

THE INTERPLAY OF ATTACHMENT AVOIDANCE AND ANXIETY IN AFFECTING NURSE'S CAREGIVING STYLE AND EMOTIONAL EXHAUSTION

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Aim of this work is to study the causal connections among different psychological dimensions that affect the relationships between nurses and patients. The data come from a survey involving nurses working in north-eastern Italy. The variables considered were anxious and avoidant attachment styles, self-efficacy in emotions regulation, professional self-efficacy, positive/negative representation of caregiving, emotional exhaustion, and affective commitment to the hospital. These latent variables were measured using the Partial Credit Model, which belongs to the Item Response Theory approach to latent variables. The obtained measures became the input of the analysis of causal relations between these variables which ended with the proposal of a causal model. The model highlights how well-being or discomfort may influence nurses' perception of their relationship to patients. Results could be useful in order to provide training and/or other forms of support, to promote the quality of the health service.

Key words: Partial Credit Model; Causal graph; Attachment; Caregiving; Self-efficacy.

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Research has mainly focused on contextual variables such as work-overload, lack of personal/organizational resources, and job demands in explaining burnout (Kokkonen, Cheston, Dallos, & Smart, 2014; Maslach & Leiter, 1997). According to scholars (Kokkonen et al., 2014; Pines, 2004) less attention has been paid to individual variables. Recently, researchers have begun to emphasize the influence of personality and personal characteristics in the emotional exhaustion process (Gama, Barbosa, & Vieira, 2014; Harrison, Loiselle, Duquette, & Semenic, 2002). When analyzing their importance, it is useful to include attachment style, which develops during childhood; this variable is in fact predictive of the attachment style adopted in adulthood and influences individual responses to stress in different interpersonal and social domains (Hawkins, Howard, & Oyeboode, 2007). Scholars, such as Pines (2004) and Ronen and Mikulincer (2009), examined the relationship between adult attachment insecurity and burnout. Nicholis, Hulbert-Williams, and Bramwell (2014) demonstrate that insecure attachment style of caregivers is associated with depression, high caregiving stress, and general difficulties with several caregiv-

ing practices. In addition, Hawkins and colleagues (2007) identify insecure attachment style as an important variable influencing nurses' stressful experience at work. Social personality studies indicate that adult attachment can be measured along two major dimensions, attachment related anxiety and attachment related avoidance. According to the social-personality psychological perspective (Shaver & Mikulincer, 2002), adult attachment styles can in fact be conceptualized as different regions in a two-dimensional space. This perspective developed apart from the "developmental perspective"; the abovementioned approaches differ, sometimes consistently, in their conceptualization of adult attachment and despite advances and researchers' interest methodological controversies are not likely to be resolved (Crowell, Fraley, & Shaver, 2008). According to literature, above all in the context of helping professions, attachment insecurity seems to be one of the most important sources of stress and burnout. The attachment behavioral system can be activated by any type of subjectively perceived threatening event or situation. In the present study, a particular type of stress is associated with relational issues escalating from the gap between attachment style and corresponding representation (positive vs. negative) of caregiving and the need to adequately perform in taking care of the patient. Moreover, anxious and avoidant subjects differ consistently in their coping strategies against stress. Anxious subjects are focused on their own emotional distress and they tend to adopt emotion/relational-focused coping strategies. Avoidant subjects tend to block cognitive access to any type of distress and tend to devalue relationships. Even though consistently different, both strategies involve defenses which clearly affect relational/social interactions, above all in organizational contexts in which care and help have to be provided. Little research has been carried out to explore the effects of health-care professionals' attachment style on their performance in caregiving. In fact, research investigating the involvement of attachment styles in health professionals' work and functioning is in its infancy (Hawkins et al., 2007; for an example, see Pedrazza, Berlanda, Trifiletti, & Bressan, 2016). Working environments in nursing involve specific job stressors (Wang, Liu, & Wang, 2015) such as caregiving practices (Pedrazza, Berlanda, Trifiletti, & Minuzzo, 2017; Pedrazza, Minuzzo, Berlanda, & Trifiletti, 2015; Pedrazza, Trifiletti, Berlanda, Minuzzo, & Motteran, 2015), exposure to pain and death, role stress, lack of support from supervisors, and interpersonal conflicts with patients and coworkers. Therefore, nursing has to be considered a professional context within which the risk of emotional exhaustion is high (Garrosa, Rainho, Bernardo, & Monteiro, 2010). Most of the research on the abovementioned topic is about one single or few variables, multivariate studies are still scarce. Moreover, Kokkonen and colleagues (2014), and Gama and colleagues (2014) suggest developing predictive designs in order to explore the relationships between attachment styles, caregiving representations, emotional exhaustion, and self-efficacy.

AIM OF THE STUDY

This study explores and combines insecure attachment styles with positive and negative representations of caregiving in order to propose hypotheses about their causal relation to professional self-efficacy, self-efficacy in emotion regulation, emotional exhaustion, and affective commitment to the hospital.

The psychological dimensions of interest were measured through questionnaires and the responses were transformed into objective measures thanks to the use of the Partial Credit Model

(PCM; Masters, 1982). The obtained measures became the input of the analysis of causal relations between the variables which ended with the proposal of a causal model (Spirtes, Scheines, Ramsey, & Glymour, 2010) which suggests a model of attachment effects in the caring context. It allows to clarify the specific contribution of different types of attachment insecurity (anxiety and avoidance) and their complex relationship to variables of individual differences supporting the patient-nurse relationship. This model could be very useful to highlight how and to what extent well-being on the one hand, and discomfort on the other, can modify or influence the way nurses perceive their relationship with patients. Results could be useful in order to provide training and/or other forms of support for nurses, which in turn will ensure the necessary monitoring of the quality of the health service.

METHOD

Procedure

The study, carried out in 2014 at a hospital in north-eastern Italy, was approved by the Ethics Committee of University of Verona, Department of Human Sciences, and permission to collect data was obtained from the nursing administrators of the hospital involved in the study. Participants were assured that their anonymity and confidentiality would be respected and guaranteed in the presentation of results. At the same time, they were informed that participation was completely voluntary and that they could withdraw from the study at any time with no negative consequences. Questionnaire packs were distributed to all nursing staff. They included the questionnaire, an information sheet that briefly described the study's purpose, and a consent form. The nurses were easily reached during their working hours at their territorial medical facility and they were asked to answer the questionnaire during their work time in agreement with the personnel manager. Questionnaires were completed in only one session and after completion immediately handed back to researchers.

Participants

A total of 570 valid questionnaires were completed (75.10% return rate); Table 1 reports in detail the characteristics of the sample with respect to gender, age, and length of service. The comparison between these values and the corresponding values in the population of reference (female 85.31%, male 14.69%, mean age 45.57 years, and mean length of service 19.28 years), and the high return rate suggest that the sample under analysis is representative.

Measures

The survey contained several instruments to measure different dimensions characterizing the nurse-patient relationship: anxious and avoidant attachment styles, self-efficacy in emotion regulation, professional self-efficacy, positive and negative representation of caregiving, emotional exhaustion, and affective commitment to the hospital. Responses were given on a 7-point Likert scale, ranging from 1 (*totally disagree*) to 7 (*strongly agree*).

