to be no research carried out focused on investigating the phenomena associated with VR of people with disabilities in Saudi Arabia. Although several studies have applied social cognitive theory (SCT) in a variety of fields, relatively few studies have applied SCT in the context of VR of people with disabilities [11], [12]. Several researchers have suggested that self-efficacy, as an important psychological factor in the field of rehabilitation, needs to be investigated [11], [13], and particularly self-efficacy beliefs and their relationships with VR [14]. The term VR self-efficacy used in this study is defined as the individual's belief about her or his capability to execute VR training to achieve a designated performance in a rehabilitation program [15]. Proxy efficacy for the trainer is the belief, of a student with disabilities, of the extent of his or her VR trainer's capabilities to organize appropriate training for her or him during vocational training sessions that assists the student to successfully complete training tasks [11]. VR trainer self-efficacy is the trainer's belief in her or his capability to train effectively students with disabilities [16].

Although there are several studies of self-efficacy and proxy efficacy, which have been conducted in different fields, this study is relatively new in the context of VR training performance of people with disabilities. Keeping in mind that the main goal of VR is to improve and equip people with disabilities with vocational skills by providing VR programs, it can be argued that it is important that people with disabilities perceive themselves to be capable of performing tasks related to VR in order to improve their VR training performance.

Previous studies have focused on self-efficacy as an independent variable and how it predicts behaviors [17]. However, there is a lack of research that has investigated the effects of self-efficacy among people with disabilities. Self-efficacy has been investigated widely and been found to

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influence health; such as, in the areas of addiction, heart disease, weight loss, and improvement after stroke [13]. Furthermore, there is very little research in which proxy efficacy has been applied; moreover, it has not been applied at all in the context of VR training performance of people with disabilities. Only limited studies have been conducted in Saudi Arabia in the context of disability and most of these studies have focused on children with disabilities [18]. Thus, this led this study to develop a theoretical framework proposing relationships between trainer self-efficacy, VR self-efficacy, proxy efficacy for the trainer, and VR training performance. It is proposed that trainer self-efficacy, proxy efficacy for the trainer, and VR self-efficacy of people with disabilities may be determinants of VR training performance during the VR programs.

The objective of this research was to increase knowledge of VR phenomena in Saudi Arabia and make recommendations for improving VR services provided for people with disabilities. The main goal of this study was to enhance VR training performance for people with disabilities using a conceptual framework based on SCT, and to better understand VR self-efficacy in the context of VR training performance of people with disabilities, and with improved understanding, to enhance future practice.

A. Understanding Social Cognitive Theory

SCT was developed by Albert Bandura in the early 1960s [24]. SCT emphasizes that human beings have feelings, can think, and can learn from their environments [15]. SCT attempts to explain human behavior by understanding and explaining cognitive processes. SCT emphasizes that interactions between personal, behavior that people are involved in, and environmental influences can result in an outcome of human behavior [15], [19], [20]. According to [20], humans are able to learn in various ways, which include not only through direct experience, but also observations and interactions. Reference [20, p. 483] argued, "Cognitive learning is fostered through tuition, modelling, and performance feedback". Rather than giving prominence to the influences of the environment alone on behavior, SCT emphasizes the importance of cognitive influences. Thus, SCT rejects behaviorism on the basis that behaviorism reduces complex human actions simply to cause and effect [19]. As human behavior involves cognition, it generally that human are able to make rational decisions so that they can actively adopt new behaviors [15]. Moreover, this means that individuals do not just copy what they observe in their environments, but are also likely to make effective decisions due to their justification on relatively complete information, including the consequences of different choices [20].

