

Research Article

Temperament, Character and Organisational Well-being among Obstetrics and Gynaecology Personnel

Amelia Rizzo¹, Patrizia Marra²

1. Department of Clinical and Experimental Medicine, University of Messina, Italy; 2. University of Messina, Italy

Background. Few studies in the literature have related organisational well-being and temperament according to Cloninger's bio-psycho-social model.

Objective. This paper investigates the relationship between dimensions of temperament (NS; HA; RD) and character (CO; SD; ST; P) and dimensions of organisational well-being in Obstetrics and Gynaecology personnel.

Method. Thirty-eight subjects, predominantly women (89.5%) aged between 18 and 63 years, participated in the study ($M=50.20$ $SD= 9.81$). The Temperament and Character Inventory of R. Cloninger et al. (1994) extended version and the C.I.V.I.T. questionnaire issued by the Independent Commission for the Evaluation, Transparency and Integrity of Public Administrations were used for the assessment.

Results. The prevailing temperament in midwifery staff was Reward Dependence while the prevailing character was Cooperative. However, positive correlations emerged between Self-Directedness and positive perceptions of the context and work and negative correlations between Self-Directedness and negative perceptions of job security and discrimination.

Conclusions. Work well-being may be related to certain character traits rather than temperament and this correlation suggests a connection between personality and adaptation.

Corresponding authors: Amelia Rizzo, amrizzo@unime.it; Patrizia Marra, pmarra@unime.it

1. Introduction

1.1. Organisational well-being and health

The state of 'Organisational Well-being' or 'Organisational Health' is inseparable from the concept of 'Health', which has been defined by the World Health Organisation in a holistic sense. 'Health' comprehensively encompasses the mind-body unity of the individual within his or her socio-cultural context, it represents "a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity" (WHO, 1948).

Organisational well-being refers to the way in which people live in relation to several aspects of the organisation in which they work. Montgomery *et al.* (2020) describe well-being challenge as 'the ability of an organisation to promote and maintain the highest degree of physical, psychological and social wellbeing of workers in all types of employment'. Organisational malaise, on the contrary, represents the antithesis of what has been stated about organisational well-being, a condition of worker discomfort and suffering (Torri & Toniolo, 2010). The main components representing the macro dimensions that every organisation must refer to in order to achieve and maintain the well-being objective are: satisfaction with the organisation; desire to be committed to the organisation; feeling of being part of a team; desire to go to work; high involvement; feeling of self-efficacy; perception of success of the organisation; positive work-life relationship; satisfactory interpersonal relationships; recognition of organisational work; positive image of managers (De Simone, 2014; Wall *et al.* 2021).

All public administrations must periodically carry out surveys to detect workers' state of well-being. These surveys are aimed at a recognition of the 'health state' of the organisation itself, and aim to implement interventions to improve the workers' well-being and consequently increase the productivity of the health authority (Carvajal-Arango *et al.*, 2021).

1.2. The bio-psycho-social model of Temperament and Character

Over the past twenty years, data has shown several studies related to Temperament and Character, conducted on specific groups such as military personnel (Elsass, 2001; Han & Sung-Bu, 2013; Jang *et al.* 2014), nurses (Eley, 2011; Yazici, 2014; Mihailovic *et al.*, 2022), office workers (Hwang, 2020), physicians (Vaidya, 2004; Sievert, 2016), students (Rizzo & Liang, 2017) etc. and in international, rather than national, contexts, neglecting the obstetrical-gynaecological sphere.

Temperament is the result of biological evolution that conditions the individual from birth and is determined by intrinsic factors in humans. Temperament, personality and character are independent concepts, although often misunderstood and interchanged. They are the result of various factors, both innate and acquired, that influence each individual throughout his or her life history (Cloninger *et al.*, 1993; Rizzo, 2013).

Considering that each healthcare professional, before being considered as a 'worker' is an individual with a unique personality, character and temperament, who more or less consciously influence and is influenced by the work context, the career choices and the care setting (Mento *et al.*, 2016).