TABLE 1
Frequency distributions of nurses' characteristics

Variables	n (%)
<i>Gender</i>	
Female	454 (83.30%)
Male	91 (16.70%)
Missing	25
<i>Age</i>	
21-30	43 (7.89%)
31-40	124 (22.75%)
41-50	245 (44.95%)
51-60	128 (23.49%)
Over 60	5 (0.92%)
Missing	25
Estimated mean	44.16
<i>Length of service</i>	
At most 5 years	54 (10.37%)
6 to 10 years	59 (11.32%)
11 to 15 years	58 (11.13%)
16 to 20 years	73 (14.01%)
Over 20 years	277 (53.17%)
Missing	49
Estimated mean	18.96

Anxious and avoidant attachment styles. The attachment theorists (Bowlby, 1973, 1982; Mikulincer & Shaver, 2016) conceptualize attachment style as the result of both the degree and quality of responsiveness of significant others to one's own needs and the recurrent own reaction to their behavior over time. The Experiences in Close Relationships (ECR; Brennan, Clark, & Shaver, 1998) scale includes two subscales: anxiety (18 items; e.g., "I worry about being alone") and avoidance (18 items; e.g., "I am nervous when another person gets too close to me"). Anxious individuals are entangled in worries and angry feelings about others, they are hypersensitive to attachment experiences and can easily retrieve memories of their childhood but have trouble in discussing them without anger or anxiety (Mikulincer & Shaver, 2016; Pedrazza & Boccato, 2012). Emotionally distant and self-reliant avoidant subjects play down the importance of attachment relationships, they are often concerned with discomfort with closeness and dependence on others. They typically appear to be secure, but their security relies on recognition and perceived mutual respect.

Self-efficacy in emotion regulation. Regulatory emotional self-efficacy (RESE) is concerned with people's belief in their ability to regulate their positive and negative affective reactions in response to different situations (Caprara et al., 2008). The scale developed by Caprara and colleagues is able to measure the perceived self-efficacy to express positive affect (five items; e.g., "I'm able to express joy when good things happen to me"); and to regulate negative

affect (nine items; e.g., “I’m able to keep from getting discouraged by strong criticism”). In this study only the items referred to the perceived self-efficacy in managing negative affect in response to adversities or frustrating events were used. They refer to beliefs regarding one’s ability to ameliorate negative emotional perceived states once they are aroused in response to important problems or stressful events.

Professional self-efficacy. Self-efficacy is concerned with people’s belief in their ability to succeed in specific situations (Bandura, 1977, 1995). It is an individual assessment of one’s ability to execute specific skills under particular circumstances, and thereby to achieve a successful outcome. As self-efficacy beliefs are domain specific, their measurement needs to be tailored and framed around several complex tasks. To measure professional self-efficacy, we used six items (e.g., “I’m always able to handle emergencies and contingencies that arise in my work”; “I’m always up to duties that are assigned to me”) of the scale proposed by Borgogni, Petitta, and Steca (2001).

Positive and negative representation of caregiving. According to Bowlby (1982) and Reizer and Mikulincer (2007), the caregiving system is designed to provide protection and support to others who are either dependent or temporarily in need. The Mental Representation of Caregiving Scale (MRCS) included 27 items (e.g., “I know I can help patients”; “I know when I do the right thing for my patients, even if they don’t thank me for that”; “Patients tend to trust me”).

Emotional exhaustion. This is the core component of burnout. Burnout was first introduced by Freudenberger (1974) and Maslach and Jackson (1981) and it represents reactions to work distress which easily results in emotional depletion and depersonalization. Burnout is a state of physical and emotional depletion that manifests itself both in physical fatigue and a feeling of being burned out by one’s job. Nurses are considered to be particularly susceptible to emotional exhaustion because they experience high levels of stress in their everyday work. The emotional exhaustion scale of the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981) in its Italian version has been validated by Sirigatti and Stefanile (1993). Six items measured emotional exhaustion (e.g., “I feel burned out from my work”).

Affective commitment to the hospital. Commitment is a psychological state that characterizes the employee’s relationship with the organization and has implications for the decision to continue or discontinue membership in the organization (Meyer, Allen, & Smith, 1993). We explored only affective commitment including the corresponding six items (e.g., “I would be very happy to spend the rest of my career with this hospital”).

Data Analysis

Measure of the Latent Trait

In order to obtain a measure for each latent trait considered, the PCM was used. PCM belongs to the family of Rasch measurement models; these models convert raw scores into linear and reproducible measurements and conform to fundamental measurement theory, that is, they have to adhere to the principle of specific objectivity. Moreover, they require unidimensionality and local independence. If the data fit the model, then the produced measures are objective and expressed in logits (Wright & Masters, 1982). Following the PCM, given an item i with $m + 1$ re-

sponse categories ($x = 0, 1, \dots, m$), the probability of the subject n with level of latent trait β_n to respond in category x is given by:

$$P(X_{ni} = x) = \frac{\exp\left\{\sum_{j=0}^x (\beta_n - \delta_{ij})\right\}}{\sum_{s=0}^m \exp\left\{\sum_{j=0}^s (\beta_n - \delta_{ij})\right\}} \quad (1)$$

where δ_{ij} is a parameter associated with the transition between response categories. δ_{ij} can be decomposed into two components $\delta_{ij} = \delta_i + \tau_{ij}$, $j = 1, 2, \dots, m$, where δ_i is the mean difficulty of item i and τ_{ij} is called threshold ($\tau_{i0} \equiv 0$ and $\sum_{j=1}^m \tau_{ij} = 0$). If the categories and thresholds are disordered, merging categories may reveal the effective number and ordering of categories and improve item fit as well as the overall scale (Andrich, de Jong, & Sheridan, 1997) so, when in the analysis the estimated thresholds were found disordered, they were merged together properly. In order to validate the scale and evaluate the obtained measure, the infit and outfit mean square (MNSQ) statistics for each item, the principal component analysis (PCA) performed on standardized residuals, and the person reliability index (PRI) were considered (Bond & Fox, 2007). Infit and outfit MNSQ statistics indicate how accurately the data fit the model, whereas the PCA of standardized Rasch residuals allows to verify whether the assumption of unidimensionality is satisfied. The PRI provides a measure of the replicability of people placement that can be expected if the same sample of people is given another set of items measuring the same latent construct and it is equivalent to Cronbach's alpha (Linacre, 1997). The estimates of the parameters involved in Equation (1) were obtained making use of the joint maximum likelihood estimation method (Wright & Masters, 1982) implemented in Winsteps 3.75 (Linacre, 2012) with the sum of item difficulty parameters set equal to 0.0 logits. The comparison between the average measure of each latent variable and zero (mean item difficulty) allows to draw a general description of the available sample of nurses.

The Causal Model

Following the definition of the causal model given by Shpitser and Pearl (2008), a probabilistic causal model is a tuple $M = (U, V, F, P(u))$, where U is a set of background or exogenous variables, which cannot be observed but which affect the rest of the model, V is a set $\{V_1, V_2, \dots, V_n\}$ of observable or endogenous variables which are functionally dependent on some subset of $U \cup V$, F is a set of functions $\{f_1, f_2, \dots, f_n\}$ so that each f_i is a mapping from a subset of $U \cup V \setminus \{V_i\}$ to V_i , and so that UF is a function from U to V and $P(u)$ is a joint probability distribution over U . The set of functions F corresponds to the causal mechanisms that link together the observed and unobserved variables. The ignorance of the background context represented by U is reproduced by the distribution $P(u)$ and this distribution, together with the mechanisms in F , induces the distribution $P(v)$ over the observable variables. The causal mechanisms represented by F can be graphically expressed in a causal graph G . Each observable variable V_i corresponds to a vertex in the graph and for any couple of variables V_i and V_j , so that V_i appears in the description of f_j , there is a directed edge (\rightarrow) from V_i to V_j that connects the two. If the causal graph is acyclic, it is called Directed Acyclic Graph (DAG) and the corresponding causal model is called semi-Markovian. Moreover, if the unobserved variables U are also independent, the correspond-

ing causal model is called Markovian. The causal model that is derived from the available data is a Markovian causal model. When observational data are available, as in this case, under suitable assumptions, such as causal sufficiency, causal Markov condition, and causal faithfulness condition (Pearl, 2009; Spirtes, Glymour, & Scheines, 2000), it is possible to recover the causal structure, or at least the equivalence class to which the true structure belongs, that represents the causal relationships that link together the available variables. Given the set of observable variables V , whose causal structure can be represented by a DAG G , the assumption of causal sufficiency states that V includes all of the common causes of pairs in V , that is, there are no confounder variables in V that have been left out of V . The causal Markov condition states that every variable in V is probabilistically independent of its non-effects (non-descendants in G) conditional on its direct causes (parents in G), whereas the causal faithfulness, or stability, condition states that no conditional independence holds unless entailed by the causal Markov condition. It is difficult to check in practice the validity of these types of assumptions, even if it is reasonable to assume their validities in most of the cases (Pearl, 2009; Kalisch et al., 2010). Under the assumptions listed above, the Markov equivalence class (Chickering, 2002a), which can be uniquely represented by a Complete Partially DAG (CPDAG), to which the causal structure underlying the available data belongs, can be derived applying either constraint-based or score-based algorithms. In the first case, the results from a series of conditional independence tests are used to determine the CPDAG, whereas the score-based algorithms make use of model selection criteria (AIC or BIC) to score the running structures until the structure (or equivalence class of structures), which maximizes the selected score, is found. The algorithms used in this study were two constraint-based algorithms PC (Spirtes et al., 2000) and JCPC (Ramsey, 2010) and one score-based algorithm Greedy Equivalence Search (GES; Chickering, 2002b).

