





Analysis of the Scale of Impairment to the Application of Social Technology


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How to cite this article: Oliveira, A. S., Lemos, V. C. O., Freitas, C. P. P., Mourão, L., Poletto, M., Souza, A. P. L., & Koller, S. H. (2020). Analysis of the Scale of Impairment to the Application of Social Technology. *Psicologia: Teoria e Prática*, 22(2), 83–104. doi:10.5935/1980-6906/psicologia.v22n2p83-104

Submission: 12/04/2019

Acceptance: 17/02/2020



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Abstract

The process of evaluating the effectiveness of Social Technology for Professional Qualification requires reliable and compact instruments. Therefore, the present study aims to evaluate evidence of the validity of an impairment scale to the Application of Social Technology. The sample consisted of 299 professionals working in public institutions attending people under conditions of social vulnerability in the State of Rio Grande do Sul. The exploratory analysis of graph data suggested a structure with three factors: interpersonal relationship, infrastructure, and perceptions of work with vulnerable populations. The confirmatory factor analysis presented low residue indexes and excellent fit indices. The results demonstrate the adequacy of the scale to investigate factors that impair the application of the contents of professional training. **Keywords:** scale validity; professional training; social technology; social vulnerability; transfer support.

ANÁLISE DA ESCALA DE IMPEDIMENTOS À APLICAÇÃO DA TECNOLOGIA SOCIAL

Resumo

O processo de avaliação da efetividade de uma Tecnologia Social para Capacitação Profissional necessita de instrumentos fidedignos e breves. Com base nisso, o presente estudo objetiva avaliar evidências de validade de uma Escala de Impedimentos à Aplicação da Tecnologia Social. A amostra foi composta por 299 profissionais que trabalham em instituições públicas de atendimento às populações em vulnerabilidade social no estado do Rio Grande do Sul. A análise exploratória de grafos sugeriu uma estrutura com três fatores: relacionamento interpessoal, infraestrutura e percepções do trabalho com populações vulneráveis. A análise fatorial confirmatória apresentou baixos índices de resíduos e excelentes índices de ajuste. Os resultados demonstram a adequação da escala para investigar fatores impeditivos à aplicação dos conteúdos trabalhados em capacitações profissionais.

Palavras-chave: validade de escala; capacitação profissional; tecnologia social; vulnerabilidade social; suporte à transferência.

ANÁLISIS DE LA ESCALA DE IMPEDIMENTOS A LA APLICACIÓN DE LA TECNOLOGÍA SOCIAL

Resumen

El proceso de evaluación de la efectividad de una Tecnología Social de Capacitación Profesional necesita instrumentos fidedignos y breves. Con base en ello, el presente

estudio objetiva evaluar evidencias de validez de una Escala de Impedimentos a la Aplicación de la Tecnología Social. La muestra fue compuesta por 299 profesionales que trabajan en instituciones públicas de atención a las poblaciones en vulnerabilidad social en el estado de Rio Grande do Sul. El análisis exploratorio de grafos sugirió una estructura con tres factores: relación interpersonal, infraestructura y percepciones del trabajo con poblaciones vulnerables. El análisis factorial confirmatorio presentó bajos índices de residuos y excelentes índices de ajuste. Los resultados demuestran la adecuación de la escala para investigar factores impeditivos a la aplicación de los contenidos trabajados en capacitaciones profesionales.

Palabras clave: validez de escala; capacitación profesional; tecnología social; vulnerabilidad social; soporte de transferencia.

1. Introduction

The understanding of social vulnerability originated in human rights and it was later incorporated into the field of health. The condition of social vulnerability arises from the inadequate relationship between the material and symbolic skills and resources owned by the different players in society versus access to social, economic, cultural opportunities originating from the State, the market and society (Abramovay, Castro, Pinheiro, Lima, & Martinelli, 2002).

Resources availability, the opportunities stemming from the market, the State and Society and the strategies in which individuals make use of their skills and resources to adapt to the changes generated by a given social context, are associated with well-being to the extent that they can provide individuals with more efficient resources for their life in society. Therefore, a group or an individual becomes socially vulnerable when faced with a situation in which their resources and skills are insufficient or inadequate to deal with the opportunities offered by society (Abramovay et al., 2002; Guareschi, Reis, Huning, & Bertuzzi, 2007). Social vulnerability is not restricted to poverty and economic classes; it also includes political issues regarding violence, health, race, sexual orientation, gender, ethnicity, and others (Guareschi et al., 2007).

In Brazil, public services are specializing in the development of assistance and psychotherapy policies for people exposed to situations of social vulnerability (Hohendorff, Habigzang, & Koller, 2015; Brasil, 2012). However, these professionals face difficulties to adequately meet their work demands, such as difficulties in tackling complaints due to legal and ethical issues, lack of technical competence

for the victim's psychological and social monitoring (Damásio, Habigzang, Freitas, & Koller, 2014; Hohendorff et al., 2015).