The biosocial theory of Robert C. Cloninger (1993), a well-known American psychiatrist, argues that personality is a combination of neurobiologically inherited traits (temperamental dimension) and traits that reflect sociocultural influence (character dimension). Cloninger provides a systematic method of classifying personality types. Originally, it was a three-dimensional model covering three facets, such as 'Novelty seeking', 'Harm Avoidance' and 'Reward dependence'. Cloninger later added to the three basic dimensions four more scales, believing that temperament and character would be better explained by a seven-dimensional structure: four for temperamental traits (self-directedness, cooperativeness and self-transcendence and persistence) and three for character traits. In summary, the dimensions for temperament are: (1) *Novelty Seeking*. This dimension implies a continuous search for stimulation that leads to an intense state of 'excitement' and a tendency to avoid monotony and punishment; (2) *Harm Avoidance*. This is a behavioural mode characterized by a peculiar tendency to avoid any situation that is followed by punishment or frustration resulting from a lack of reward and an inability to expose oneself to new stimuli considered as potentially dangerous; (3) *Reward Dependence*. The tendency to engage in behaviour to respond promptly and appropriately to social demands in search of social approval.

Dimensions of character are: (1) *Self-directedness*, a sense of responsibility that can also lead the subject to take responsibility for others; (2) *Cooperativeness*, cooperation, a dimension that can lead to over-dependence on others; (3) *Self-transcendence*, a need for transcendence that can evolve into either mysticism or psychotic-like experiences; (4) *Persistence*, stubbornness and determination to pursue the achievement of the proposed goals.

The instrument that can be used to investigate temperament and character is the Temperament and Character Inventory (TCI). A validated self-administered test capable of detecting the levels of the dimensions considered is useful in the differential diagnosis and therapeutic planning of various

psychiatric disorders. The temperament and character profile that emerges from the TCI can be useful for investigating the subject's personality in categorical diagnostic assessment (Cloninger *et al.*, 1994).

1.3. Temperament in Healthcare

A study conducted in Norway by Kluger *et al.* (2002) recruited doctors, anaesthetists and anaesthetist residents as part of the sample, administering the TCI to a sample of 364 physicians. Findings showed the anaesthetist specialists reporting high scores on the Cooperativeness, Harm Avoidance and Self-Directionality scales compared to the general population sample. Physicians reported high scores on Cooperativeness compared to their anaesthetist colleagues, while residents scored high on Novelty Seeking and Reward Dependence. A personality disorder was found in 10% of residents, 2% of physicians, and 9% of anaesthetists with implications for recruitment, risk management and professional development.

In 2009, a study was conducted on nurses within the psychiatric department, assessing self-esteem and temperament, to determine which factor determines occupational stress. The results showed a gender difference, women presented higher self-esteem, furthermore, the study shows that the most prevalent subtype was Hyperthymic Temperament, observing an interaction between the subtypes of temperament, self-esteem and professional experience. This shows the importance of investigating in the healthcare field to detect those factors that indicate personality and temperament disorders to improve organisational well-being and customer satisfaction (Cordeiro & Figueira, 2009).

1.4. Objective of the present study

Analysing the well-being process and all the related intrinsic and extrinsic factors, we hypothesize a correlation between the dimensions of the health professional's temperament (persistence, self-transcendence, cooperation, harm avoidance, self-directedness, reward dependency, novelty seeking) and the dimensions of organisational well-being perceived by the worker. There is much evidence in the literature of the interconnection between temperament and adaptation (Vaughn & Shin, 2011). Adaptability is that characteristic which allows one to easily adapt to changes or to a new environment. Temperament can be assumed to be the basis on which perceptions of one's environment are built (Rothbart & Hwang, 2005).