When possible, it would be opportune to insert specific background information and assumptions in the searching step through constraints; this narrows down the various possible causal graphs found by the searching algorithm, keeping it from exploring graphs that contain edges implying unrealistic causal connections. On the other hand, the imposition of these constraints has to be done very carefully, given that they considerably condition the results of any searching algorithm. In this study, background information and assumptions were formalized through the identification of forbidden edges, meaning that if a relationship between two variables connected by a forbidden edge exists, it is represented by an arrow with orientation opposite to the one expressed by the forbidden edge. These edges originate from a tier ordering of the variables, meaning that variables in higher tiers can cause, but not be caused by, the variables in lower tiers.

In order to study the stability of the structures obtained from the three searching methods considered, a bootstrap study was performed. Fifty bootstrap samples, with the same size as the original sample, were generated from the available data and the found edges were recorded. The results guided the choice of the structure that is proposed as causal structure for the available variables.

The Linear Structural Equation Model

In this study, a particular form of causal model is considered, that is the linear structural equation model (SEM; Bollen, 1989). Linear SEM is a system of linear structural equations among a set of variables $V = \{V_1, V_2, \dots, V_n\}$, for example $V_1 = a + b V_2 + c V_3 + u_1$, so that each variable appears on the left hand side of at most one equation. Each equation is structural in the

sense that it should be interpreted as an assignment process which expresses the causal relation between the dependent variable (V_1), which is on its left-hand side, and its independent or explanatory variables (e.g., V_2 and V_3 in the example) which cause it. An error or disturbance term u is added to each equation, representing all factors omitted from the set of variables V that, together with the explanatory variables, determine the value of the dependent variable. This interpretation of the equations in linear SEM renders the equality sign in the equations non-symmetrical, since the values of the explanatory variables V_2 and V_3 are not determined by inverting the equation $V_1 = a + b V_2 + c V_3 + u_1$, but by other equations. Moreover, this interpretation makes the claim that the other variables in V do not affect the dependent variable (V_1) once the independent variables (V_2 and V_3 in the example) are held fixed (Pearl, 2009). The structural coefficients (b and c in the example) quantify the direct causal effect of the corresponding explanatory variables on the dependent variable.

The estimates of the parameters of the linear SEMs were obtained making use of the maximum likelihood method, based on the correlation matrix, implemented in the R package *lavaan* (Rosseel, 2012). In order to evaluate the goodness of fit of the model, the following fit indices were considered: the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), the Tucker-Lewis index (TLI), and the comparative fit index (CFI).

RESULTS

Latent Traits

Before proposing a causal model able to describe the causal relationships among the psychological dimensions considered, a brief description of each latent trait and the results of the Rasch analysis applied to the questionnaire devoted to measure it, are reported. For each latent trait, a preliminary analysis of the presence of empty or almost empty response records was performed and ended with the deletion of some records from the sample. The use of inferential confidence intervals (Carpita & Golia, 2012) allowed to verify that the averages of the Rasch measures evaluated considering the groups generated by the covariates gender, age, and length of service, were not significantly different, confirming that the sample was homogeneous.

Table 2 reports in summary the results of the Rasch analysis performed for the eight latent traits considered. In general, the values of PRI imply a good level of confidence that the nurse placement would be reproducible with a different instrument measuring the same construct. The analysis of skewness and kurtosis suggests the non-normality of the distribution of almost all the obtained measures; this finding has an effect on the choice of a suitable conditional independent test used in the determination of the DAG.

Attachment styles. Eighteen and ten items measured, respectively, anxious and avoidant attachment styles. For both the attachment styles, the order in the thresholds was not respected, so the third and fourth as well as the fifth and sixth response categories were merged together.

Regarding the anxious attachment style, during the Rasch analysis three misfitting items were identified and successively deleted, whereas six items connected to subdimensions were

TABLE 2
Summary of the Rasch analysis for all the dimensions considered:
Final number of participants, response categories and items, and person reliability index (PRI).
Summary of the obtained measures: Mean, variance, skewness, and kurtosis.

	Nurses	Categories	Items	PRI	Mean	Variance	Skewness	Kurtosis
Anxious attachment	551	5	10	0.84	-0.194	1.332	-0.316	5.170
Avoidant attachment	553	5	7	0.83	-0.748	2.734	-0.125	4.829
Positive representation of caregiving	550	5	6	0.82	0.679	3.214	0.582	4.377
Negative representation of caregiving	546	4	5	0.69	-0.959	3.175	-0.374	2.825
Emotional exhaustion	555	5	5	0.87	0.045	6.460	0.086	3.923
Professional self-efficacy	547	6	5	0.80	0.957	3.014	0.550	4.272
RESE	552	6	6	0.81	0.502	2.148	0.062	6.049
Hospital commitment	542	5	5	0.82	0.821	4.656	0.237	3.696

Note. RESE = regulatory emotional self-efficacy.

deleted to weaken them. The aspect that most easily generates anxiety is self-doubt and fear of losing others' approval whereas the aspect that generates lowest anxiety is the desire to get very close to others even if this sometimes scares subjects away. With respect to the avoidant attachment style, the Rasch analysis identified three misfitting items connected to a subdimension, that were deleted. From the analysis, the aspect that most easily represents an avoidant attachment is the perception of others' intrusiveness and the lack of trust whereas the aspect that less represents an avoidant attachment is related to shyness and reluctance to get close to other people. The average measure of avoidant attachment can be interpreted as an indication that the nurses involved in this study are not dismissive.

Self-efficacy in emotion regulation. Eight items in the survey were connected to this latent trait. The order in the thresholds was not respected, so the second and the third response categories were merged together and, in order to weaken one strong subdimension, two items were deleted. The most difficult aspect to overcome is irritation toward experienced wrongs whereas the easiest aspect to manage is frustration when one does not obtain the appreciation one feels to deserve. Moreover, the average measure of the construct suggests that the nurses involved in this study perceive themselves as effective in managing negative emotions.

Professional self-efficacy. In this study, six items were used to assess professional self-efficacy. Given that the first two response categories had a very low frequency, they were merged together. Moreover the analysis identified the presence of one subdimension, so one item was deleted to weaken it. The most difficult aspect to overcome is the capability to iron out thorny is-

sues among colleagues, whereas the easiest aspect to manage is integration with colleagues. Moreover, the average measure of self-efficacy suggests that the nurses involved in this study perceive themselves as effective and efficient.