The complexity of the service for vulnerable populations (e.g., victims of violence) can have negative impacts on the professionals (National Society for the Prevention of Cruelty to Children [NSPCC], 2013). Among the organizational aspects that have generated illness and psychological distress, the following are included: low work control, high physical and psychological demand, poor content, and rigid and authoritarian hierarchical relationships (Grant, Lavery, & Decarlo, 2019; NSPCC, 2013; Turgoose, 2015). Among the negative consequences for professionals serving vulnerable populations, burnout, or chronic fatigue syndrome has been identified (Lago, 2008; Turgoose, 2015). The constant contact with complex demands involving different types of violence (e.g., structural, physical, psychological) can also lead professionals to perceive themselves as vulnerable, also to become victims, causing a gradual loss of the feeling of control over their environment, as well as a decrease in their esteem and trust in others (Lago, 2008; Turgoose, 2015).

Professionals who work with populations in social vulnerability tend to experience higher rates of stress and to be more vulnerable to psychological trauma. They need to invest in emotional issues in a high number of cases with insufficient recovery time (NSPCC, 2013; Turgoose, 2015). Living this type of experience has a variety of effects on a professional, including low self-esteem, emotional numbness, cynicism, and loss of confidence. Some professionals report physical symptoms such as headaches and nausea due to the concern and the trauma that are reflected in certain cases (Grant et al., 2019; NSPCC, 2013; Turgoose, 2015). Other psychological symptoms may also arise, such as the demand for emotional withdrawal, perceptions of lack of control, low self-esteem, and stress related to the psychosocial setting (Godinho, Ferreira, Fayer, Bonfatti, & Greco, 2017).

The negative impact of working with vulnerable populations also has negative consequences for the population served, which is sometimes treated with depersonalization behaviors by the professional, resulting in lower quality of care, less ability to identify symptoms and signs of violence and greater emotional distance from work, since the professional is unable to empathize with those individuals and provide them with adequate support (NSPCC, 2013; Turgoose, 2015). The behavior of affected professionals impacts the departments and services,

increasing pressure on the other team members, who may have to handle additional cases besides their own to help their suffering teammate (NSPCC, 2013).

In this connection, a Social Technology for Professional Training (STPT) was proposed for people in the education, health, and children and adolescents protection network regarding human rights, violence, and conflict mediation. An STPT of public service workers for vulnerable populations in Rio Grande do Sul was used to expand their knowledge and generate collective learning to face the difficulties associated with their work demands.

Social technology consists of differentiated techniques and methods that are executed as a feasible, structured, and integrated strategy for the qualification of professionals. Social Technology is also subjected to evaluations of its results and impact, therefore, capable of reapplication. It also considers the context in which it is performed and values the knowledge and experiences of the professionals who take part in this reality (Freitas, Habigzang, & Koller, 2015; Rodrigues & Barbieri, 2008).

The participation of professionals in building the solution through social technology allows the development of new learning, behavior changes, and solid knowledge that can be transmitted to other people with similar demands, for example, training of professionals to face violence. This professional training strategy aims at economic, social, and environmental sustainability. That is why science integrated with social technologies must respond to the broad demands arising from conflicts and social inequalities. This vision is essential for the evaluations in the health area, intending to produce knowledge of valuable content, enabling the development of more in-depth work to transform reality, where problems are debated and solutions found (Rodrigues & Barbieri, 2008; Martins, 2007).

In addition to the development of the STPT, it should be observed that evaluating the effectiveness of these interventions is relevant to verify whether they are amenable to reapplication. The STPT assessment allows feedback from the attendance system's protection, the improvement of processes and decisions, and a systematic process of gathering information for continuous improvement (Freitas et al., 2015; Bastos, Ciampone, & Mira, 2013).

The methods developed to assess the effectiveness of interventions demonstrate that factors related to training (e.g., content, frequency of meetings,

infrastructure), factors external to professional training (e.g., support for learning, support for the application of learned content), and some aspects intrinsic to the participants may be associated with the impact on the work environment of trained professionals (Mourão, Gondim, Macêdo, & Luna, 2013). Among these factors, support for transference, or support for the application of the content learned in training by managers and coordinators, has been pointed out as being a relevant factor for professionals to apply the skills acquired in training (Bastos et al., 2013; Mourão, Abbad, & Zerbini, 2014).

The transfer support is constituted by the trainees' perceptions regarding support to apply new skills acquired in the professional training in the work environment and regarding the employees' perception of the organization's characteristics (Bastos et al., 2013; Mourão et al., 2014). This construct can be subdivided into situational support factors (managerial, social, and organizational support to apply new skills learned in professional training at work), and material support (quality and availability of material resources and adjustment of the physical environment of the workplace to the transfer of professional training), and consequences associated with the use of new skills, which are related to the opinion of participants on the reactions of peers or supervisors, in the face of attempts to apply the new skills learned at work (Bastos et al., 2013).

Support for transference is a fundamental factor for the application of training content in day-to-day practice, thus generating new competencies. For this purpose, an adequate organizational environment is important, both in the functional context and in terms of working groups (Borges-Andrade, Abbad, & Mourão, 2012). Transfer support is also constituted by the trainees' perceptions about the support of peers and leaders in applying the new skills acquired in professional training within the work environment. This can be broken down into two factors: the psychosocial support received from managers and colleagues and the material support, such as the infrastructure conditions and the material and financial resources (Mourão et al., 2014).