At the same time, there is scientific evidence that events and the environment, due to their reciprocal interaction with the person, can create changes in traits, which from a clinical point of view constitute an attempt at adaptation, an accommodation reaction (Quinn et al., 2009). Sometimes individuals' reactions to adverse events take on a psychopathological form (maladaptation or reactive anxious-depressive syndrome), and this becomes of clinical competence, as the subject manifests egodystonic symptoms that generate (or rather, represent) suffering (Nigg, 2006; Miettunen & Jääskeläinen, 2022).

Given these premises, it is easy to understand how both temperament, as a biological and genetic disposition, and character, as the result of reciprocal interactions between person and environment, can be closely related to organisational well-being. This certainly passes through objectifiable forms, as seen, but from the psychic point of view, it also passes through representations of a subjective nature.

2. Methods

2.1. Sample

The sample used for the study consisted of 38 subjects; 89.5% were women, while the remaining 10.5% were men working in Obstetrics and Gynaecology Units. Of these, 21% had a fixed-term contract type, while the majority (78.9%) have a permanent employment contract. With regard to the age groups represented, the distribution of subjects according to age group emerged as follows: 21.1 % up to 30 years; 15.8 % 41 to 50 years; 57.9 % 51 to 60 years; 5.3 % over 60 years. With regard to the length of service, most of the subjects (68.4%) have worked for a minimum of 11 and a maximum of 20 years. The 26.3% have worked for less than 5 years and only 5.3% have worked for between 5 and 10 years. The position held in the organisation was also noted, resulting in 100% of the individuals holding a non-management role.

2.2. Procedure

The questionnaires were completed during the quarter of August - October 2021. Completion took between 20 and 40 minutes on average, in a single session. Only one of the questionnaires was not definitively completed and was therefore excluded from the analysis. Each subject was provided with all the introductory information regarding the research, with reference to the regulations requiring a

compulsory periodic assessment by the health system of perceived organisational well-being. They were also provided with all the instructions concerning the compilation, a matrix with the questions and an answer sheet. Participants were guaranteed anonymity of the data and confidentiality of the information. Subjects were informed about the cognitive and non-diagnostic purposes of the research and signed a consent for participation in the observational study and data processing. No experimentation was planned in the study.

2.3. Instruments

Two instruments were used for the research, a description of which follows.

Temperament and Character Inventory (Cloninger, 1993)

The TCI, in its most comprehensive version (version 9) consists of 240 items: 89 are derived directly from the TPQ and, together with a further 27 items added ex novo to improve the reliability of the scales, explore temperamental traits (NS, HA, RD and P), 119 assess character traits (SD, C and ST) and a further 5 serve as indicators of the presence of PD. The scale scores are still calculated on the 226 items of the previous version. There is also a reduced version of the TCI with 125 items, which is usually used as a screening instrument.

As the item assessment is dichotomous (true/false), the score is 1/0 for positive items and 0/1 for negative items. The raw scores are transformed into standardised T-scores that allow a personality profile to be drawn up. For each temperamental and character trait and for the corresponding subscales, T-scores and percentile scores corresponding to the respective raw scores are prepared on the basis of a normative sample. For interpretation purposes, the following cutoff points are indicated for the percentile scores: very low 0-16.7%; low 17-33%; medium 34-66.7%; high 67-83%; very high 84-100%.

CIVIT Organisational Well-being Questionnaire

(Independent Commission for the Evaluation, Transparency and Integrity of Public Administrations)

The questionnaire datasheet

In the sections of the questionnaire, the respondent is asked to express his or her assessment by means of an always identical scale using 6 classes in ascending order. The respondent for each

question and/or statement expresses his/her rating in relation to how much he/she agrees or disagrees with the statement or how important or unimportant he/she considers it to be.