The caregiving system. We identified two features of caregiving, named here positive and negative representation of caregiving. The first one is characterized by a high perception of the personal ability to provide effective help associated with the altruistic motivations. The second feature is characterized by the perceived low ability to be effective in the recognition of others' needs. Ten and five items were connected, respectively, with positive and negative representation of caregiving. For both the representations of caregiving, the order in the thresholds was not respected, so for the positive representation of caregiving the first three response categories were merged together, whereas for the negative representation of caregiving the third and fourth as well as the last three response categories were merged together. Regarding the positive representation of caregiving, the Rasch analysis identified one misfitting item, that was deleted, and some items connected to different subdimensions, three of which were deleted to weaken these subdimensions. The most difficult aspect in the positive representation of caregiving behavior reflects the ability to help a suffering patient, whereas the easiest is related to the awareness of providing the best intervention for patients. With respect to the negative representation of caregiving, no misfitting items were found; the easiest perceived behavior refers to the incapability to notice a request for help whereas the most difficult perceived behavior refers to frequent avoidance of needy peoples' or patients' requests. The evaluation of the average measure of positive and negative representations of caregiving suggests that nurses involved in this study score high in the positive and low in the negative representation of caregiving.

Emotional exhaustion. This dimension of Maslach Burnout Inventory (Maslach & Jackson, 1981) consists of five items. The order in the thresholds was not respected, so the second and the third as well as the fifth and the sixth response categories were merged together, moreover no misfitting items were found. The easiest feeling subjects experience is the perception of deep exhaustion at the end of the workday, whereas the most difficult subjective perception consists in the refusal to accept their deeply compromised psychological condition of emotional depletion. Nurses feel highly uncomfortable in admitting that they are burned out because of their job. In fact this recognition usually has organizational and personal consequences in the evaluation of subject's work performance (high turnover, or even relocation).

Affective commitment to the hospital. Six items in the survey were connected with this construct. The order in the thresholds was not respected, so the second and the third as well as the fifth and the sixth response categories were merged together, moreover the Rasch analysis identified one misfitting item that was deleted. The most difficult aspect to agree with is sharing the problems of the hospital, whereas the easiest aspect is the diachronic commitment to the hospital. Moreover, the average measure of the affective commitment to the hospital can be interpreted as an indication that the nurses involved in this study have a high level of commitment.

The Causal Graph

In order to propose a causal model for the available variables and data, the first step consists in searching for the CPDAG underlying these variables. Figure 1 visualizes the constraints considered in the paper in the form of forbidden edges (right-hand side), originated from the tier

ordering shown on the left-hand side of the figure. The reasons underlying these constraints are related to the following issues.

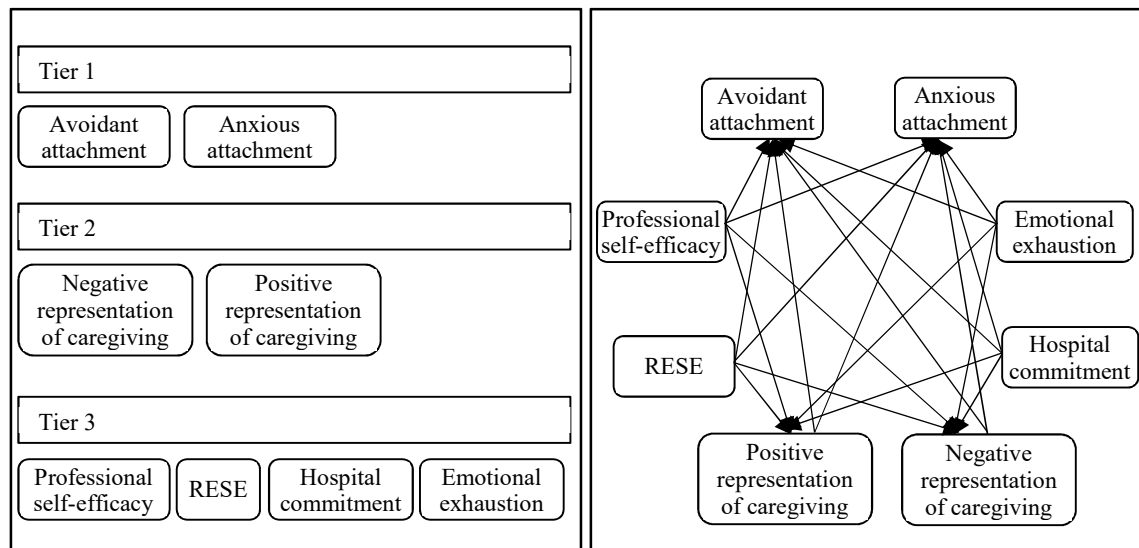


FIGURE 1
Constraints due to domain knowledge.

A two-step review of the literature of interest was carried out: (1) one explored attachment theory studies in order to show proof of what Bowlby (1982) theorized and the subsequent scientific literature and research (Adam, Gunnar, & Tanaka, 2004; Edelstein et al., 2004; Lyons-Ruth, Yellin, Melnick, & Atwood, 2005; Mikulincer & Shaver, 2016; Rholes, Simpson, & Blakely, 1995; Ward & Carlson, 1995) have proven: avoidant and anxious attachment styles are related to coherent caregiving style, respectively, to dismissing and ambivalent/compulsive caregiving (Dozier, Cue, & Barnett, 1994). Moreover, scholars assume that parents develop the mental representation of themselves as caregivers and thereby their caregiving style according to their attachment orientation. It is therefore not unreasonable to assume that there is a direct relationship between attachment styles and what one refers to as positive versus negative representation of caregiving. (2) According to literature and research focused on the users'/professionals' relationships in helping professions, it is possible to assume that the positive versus negative mental representation of caregiving is related to self-efficacy in providing help and care in nursing (George & Solomon, 1996; Pedrazza et al., 2017). Moreover, in line with literature (Collins, Guichard, Ford, & Feeney, 2006) negative versus positive mental representation of caregiving is associated with emotional exhaustion; in fact, an effective caregiving requires emotion regulation skills and interpersonal and intrapersonal regulation (of goals and motives) skills. According to scholars, self-efficacy is a contextual and specific evaluation of own ability and skills in facing specific and particular work-related tasks. In this study, work content and context feed into the core goal of providing care and assistance.

The attachment theory explores support-seeking and caregiving processes. Attachment and caregiving are two distinct, closely related, behavioral systems (Bowlby, 1982). The representation of caregiving emerges from experiences gained in primary relationships, where also at-

achment styles develop. Both gain stability within the context of significant relationships. Moreover both of them stem from different emotional responses of the caregiver to the caretaker. The caregiver's sensitivity and readiness to meet the caretaker's needs and expectations affects the maintenance, amplification, or lessening of initial elective caretaker's responses. The latter develop in affective responses; cognitive representations, plans, and strategies stored in working models and can be put on a continuum from *comfort* to *discomfort in closeness*, allowing thereby for the possibility to develop respectively in anxious and avoidant attachment styles. Avoidance and anxiety may therefore be considered different, juxtaposed, and over time stabilized adaptive responses given in facing the same issue: closeness to another. Attachment in nursing appears to be of utmost importance because caregivers' attachment needs may interfere with their ability to attend in a sensitive and responsive manner to their patients' needs (Kokkonen et al., 2014).

Five hundred and fourteen nurses have a measure for each of the eight variables described previously. Given that the measures obtained using PCM are expressed in logit interval scale, they were standardized. The CPDAG for the nurse-patient relationship survey was identified applying PC, JCPC, and GES algorithms implemented in the freeware program TETRAD V (Spirtes et al., 2010); for PC and JCPC the conditional independence test for not normal variables proposed by Ramsey (2014) was used. Tables 3 and 4 report the results of the bootstrap study performed to evaluate the stability of the obtained structures. Table 3 shows the number of times, in percentage, the edges present in the CPDAG obtained from the original data were found in the bootstrap replications, whereas in parenthesis there is the percentage of edges correctly oriented, that is, oriented in the same way they were in the CPDAG obtained from the original data. For example, the percentages referred to the link *professional self-efficacy-RESE* and algorithm JCPC, 60% and 73%, mean that 60% of the analyzed CPDAG contained the edge and between them, 73% had the edge correctly oriented. The first six edges shown in Table 3 were found by all the three methods and they were pretty strong, with the exception of professional self-efficacy-RESE for the JCPC algorithm. The percentage of right orientation was higher than 50%, with the exception of two links identified by the PC algorithm. The PC algorithm found only one more edge, but it was present only in 30% of the bootstrap samples. The JCPC algorithm identified only one more edge which was present in few bootstrap samples (14%). Lastly, the GES algorithm found four more edges, three of them were present in more than half of the bootstrap samples with the right orientation, whereas the edge *anxious attachment-professional self-efficacy* was less common. Table 4 reports the number of extra edges found by the three searching algorithms during the bootstrap study, but not present when the original data were analyzed, and their partition based on the frequency of their appearance. Even if the GES algorithm is the one with more extra edges, 78.6% of them appears at most in 10% of bootstrap samples, whereas this percentage drops to 54.5% for PC and 61.5% for JCPC. The results of the bootstrap study suggested that, for the available data, the GES algorithm seemed the one able to give a causal structure which was more stable than the others, meaning that the edges in the CPDAG were less dependent on the specific sample considered.