For an STPT effectiveness assessment process, the use of reliable and compact instruments is required, considering the characteristics of the work context in which the training was developed. It is understood that the items of the instruments used in the assessment of professional training must be constructed based on the instructional objectives of the course (Mourão et al., 2013). In this perspective, an

instrument was developed to investigate the professionals' perceptions about the application of the skills acquired during the training in the services of the Protection Network. Thus, the present study aims to evaluate evidence of the validity of the Scale of Impairments to the Application of Social Technology (EIATS).

2. Method

2.1 Participants

The inclusion criterium for the participants was to have completed the training for professionals in the education, health, and child protection network on human rights, violence, and conflict mediation. Thus, the sample consisted of 299 professionals from the protection network who worked in public institutions serving the socially vulnerable populations in the State of Rio Grande do Sul. The sample was formed predominantly by women (90%, $n = 268$). The participants' average age was 36.8 years ($SD = 9.7$ years, range 18 to 64 years), with 44% declaring to be married, 40% single, 7% divorced, and 9% others. Concerning work in the area, the average working time ranged from one month to 40 years ($M = 7.7$ years; $SD = 8.3$ years), with the time of work in the function ranging from one month to 30 years ($M = 5.8$ years; $SD = 6.5$ years). Regarding education, 52% of the professionals had undergraduate degrees, 42% are graduated students, and 6% completed high school. Among the higher education professionals, 37% graduated in Pedagogy, 20% in Social Work, 7% in Psychology, another 7% in Psychopedagogy, 5% in History and the remaining 24%, equally distributed in Physical Education, Liberal Arts, History, Mathematics, Educational Guidance, Art Education, Performing Arts, Advertising, and Biology. At least 67% of the participants, at the time of the course, had already gone through some training on work with vulnerable populations.

2.2 Instruments

A sociodemographic and labor questionnaire was applied to obtain information such as age, gender, marital status. Also, education, working time in general, working time in the function, and specific training to work with populations in socially vulnerable situations were investigated.

The Scale of Impairments to the Application of Social Technology (EIATS – *Escala de Impedimentos à Aplicação da Tecnologia Social*) was developed through a

broad brainstorming. The items were developed based on the theoretical framework on the transfer of learning, social support (Borges-Andrade et al., 2012; Bastos et al., 2013; Mourão et al., 2014) and on the demands associated with interventions with populations in situations of social vulnerability (Abramovay et al., 2002; Damásio et al., 2014; Freitas et al., 2015; Hohendorff et al., 2015). The construction of the items was carried out by five investigators specialized in working with populations in social vulnerability and psychometry situations. Initially, a set of 23 items was set up to be answered using a five-point Likert scale, varying from one (not at all) to five (very much). The set of initial items was evaluated in a pilot study, which involved 100 professionals from the Protection Network who had worked for at least two years with populations in situations of vulnerability. In order to identify which items were suitable, the professionals selected the items based on the redundancy between them, their specificity, clarity and relevance for the application of the content in their work performance. Out of the total 23 items, 13 were considered relevant and eventually made up the final version of the scale. EIATS aims to assess professionals' perceptions of aspects related to the professional, interpersonal relationships, and infrastructure that could hinder the application of the learning and skills acquired at the STPT.

2.3 Data Collection Procedure

This study is an excerpt from the investigation "Evaluation the Impact of Professional Training for Workers in the Child and Adolescent Protection Network of Rio Grande do Sul, Brazil." The application of the scale described here was used in the present study to assess the impact of STPT on the interventions developed by professionals specialized in the care of populations in situations of social vulnerability.

STPT was composed of three modules, in which the themes Child and Adolescent Rights, Violence, Conflict Mediation were addressed. The training lasted a total of 30 hours. The training was free and was carried out in partnership with the Social Assistance Secretariats of each Municipality. All professionals from the Municipality's Protection Network and neighboring municipalities were invited to participate in the STPT, and the dissemination was carried out through digital media (e.g., e-mails, Facebook) and physically (e.g., posters and folders). STPT was developed in six municipalities in Rio Grande do Sul and originated from previous

studies involving these professionals who served vulnerable populations, who had difficulties in adequately meeting their work demands and the need for greater technical competence for the psychological and social monitoring of the victim (Damásio et al., 2014; Hohendorff et al., 2015). Classes were expository, with group discussion activities and the development of an action plan.

The professionals who participated in the study did so voluntarily, having received a copy of the Free and Informed Consent Form. The questionnaires were applied in the last training module, collectively, in the same auditoriums and classrooms where the training had been implemented. The present study was initiated after the approval of a Research Ethics Committee.

2.4 Data analysis

Network psychology techniques were used to determine the number of scale factors and comparisons between groups. Network psychology is a technique based on the principle that visible psychological effects are results emerging from the interaction network between its components. Network psychology, as a statistical technique, is performed by analyzing the correlations of what was measured, using a graph where each node is a variable, and the nodes are connected by an edge that represents the correlation between the variables. The greater the correlation between the variables, the thicker the edge, and the closer the variables are (Epskamp, Borsboom, & Fried, 2017).