The sections are:

<p style="text-align: center;">Organisational Well-being</p> <p style="text-align: center;">A - Occupational Safety and Health and Work-related Stress</p> <p style="text-align: center;">B - Discrimination</p> <p style="text-align: center;">C - Fairness in my administration</p> <p style="text-align: center;">D - Career and professional development</p> <p style="text-align: center;">E - My work</p> <p style="text-align: center;">F - My colleagues</p> <p style="text-align: center;">G - The context of my work</p> <p style="text-align: center;">H - The sense of belonging</p> <p style="text-align: center;">I - The image of my administration</p>
<p style="text-align: center;">Degree to which the assessment system is shared</p> <p style="text-align: center;">L - My organisation</p> <p style="text-align: center;">M - My performance</p> <p style="text-align: center;">N - The functioning of the system</p>
<p style="text-align: center;">Evaluation of the Hierarchical Superior</p> <p style="text-align: center;">O - My boss and my growth</p> <p style="text-align: center;">P - My boss and equity</p>

Finally, the questionnaire allows the collection, for each employee involved, of the following biographical and work-related data: gender; type of contract; age range; length of service; qualification.

3. Results

3.1. Statistical analysis

Considering the small size of the sample for the present study, it was not possible to calculate any differences between the groups determined by age variables, such as gender, age, length of service, and role held, nor to study the different perceptions of the groups by means of Student's t-test for independent groups. At this stage of the work, however, the focus was on a rather descriptive statistic, which would give an account of the results obtained from the sample, in order to adequately describe the expression of the variables measured. Nevertheless, it was possible to explore an initial connection between Temperament, Character and Organisational Well-being through the calculation of Pearson's correlations.

3.2. Descriptive statistics

The first step of the analysis focused on the descriptive statistics of the sample. In particular, the results of the Temperament and Character Inventory will be presented in order of administration, followed by the Organisational Well-being assessment.

Temperament in the Obstetrics Units

Table 1 shows the overall statistics concerning the minimum and maximum scores obtained and the corresponding averages and standard deviations. Overall, it can be seen that the greatest differentiation is obtained between the scales relating to Character, while a higher standard deviation is observed in the temperament scales, indicative of antithetically expressed temperament types in the sample.

TCI Descriptive Statistics	Min	Max	Mean	SD
Novelty Seeking	12	25	17,63	4,258
Harm Avoidance	6	32	18,53	7,09
Reward Dependence	6	18	14,79	2,879
Persistence	4	7	5,63	0,955
Self-directedness	19	42	29,84	6,012
Cooperativeness	24	40	31,05	4,223
Self-transcendence	9	30	18,84	6,56

Table 1. Descriptive statistics for raw TCI scores

Since the scores for the various subscales are not comparable, as they do not have the same denominator, they were transformed into percentages to report the values on a scale with intervals from 0 to 100.

Descriptive Statistics	Min	Max	Mean	Std. Dev.
Novelty Seeking	23%	75%	47,32%	16,415
Harm Avoidance	17%	91%	52,95%	20,192
Reward Dependence	25%	75%	61,79%	12,049
Persistence	50%	88%	70,68%	11,972
Self-directedness	43%	95%	67,63%	13,623
Cooperativeness	57%	95%	73,95%	10,069
Self-transcendence	27%	91%	57,11%	20,135

Table 2. Descriptive statistics on TCI percentage scores

The prevailing temperament

In order to obtain information on the prevailing temperament type in the group examined, after transforming the scores into percentages, it was possible to determine which temperament type was the most prevalent among the three temperament types. Table 3 shows the distribution of the temperament types in the sample. As can be observed, the prevalent type is the reward-dependent type.

Temperament type	Percent
Novelty Seeking	10,5
Harm avoidance	21,1
Reward Dependence	68,4

Table 3. Prevalent Temperament Types

Type of prevailing character

Similarly, the same procedure was used to identify the prevailing character type for the sample examined, based on classes established from the percentage prevalence. Table 4 shows the distribution of the three types among the subjects assessed. Most of the subjects show a cooperative type of character, i.e. based on social acceptance.