The CPDAG obtained applying GES algorithm is shown in Figure 2. The causal relations highlighted by the graph find justification in the psychological literature. It is assumed that a specific interaction occurs between attachment style associated characteristics and caregiving styles: attachment style leads avoidant and anxious subjects to a different representation of their corresponding caregiving style (Reizer & Mikulincer, 2007).

TABLE 3
Number of times (in percentage) the edges present in the CPDAG
obtained from the original data are found in 50 bootstrap samples

Edge	PC	JCPC	GES
IN COMMON			
Anxious attachment-avoidant attachment	100% (100%)	100% (100%)	100% (100%)
Anxious attachment-RESE	100% (100%)	100% (100%)	100% (100%)
Negative representation of caregiving- positive representation of caregiving	100% (46%)	100% (66%)	100% (62%)
Positive representation of caregiving- professional self-efficacy	100% (100%)	100% (100%)	100% (100%)
Emotional exhaustion-hospital commitment	100% (32%)	100% (66%)	100% (76%)
Professional self-efficacy-RESE	100% (76%)	60% (73%)	94% (51%)
PC			
Positive representation of caregiving- hospital commitment	30% (100%)		
JCPC			
Anxious attachment-emotional exhaustion		14% (100%)	
GES			
Anxious attachment-emotional exhaustion			62% (100%)
Avoidant attachment-negative representation of caregiving			64% (100%)
Professional self-efficacy-hospital commitment			76% (100%)
Anxious attachment-professional self-efficacy			32% (100%)

Note. RESE = regulatory emotional self-efficacy. In brackets the percentage of edges oriented in the same way as the ones in the CPDAG obtained from the original data.

TABLE 4
Number of extra edges found during the bootstrap study
and their partition based on the frequency of their appearance

Searching algorithm	Edges	freq ≤ 0.1	freq $\in (0.1, 0.2]$	freq $\in (0.2, 0.36]$
PC	11	6	2	3
JCPC	13	8	3	2
GES	14	11	1	2

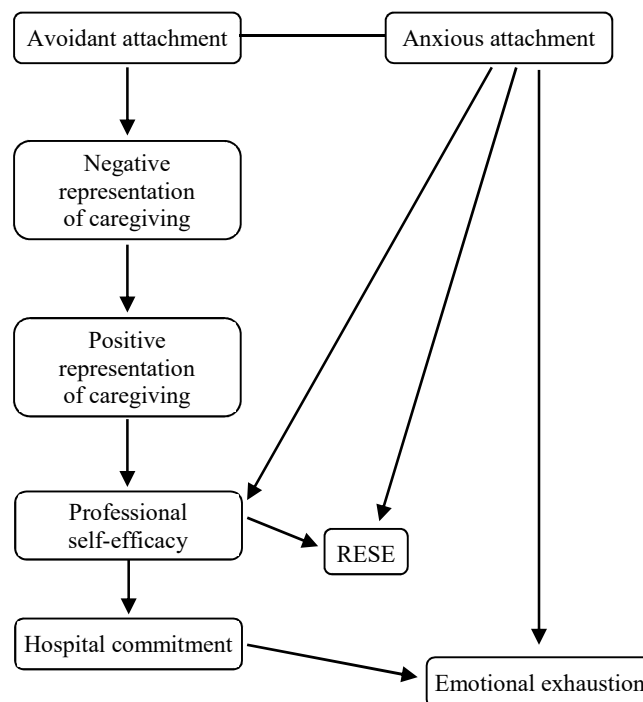


FIGURE 2
The final CPDAG.

Knowledge from the literature previously mentioned allows to assume the absence of confounders that cause the relations found between attachment and caregiving styles as well as between nurses' mental representations of caregiving and their professional self-efficacy, self-efficacy in emotion regulation, and emotional exhaustion (Collins et al., 2006; George & Solomon 1999; Shaver & Hazan, 1988).

The link between the two attachment styles is the only one not oriented by the searching algorithm, therefore the Markov equivalence class represented by this CPDAG consists of two DAGs. A possible theoretical psychological explanation of this finding is the following. At a very early age, avoidant and anxious infants' expectations toward the attachment figure do not differ from each other (Johnson et al., 2010), but over time they contribute to develop different attachment patterns which can be fairly stable over time (Mikulincer & Shaver, 2016; Zhang & Labouvie-Vief, 2004). In addition, a large number of data from studies which apply self-report measures of adult attachment style, provide support for the fact that these two constructs partially overlap.

The Causal Model: The Linear Structural Equation Model

Starting from the causal graph derived previously, it is possible to read from the CPDAG shown in Figure 2 the set of equations that constitute the linear SEM used in this work. Given that the psychological theory is not able to suggest an orientation for the link between the two attachment styles, as discussed previously, two linear SEMs will be considered here. The two mod-

els share all the equations with the exception of the first one, that expresses the relation between the two attachment styles; in model M_1 the anxious attachment style causes the avoidant attachment style whereas in model M_2 it is caused by the avoidant attachment style. The system of equations of the two models is reported below.

$$\text{Anxious attachment} = u_{An.A} \quad (M_1)$$

$$\text{Avoidant attachment} = \beta_1 \times \text{anxious attachment} + u_{Av.A} \quad (M_1)$$

$$\text{Avoidant attachment} = u_{Av.A} \quad (M_2)$$

$$\text{Anxious attachment} = \beta_1 \times \text{avoidant attachment} + u_{An.A} \quad (M_2)$$

$$\text{Negative repr. of caregiving} = \beta_2 \times \text{avoidant attachment} + u_{N.R.CG}$$

$$\text{Positive repr. of caregiving} = \beta_3 \times \text{negative repr. of caregiving} + u_{P.R.CG}$$

$$\text{Professional self-efficacy} = \beta_4 \times \text{positive repr. of caregiving} + \beta_5 \times \text{anxious attachment} + u_{S.E}$$

$$RESE = \beta_6 \times \text{professional self-efficacy} + \beta_7 \times \text{anxious attachment} + u_{RESE}$$

$$\text{Hospital commitment} = \beta_8 \times \text{professional self-efficacy} + u_{H.C}$$

$$\text{Emotional exhaustion} = \beta_9 \times \text{anxious attachment} + \beta_{10} \times \text{hospital commitment} + u_{E.E}$$

The measures of the obtained latent traits are affected by measurement errors, so it was necessary to correct for measurement errors (Ciavolino, Carpita, & Al-Nasser, 2015) before the estimation of the model. The estimates of the parameters in the two linear SEMs were obtained making use of the maximum likelihood method based on the correlation matrix corrected for measurement errors through the reliability index PRI (Fuller, 1987). Both the two linear SEMs have the same values of the goodness-of-fit indices, given that they belong to the same equivalence class; these are: SRMR = .035; RMSEA = .05; TLI = .95; and CFI = .97. These values indicate an excellent goodness-of-fit of the models to the data (West, Taylor, & Wu, 2012).