Exploratory Graph Analysis – EGA (Golino, 2017) is a statistical technique based on network psychology, which seeks to estimate the number of dimensions in an instrument. The EGA has the advantage of estimating the number of dimensions and also which variables belong to which dimensions (Golino & Epskamp, 2017). The EGA was conducted by the EGA package, in the R language (R Core Team, 2018), which allows the result after checking the scale's dimensionality and structure to be tested through the confirmatory factor analysis (CFA), which allows us to assess whether the factorial structure found is suitable for the instrument and the sample.

The CFA was conducted using the lavaan package (Rosseel, 2012) in the software R, using the *Weighted Least Squares Mean and Variance-Adjusted* (WLSMV) estimator, as it is suitable for categorical variables and does not require normality. The Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) tests, and their robust

versions and Root-Mean-Square Error of Approximation (RMSEA) were used to verify if the model was suitable. RMSEA is expected to be below 0.08, CFI and TLI to be above 0.96 (Brown, 2015).

Through the network analysis, it was possible to verify characteristics emerging from the relationship between the variables, and whether there was any structural difference between the groups of professionals with different levels of education. It is expected that professionals with different backgrounds would present a slightly different network, representing the way their technical knowledge changes the way they receive/interpret the STPT. The network analysis was conducted using the qgraph package (Epskamp, Cramer, Waldorp, Schmittmann, & Borsboom, 2012). In addition to the network graph, three measures of centrality were used; such measures inform how central each variable is in the network. Thus, connectivity indicates how much one variable connects other variables; proximity indicates how close one variable is to the others, and strength indicates the mean of the variable's correlations. Each of these measures is represented by a z-score, so that the indexes can be compared across different networks.

3. Results

The EGA carried out with the EIATS suggested a structure with three factors, namely: interpersonal relationship, infrastructure, and perceptions of work with vulnerable populations. The first factor, interpersonal relationship, was composed of three items; an example of one item is "My relationship with my co-workers." The second factor, named infrastructure, was also made up of three items, and one example is "Working conditions concerning material resources." Finally, the third factor, perceptions of work with vulnerable populations, was composed of seven items; as an example, one item reads "Lack of sensitivity in relation to the demands of the public served." The CFA confirmed this structure, with low residue levels (RMSEA = 0.074 (90% CI: 0.04 0.10)) and excellent fit rates (CFI = 0.982; TLI = 0.978; Robust CFI = 0.995; Robust TLI = 0.994). The complete results and the factorial structure can be seen in Table 3.1.

Table 3.1. Confirmatory actor analysis of the EIATS.

Latent variables						Variances					
	Variables	Estimate	Standard error	z value	sig.	Standard	Estimate	Standard error	z value	sig.	standard
Factor 1:	1	1.00			0.000		0.51	0.09	5.76	0.000	0.84
	2	1.02	0.04	25.32	0.000		0.33	0.06	5.27	0.000	0.90
	3	1.08	0.06	17.67	0.000		0.35	0.08	4.48	0.000	0.90
Factor 2:	4	1.00			0.000		0.42	0.08	5.10	0.000	0.86
	5	1.02	0.06	16.80	0.000		0.47	0.10	4.67	0.000	0.85
	6	1.00	0.05	20.94	0.000		0.44	0.08	5.53	0.000	0.85
Factor 3	7	1.00			0.000		0.75	0.11	6.88	0.000	0.78
	8	1.05	0.06	16.47	0.000		0.68	0.09	7.61	0.000	0.81
	9	1.02	0.07	15.56	0.000		0.68	0.10	6.91	0.000	0.80
	10	1.08	0.07	16.62	0.000		0.48	0.09	5.57	0.000	0.86
	11	1.07	0.07	16.13	0.000		0.57	0.08	7.51	0.000	0.84
	12	1.05	0.06	16.29	0.000		0.72	0.11	6.52	0.000	0.80
	13	0.92	0.08	12.31	0.000		1.04	0.12	8.61	0.000	0.70
						Factor 1	1.25	0.14	9.28	0.000	1.00
						Factor 2	1.18	0.12	10.21	0.000	1.00
						Factor 3	1.17	0.14	8.58	0.000	1.00
Covariances											
		Estimate	Std error	z value	sig.	Standard					
Factor 1	~~										
	Factor 2	0.89	0.10	8.90	0.000	0.74					
	Factor 3	0.74	0.10	7.09	0.000	0.61					
Factor 2	~~										
	Factor 3	0.61	0.09	6.60	0.000	0.52					
CFI		0.982									
TLI		0.978									
Robust CFI		0.995									
Robust TLI		0.994									
RMSEA		0.038									
Robust RMSEA		0.038	I.C. 90% =	0.030	0.046						

The results of the psychological networks can be seen in Figure 3.1.