The environment and personal factors, including people's beliefs, thought patterns, and emotional reactions combine to determine a person's behaviors [15]. In turn, the results of these behaviors would likely form the person's future beliefs [15]. According to [21], reciprocal determinism is interactions of the environment, personal factors, and behavior. The causal interactions between personal, behavioral, and environmental

factors are represented in Fig 1. Reciprocal determinism does not mean that the influences of the three factors are equally strong at any particular time. SCT acknowledges that one factor may be stronger or weaker than the others, depending on the specific situation [20]. Another relationship worth mentioning is that between behavior and environment. As such, behavior may influence the environment, which may subsequently change behavior. It is also for this reason that people are both producers and products of their environments [20]. SCT asserts that some sources of influence are stronger than others and they do not necessarily all occur jointly. In fact, the interactions between the three factors will vary depending on the individual, the specific behavior enacted, and the particular situation in which the behavior occurs [20], [21].

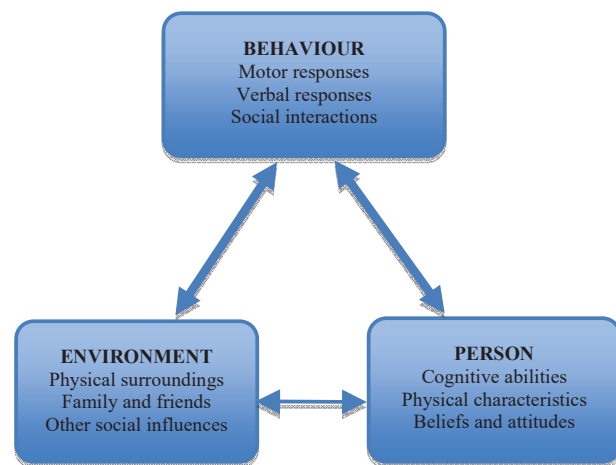


Fig. 1 The model of triadic reciprocal causation in Social Cognitive Theory

Personal factors comprise an individual's beliefs, thoughts, feelings, self-perceptions, goals, and intentions [15]. Reference [20] stated that beliefs, thoughts, feelings, and goals shape behaviors. The perceptions that individuals have of a particular behavior can affect how they will behave; it is important also to note that behaviors may vary in different situations. Personal factors include beliefs of personal efficacy, comprehension of goals, logical thinking, and effective self-reactions to different situations. They are also likely to evoke different reactions from their environment depending on their social roles and status. As far as personal and environmental influences go they do not function as independent determinants. Furthermore, they determine each other. For example, once a vocational trainer understands the relationship that exists between personal factors and environment, she or he can attempt to use this knowledge to help the students by involving students with disabilities in sharing responsibilities (e.g., doing voluntary jobs during the rehabilitation program) which would likely install confidence in her or his cognitive processes which in turn can generate an active environment. Active individuals can produce an active environment [21]. For example, personal factors (students) can

influence the environment (teacher) when teachers react to students with disabilities based on their levels of physical functioning rather than on the real ability of the students. In turn, a teacher's positive feedback (environment) can increase students' beliefs about their own capabilities (personal).

Personal factors may influence behavior when individuals learn by observing others and could give confidence to some extent to the student for performing a particular behavior. People with high self-efficacy for a task generally are more likely to engage in that task than would otherwise be the case [21]. On the other hand, people with lower self-efficacy for a task generally are less likely to engage in that task.

The beliefs, cognitive competencies, and expectations of individuals can be influenced directly by the environment in which they live in [21]. Furthermore, their behavior is likely to be determined in part by their environment. The experience that people gain through their social and physical environment can modify and develop a set of beliefs, expectations and cognitive competencies [20]. SCT processes should not be misunderstood as mechanical, wherein individuals are merely inactive participants. People are not passive receptors of the different stimuli in their environments; in most circumstances, individuals have the potential to be free agents who actively seek out and process different information in order to choose appropriate actions [21]. Personal factors such as social persuasion and modelling can be influenced by the environment; tuition may alter cognition. In addition, teacher feedback (environmental factor) may influence the student's self-efficacy (personal factor); a teacher saying, "you are doing great" could enhance a student's self-efficacy and "I don't think you can learn this" could lower students' beliefs in their own capabilities.