Character type	Percent
Self-directedness	36,8
Cooperativeness	47,4
Self-transcendence	15,8

Table 4. Types of Character in the sample

Analysis of organisational well-being

For the analysis of organisational well-being, the sections indicated in the questionnaire were followed and a total score was also calculated from the sum of all raw scores (see Table 15). In the scoring phase, those items that were formulated negatively were taken into account as reversed items, i.e. the scores were reversed in favour of the scale, which focused on the measure of satisfaction and thus indicated a positive outlook where it took the numerically highest values and vice versa. Table 5 shows the descriptive statistics obtained for the various sections of the organisational well-being questionnaire.

C.I.V.I.T.	Minimum	Maximum	Mean	Std. Deviation	Mean %
A. Security	24	54	38,63	8,578	65,85%
B. Discrimination	31	53	39,47	6,363	67,72%
C. Equity	6	24	16,53	5,015	46,11%
D. Career	5	29	16,47	6,467	70,95%
E. Work	20	30	25,63	2,813	45,89%
F. Colleagues	9	31	22,74	5,404	70,95%
G. Context	8	30	20,21	7,231	60,84%
H. Membership	15	30	22,95	3,993	71,79%
I. Image	9	18	15,74	3,052	84,91%
L. Organisation	4	22	15,37	4,890	56,84%
M. Performance	8	24	15,32	4,843	56,58%
N. Functioning	5	26	16,74	6,314	46,95%
O. Boss and growth	5	30	17,89	7,233	51,58%
P. Boss and equity	4	24	13,89	6,699	49,47%

Table 5. Descriptive Statistics of row scores

Similarly, the same procedure used for temperament, of conversion into percentage scores, was used in order to make the scores comparable. As can be seen, many of the scales were 100% saturated, which would indicate the scores obtained by some subjects, who expressed the highest satisfaction with their organisation. In summary, subjects express medium satisfaction with fairness, and medium-high satisfaction with safety and performance, very high satisfaction with the absence of discrimination, the possibility of career advancement, colleagues, context, belonging and the image of the Unit. The answers are more ambivalent towards the boss, growth and equity. Most of the subjects express medium satisfaction and the remaining part is divided into low and high satisfaction. Towards work, on the other hand, it is medium to low. Overall, the sample's job satisfaction is medium-high.

3.3. Inferential statistics

Relationship between temperament and organisational well-being

In order to test whether there was a relationship between temperament, character and organisational well-being, and thus to answer the correlational hypothesis of the pilot research, Pearson's correlations were used. Only one negative relationship emerged between the type of novelty-seeking temperament and the aspect of fairness in the organisation: the more the subject is inclined to seek new stimuli, the less satisfactory he considers the level of fairness in his company to be. For the rest, however, it is possible to state that it is not the temperament that characterizes the perception of well-being within an organisation.

Relationship between character and organisational well-being

Ultimately, the character scales were correlated with the dimensions of organisational well-being (see Table 6).

	SD	C	ST
A. Security	-0,07	-0,122	-,467*
B. Discrimination	0,025	0,162	,698**
C. Equity	0,049	0,151	-0,175
D. Career	0,151	-0,084	-0,09
E. Work	,460*	0,282	0,138
F. Colleagues	0,014	0,047	-0,167
G. Context	,567*	0,214	0,101
H. Membership	0,312	0,185	-0,215
I. Image	0,203	-0,102	-0,097
L. Organisation	-0,047	-0,052	-0,017
M. Performance	0,084	0,04	-0,161
N. Functioning	-0,026	-0,124	-0,319
O. Boss and growth	0,005	0,015	-0,114
P. Boss and equity	0,122	0,151	-0,142

Table 6. Correlations

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

SD= *Self-Directedness*; C=*Cooperativeness*; ST=*Self-Transcendence*

From the results it would appear that temperament is the aspect of personality most closely related to the perception of well-being. In particular, significant associations emerged between novelty-seeking temperament and satisfaction with work and the work context: the greater the subject's disposition to new stimuli, the greater the perception of well-being in the work context ($p < 0.05$).