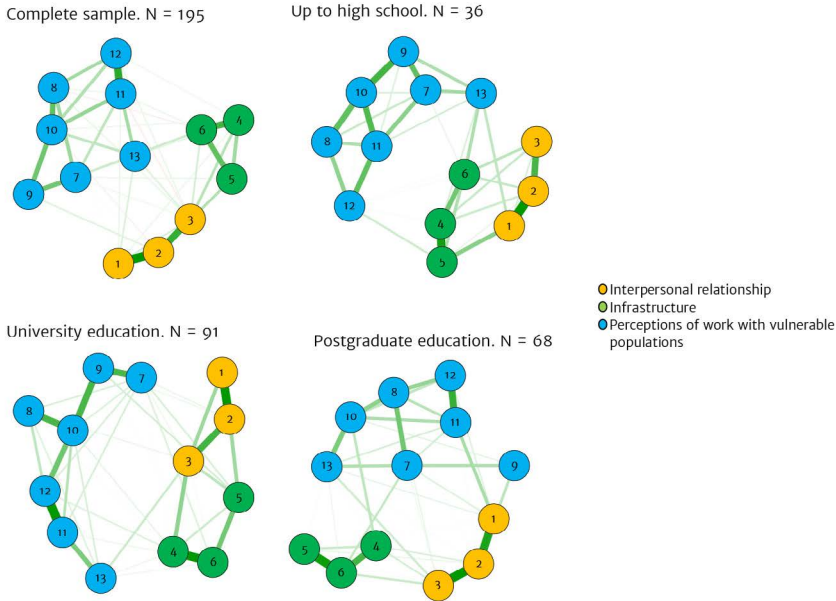


Figure 3.1. Graphs of the EIATS according to samples separated by education level.

It is noteworthy that in the network of the entire sample and in those who have completed high school, 13 (“My institution does not work in partnership with other institutions in the network”) connects factor 3 – Perceptions of work with vulnerable populations with 2 – Infrastructure. However, this item is less central in the networks of individuals with higher education and postgraduate education, and these factors are less connected in the case of individuals whose education was completed with graduation. For graduated individuals, item 9 (“Realizing that there is a naturalization of violence and violation of rights in my work environment”) is more central. When the connectivity measures are verified (Figure 3.2), these observations are confirmed; item 13 is the one with the highest connectivity index in individuals up to high school, followed by item 1 (“My relationship with my boss”). However, although item 9 connects the factors (factor 1 – Interpersonal relationship, factor 2 – Infrastructure, and factor 3 – Perceptions of work with vulnerable populations), this item is not particularly connective in general, having a high degree of connectivity only with higher education individuals.

Scale applied to social technology

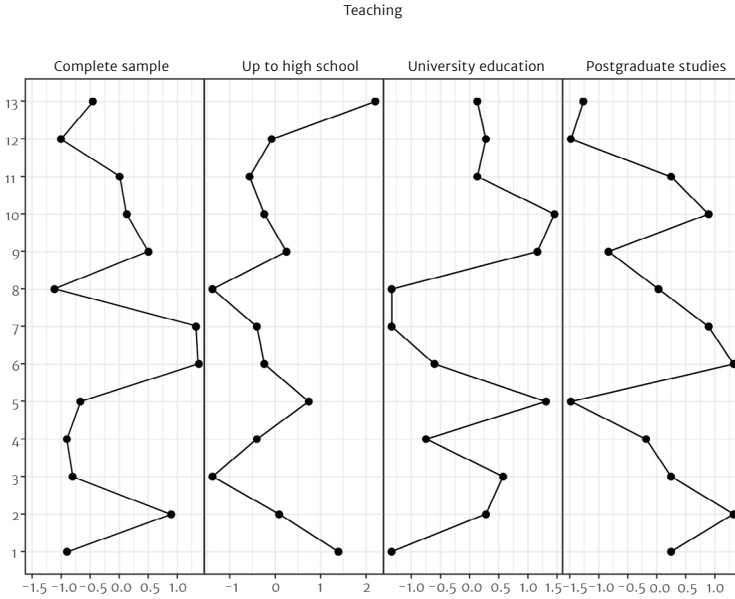


Figure 3.2. Connectivity analysis of the EIATS.

When looking at the centrality chart (Figure 3.3), the network of individuals with up to high school is more dispersed, with a highlighted importance for item 13, while in the other groups, the network is better connected.

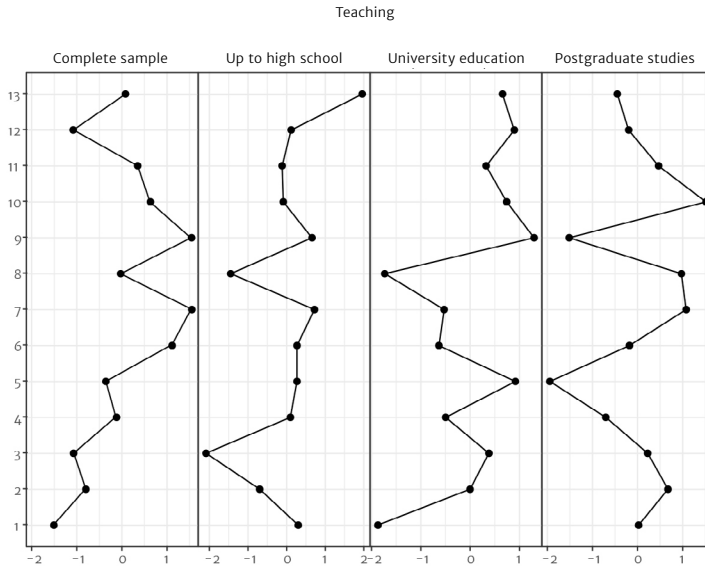


Figure 3.3. Centrality analyses of the EIATS.