Figure 3 shows the estimates of the coefficients present in the two linear SEMs implied by the DAGs as edge weights; for example, the value .211 on the edge between avoidant attachment and negative representation of caregiving is the estimates of β_2 . The obtained causal models show that attachment avoidance influences directly a negative representation of caregiving, which in turn affects negatively its positive features. Positive caregiving enhances professional self-efficacy, this latter, in turn, affects positively self-efficacy in emotion regulation. Professional self-efficacy has a direct and positive influence on commitment and this contributes to the decrease in emotional exhaustion.

From the DAGs reported in Figure 3 it is also possible to read the total effect θ of a variable X_i on another variable X_j . The total effect defines the effect that a variable has, which can be direct only or direct as well as mediated by other variables. When a linear SEM is used, the total effect of X_i on X_j is obtained multiplying the coefficients associated with the edges along each directed path¹ from X_i to X_j , and then summing all the directed paths, if there are more than one. Conceptually, one of the two DAGs of Figure 3 is the true causal DAG, but it is not known which of the two it is. For each DAG, if one estimates the total causal effect θ_k under the assumption that the given DAG is the true causal DAG, one obtains a set of possible causal effects, $\{\theta_1, \theta_2\}$, that contains the true causal effect. If all the θ_k are equal, the causal effect of X_i on X_j is uniquely determined. If $\theta_k \neq 0, \forall k$, then X_i has a positive or negative causal effect on X_j . One possible tool able to summarize the information contained in this set is the minimum absolute value $\min_k |\theta_k|$; it is a lower bound on the size of the causal effect of X_i on X_j and can be used to determine variable importance (Maathuis, Kalisch, & Bühlmann, 2009).

Table 5 reports the set representing the total effect of anxious and avoidant attachment on the remaining variables calculated using the models M_1 and M_2 and corresponding minimum absolute value. The results of the analysis indicate that anxiety exerts a major and stronger negative effect on emotional exhaustion than avoidance; anxiety also affects negatively, in a more powerful way, professional self-efficacy, regulatory emotional self-efficacy, and affective commitment to the hospital. A stronger effect of avoidance on the general representation of caregiving is noted: avoidance seems to support a negative representation of caregiving; moreover it thwarts its positive representation.

These results are supported by literature (Mikulincer & Shaver, 2016); anxious subjects are willing to handle emotions both positive and negative whereas avoidant subjects keep away from negative emotions. Anxious subjects perceive negative stimuli as more threatening than secure subjects being thereby more likely to feel overwhelmed by them, and unable to meet daily professional demands.

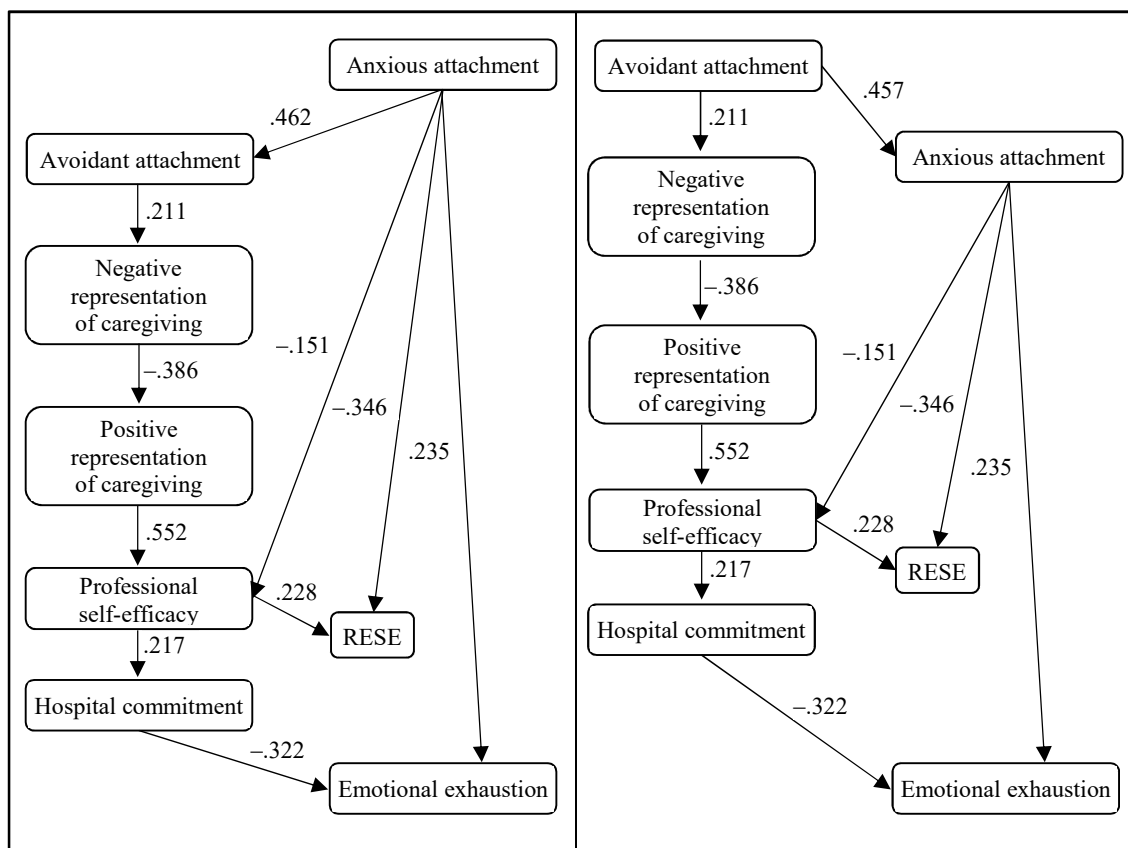


FIGURE 3

The two possible DAGs with the estimates of the coefficients present in M_1 (on the left-hand side) and in M_2 (on the right-hand side).
RESE = regulatory emotional self-efficacy.

TABLE 5
Total effects of the two attachment styles on the other variables and the corresponding minimum absolute value

Cause variable	Anxious attachment			Avoidant attachment		
Effect variable	M ₁	M ₂	$\min_k \theta_k $	M ₁	M ₂	$\min_k \theta_k $
Negative representation of caregiving	0.097	0.000	0.000	0.211	0.211	0.211
Positive representation of caregiving	-0.038	0.000	0.000	-0.081	-0.081	0.081
Professional self-efficacy	-0.172	-0.151	0.151	-0.045	-0.114	0.045
RESE	-0.380	-0.380	0.380	-0.010	-0.184	0.010
Hospital commitment	-0.037	-0.033	0.033	-0.010	-0.025	0.010
Emotional exhaustion	0.247	0.245	0.245	0.003	0.115	0.003

Note. RESE = regulatory emotional self-efficacy.

DISCUSSION AND CONCLUSION

The aim of this work was to study the possible causal relations among different psychological dimensions that affect nurses' caregiving practices. In order to do so, as a first step, the estimated measures of the eight psychological dimensions considered were obtained, making use of the PCM. Comparing the average measure of each latent trait and the mean item difficulty, it is possible to draw a general description of the sample of nurses who responded to the survey; they are not dismissive, they are effective in the recognition of others' needs and share altruistic motivations. Moreover, they perceive themselves as able to provide effective help, they perceive themselves as efficient in general, and particularly in managing negative affect; finally they score high in affective commitment to the hospital. The second step of the analysis concerns the proposal of a causal structure including the variables of interest. The DAG obtained applying the searching algorithm GES was judged, for the available data, the most stable between the ones considered. The causal model consistent with this DAG showed that the anxious and avoidant attachment exert different effects on the variables taken into account. Whereas avoidant attachment exerts a direct negative influence on caregiving, anxious attachment causes emotional exhaustion and exerts a direct and negative effect on both professional self-efficacy and self-efficacy in emotion regulation. In addition, the positive representation of caregiving exerts a positive effect on professional self-efficacy and the latter influences both the affective commitment to the hospital and self-efficacy in emotion regulation.

