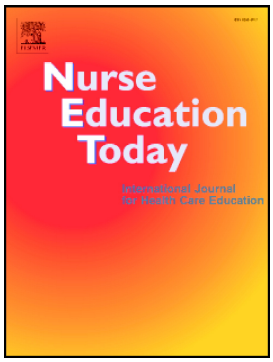
Accepted Manuscript



Sense of coherence, academic performance and professional vocation in certified nursing assistant students

Natura Colomer-Pérez, Joan J. Paredes-Carbonell, Carmen Sarabia-Cobo, Vicente Gea-Caballero

PII: S0260-6917(19)30057-7
DOI: https://doi.org/10.1016/j.nedt.2019.05.004
Reference: YNEDT 4122

To appear in: *Nurse Education Today*

Received date: 14 January 2019
Revised date: 19 March 2019
Accepted date: 3 May 2019

Please cite this article as: N. Colomer-Pérez, J.J. Paredes-Carbonell, C. Sarabia-Cobo, et al., Sense of coherence, academic performance and professional vocation in certified nursing assistant students, Nurse Education Today, https://doi.org/10.1016/j.nedt.2019.05.004

Sense of coherence, academic performance and professional vocation in Certified Nursing Assistant students

Natura Colomer-Pérez (1,2), Joan J. Paredes-Carbonell (1,3,4), Carmen Sarabia-Cobo (5), Vicente Gea-Caballero (6,7)

(1) Facultat d'Infermeria i Podologia. Universitat de València. València. España.
(2) Instituto Universitario de Investigación en Tráfico y Seguridad Vial (INTRAS) Universitat de València. València. España.
(3) Centre de Salut Pública d'Alzira. Conselleria de Sanitat Universal i Salut Pública, Alzira. València. España.
(4) Fundació per al Foment de la Investigació Sanitària i Biomèdica de la Comunitat Valenciana (FISABIO). València. España.
(5) Facultad de Enfermerñia, Universidad de Cantabria. Nursing Research Group IDIVAL, Cantabria. Spain.
(6) Escuela de Enfermería La Fe, centro adscrito Universitat de València. València. España.
(7) Instituto de Investigación Sanitaria IIS La Fe, Grupo de Investigación GREIACC. València. España.

Corresponding autor:

Carmen Sarabia-Cobo.

Avda/Valdecilla sn. Facultad de Enfermería, Universidad de Cantabria.

carmen.sarabia@unican.es

(34) 606 247 502

Sense of coherence, academic performance and professional vocation in Certified Nursing Assistant students

Abstract:

Background: The sense of coherence (SOC) of the salutogenic health model explains why people in stressful situations are able to maintain or even improve their health. There are some studies on which measures are more effective to reduce stress in Nursing assistant students. There are no studies that link SOC with the two key aspects in the prevention of stress in Nursing assistant students: the motivation of pursuing this profession and the academic level.

Objectives: to explore the salutogenic paradigm among Nursing assistant students in a region of Spain (Comunitat Valenciana).

Design: Cross-sectional, analytical and exploratory study carried out in 2016.

Methods: Students of the first year of Nursing Assistant certification. Self-administered questionnaire to collect the variables: Sense of Coherence (SOC-13 instrument); professional vocation; Self-reported grades of the academic record.

Results: The mean score for the total SOC measurement was M=56.38 (SD=12.236; 71). Regarding the SOC components, the average score was for Manageability M=16.45 (SD=4.53;24); Comprehensibility M=19.27 (SD=5.642;30) and Meaningfulness M=20.65 (SD=4.48;23). Students who lived in rural environments presented a weaker SOC (M=54.05), compared to those who were located in urban environments (M=56.83) and large cities (M=56.15). The students who reported a choice of studies motivated by professional vocation presented a stronger SOC, scoring also a remarkable academic performance ($p < 0.05$).

Conclusions: Strong levels of SOC in Nursing assistant students, are related to a greater motivation to study something desirable, and to obtaining high academic performance,

despite being a demanding and high-stress profession. Therefore, a strong SOC seems to contribute to being more resistant to stress. The environments that provide and facilitate greater external resources such as health, education, culture, association, leisure and recreation, for the community, have higher global levels of sense of coherence.

Keywords: Salutogenic Model of Health; Sense of Coherence; Nursing; Vocational Education and Training; Certified Nursing Assistant.