The third component in triadic reciprocal determinism is behavioral factors; behavior may be modified by the environment and personal factors [15], [20], and behavior can modify the environment. Behavior can affect personal factors, cognitive processes, self-beliefs, and emotional reactions. Individuals generally choose activities that they are capable of succeeding at [20]. Through their actions, people create as well as select environments; behavior determines which of the many potential environmental influences will be considered and what kind of actions people take.

The classic interactions of the three reciprocal determinism factors can be found in the classroom. For example, during a lesson in class, the students in the classroom may be concentrating and paying attention to what the teacher is teaching them (environment influences cognition, a personal factor). Students who struggle and do not understand what the teacher is teaching them may hold their hand up to ask questions for support (cognition influences behavior). The teacher may then try and explain and demonstrate the content material in a simplified way (behavior influences environment). Furthermore, the teacher may give the students a task (environment influences cognition, which influences behavior). During the task that the students have been set, they may hold the beliefs that they are performing well (behavior influences cognition).

B. Self-Efficacy

Self-efficacy refers to one's confidence in one's capability to successfully perform a given task [15], [19], [21]. Self-efficacy theory proposes that people regulate their behaviors based on their self-efficacy beliefs [13], [15], [19], [21], [22]. Reference [15] stated that, human agency is exercised through different mechanisms and the most effective one is self-efficacy beliefs. Individuals' levels of self-efficacy determine what kind of actions they desire to take, their goals, how persistent they will be to achieve these goals, how much effort they put in, the expected outcomes from their efforts, and how they can visualize their accomplishments [13], [21]. Moreover, self-efficacy plays a vital role in human functioning because it influences behavior, goals and motivation, outcome expectations, and individuals' perceptions about their selves in their own environment [13], [21]. Agency depends heavily on self-efficacy, which is essential for setting specific goals and managing difficulties when executing the courses of action needed to achieve desired outcomes [21]. The level of self-efficacy beliefs influences the kind of goals that people set for themselves [23]. Self-efficacy has been considered by many educational psychologists to be a predictor of academic success because it influences behavior [23]. Self-efficacy plays a vital role in people adjusting to their new disabilities [24].

C. Self-Efficacy Mechanism

According to SCT, self-efficacy is not a measure of someone's skills, rather, it is the individuals' beliefs about their own capabilities to execute a certain task with the skills they possess [15], [19], [21]. Self-efficacy affects choice of activities, effort, and persistence [19], [23]. Generally, when people have low self-efficacy for accomplishing a certain task, it is more likely they will avoid it, than if they had high self-efficacy for completing that task [23].

Reference [15] claimed that individuals' beliefs in their own capabilities toward executing certain behavior differ across activity domains and situational conditions. Self-efficacy beliefs influence individuals' behavior through their cognitive and motivational processes [19]. Bandura argued that the level of self-efficacy beliefs influences whether people think pessimistically or optimistically [15]. The levels of self-efficacy beliefs influence how people may overcome obstacles and the effort they may put toward the goals they set for themselves [15], [21]. The level of self-efficacy contributes to the kind of options that people canvass when they consider a certain action [15].

D. Sources of Self-Efficacy

References [15], [21] stated that, one's beliefs about one's own capabilities are developed primarily through four sources, namely, performance accomplishment (or mastery experiences), vicarious experiences, verbal persuasion, and physiological and affective states, generally in decreasing order of strength, as shown in Fig. 2. The first and the most influential source of efficacy information is performance accomplishments which is based on personal mastery