There are mainly two original aspects of this paper. From a psychological point of view, this paper clarifies and distinguishes the specific contribution of different types of attachment insecurity on nurses' perception of their relationship to patients and to their work context. The opportunity to differentiate those effects is inherent to the need to develop specific and targeted training opportunities for both avoidant and anxious nurses. Nurses scoring high in avoidance should be provided with specific continuous supervision in order to become aware of the detrimental effects of their negative representation of caregiving. Supervisors should promote changes

of both the affective and the cognitive dimensions associated with a dismissing versus negative caregiving style. By contrast, anxious professionals could take advantage of an in-depth understanding of their fears associated with low professional self-efficacy and low self-efficacy in emotion regulation. Emotion-focused training opportunities could be of interest for them, for the purpose of preventing emotional exhaustion. Moreover, previous research findings (Wagaman, Geiger, Shockley, & Segal, 2015) support the causal relationship between emotional exhaustion and depersonalization, highlighting that work stress factors may lead to depersonalization through emotional exhaustion. According to scholars (George & Solomon, 1999) there is a need to adopt an organized behavioral system approach in order to better understand the caregiving behavior: the latter should be looked at as an independent behavioral system strongly linked to the attachment behavioral system. According to the previously mentioned experts, scientific attention should be drawn on caregiving to analyze the personal subjective representation and evaluation of the self as a provider of safety and care. This study may be considered as an attempt toward the goal of more fully understanding how the personal representation of caregiving and the evaluation of the personal self-efficacy in managing negative emotions may be connected to different attachment orientations. From a methodological point of view, it combines the item response theory approach through the Rasch model, with causal reasoning and experts' knowledge in the field, and this combination is relatively novel in psychology.

There are some limitations of the present study. This research was conducted in a single Italian hospital. Future research should explore these relationships in different organizations and cultural contexts, in order to explore how far the results can be generalized. Moreover, all the questionnaires included self-report measures and they can therefore be affected by social desirability concerns as well as by other forms of response bias. Finally, we assume that future studies, using qualitative research methodology (see Pedrazza & Berlanda, 2014), could explore the main elements and the core category of the relationship between nurses and patients, in order to gain additional knowledge, to provide training and/or other forms of support, and to promote the quality of the health service.

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NOTE

1. A path in a graph G is a distinct sequence of vertices so that all successive pairs of vertices in the sequence are adjacent (connected by an edge) in G . A directed path from X_i to X_j is a path between X_i and X_j in which all edges point toward X_j , that is, $X_i \rightarrow \dots \rightarrow X_j$.

REFERENCES

- Adam, E. K., Gunnar, M. R., & Tanaka, A. (2004). Adult attachment, parent emotion, and observed parenting behavior: Mediator and moderator models. *Child Development*, 75, 110-122. doi:10.1111/j.1467-8624.2004.00657.x

- Andrich, D., de Jong, J. H. A., & Sheridan, B. E. (1997). Diagnostic opportunities with the Rasch model for ordered response categories. In J. Rost & R. Langeheine (Eds.), *Application of latent trait and latent class models in the social science*. Munster, Germany: Waxmann.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215. doi:10.1016/0146-6402(78)90002-4
- Bandura, A. (1995). *Self-efficacy in changing societies*. Cambridge, NY: Cambridge University Press.
- Bollen, K. (1989). *Structural equations with latent variables*. New York, NY: John Wiley.
- Bond, T. G., & Fox, C. M. (2007). *Applying the Rasch Model. Fundamental measurement in the human sciences*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Borgogni, L. Petitta, L., & Steca, P. (2001). Efficacia percepita personale e collettiva nei contesti organizzativi [Personal and collective self-efficacy in the workplace]. In G. V. Caprara (Ed.), *La valutazione dell'autoefficacia* (pp. 157-171). Trento, Italy: Erickson.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and Anger*. New York, NY: Basic Books.
- Bowlby, J. (1982). *Attachment and loss: Vol. 1. Attachment*. New York, NY: Basic Books. (Original work published 1969)
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult romantic attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York, NY: Guilford Press.
- Caprara, G. V., Di Giunta, L., Eisenberg, N., Gerbino, M., Pastorelli, C., & Tramontano, C. (2008). Assessing regulatory emotional self-efficacy in three countries. *Psychological Assessment*, 20, 227-237. doi:10.1037/1040-3590.20.3.227
- Carpita, M., & Golia, S. (2012). Measuring the quality of work: The case of the Italian social cooperatives. *Quality and Quantity*, 46, 1659-1685. doi:10.1007/s11135-011-9515-0
- Chickering, D. M. (2002a). Learning equivalence classes of Bayesian-network structures. *Journal of Machine Learning Research*, 2, 445-498. doi:10.1162/153244302760200696
- Chickering, D. M. (2002b). Optimal structure identification with greedy search. *Journal of Machine Learning Research*, 3, 507-554. doi:10.1162/153244303321897717
- Ciavolino, E., Carpita, M., & Al-Nasser A. (2015). Modelling the quality of work in the Italian social cooperatives combining NPCA-RSM and SEM-GME approaches. *Journal of Applied Statistics*, 42, 161-179. doi:10.1080/02664763.2014.938226
- Collins, N. L., Guichard A. C., Ford, M. B., & Feeney, B. C. (2006). Responding to need in intimate relationships: Normative processes and individual differences. In M. Mikulincer & G. S. Goodman (Eds.), *Dynamics of romantic love: Attachment, caregiving, and sex* (pp. 149-189). New York, NY: Guilford Press.
- Crowell, J. A., Fraley, R. C., & Shaver, P. R. (2008). Measurement of individual differences in adolescent and adult attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment. Theory, research and clinical applications* (2nd ed., pp. 552-598). New York, NY: Guilford Press.
- Dozier, M., Cue, K. L., & Barnett, L. (1994). Clinicians as caregivers: Role of attachment organization in treatment. *Journal of Consulting and Clinical Psychology*, 62, 793-799. doi:10.1037//0022-006X.62.4.793
- Edelstein, R. S., Alexander, K. W., Shaver, P. R., Schaaf, J. M., Quas, J. A., Lovas, G. S., & Goodman, G. S. (2004). Adult attachment style and parental responsiveness during a stressful event. *Attachment & Human Development*, 6, 31-52. doi:10.1080/146167303100001659584
- Freudenberger, H. J. (1974). Staff burnout. *Journal of Social Issues*, 30, 159-165. doi:10.1111/j.1540-4560.1974.tb00706.x
- Fuller, W. A. (1987). *Measurement error models*. New York, NY: Wiley.
- Gama, G., Barbosa, F., & Vieira, M. (2014). Personal determinants of nurses' burnout in end of life care. *European Journal of Oncology Nursing*, 18, 527-533. doi:10.1016/j.ejon.2014.04.005
- Garrosa, E., Rainho, C., Bernardo, M. J., & Monteiro, M. J. (2010). The relationship between job stressors, hardy personality, coping resources and burnout in a sample of nurses: A correlational study at two time points. *International Journal of Nursing Studies*, 47, 205-215. doi:10.1016/j.ijnurstu.2009.05.014
- George, C., & Solomon, J. (1996). Representational models of relationships: Links between caregiving and attachment. *Infant Mental Health Journal*, 17, 198-216. doi:10.1002/(SICI)1097-0355(199623)17:3<198::AID-IMHJ2>3.0.CO;2-L