Introduction

Based on the findings in literature review, academic performance alone does not explain professional competence (Blackman, et al., 2007; McMullan, et al., 2003; Ofori & Charlton, 2002). It seems that being successful in education could be a consequence of personality traits, acquired cognitive resources and coping strategies, and not a simple feature of the education process (Lahti, et al., 2014; Pulido-Martos, et al., 2012; Rudman & Gustavsson, 2012). The overall research seems to indicate that optimum professional performance is mediated by psychological characteristics (Pitt, et al., 2012; Thomas & Asselin, 2018; Richardson, et al., 2012).

Regarding the case of nursing students, stress is a psychosocial factor that influences the academic performance and well-being of this group (Rudman & Gustavsson, 2012). Nursing students not only face academic stress, but also face stress at work during the training period (Pulido-Martos et al., 2012). Some of the most common stressors are time pressure, workload, decision making, continuous changes (meet new professionals and patients, changes of units, etc) that occur during apprenticeship (Rudman & Gustavsson, 2012). The negative consequences of not having adequate coping strategies to undertake the inherent demands of the degree, as well as the future professional life, have an impact on the health and mental well-being of the person. And this situation is directly related to their professional performance (Lee, et al., 2017).

A systematic review which analyses what measures are effective in the long run to reduce stress in nursing students concludes that there are still few studies in this regard (Galbraith & Brown, 2011). Moreover, this study highlights that the most effective interventions must be grounded both in providing skills to cope with stressful situations (usually relaxation techniques) and skills to change maladaptive cognitions. From thereon, the literature has grown in this respect underlining resilience and sense of coherence as

protective factors against stress (García-Izquierdo, et al., 2017; Ríos-Risquez, et al., 2016; Stephens, 2013). This last conception has reached special relevance in recent years as it corresponds to a complete theoretical model whose implementation seems to obtain sustained benefits over time and a positive impact in all personal spheres: The Salutogenic Model of Health (SMH) (Antonovsky, 1996; Eriksson & Lindström, 2005).

Salutogenic paradigm is a theory developed by Aaron Antonovsky (1923-1994) who was initially interested in exploring the relationships between variables such as stress, social class, culture, health and illness. The SMH explains why people in a stressful situation are well maintained and even able to improve their health (Antonovsky, 1987; Eriksson & Lindström, 2005). An individual's health is determined by the interplay of environmental threats (stimuli), generalised resistance resources (GRRs) at one's disposal, and the strength of one's Sense of Coherence (SOC). SOC is directly related to the ability of using cognitive, affective and instrumental strategies that help people to improve their ability to cope with life stress (Antonovsky 1990; Eriksson & Lindström, 2005).

When analysing the current studies on SOC in the nursing profession, we observed that still scare and focus only on certain aspects of the problem (Basińska, et al., 2011; Stephens, 2013). A strong SOC correlates with health behaviours, optimism and self-efficacy in healthy university students (Bergh, et al., 2006; Söderfeldt, et al., 2000) and shows significant positive results with mental health and negative correlation with anguish and stress (Grayson, 2007). On the other hand, we couldn't find evidence linking SOC with two academic aspects that seem to be paramount for the student's stress prevention in the field of health sciences: the calling or motivation to pursue this profession and the academic records (Alkaya, et al., 2018; Eley, Bertello & Rogers-Clark, 2012; McLaughlin et al., 2010). Some findings point towards both factors influencing the

students' ability to resist the inherent stressors of their education, as well as their professional future (Bodys-Cupak, et al., 2018). Nonetheless, it has not been explored yet whether those concepts are related to the SOC itself as an intrinsic determinant measure of both. Given that, we know that the professional vocation and the academic performance are partially moderated by the country's own culture and the global vision of the nursing profession (Fealy, 2004). Furthermore, it is certainly interesting to appreciate that the SMH considers SOC as a cross-cultural concept (Meyer, 2011). This fact means that in all cultures and in all stages of coping with a stressor, a person with a strong SOC has an advantage to prevent different situations o stressors from becoming stress (Eriksson, 2017). However, in seeking to comprehend how SOC works, it is culture that seems to define what resources are appropriate (Eriksson, 2017; Mayer & Boness, 2011). It is observed that, in comparison, the most disadvantaged populations and the most vulnerable people tend to score lower in SOC (Bezuidenhout & Cilliers, 2010). In this regard, it is also supported by studies showing that both students and nursing professionals coming from environments with favourable socioeconomic indexes show stronger SOC levels (Grayson, 2007; Posadzki, et al., 2010). The same is true for the students with a strong sense of coherence are more able than others to handle problems associated with university life as well as cope more satisfactorily with the problems of the profession (emotional impact, stress and anguish, strong job demands, etc.) (Foureur, et al., 2013). Everything seems to point to the fact that the implementation of educational and formative strategies based on the SMH will give rise, in students, to two results: the improvement of their own SOC in order to be competent professionals to undertake better care, and in order to be care agents in the application of this model with the patients they will attend (He, et al.,, 2012; Malinauskiene, et al., 2012; Meyer, 2011; Nilsson, Andersson, et al., 2012).

