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The Self-Rating Scale of Self-Directed Learning (SRSSDL): A factor analysis of the Italian version

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SUMMARY

Background: The development of self-directed learning (SDL) is a growing priority among nurses and other health care workers: they need to be prepared in order for their university education to be effective and relevant to their lifelong learning. To learn in a self-directed manner, it is necessary to develop an awareness of one's ability to self-learn and then to implement appropriate and effective strategies; progress must be assessed using validated measurement tools.
Objectives: The aim of this study was to examine the factor structure of the Italian version of the Self-Rating Scale of Self-directed Learning ($SRSSDL_{Ita}$), and to provide evidence of its validity.
Design: A cross-sectional design was undertaken.
Participants: Given that the instrument is composed of 60 items, a total of 600 to 900 participants were targeted. In addition, according to the theoretical assumption that self-directed learning — as a crucial component of lifelong learning — is a measurable skill that is developed across the individual's professional life, a maximum variation sample was examined. Therefore, 847 participants were involved, including 453 nurses, 141 radiology technicians, 182 nursing students and 68 radiology technician students.
Methods: Principal component analysis and factor analysis were performed.
Results: The Italian version of the SRSSDL Scale consists of 40 items composed of eight factors: Awareness ($\alpha = 0.805$), Attitudes ($\alpha = 0.778$), Motivation ($\alpha = 0.789$), Learning Strategies ($\alpha = 0.789$), Learning Methods ($\alpha = 0.781$), Learning Activities ($\alpha = 0.676$), Interpersonal Skills ($\alpha = 0.684$), and Constructing Knowledge ($\alpha = 0.732$).
Conclusions: The $SRSSDL_{Ita}$ consists of 40 items across eight factors. The shorter Italian version might reduce the time needed to complete, thereby making the tool faster and easier to use.

Self-directed learning (SDL) is a process through which the individual takes the initiative to learn with or without the help of others, identifies their learning needs, formulates objectives, identifies human and material resources, chooses and implements appropriate strategies and assesses the learning level they have achieved (Knowles et al., 2008). According to the andragogical model of Knowles et al. (2008), adults are willing to learn when their life circumstances create a need for knowledge; adults are also considered responsible for their own existence and need to be considered capable of a form of self-direction that is independent of others (Knowles et al., 2008). There are two prevailing views concerning SDL (Knowles et al., 2008):

> *"First of all, self-directed learning is conceived as self-instruction, in which people take control of the dynamics and techniques to educate themselves on a particular subject. […] Secondly, self-directed learning is conceived as a form of individual autonomy, called self-teaching. Autonomy means taking control of the objectives and targets of learning and giving it a direction."*

The development of SDL is a growing priority among nurses and other health-care workers, who need their university education to be effective in their lifelong learning (*lifelong learning* or *life-wide learning*, *LLL*) (Muir Gray, 2001). Self-directed learning can be developed either alone or with the support of others, such as teachers, educators, mentors and colleagues, both at the university and at the clinical practice level, through both the initiatives undertaken by the faculties' members and those realised by the managers and at continuing education centres, respectively. In accordance with its relevance, the approach has garnered increased attention in countries such as Australia, Canada, the UK, the USA, Italy and, more recently, Thailand (Klunklin et al., 2010) where it has been described as an integral component of health-care education and practice (Hoban et al., 2005; Li et al., 2010; Shokar et al., 2002).

Chen et al. (2012) have argued that SDL is significantly correlated with the teaching skills of nursing instructors. Studies showing the

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association between SDL skills and learning styles among nurses have been contradictory, however, and this has been a much debated topic in recent years (El-Gilany and Abusaad, 2012). A positive correlation between SDL and the success of academic nursing students has been documented (Avdal, 2012).

For SDL to be effective, it is necessary to develop first an awareness of one's self-learning skills, and then to develop effective strategies to access those skills. Suitable educational strategies must be implemented in order to foster trust, mutual accountability and critical thinking, all of which are complementary skills in the process of becoming a self-directed learner (Yuan et al., 2012). It is therefore necessary to measure the individual's SDL ability and to foster the development of relevant skills through the application of appropriate strategies and also through teamwork among colleagues and/or students who can increase the individual's motivation to become self-directed. Measuring SDL skills allows us to identify those individuals who require specific development plans and to measure the effectiveness of the initiatives promoted.