The data mentioned above is an indication that, for those with less education, there is an attribution of greater importance to the support that the organization offers. In contrast, individuals with a higher level of education seem to have the ability to identify problems in a more specific way, giving more importance to the quality of work and well-being, as in items 9 (“Realizing that there is a naturalization of violence and violation of rights in my work environment”), 5 (“Working conditions with regard to workload”), 2 (“My relationship with my co-workers”) and 10 (“Feeling that my initiatives are not effective”). More connected networks, in general, are also an indication that in individuals with a higher degree of education, there is a greater possibility of identifying difficulties. In contrast, for individuals with up to high school, the perceptions about the difficulties of applying skills acquired in training are centered on the relationship with the institution (item 13).

4. Discussion

The present study aimed to evaluate the evidence of validity of the EIATS. This scale was developed to measure the professionals' perceptions about potential impairments in applying the qualification developed, and contents learned through a PTST in their work. The psychometric properties of the scale were evaluated using network psychology techniques (Exploratory Graph Analysis – EGA) and CFA.

Through the EGA, it was observed that the EIATS presented a structure of three first-order oblique factors, which assessed the professionals' perceptions about their general and specific difficulties related to the support to the transfer. Among them, interpersonal relationships (social support among professionals), infrastructure, and perceptions of work with vulnerable populations are included. Subsequently, the CFA confirmed that the first order oblique three-factor structure was the best solution for the scale.

The EIATS sought to investigate the perceptions of trained workers about the levels of support to transfer in their relevant workplaces. Support for transfer refers to an organizational context that facilitates the application of new skills in the work environment. This support can be originated through managers and co-workers (Borges-Andrade et al., 2012). This dimension can also be termed support for the training application. As in the present study, support for transfer has been measured in two factors: psychosocial support (support received from managers and colleagues) and material support (infrastructure conditions and material, and financial resources) (Bastos et al., 2013; Mourão et al., 2014). In the case of STPT, these support dimensions take on a specific outline since the work with vulnerable populations encounters barriers that are peculiar to them, such as the difficulties in conducting complaints and the lack of technical competence for the psychological and social monitoring of the victim (Damásio et al., 2014; Hohendorff et al., 2015).

In this connection, in the scale presented, in addition to the Interpersonal Relationship and Infrastructure dimensions, it was observed that, among the protection network professionals, the perceptions of work with vulnerable populations dimension constitutes one of the factors related to workers' perceptions on the support to contents transfer addressed in their professional training. These findings demonstrate the peculiarities of the demands of professionals who serve populations in situations of social vulnerability (Freitas et al., 2015; Lago 2008; NSPCC, 2013).

The interpersonal relations dimension investigated the social support perceived by workers to support transfer. Social support as a support for transfer is a relevant factor since an organizational set up where there is social support from managers and coworkers facilitates the application of the new skills acquired in professional training (Borges-Andrade et al., 2012). This dimension of the EIATS deserves attention since the complexity of serving vulnerable populations (with high physical and psychological demands and, sometimes, rigid and authoritarian hierarchical relationships) can lead to negative impacts on professionals, including illness and psychological distress (Grant et al., 2019; NSPCC, 2013; Turgoose, 2015).

When analyzing in-depth, we note the significant relationship between the three items in the interpersonal relations dimension. These items may have exhibited a high relationship since the protection network workers tend to perform horizontal work. Thus, there is no substantial difference between the role of the manager and other professionals in the network, according to the Basic Operating Standard – NOB-Suas (Brasil, 2012), in article 28, in which management levels are identified among the States, the Federal District, and the municipalities following the organization of Suas at the local, state and district levels. The correlation between items 1 and 3, as well as between items 2 and 3, may result from the fact that the projects and levels of management in public services are dynamic and the changes can occur automatically considering that the federative entity, when the Suas Development Index is assessed annually, demonstrates the achievement of a more advanced stage or a return to the previous stage of the Suas Organization (articles 29 and 30).

The second dimension refers to the infrastructure of the work environment for the application of the content presented. It is observed that the difficulties pointed out by the participants in the referred items (e.g., “Working conditions with regard to infrastructure,” “Working conditions with regard to workload”) indicate aspects that may make it difficult for professionals to develop long-term projects, hampering the application of professional qualification at work. Therefore, if there is no support for the transfer of knowledge and learning, the acquisition of content and skills development may be insufficient to generate changes in the work environment at the team and organization levels. Thus, organizations should assess their support aspects before enrolling their teams in professional training that may not be effective (Bastos et al., 2013).

The third dimension, perceptions of work with vulnerable populations, refers to the way professionals assess the impairments to the support of the specific transfer of workers who serve populations in situations of social vulnerability (e.g., “Not knowing what my role is,” “Realize that there is a naturalization of violence and violation of rights in my work environment”).

In the case of the present scale, this dimension is justified because, in the social technologies geared to the servicing of vulnerable populations, the knowledge and experience of the professionals who participate in this reality are particularly taken into account (Freitas et al., 2015; Rodrigues & Barbieri, 2008).

When assessing the work-related impairments of the protection network professionals, it may be observed that support from managers and peers is of paramount importance to minimize the negative impact of work demands associated with vulnerable populations on the professionals’ mental health (NSPCC, 2013). Based on these findings, the relationships between the perception of work with vulnerable populations and interpersonal relations dimensions can be understood by professionals to assess their perceptions of support for transfer.