In light of the studies that suggest deepening the connection of SMH, especially through the study of SOC, with the academic development and skills of undergraduate nursing students (Goff, 2011; Khamisa, et al., 2013), the main aim of this study was to explore the salutogenic paradigm among nursing assistant students in a region of Spain (Comunitat Valenciana). As secondary objectives, we considered to measure SOC in the study population; to establish the relation between the construct and the professional vocation of study population; to establish the relation between the construct and the academic performance of study population; and to establish the relation between the construct and factor variables of study population.

Methods

Study design. Cross-sectional, analytical and exploratory study carried out in 2016.

Sample. Students of the first course of Certification of Nursing Assistant (CNA) of all public upper secondary schools with Vocational Education and Training certifications of the Comunitat Valenciana (Spain). The educational system and the training program are the same for all centres. The study was aimed at the entire student population (N=1150). With an IC=95% and an Error=5% a minimum sample of N=289 was required. The final research sample was N=921.

Study variables.

Independent variables: gender, age, employment situation, geographic environment of the school, income level.

Dependent variables:

Sense of coherence assessed by the **Orientation to Life Questionnaire-13 items (OLQ-13 or SOC-13),** (Antonovsky, 1993). The instrument aims to measure a global orientation of the personality that facilitates the solution of problems in an adaptive way in stressful situations to which people are subjected throughout their lives. As in the extensive

questionnaire, the 13-item questionnaire also measures the dimensions of Comprehensibility (with 5 items), Manageability (with 4 items) and Meaningfulness (with 4 items). The answers offer a continuum of agreement to disagreement in 7 response options -represented on a Likert scale, from 1 to 7- ranging from "Never" and "Rarely" to "Very often" and "Always", both in the sense of the positive or negative questions. The OLQ-13 scale has shown good internal consistency, with a Cronbach alpha between 0.70 and 0.92 (Antonovsky, 1993; Eriksson & Lindström, 2005; Lizarbe-Chocarro, et al., 2016) and retains the same psychometric qualities as the original version of 29 items, in addition to giving more peace of mind when answering it, because it contains fewer reagents (Virués-Ortega, et al., 2007).

Subjective average grade to obtain in the course. The students were asked about their final academic record: *Approximately, could you indicate which average grade (of all the matters) you have obtained in this course?* The response options were: Fail (<5), Pass (5-5.9), Good (6-6.9), Remarkable (7-7.9), Outstanding (8-8.9), With Distinction (9-10). In Spain, the academic record is scored in a scale of 0-10, with 10 being the highest score to reach and below 5 is considered as failed.

Motivation of choice of studies. Table 1 shows the categories compiled *ad hoc* for the collection of this variable and that answer the question: *What motivation led you to study the VET certification of CNA?* The subsequent recoding is also shown to facilitate its analysis.

See Table 1

Data collection. The final questionnaire was made by principal investigator who validated in an online form. The questionnarie was drawn up that collected all the variables of the study and which was sent, with the permission of the secondary schools' management, to all first-year students, with an information sheet about the objective of the study and the

voluntary nature of their study participation. The administration of the questionnaires started on April 26th, 2016 and finished on June 1st, 2016. There were no exclusion criteria to participate, apart from not wanting to participate in the study. The questionnaire was completely anonymous and not participating in the study did not imply grievances for the students.

Data Analysis. The variables were described using frequencies and percentages. We performed a correlation analysis between dependent and independent variables using the Pearson r. To study the possible differences between groups Chi square was used for qualitative variables and Student t for quantitative variables. In the case of differences between more than two groups, the non-parametric Kruskal Wallis test and the parametric ANOVA test were used. In all the analyses, a confidence level of 95% was established ($p < 0.05$). The statistical program SPSS v.22 was used.