A negative association also emerged between the self-transcendent type and the perception of job security and discrimination. In fact, the result shows that the higher the dimension of Self-transcendence (see definition in the previous chapters), the lower the person perceives the safety of their work environment ($p < 0.01$). Moreover, the level of Self-transcendence is also negatively associated with the perception of discrimination ($p < 0.05$).

4. Conclusion

The aim of the present work was to identify the role of temperament and character, the founding components of personality according to Robert Cloninger's bio-psycho-social model, in the perception of organisational well-being in obstetrics.

Due to the smallness of the sample, it can at present be considered a pilot study; there are in fact a number of limitations that must be overcome if these results are to be considered generalisable. Firstly, the subjects are poorly represented; secondly, there is no gender balance, although it must be considered that obstetrics departments often have a clear predominance of female staff.

Despite this, the study presents some strong elements. First and foremost, it has pragmatically applied the indications of legislative decree 150/2009, which stipulates in Article 14(5) 'on optimising public work productivity and the efficiency and transparency of public administrations' an annual survey of organisational well-being.

The results that have emerged, although partial, have provided us with some research elements that may guide future studies. For example, we were able to observe that most of the subjects display a reward-dependent temperament type. This would imply that in the work context, these subjects act on the basis of rewards and punishments from the environment. In fact, we have seen that the reward-dependent subject is generally oriented towards responding promptly and adequately to the demands of the social environment in order to obtain its approval: he appears particularly sensitive to the reactions of others and to social pressure, as well as dependent on rewards. He is therefore sociable, helpful and altruistic and, being highly emotional and sensitive, concerned with pleasing others.

It cannot be ruled out that this disposition influenced the choice of course of study, as shown by some research work linking temperamental traits to the choice of university (Jaracz *et al.*, 2021). Furthermore, this could also depend on the fact that predominantly women were evaluated: it is

known that temperamental traits show gender differences, with a prevalence of Novelty Seeking among men and Reward Dependence and Harm Avoidance among women (Else-Quest *et al.*, 2006).

We also observed a greater expression of character than temperament. In this respect, the subjects would appear to be divided into two subgroups: cooperative and self-directed. Certainly, we have reason to think that this differentiation may also have an impact on the working environment. Indeed, there are studies that define the former as gregarious and the latter as leaders (Kisling, 2007). In this regard, the sample also obtained high levels of Persistence, which could indicate traits of stubbornness and perfectionism, tending to be associated with the self-directed character, i.e., based on the acceptance of the self as an autonomous and independent individual.

Another interesting aspect was being able to explore the perception of organisational well-being with respect to many dimensions of the working environment ranging from environmental and functional aspects to communication and relationship aspects. Overall, satisfaction with the sample's work well-being was medium to high. The most ambivalent responses were those towards the boss: growth and fairness. The majority of the subjects in fact expressed medium satisfaction and the remainder was divided into low and high satisfaction, with no half measures. This indicates that some subjects tend to perceive the boss as a figure who does not nurture the development and growth of his workers, or who may make unfair decisions towards different employees whom he perceives as more or less close. Undoubtedly, the relationship with one's boss is a dimension that involves a broader sphere concerning attitudes towards authority figures; so broad that it deserves independent treatment (Burwen & Campbell, 1957).

To answer and remain confined to the specific original research question, it would appear from the results that *temperament* is the aspect of personality most closely related to the perception of well-being. In particular, significant associations emerged between novelty-seeking temperament and satisfaction with work and the work context, i.e. the greater the subject's disposition to new stimuli, the greater the perception of well-being in the work context (Rizzo *et al.*, 2022; Maggio *et al.*, 2022). The novelty-seeking type is in fact attracted to new stimuli and potentially more enterprising in initiatives and problem-solving because it often also exhibits traits of creativity and a tendency to innovate (Schweizer, 2006).