- George, C., & Solomon, J. (1999). Attachment and caregiving: The caregiving behavioural system. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 649-670). New York, NY: Guilford Press.
- Harrison, M., Loiselle, C. G., Duquette, A., & Semenic, S. G. (2002). Hardiness, work support and psychological distress among nursing assistants and registered nurses in Québec. *Journal of Advanced Nursing*, 38, 584-591. doi:10.1046/j.1365-2648.2002.02225.x
- Hawkins, A. C., Howard, R. A., & Oyeboode, J. R. (2007). Stress and coping in hospice nursing staff: The impact of attachment styles. *Psycho-Oncology*, 16, 563-572. doi:10.1002/pon.1064
- Johnson, S. C., Dweck, C. S., Chen, F. S., Stern, H. L., Ok, S.-J., & Barth, M. (2010). At the intersection of social and cognitive development: Internal working models of attachment in infancy. *Cognitive Science*, 34, 807-825. doi:10.1111/j.1551-6709.2010.01112.x
- Kalisch, M., Fellinghauer, B. A. G., Grill, E., Maathuis, M. H., Mansmann, U., Bühlmann, P., & Stucki, G. (2010). Understanding human functioning using graphical models. *Medical Research Methodology*, 10, 1-10. doi:10.1186/1471-2288-10-14
- Kokkonen, T. M., Cheston, R. I. L., Dallos, R., & Smart, C. A. (2014). Attachment and coping of dementia care staff: The role of staff attachment style, geriatric nursing self-efficacy, and approaches to dementia in burnout. *Dementia*, 13, 544-568. doi:10.1177/1471301213479469
- Linacre, J. M. (1997). KR-20/Cronbach Alpha or Rasch Person Reliability: Which tells the "Truth"? *Measurement Transactions*, 11(3), 580-581.
- Linacre, J. M. (2012). Winsteps® (Version 3.75.0) [Computer Software]. Beaverton, Oregon: Winsteps.com.
- Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2005). Expanding the concept of unresolved mental states: Hostile/helpless states of mind on the Adult Attachment Interview are associated with disrupted mother-infant communication and infant disorganization. *Development and Psychopathology*, 17, 1-23. doi:10.1017/S0954579405050017
- Maathuis, M. H., Kalisch, M., & Bühlmann, P. (2009). Estimating high-dimensional intervention effects from observational data. *The Annals of Statistics*, 37, 3133-3164. doi:10.1214/09-AOS685
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior*, 2, 99-113. doi:10.1002/job.4030020205
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal distress and what to do about it*. San Francisco, CA: Jossey-Bass.
- Masters, G. N. (1982). A Rasch model for partial credit scoring. *Psychometrika*, 47, 149-174. doi:10.1007/BF02296272
- Meyer, J. P., Allen, N. J., & Smith, C. A. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology*, 78, 538-551. doi:10.1037/0021-9010.78.4.538
- Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood*. New York, NY: Guilford Press.
- Nicholis, W., Hulbert-Williams, N., & Bramwell, R. (2014). The role of relationship attachment in psychological adjustment to cancer in patients and caregivers: A systematic review of the literature. *Psycho-Oncology*, 23, 1083-1095. doi:10.1002/pon.3664
- Pearl, J. (2009). *Causality: Models, reasoning, and inference*. New York, NY: Cambridge University Press.
- Pedrazza, M., & Berlanda, S. (2014). Intergroup conflict and co-construction of identity in the primary school: Multi-method research in an interethnic context. *TPM – Testing, Psychometrics, Methodology in Applied Psychology*, 21, 21-36. doi:10.4473/TPM21.1.2
- Pedrazza, M., Berlanda, S., Trifiletti, E., & Bressan, F. (2016). Exploring physicians' dissatisfaction and work-related stress: Development of the PhyDis Scale. *Frontiers in Psychology*, 7, 1238. doi:10.3389/fpsyg.2016.01238
- Pedrazza, M., Berlanda, S., Trifiletti, E., & Minuzzo, S. (2017). Variables of individual difference and the experience of touch in nursing. *Western Journal of Nursing Research*. Advance online publication. doi:10.1177/0193945917705621
- Pedrazza, M., & Boccato, G. (2012). Training on attachment styles increases secure adults' attributions of control. *TPM – Testing, Psychometrics, Methodology in Applied Psychology*, 19, 69-79. doi:10.4473/TPM19.2.1
- Pedrazza, M., Minuzzo, S., Berlanda, S., & Trifiletti, E. (2015). Nurses' comfort with touch and workplace well-being. *Western Journal of Nursing Research*, 37, 781-798. doi:10.1177/0193945914527356

- Pedrazza, M., Trifiletti, E., Berlanda, S., Minuzzo, S., & Motteran, A. (2015). Development and initial validation of the nurses' Comfort with Touch Scale. *Journal of Nursing Measurement*, 23, 364-378. doi:10.1891/1061-3749.23.3.364
- Pines, A. M. (2004). Adult attachment styles and their relationship to burnout: A preliminary cross cultural investigation. *Work & Stress: An International Journal of Work, Health & Organisations*, 18, 66-80. doi:10.1080/02678370310001645025
- Ramsey, J. D. (2010). *Bootstrapping the PC and CPC algorithms to improve search accuracy* (Technical Report No. CMU-PHIL-187). Pittsburgh, PA: Carnegie Mellon University.
- Ramsey, J. D. (2014). *A scalable conditional independence test for nonlinear, non-gaussian data*. Retrieved from <http://arxiv.org/abs/1401.5031>
- Reizer, A., & Mikulincer, M. (2007). Assessing individual differences in working models of caregiving: The construction and validation of the mental representation of caregiving scale. *Journal of Individual Differences*, 28, 227-239. doi:10.1027/1614-0001.28.4.227
- Rholes, W. S., Simpson, J. A., & Blakely, B. S. (1995). Adult attachment styles and mothers' relationships with their young children. *Personal Relationships*, 2, 35-54. doi:10.1111/j.1475-6811.1995.tb00076.x
- Ronen, S., & Mikulincer, M. (2009). Attachment orientation and job burnout: The mediating roles of team cohesion and organizational fairness. *Journal of Social and Personal Relationships*, 26, 549-567. doi:10.1177/0265407509347930
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48, 1-36. doi:10.18637/jss.v048.i02
- Shaver, P. R., & Hazan, C. (1988). A biased overview of the study of love. *Journal of Social and Personal Relationships*, 5, 473-501. doi:10.1177/0265407588054005
- Shaver, P. R., & Mikulincer, M. (2002). Attachment related psychodynamics. *Attachment and Human Development*, 4, 133-161. doi:10.1080/14616730210154171
- Shpitser, I., & Pearl, J. (2008). Complete identification methods for the causal hierarchy. *Journal of Machine Learning Research*, 9, 1941-1979. doi:10.1145/1390681.1442797
- Sirigatti, S., & Stefanile, C. (1993). MBI-Maslach Burnout Inventory: Adattamento Italiano [MBI-Maslach Burnout Inventory: Italian adaptation]. Firenze, Italy: OS Organizzazioni Speciali.
- Spirtes, P., Glymour C., & Scheines, R. (2000). *Causation, prediction, and search*. Cambridge, MA: The MIT Press.
- Spirtes, P., Scheines, R., Ramsey, J., & Glymour, C. (2010). The TETRAD project: Causal models and statistical data. Retrieved from <http://www.phil.cmu.edu/tetrad/>
- Wagaman, M. A., Geiger, J. M., Shockley, C., & Segal, E. A. (2015). The role of empathy in burnout, compassion satisfaction, and secondary traumatic stress among social workers. *Social Work*, 60, 201-209. doi:10.1093/sw/swv014
- Wang, S., Liu, Y., & Wang, L. (2015). Nurse burnout: Personal and environmental factors as predictors. *International Journal of Nursing Practice*, 21, 78-86. doi:10.1111/ijn.12216
- Ward, M. J., & Carlson, E. A. (1995). Associations among adult attachment representations, maternal sensitivity, and infant-mother attachment in a sample of adolescent mothers. *Child Development*, 66, 69-79. doi:10.2307/1131191
- West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209-231). New York, NY: The Guildford Press.
- Wright, B. D., & Masters, G. N. (1982). *Rating scale analysis*. Chicago, IL: MESA Press.
- Zhang, F., & Labouvie-Vief, G. (2004). Stability and fluctuation in attachment style over a 6-year period. *Attachment and Human Development*, 6, 419-437. doi:10.1080/1461673042000303127