Ethical considerations. Permissions were requested and obtained from the educational centres and the competent organism in the area of education in the region (05ED01Z / 2016/406 / S) Resolution of February 25th, 2016 of the Autonomous Secretariat of Education and Research of the Conselleria d'Educació, Investigació, Cultura i Esport. The data were analysed anonymously and the centres and students received the pertinent information on the purpose of the research and the strictly academic use of the data obtained. Responding to the questionnaire was interpreted as granting consent to participation in the study. The study was in accordance with Spanish and European data protection regulations.

Results

A total of 921 people answered the questionnaire (participation rate of 87%). The average age was 28.52 years (SD=11.42). 81.5% were women. 91.2% indicated having a low/medium income. Regarding the average grade of the academic record, a quarter said to be in the band of With Distinction (25.2%), and something more than the majority - specifically 59.2% - would refer to having obtained an average between Good (26.3%) and Remarkable (32.9%). Finally, 12.9% of the sample affirmed obtaining a Pass average grade, while only 2.7% expressed that they did not pass the course considering it as a fail. When being asked about their motivation at the time of choosing to study the CNA studies, almost half (48.2%) indicated that it was a choice of professional calling, while for a third of students (34.3%) seeking better work choices was the intention.

Sense of coherence

Reliability of SOC-13. The questionnaire had adequate levels of reliability as a whole as well as in all the three components (total Cronbach alpha=0.811; Manageability, α=0.584; Comprehensibility, α=0.652; Meaningfulness α=0.614).

Scores on the SOC-13 scores. The mean score obtained for the global SOC measurement was M=56.38 (SD=12.23). Regarding the SOC subdimensions, the average score was: Manageability M=16.45 (SD=4.53); Comprehensibility M=19.27 (SD=5.64); and Meaningfulness M=20.65 (SD=4.48).

Correlations

The correlations between sense of coherence, and its three subdimensions, and the related variables (age, income level and academic performance) of the participants are shown in Table 2.

See Table 2

Categorical analysis

Sense of coherence and demographic variables. The distribution of the scores according to the variables under study can be seen in Table 3. Regarding **gender**, it is observed that the average score of Total SOC in women is slightly higher -about two points- than in men, although this result is not statistically significant ($p=0.06$). This phenomenon is observed, specifically, in the Meaningfulness component, for which the average in women is just two points higher than that of men. Regarding the **age** variable, the high sense of coherence score for the most advanced age group is relevant. We can observe that the subjects older than 45 years obtained higher scores, slightly higher than the group comprising the ages between 30 and 45 years. The results for the group of under 30s show a notable difference, about seven points less for SOC. These differences are statistically significant ($p<0.01$). When analysing the differences according to the **geographic context** in which the secondary school is located, it is observed that the lower scores obtained in the three subdimensions of the sense of coherence belong to the students of schools located in a rural environment, specifically for the Total SOC the average analysed for this group is $M=54.05$ ($SD=13.06$). These differences are statistically significant only for the Comprehensibility component ($p<0.05$), which shows its highest score among the students who attend upper schools located in large cities.

See Table 3

SOC and Academic Performance. Table 4 shows the average scores both for the total score and for the three components, highlighting the students with the highest grades who present the most total SOC and also in their three components, with statistically significant differences between groups for both total SOC and the inner subdimensions ($p<0.001$).

See Table 4

SOC and Career choice motivation. Table 5 shows the average scores of SOC and its components, highlighting the students with the highest professional motivation for these studies as those with the strongest SOC scores, with statistically significant differences for the three subdimensions ($p<0.01$ for Meaningfulness; $p<0.05$ for Manageability and Comprehensibility), as well as for total SOC ($p<0.01$).

See Table 5

Discussion

The findings reported in this paper have enabled us to address the study aim: to explore the salutogenic paradigm among CNA students in a region of Spain. We found that the mean SOC scores in this collection of students are higher than the mean scores of students of other fields of study, as reported by Coetzee & Oosthuizen (2012), in a study in which the SOC was determined (M=48.1) for students of industrial and organisational psychology of the University of South Africa (UNISA). Regarding nursing degree students –and despite the differences that we can assume exist between students of higher education and those of vocational training-, the mean scores found in most studies are higher than those of the present study (e.g. Leino-Loison, et al., 2004). However, in our search for comparisons regarding the SOC of university students studying health sciences, we found some studies which present slightly higher SOC means, such as a sample of Slovakian psychology students from the University of Ruzomberok (M=58.9), (Skodova & Lajciakova, 2013) and physiotherapy students from the university of Debrecen in Hungary, (M=60.7), (Biró, et al., 2015).