In addition, a negative association also emerged between the Self-transcendent type and the perception of job security and discrimination. In fact, the result shows that the higher the levels of Self-transcendence, the more negatively the person perceives the safety of their work environment

and perceives discrimination. Self-transcendence is a personality trait that involves the expansion of personal boundaries and includes spiritual ideas, such as feeling part of the universe. It is possible that these individuals are more sensitive to aspects related to belonging, acceptance, and feeling excluded or are more likely to notice attitudes of discrimination or threats to their sense of security, compared to others with characteristics of greater distractibility, extroversion or outward-oriented thinking.

In conclusion, the results obtained suggest that there is a relationship between temperament, character and organisational well-being, as hypothesised. In particular, it is not so much temperament, and thus the basic disposition of the individual (Yldirim et al., 2023), but character, formed from social interactions, that characterises the perception of organisational well-being in one's work environment.

However, in order to confirm and generalise this hypothesis, there is a clear need for future studies.

Funding

This research has received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflicts of Interest

The authors declare that there is no financial, general, or institutional conflict of interest regarding the publication of this article.

References

- World Health Organization, et al. Definition of health. <http://www.who.int/suggestions/faq/zh/index.HTML>, 1948.
- Montgomery, Anthony, et al., eds. *Connecting Healthcare Worker Well-Being, Patient Safety and Organisational Change: The Triple Challenge*. Springer International Publishing, 2020.
- Torri, Paola, and Emanuele Toniolo. "Organizational wellbeing: challenge and future foundation." *Giornale italiano di medicina del lavoro ed ergonomia* 32.3 (2010): 363-367.
- De Simone, Stefania. "Conceptualizing wellbeing in the workplace." *International Journal of Business and Social Science* 5.12 (2014).

- Wall, Tony, Cary L. Cooper, and Paula Brough, eds. *The Sage Handbook of Organizational Wellbeing*. SAGE, 2021.
- Carvajal-Arango, David, Alejandro Vasquez-Hernandez, and Luis Fernando Botero-Botero. "Assessment of subjective workplace well-being of construction workers: A bottom-up approach." *Journal of Building Engineering* 36 (2021): 102154.
- Elsass, William P., et al. "Susceptibility to maladaptive responses to stress in basic military training based on variants of temperament and character." *Military medicine* 166.10 (2001): 884-888.
- Han, Kyoung-Ho, and Sung-Bu Lee. "The temperament and character of Korean male conscripts with military maladjustment—a preliminary study." *Psychiatry Investigation* 10.2 (2013): 131.
- Jang, Sung Gue, Sang Kyu Lee, and Jong Hyuk Choi. "Control study on temperament and character traits, resilience, and predictors of military maladjusted soldiers." *Journal of Korean Neuropsychiatric Association* 53.3 (2014): 178-185.
- Eley, Diann, et al. "Exploring temperament and character traits in nurses and nursing students in a large regional area of Australia." *Journal of Clinical Nursing* 20.3-4 (2011): 563-570.
- Yazici, Ahmet Bulent, et al. "The relationship between temperament and character traits and burnout among nurses." *Journal of Psychology & Psychotherapy* 4.5 (2014): 1.
- Mihailovic, Marko, et al. "The personality of newly graduated and employed nurses: Temperament and character profiles of Swedish nurses." *International Journal of Nursing Studies Advances* 4 (2022): 100058.
- Hwang, Hyun Chan, et al. "Associations of temperament and character with coping strategies among office workers." *Psychiatry investigation* 17.1 (2020): 37.
- Sievert, Martin, et al. "The influence of temperament and character profiles on specialty choice and well-being in medical residents." *PeerJ* 4 (2016): e2319.
- Vaidya, Nutan Atre, et al. "Relationship between specialty choice and medical student temperament and character assessed with Cloninger Inventory." *Teaching and learning in medicine* 16.2 (2004): 150-156.
- Rizzo, Amelia, and Liang Chaoyun. "How young adults imagine their future? The role of temperamental traits." *European Journal of Futures Research* 5.1 (2017): 1-8.
- Rizzo, Amelia. "Temperament and generativity during the life span." *Mediterranean Journal of Clinical Psychology* 1.1 (2013).
- Cloninger, C. Robert, Dragan M. Svrakic, and Thomas R. Przybeck. "A psychobiological model of temperament and character." *Archives of general psychiatry* 50.12 (1993): 975-990.