experiences [13], [21]. Success generally increases self-efficacy beliefs, while failure generally decreases efficacy beliefs [21]. Strong self-efficacy is likely to be developed through repeated successes [21]. The second source of self-efficacy is vicarious experiences, often through observing social models [13], [21]. Observing someone with similar capabilities and in a similar environment successfully accomplishing certain behavior by persistent effort likely increases observers' beliefs in their own capabilities as it may lead observers' to believe that they could also perform the task effectively. The third source of self-efficacy is verbal persuasion [13], [15], [21]. People's beliefs may be influenced by the messages conveyed by others. Reference [21] claimed that individuals who are encouraged verbally that they have the required capabilities to execute a certain behavior are more likely to invest more effort than those who are not persuaded verbally. The final source of self-efficacy and generally the weakest is physiological states [13], [15], [21]. Stress and anxiety generally have a negative effect on self-efficacy [13], [19]. Reference [19] stated, "stressful and taxing situations generally elicit emotional arousal that, depending on the circumstances, might have informative value concerning personal competency" (p. 198). People take into consideration their own physical and emotional states when judging their beliefs in their own capabilities [15], [21]. The less anxiety people have when executing a task the higher their self-efficacy beliefs are likely to be. Some arousal may be functional, e.g., trembling or sweating could be viewed as a result of weakness, or may be considered as determination to succeed [21].

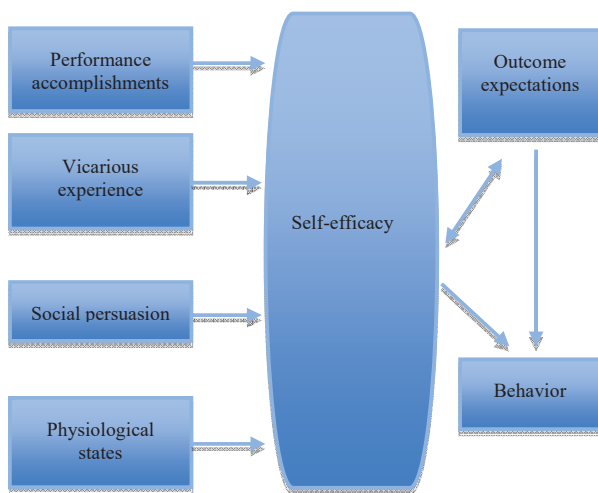


Fig. 2 Sources of self-efficacy information. Adapted from "Self-efficacy"

E. Proxy Efficacy

Although self-efficacy can predict physical activity, [21, p. 13] claimed that "people do not have direct control over the social conditions and institutional practices that affect their everyday lives", and provide the context for their activity choices [15], [21]. In these social and physical conditions, people tend to seek other people who have expertise, influence

and who have access to resources to act at their behest to help them achieve their desired goals and outcomes [11], [19], [21]. A proxy agent could be any third party, and in the field of vocational training and education for people with disabilities, a proxy agent is often likely to be the vocational trainer. For example, in a vocational training course, people with disabilities are likely to seek the help of vocational trainers to act for them. People may also depend on proxies because they want to avoid saddling themselves with the difficult tasks needed to develop essential capabilities, and taking responsibility, which the exercise of control entails [21].

II. METHODS

The participants were students with disabilities and their trainers. Only participants with SCI and Amputees were selected because they generally had the mental capacity to participate in this research. The sample comprised 224 students aged 19 to 46 (mean age=29.84), including 36 females (16.1%) and 188 males (83.9%). The longest time since injury was 11 years and the shortest time since injury was two months. A total of 32 trainers responded to the questionnaires, comprising six females (13.4%) and 26 males (86.6%). Twelve students and four trainers provided free responses.

The questionnaires were administered in 11 VR centers in Saudi Arabia. The sample was selected from the population of three cities, namely, Riyadh, Jeddah, and Dammam. Each VR center was contacted by telephone to seek its participation in the study. If a VR center expressed an interest in participating in the study, the researcher arranged to send a brief introduction to explain the nature of the study and what was required if the center participated in the study.

A. Measures

Three questionnaires were used in this study. The instruments included an 11-point percentage response scale to measure the extent of the students' VR self-efficacy beliefs, proxy efficacy for the trainer, trainer self-efficacy and students' training performance, ranging in 10-unit intervals from 0 "Not at all confident", through moderate degrees of confidence, 50 "Moderately confident", to the highest confidence, 100 "Completely confident" [21]. The items were developed with respect to the common tasks and activities expected in the VR course.