Differences in the mean SOC scores according to the related variables

We found significant differences in scores according to gender, with women obtaining almost three points higher than men. Regarding age groups, for the students in our study, we observed a considerable increase in the SOC for the two older age groups (30-45 years, M=60.75 and >45 years, M=60.86) compared to M=53.75 for students under the age of 30. These results are in line with what Antonovsky postulated regarding the progressive strengthening of SOC during adolescence and the tendency for the same to stabilise after the age of 30 (Antonovsy & Sagy, 1986). When observing the differences according to the geographic environment in our study, the mean scores for SOC in the case of students who lived and studied in rural environments were lower (M=54.05), compared to those who lived in urban areas (M=56.83) and major cities (M=56.15). These findings are similar to those reported in the study by Tsuno & Yamazaki (2007), in which residents of urban areas showed significantly higher SOC scores compared to residents of rural areas. Accordingly, Eriksson & Lindström (2011), also affirmed that urban environments can provide and improve living standards throughout the entire health spectrum, and therefore this proposition may be applied to the intrinsic relationship between wellbeing, the general resistance resources and the sense of coherence, as the salutogenic theory has extensively substantiated in the available literature. Based on these findings, we can conclude that environments that provide and facilitate greater external resources for the community, in terms of health, education, culture, association, leisure and recreational aspects – parameters which are usually attributed to a greater extent to urban environments-, are related to higher levels of wellbeing and SOC, especially regarding the opportunities that these environments can offer towards the strengthening of the construct under study (Braun-Lewensohn, & Sagy, 2011). This is in line with the cultural concept that appears to influence the development of SOC, as postulated by several studies, which suggesting the need for further studies in order to determine the impact of

each of the sociocultural factors that appear to have more bearing in the development of a strong SOC (Braun-Lewensohn, & Sagy, 2011; Mayer, & Krause, 2011).

Regarding the motivation for studying a degree, the students who reported choosing their degree because of professional motivation presented a higher SOC. Furthermore, these students had a notable academic achievement, which supports findings from other similar studies (Clydesdale, 2015; Eley, et al., 2010). Clearly, students with a strong professional motivation, study with more enthusiasm, and thus achieve greater academic performance. However, what is less clear is whether such motivation, on its own, justifies a good performance. Specifically, in our study we found correlations between SOC and a greater age, female gender and living in an urban environment, factors which appear to influence having a strong SOC, which clearly contributes towards having better defense mechanisms towards stressors that are inherent to performance in health sciences, as suggested by previous studies (Thomas, et al., 2012; Williamson, Health, & Proctor-Childs, 2013). Specifically, a low SOC was consistently related with high levels of solitude, low social status and poor academic performance for a sample of students with disruptive behaviour (Idan & Margalit, 2014). Moreover, in the case of studies involving nursing students, the study by Moyer (1996) reported that the combination of high levels of SOC and high referred self-esteem also explained the fluid acquisition of clinical competency. In this respect, the predictive model used by Levi, et al., (2014) to observe the relationships between sense of coherence and personal and academic effectiveness provides interesting results. This study affirmed that SOC is strongly related with the contribution towards the achievement of good grades, while suggesting that students with a strong SOC obtain better academic records and remain committed to their studies for longer, as well as being able to better focus their efforts. In another study performed by Davidson, et al., in 2012, an intervention was introduced to examine academic results via

a workshop held for 43 students of Tel Aviv University, focused on promoting hope, sense of coherence and personal effectiveness to improve the academic success of their students expressed via their grades. The SOC results obtained after the aforementioned intervention were higher than before the intervention, and the grades also experienced a slight, but evident, increase.

Study limitations. One of the main limitations of this study is related to its cross-sectional design, which hampers the ability to make causal inferences. Also, self-reports were used on behalf of the study participants. Although these types of measures help enrich the perception of reality, they may however induce bias; while considering that a bias exists regarding the homogeneity of the sample in favour of female participants.