- Settineri, Salvatore, et al. "Caregiver's burden and quality of life: Caring for physical and mental illness." *International Journal of Psychological Research* 7.1 (2014): 30–39.
- Mento, Carmela, et al. "The Empathy in Young Students of Health Professions." *European Journal for Person Centered Healthcare* 4.1 (2016): 33–39.
- Cloninger, C. Robert, et al. "The Temperament and Character Inventory (TCI): A guide to its development and use." (1994): 19–28.
- Kluger, M. T., et al. "Personality traits of anaesthetists and physicians: an evaluation using the Cloninger Temperament and Character Inventory (TCI-125)." *Anaesthesia* 54.10 (1999): 926–935.
- Cordeiro, R., and M. Figueira. "Self-esteem and affective temperament of nurses in psychiatric and mental health services." *European Psychiatry* 24.S1 (2009): 1–1.
- Vaughn, Brian E., and Nana Shin. "Attachment, temperament, and adaptation: One long argument." *Minnesota symposia on child psychology: The origins and organization of adaptation and maladaptation*. Wiley Blackwell, 2011.
- Rothbart, Mary K., and J. U. L. I. E. Hwang. "Temperament and the development of competence and motivation." *Handbook of competence and motivation* (2005): 167–184.
- Quinn, John L., et al. "Heterogeneous selection on a heritable temperament trait in a variable environment." *Journal of Animal Ecology* 78.6 (2009): 1203–1215.
- Nigg, Joel T. "Temperament and developmental psychopathology." *Journal of Child Psychology and Psychiatry* 47.3-4 (2006): 395–422.
- Miettunen, J., A. Ahola, and E. Jääskeläinen. "Predictive and discriminant validity of different psychopathology and temperament scales for major psychiatric disorders—23-year follow-up of the Northern Finland Birth Cohort 1966." *European Psychiatry* 65.Suppl 1 (2022): S69.
- Jaracz, Marcin, et al. "Contributions of Affective Temperament Traits to Professional Choice: Evidence from the Study of Firefighters, Musicians, Athletes, Bank Managers, Nurses and Paramedics." *Psychology Research and Behavior Management* 14 (2021): 827.
- Else-Quest, Nicole M., et al. "Gender differences in temperament: a meta-analysis." *Psychological Bulletin* 132.1 (2006): 33.
- Kisling, Reid A. "Character for leadership: The role of personal characteristics in effective leadership behaviors." Regent University, 2007.
- Burwen, Leroy S., and Donald T. Campbell. "The generality of attitudes toward authority and nonauthority figures." *The Journal of Abnormal and Social Psychology* 54.1 (1957): 24.

- Schweizer, Tanja Sophie. "The psychology of novelty-seeking, creativity and innovation: neurocognitive aspects within a work-psychological perspective." *Creativity and Innovation Management* 15.2 (2006): 164-172.
- Rizzo A, Alfa R, Carlotta V, Sturniolo G, Trazzi L, Viola F. "Burnout, decision-making and coping among healthcare workers: How the world was before the COVID-19 pandemic." *G Ital Psicol Med Lav.* 2022;2(2):105-16.
- Maggio MG, Rizzo A, Stagnitti MC, Manuli A, Calabrò RS. "System usability, stress and mood among teachers using distance learning." *G Ital Psicol Med Lav.* 2022;2(2):117-24.
- Yildirim M, Turan ME, Albeladi NS, Crescenzo P, Rizzo A, Nucera G, Ferrari G, Navolokina A, Szarpak L, Chirico F. "Resilience and perceived social support as predictors of emotional well-being." *J Health Soc Sci.* 2023;8(1):59-75.

Declarations

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.