The high cost of the negative impact of work demands associated with vulnerable populations (NSPCC, 2013; Lago 2008) demonstrates the relevance of the perception of work with vulnerable populations dimension being investigated as an impairment to the application of the content addressed in the training program. Emotional withdrawal, perceptions of lack of control, low esteem of workers, and stress associated with the psychosocial work environment can turn professionals negligent in their work activities (Godinho et al., 2017; Grant et al., 2019; Turgoose, 2015). This context can make it difficult for them to develop new skills or perceive opportunities to apply them in their work context. In this connection, the perception of work with vulnerable populations must be taken into account as a necessary element for the effective transfer to work of what was learned in the training activity aimed at this type of social technology.

According to the results obtained, in the relationship between the institution and the protection network among professionals with high school education level, the infrastructure factor connects with the perceptions of work with vulnerable populations factor, which demonstrates that this group is more dependent on support by the organization than professionals with higher education, in which the connectivity between these items is lower. Therefore, the performance of

secondary level education professionals in the institutions refers to the difficulties of infrastructure and perceptions about working with vulnerable populations. It is thus understood that these professionals have less autonomy, which causes them to perceive more difficulties and impairments to the application of the training content, depending heavily on the institution's policy and how it relates to the network. Higher education professionals demonstrate greater self-regulation in learning, allowing them to have more autonomous versus more controlled behavior in their learning activities (Pinto, Faria, & Pinto, 2016).

5. Final considerations

The EIATS aimed to assess the perceptions of professionals about the support for transference in the dimensions: interpersonal relations, infrastructure, and perceptions of work with vulnerable populations. The items on these scales were developed to measure the difficulties that workers in the protection network face in their daily lives. The scale showed satisfactory fit rates, which suggests that it can be considered an adequate instrument to assess workers' perceptions of their difficulties in applying the content of their professional training. Some strong points can be identified, such as the fact that the scale is valid to assess the applicability of identifying the perceptions of difficulties of those professionals who work with populations in situations of social vulnerability. The scale also details important aspects related to the perceptions of transfer support, such as the interpersonal relationship among professionals, infrastructure, and perceptions of work with vulnerable populations.

A few limitations can also be observed, such as the exclusive use of a self-report instrument, which may have produced a bias in connection with the collection method, suggesting that the data should be reviewed with caution. The type of sample for convenience and women's dominance may restrict the generalization of results to other types of investigation. Besides, the sample is composed exclusively of professionals from the State of Rio Grande do Sul. Although the study involves professionals from different regions of the State, this is still a limitation to the generalization of results. Another limitation is the lack of evaluation application after a training period, so professionals can transfer their knowledge to their work context and generate effects on their performance and attitudes (Lacerda & Abbad, 2003).

Regardless of these limitations, the present investigation is of theoretical and practical relevance, for offering evidence of the validity of a specific scale for professionals who work with populations in conditions of social vulnerability. Further studies investigating such evidence are required, using larger and more diverse samples. It is also relevant to apply the EIATS after some training as a possibility for the development of further studies. These surveys will contribute to the development of tools for the assessment of Social Technologies for Professional Training for workers who meet complex demands related to populations in situations of social vulnerability.

References

- Abramovay, M., Castro, M. G., Pinheiro, L. C., Lima, F. S., & Martinelli, C. C. (2002). Juventude, violência e vulnerabilidade social na América Latina: desafios para políticas públicas. Brasília: UNESCO. Retrieved from: <http://livros01.livrosgratis.com.br/ue000077.pdf>.
- Bastos, L.F.L., Ciampone, M. H. T., & Mira, V. L. (2013). Avaliação de suporte à transferência e impacto de treinamento no trabalho dos enfermeiros. *Revista Latino-Americana de Enfermagem*, 21 (6),1274-81. doi:10.1590/0104-1169.2913.2364.
- Borges-Andrade, J. E., Abbad, G. S., & Mourão, L. (2012). Modelos de avaliação e aplicação em TD&E. In G. Abbad, L. Mourão, P. P. M. Meneses, T. Zerbini, J. E. Borges-Andrade & R. Vilas-Boas (Orgs.), *Medidas de avaliação em treinamento, desenvolvimento e educação* (pp. 20-35). Porto Alegre: Artmed.
- Brown, T. A. (2015). Confirmatory factor analysis for applied research. *Methodology in the social sciences* (2nd ed.). New York: The Guilford Press.
- Damásio, B. F., Habigzang, L. F., Freitas, C. P. P., & Koller, S. H. (2014). Avaliação de processo de uma tecnologia social de capacitação profissional para psicólogos que atendem casos de violência sexual. *Contextos Clínicos*, 7(2), 207-219. doi:10.4013/ctc.2014.72.08.
- Epskamp, S., Borsboom, D., & Fried, E.I. (2017). Estimating psychological networks and their accuracy: a tutorial paper. *Behavior Research Methods*. doi:10.3758/s13428-017-0862-1.
- Epskamp, S., Cramer, A. O. J., Waldorp, L. J., Schmittmann, V. D., & Borsboom, D. (2012). qgraph: network visualizations of relationships in psychometric data. *Journal of Statistical Software*, 48(4), 1-18. Retrieved from: <http://www.jstatsoft.org/v48/i04/>.