Students' VR self-efficacy items were designed to measure students' VR self-efficacy beliefs and proxy efficacy beliefs for the trainer, and consisted of two main sections. The first section consisted of nine items designed to assess students' beliefs in their own capabilities to carry out the VR activities (e.g. "I can use the Internet as a job searching tool" and "I can complete a job application online"). The second section consisted of eleven items designed to assess students' beliefs in their trainer's capabilities to help them achieve their training goals (e.g. are "train me to use the Internet effectively as a job searching tool"). The questionnaire was completed at the end of, or right after, the VR course. Each student completed a questionnaire separately to enable privacy. The

students completed the questionnaire in their own time over a period of one day. The questionnaire was given to students by a third party, namely, a trainer, physical therapist, or occupational therapist, to avoid bias; the third party was one member of a multidisciplinary team providing rehabilitation and consultation services to the students.

Trainer self-efficacy questionnaire consisted of 20 items and was designed to assess the trainers' beliefs in their own capabilities to carry out VR activities in training students with disabilities (e.g. "I can accurately evaluate the capacity of my students' employability skills"). The questionnaire was completed at the end of, or right after, the VR course. Each trainer completed a questionnaire independently to enable privacy. Trainers completed the questionnaire in their own time over a period of two days. The questionnaire was given to trainers by the researcher.

The VR performance questionnaire consisted of 10 items and was designed to measure students' performances during their VR. (e.g. "Create her/his own curriculum vitae"). In the last item the questionnaire's administrator was asked to describe each student's overall performance in their VR training. The VR students' performance questionnaire was administered by a third party, namely, a trainer, physical therapist, or occupational therapist, to avoid bias, and it was completed at the end of the VR course. The third party measured the students' performance in the most common tasks in VR. Each item in the student VR self-efficacy and trainer self-efficacy scales started with "I can..." followed by the statement (e.g. "I can accurately evaluate the capacity of my students' employability skills").

III. ANALYSIS AND DISCUSSION

Exploratory factor analysis was applied to items representing three constructs in this study, namely, VR self-efficacy, proxy efficacy for the trainer, and training performance. The factor analytic results found that each construct was two-dimensional.

Two forms of VR self-efficacy were identified, namely, *VR self-efficacy job search* and *VR computer*. *VR self-efficacy job search* comprises items that appear to be related to searching for a job, and reflect students' capabilities for searching for a job. *VR self-efficacy computer* was given this name because it contains items that relate to the students' capabilities in using a computer and reflect students' capabilities for using a computer during the VR course (as shown in Table I).

Two forms of proxy efficacy for the trainer were identified, namely, *proxy efficacy computer* and *proxy efficacy understanding*. The factor *proxy efficacy computer* contains items that relate to students' beliefs in their trainer's capabilities to train them to use a computer successfully. The second domain, *proxy efficacy understanding* contains items that relate to students' beliefs of the extent of their trainers' capabilities to help them understand the course requirements and contents (as shown in Table II).

Training performance also was found to be two-dimensional, namely, *performance job search* and *performance understanding*. The first domain, *performance*

job search contains items that relate to students' performance in tasks related to searching for a job during their VR training. The second domain, *performance understanding* contains items related to how well students demonstrated understanding of the training content (as shown in Table III).

TABLE I
FINAL FACTOR SOLUTION FOR VR SELF-EFFICACY ITEMS

Factor/ Item	Loading
Factor 1: VR self-efficacy job search ($\alpha=.91$)	
2: I can use the Internet as a job searching tool.	0.91
1: I can create my own curriculum Vitae	0.86
3: I can complete a job application online.	0.83
Factor 2: VR self-efficacy computer ($\alpha=.68$)	
5: I can write in Arabic using a keyboard.	0.74
6: I can use the basic functions of a computer.	0.68
7: I can carry out activities required in the training sessions.	0.44