At the moment, three original tools that measure SDL skills are documented in the literature: the Self-directed Learning Readiness Scale (SDLRS; Guglielmino, 1977), the Oddi Continuing Learning Inventory (OCLI; Oddi et al., 1990) and, most recently, the Self-Rating Scale of Self-Directed Learning (SRSSDL; Williamson, 2007). The tools developed by Guglielmino and Oddi for nursing students have been validated and subjected to factor analysis in order to identify basic constructs (Fisher and King, 2010; Harvey et al., 2006). While no recent validation studies are available for the Oddi scale (Oddi et al., 1990), the Guglielmino (1977) tool, originally composed of 58 items categorised into eight factors, has been re-validated recently among nursing students (Fisher et al., 2001). On a convenience sample of 201 students attending the Bachelor of Nursing programme at the University of Sydney, the instrument was reduced to 42 items and, through factor analysis, further two items were removed. The scale consists of 40 items and is then divided into three factors: "Self-Management" (13 items), "Desire for Learning" (12 items) and "Self-control" (15 items). Later in 2010, Fisher and King re-validated the tool in a sample of 227 first-year nursing students providing a confirmation of the factors (Fisher and King, 2010; Fisher et al., 2001).

Williamson's SRSSDL was validated in 2007, among a group of nursing students at Thames Valley University in London. The tool assesses learning skills including awareness, learning strategies, learning activities, evaluation and interpersonal skills. It has subsequently been validated in an Italian context that used nursing and radiology technician students and professionals (Cadorin et al., 2011, 2012), based on the need to develop a SDL tool that is useful across LLL stages and for different heath care worker profiles. The SRSSDL provides instant feedback on the individual's self-directed skill level. This feedback is important not only in helping the individual choose the best available education strategies (for example, whether the student needs a supervisor, if the nurse is a new employee and needs additional coaching by more experienced colleagues, etc.), but also in the process of evaluating the effectiveness of such strategies (Cadorin et al., 2012; Zabalegui, 2011). Factor analysis was not performed on the original scale (Williamson, 2007). Nevertheless, recently Cheng and colleagues have incorporated the items of Guglielmino's and Williamson's tools, developing a new instrument, the Self-Directed Learning Instrument (SDLI) aimed at measuring the SDL abilities among nursing students. Involving a convenience sample of 1072 nursing students in Taiwan, the factor analysis highlighted four factors: "Learning motivation" (6 items), "Planning and implementing" (6 items), "Self-monitoring" (4 items) and "Interpersonal communication" (4 items) (Cheng et al., 2010).

Therefore, the general aim of this paper is to document the factor structure of the Italian version of the SRSSDL and to provide evidence of its validity.

Methods

Study Design

A cross-sectional study design was performed in 2010.

Sample and Sampling

According to Pett et al. (2003), 10–15 participants per item were considered the sample-size target. Given that the instrument is composed of 60 items, the researchers targeted a sample between 600 and 900 participants. In addition, according to the theoretical assumption that SDL, as a crucial component of LLL for health-care workers (Stanley and Dougherty, 2010) will be developed over the course of their professional lives (Malta et al., 2010), a maximum variation of the sample was sought out. Registered nurses (RNs) and nursing students, as well as radiology technicians (RTs) and radiology technician students, were therefore eligible for inclusion as participants in the study. The group of RTs was included according to the following consideration made by researchers: a) review of the literature has revealed no studies regarding the self-directed learning among RTs, health-care workers and students, and b) both students and professional RTs are exposed to very innovative environments (e.g., technology is constantly changing) in which the ability to continuous learning, is considered crucial.

Therefore, a consecutive sample of RNs and RTs attending continuing education seminars, workshops or other educational initiatives offered from 2009 to 2010 by hospitals and who had agreed to take part in the survey, were included. All RN students ($n = 182$) and RT students ($n = 68$) enrolled in two universities located in Northern Italy during the academic year 2009–2010, and who had agreed to take part in the survey were included as well.

Instrument and Data Collection Process

The SRSSDL, originally developed and validated by Williamson (2007), was considered here in its Italian version (Cadorin et al., 2011, 2012). The tool was forward- and backward-translated and evaluated for its content validity. In addition, during its preliminary validation, the tool had shown a high test–retest reliability (Pearson's coefficient = 0.73) and a high internal consistency (Cronbach's alpha = 0.94) (Cadorin et al., 2011, 2012). The Italian version of the tool consisted of 60 items categorised into five general domains (Awareness, Learning strategies, Learning activities, Evaluation and Interpersonal skills), according to the original version (Williamson, 2007). The responses for each item were rated using a five-point Likert scale (5 = always, 4 = often, 3 = sometimes, 2 = seldom, 1 = never). In addition, a general questionnaire that included demographic variables (gender, age, education and professional background and, for students, the year of university attended at the moment of the survey) was also adopted.

Only once the study had received the proper authorisations was preliminary contact made with potential participants. At the start of continuing education seminars, an extensive description of the aims of the study was provided to eligible participants, after which the questionnaires were distributed. The same process was carried out for the students, giving information at the beginning of the lessons and then distributing the questionnaires.

Ethical Issues

The authorisations of the institutes involved in this study — i.e., Continuing Education Centres offering the seminars/workshops and the Bachelor's Degree programme in Nursing Science and Radiology Technicians — were obtained through their Internal Review Boards. Before distribution of the questionnaires, participant consent was