- Freitas, C. P. P., Habigzang, L. F., & Koller, S. H. (2015). Avaliação de uma capacitação para profissionais de psicologia que trabalham com vítimas de abuso sexual. *Psico*, 46(1), 38-45. doi:10.15448/1980-8623.2015.1.16718.
- Godinho, M. R., Ferreira, A. P., Fayer, V. A., Bonfatti, R. J., & Greco, R. J. (2017). Capacidade para o trabalho e fatores associados em profissionais no Brasil. *Revista Brasileira de Medicina do Trabalho*, 15(1), 88-100. doi:10.5327/Z1679443520177012.
- Golino H. F., & Epskamp, S. (2017) Exploratory graph analysis: a new approach for estimating the number of dimensions in psychological research. *PLoS ONE* 12(6), e0174035. doi:10.1371/journal.pone.0174035.
- Golino, H. F. (2017). *EGA: Exploratory graph analysis: estimating the number of dimensions in psychological data*. R package version 0.3. Retrieved from: <https://rdrr.io/github/hfgolino/EGA/>.
- Grant, H. B., Lavery, C. F., & Decarlo, J. (2019). An exploratory study of police officers: low compassion satisfaction and compassion fatigue. *Frontiers in psychology*, 9, 2793. doi:10.3389/fpsyg.2018.02793.
- Guareschi, N. M. F., Reis, C. D., Huning, S. M., & Bertuzzi, L. D. (2007). Intervenção na condição de vulnerabilidade social: um estudo sobre a produção de sentidos com adolescentes do programa do trabalho educativo. *Estudos e Pesquisas em Psicologia*, 7(1), 17-27. Retrieved from: <http://pepsic.bvsalud.org/pdf/epp/v7n1/v7n1a03.pdf>.
- Hohendorff, J. V., Habigzang, L. F., & Koller, S. H. (2015). Psicoterapia para crianças e adolescentes vítimas de violência sexual no sistema público: panorama e alternativas de atendimento. *Psicologia, Ciência e Profissão*, 35 (1), 182-198. doi:10.1590/1982-3703000202014.
- Lacerda, E. R. M., & Abbad, G. (2003). Impacto do treinamento no trabalho: investigando variáveis motivacionais e organizacionais como suas preditoras. *Revista de Administração Contemporânea*, 7 (4), 77-96. doi:10.1590/S1415-6552003000400005.
- Lago, K. C. (2008). Fadiga por compaixão: quando ajudar dói. Dissertação de mestrado, Universidade de Brasília, Brasília, DF, Brasil.
- Martins, J. (2007). Avaliação de tecnologia inovadora para promoção do desenvolvimento infantil segundo agentes comunitários de saúde. Dissertação de mestrado, Universidade de São Paulo, Escola de Enfermagem, São Paulo, SP, Brasil.
- Mourão, L., Gondim, S. M. G., Macêdo, M. E. C., & Luna, A. F. (2013). Avaliação de necessidades de treinamento como preditora do impacto do treinamento no trabalho.

- Revista Psicologia: Organizações e Trabalho*, 13(2), 203-216. Retrieved from: http://pep-sic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1984-66572013000200008.
- Mourão, L.; Abbad, G.S., & Zerbini, T. (2014). Avaliação da efetividade e dos preditores de um treinamento à distância em uma instituição bancária de grande porte. *Revista de Administração*, 49(3), 534-548. doi:10.5700/rausp1166.
- NOB-SUAS (2012). Norma operacional básica do sistema único de assistência social. Ministério do desenvolvimento social e combate à fome secretaria nacional de assistência social. Resolução CNAS nº 33 de 12 de dezembro de 2012. Recuperado de: https://www.mds.gov.br/webarquivos/public/NOBSUAS_2012.pdf.
- NSPCC, 2013. Vicarious trauma: the consequences of working with abuse. An NSPCC research briefing. 1-8. Recuperado de: <https://www.nspcc.org.uk/preventing-abuse/signs-symptoms-effects/>.
- Pinto, J. C., Faria, L., & Pinto, H. R. (2016). Autorregulação na aprendizagem: um estudo exploratório no ensino superior português. *Psicologia da Educação*, 43, 1-12. doi:10.5935/2175-3520.20160001.
- R Core Team. (2018). R: a language and environment for statistical computing, R Foundation for Statistical Computing, Austria, 2015. ISBN 3-900051-07-0. Retrieved from: <http://www.R-project.org>.
- Rodrigues, I. & Barbieri, J. C. (2008). A emergência da tecnologia social: revisitando o movimento da tecnologia apropriada como estratégia de desenvolvimento sustentável. *Revista de Administração Pública*, 42(6), 1069-94. Retrieved from: <http://www.scielo.br/pdf/rap/v42n6/03.pdf>.
- Rosseel, Y. (2012). Lavaan: an r package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1-36. Retrieved from: <http://www.jstatsoft.org/v48/i02/>.
- Turgoose, D. P. (2015). Empathy and compassion fatigue in specialist police officers working with victims of rape and sexual assault: Assessment and brief training intervention. Tese de Doutorado, University College London.

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