TABLE II
FINAL FACTOR SOLUTION FOR STUDENTS' PROXY EFFICACY FOR THE TRAINER ITEMS

Factor/ Item	Loading
Factor 1: Proxy efficacy computer ($\alpha=.79$)	
16: can train me to use the basic functions of a computer	0.74
15: can train me to write in Arabic using a keyboard	0.68
17: can train me to use computer programs	0.61
14: can train me to complete a job application online	0.53
Factor 2: Proxy efficacy understanding ($\alpha=.67$)	
10: can assist me to understand how to complete the training tasks	0.85
11: can assist me to decide which course suits me	0.53

TABLE III
FINAL FACTOR SOLUTION FOR TRAINING PERFORMANCE ITEMS

Factor/ Item	Loading
Factor 1: performance job searching ($\alpha=.91$)	
2: Use the Internet as a job searching tool	0.89
4: Complete a job application online without assistance	0.87
3: Know how to apply for a job	0.81
1: Create her/his own curriculum vitae	0.71
7: Contact the organizations that advertise employment opportunities for further information	0.54
Factor 2: performance understanding ($\alpha=.92$)	
10: Demonstrate her/his ability to use the training equipment in this training course	0.90
9: Demonstrate his/her understanding of the training tasks	0.88

A. Correlational Analysis

After the factor solutions were finalized, the procedure was repeated and regression factor scores were generated. Correlations between factors were examined before carrying out multiple regression analyses. It should be emphasized that relationships identified may not be interpreted as causal. One-tailed tests of significance were employed as the directions of the relationships were expected or hypothesized. Trainer scores were matched to students. That is, all of a trainers' students had the same trainer self-efficacy score.

B. Multiple Regression Analyses

Several regression models were carried out to test the posited hypotheses. For each analysis, a temporal hierarchical

ordering, based on theoretical and logical considerations, was applied: gender, age, academic qualification, time since injury, reasons for enrolment, center, trainer self-efficacy, VR self-efficacy Factor 1 "VR self-efficacy job search" and Factor 2 "VR self-efficacy computer", proxy efficacy Factor 1 "proxy efficacy understanding", and performance Factor 1 "performance job search" and Factor 2 "performance understanding". Two approaches were used, namely, hierarchical regression and stepwise regression, when no theoretical criterion was evident, were used to include or remove an independent variable at each step.

Trainer self-efficacy and proxy efficacy computer, are statistically significant predictors of performance understanding, each accounting for 3% of the variance. It is possible that, in general, the more self-efficacious the trainers were for training people with disabilities, the more likely they did a good job of making the course understandable, and positively affect the students' training performances.

VR self-efficacy job search is a statistically significant predictor of performance job search accounting for 7% of the variance. The more self-efficacious the students generally were for job searching, the better their performances in the training course for job searching, and vice versa. A positive relationship between self-efficacy and performance has been found consistently in a large number of studies [21].

Trainer self-efficacy was also a statistically significant predictor of performance understanding, accounting for 3% of the variance. In general, the more self-efficacious the trainers were for training people with disabilities, the more likely they did a good job of making the course understandable, and positively affected the students' training performances.

Proxy efficacy computer is a statistically significant predictor of VR self-efficacy job search, accounting for 7% of the variance. Generally, the more self-efficacious the students were to search for a job, the higher their proxy efficacy for their trainer to train them to use the computer, and vice versa. The reader is reminded that causality may not be ascribed. Indeed the relationship between proxy efficacy and self-efficacy is likely to be dynamic, and therefore, the finding makes sense in both directions. Job search and the use of a computer are not entirely independent from each other, because nowadays computers are important tools in job searching.

Proxy efficacy computer and proxy efficacy understanding are statistically significant predictors of VR self-efficacy computer, accounting for 6% and 5% of the variance, respectively. The more capable students believed their trainers were helping them learn how to use a computer effectively, the higher their VR self-efficacy for using computer, and vice versa. Reference [13] claimed that people might exert more effort to change their behavior if they believe they have a capable third party acting on their behalf.

IV. IMPLICATIONS

The time when people with disabilities are in the process of adjusting to their condition after an injury is a vital

transforming period. Therefore, it is important that trainers are fully equipped with the knowledge, which enables them to be aware of the variety of modifications that can be made to the VR courses, in line with each student's physical condition, in order to implement appropriate VR training. A formal university qualification is considered important evidence of competency as a VR trainer. A psychology component should be included in the VR degree for VR trainers to enhance understanding of the psychological status of those injured a long time ago. This would give trainers a wider scope for dealing with students with a long time since injury. In Saudi Arabia, the Ministry of Labor and Social Development should provide training courses for trainers to teach them the skills required to train students with disabilities. The extensive training of VR trainers could be provided in an in-service mode, or during on the job training for those who have just begun the job. Such training should utilize the knowledge of previous studies and current policies in the domain of VR for people with disabilities, in order to create a policy that aims for greater evaluating, updating, revising, and developing of the training for VR trainers. The Ministry of Education should create a policy that aims at a better use of the knowledge of recent research in the field of VR for people with disabilities in order to develop VR curricula to be included in rehabilitation degree programs in universities in Saudi Arabia. Of course, this would take time to be implemented, however, a curriculum that teaches the main aspects of VR could be provided relatively quickly.

Improving VR trainers' competence and training them should be on the VR providers' policy agenda. Trainers should also be trained on how to ensure the link between students' capabilities, interests and qualifications and the nature of the potential job. This is because the stronger the link, the more likely it would help increase the chance for students with disabilities to become employed.

VR providers should make a policy, which aims at utilizing self-efficacy sources when training the VR trainers. Capable trainers could contribute greatly to training people with disabilities on how to use a computer.

Longitudinal research is needed to further investigate how VR self-efficacy relates to VR training performance. It is recommended that future research follow students with disabilities from the beginning of the VR course until the end of it, as it could provide a clearer understanding of the relationship between high VR self-efficacy and VR training performance. This study examined a limited number of variables to investigate VR self-efficacy in the context of VR training for people with disabilities. Future research is needed to investigate in depth the relationship between time since injury and students' training performance to better understand the role of VR self-efficacy in enhancing students' training performances. There might be a need for future research to identify the best time to provide people with disabilities with VR services during the rehabilitation program, since the efficacy of VR programs could be influenced by the timing of the injury and negative psychological emotional reactions such as anxiety.

V. CONCLUSION

This study suggests that the relationship between self-efficacy and VR performance appears to be consistent with other academic contexts. The study reported an exploration of relationships among variables related to VR training of people with disabilities. The principal result is the strong association between VR self-efficacy, trainer's self-efficacy, and proxy efficacy as a predictor of the actual VR performance of people with disabilities in their VR training.

The quantitative result demonstrated that trainer self-efficacy was a statistically significant predictor of VR self-efficacy. This means, in general, the more self-efficacious the trainers were in training people with disabilities, the higher the VR self-efficacy, and vice versa.

Trainer self-efficacy was a statistically significant positive predictor of the training performance of people with disabilities. Trainer self-efficacy likely predicted the training performance because, in general, the more self-efficacious the trainers were for training people with disabilities, the more likely they did a good job of making the course understandable, and had opportunities for mastery experiences, and thus, positively affect the students' training performances. The trainers training and executing given tasks successfully likely increased the students' beliefs in their own capabilities, and thus, improved performances. Arguably, trainer self-efficacy would likely predict the quality of the training achievements.

VR trainer self-efficacy, proxy efficacy, and VR self-efficacy appear to be important elements in VR training performances of people with disabilities. The results and implications of this study may add to the knowledge of rehabilitation for people with disabilities in general, and applying SCT in the context of VR in particular. This study may also encourage other researchers to conduct longitudinal research to study VR self-efficacy in more depth. Future research might be needed to identify other determinants of VR self-efficacy and its relation to the VR training performance of people with disabilities.

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