Future studies should introduce other types of data, such as qualitative methods, for example, by using focus groups, and proposing the use of triangulation methods. This would allow a more exhaustive analysis of the process in which the sense of coherence and the agency for self-care provides strength for the practice of nursing. Nonetheless, in the future, the challenge is to develop quality interventions and to research the effects of the them.

Conclusion

Having a strong SOC appears to contribute towards improved resistance to stress, which, in part, may also justify the motivation for studying something that is pleasing and obtaining high academic performance despite being a profession with high demands and marked stressors. It would be interesting to perform further studies along these lines, in order to detect people with a strong SOC or to favour the same and therefore incentivise the acquirement of an appropriate motivation to guarantee greater academic success, lower dropout rates and improved competence in professional performance.

In this sense, it is necessary to broaden our understanding of SOC and its contribution to

academic success, as well as for adapting and incorporating intervention strategies directed at strengthening the constructs as well as improving academic performance among students. This result in professionals more resistant to burnout with more possessing internal strategies for professional development, personal satisfaction, and professional competence.

Declaration of Conflicting Interests

The authors declare no potential conflicts of interest in relation to the research, authorship, and/or publication of this article.

Funding

The authors have received no financial support for the research, authorship, and/or publication of this article.

References

Alkaya, S. A., Yaman, Ş., & Simones, J. (2018). Professional values and career choice of nursing students. Nursing ethics, 25(2), 243-252.

Álvarez-Dardet, C., & Ruiz Cantero, M. T. (2011). Patrimonio de salud: ¿son posibles las políticas salutogénicas?. Revista Española de Salud Pública, 85(2), 123-127.

Antonovsky A. (1987) Unraveling the Mystery of Health. How People Manage Stress and Stay Well. San Francisco Jossey-Bass.

Antonovsky, A. (1990). Personality and health: Testing the sense of coherence model. Personality and disease, 7, 155-177.

Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. Health promotion international, 11(1), 11-18.

Antonovsky, H., & Sagy, S. (1986). The development of a sense of coherence and its impact on responses to stress situations. Journal of Social Psychology, 126(2), 213-226.

Basińska, M. A., Andruszkiewicz, A., & Grabowska, M. (2011). Nurses' sense of coherence and their work related patterns of behaviour. International journal of occupational medicine and environmental health, 24(3), 256.

Bergh, H., Baigi, A., Fridlund, B., & Marklund, B. (2006). Life events, social support and sense of coherence among frequent attenders in primary health care. Public health, 120(3), 229-236.

Bezuidenhout, A., & Cilliers, F. V. (2010). Burnout, work engagement and sense of coherence in female academics in higher-education institutions in South Africa. SA Journal of Industrial Psychology, 36(1), 1-10.

Biró, P., Csernoch, M., Máth, J., & Abari, K. (2015). Measuring the level of algorithmic skills at the end of secondary education in Hungary. Procedia-Social and Behavioral Sciences, 176, 876-883.

Blackman, I., Hall, M., & Darmawan, I. (2007). Undergraduate Nurse Variables that Predict Academic Achievement and Clinical Competence in Nursing. International Education Journal, 8(2), 222-236.

Bodys-Cupak, I., Majda, A., Skowron, J., Zalewska-Puchała, J., & Trzcińska, A. (2018). First Year Nursing Students' Coping Strategies in Stressful Clinical Practice Situations. Journal of Education in Science, Environment and Health, 4(1), 12-18.

Braun-Lewensohn, O., & Sagy, S. (2011). Salutogenesis and culture: Personal and community sense of coherence among adolescents belonging to three different cultural groups. International Review of Psychiatry, 23(6), 533-541.

Clydesdale, T. (2015). The purposeful graduate: Why colleges must talk to students about vocation. University of Chicago Press.

Coetzee, M., & Oosthuizen, R. M. (2012). Students' sense of coherence, study engagement and self-efficacy in relation to their study and employability satisfaction. Journal of Psychology in Africa, 22(3), 315-322.

Davidson, O. B., Feldman, D. B., & Margalit, M. (2012). A focused intervention for 1st-year college students: Promoting hope, sense of coherence, and self-efficacy. The Journal of Psychology, 146(3), 333-352.

Eley, D., Eley, R., Bertello, M., & Rogers-Clark, C. (2012). Why did I become a nurse? Personality traits and reasons for entering nursing. Journal of advanced nursing, 68(7), 1546-1555.

Eriksson, M. (2017). The sense of coherence in the salutogenic model of health. In The Handbook of Salutogenesis (pp. 91-96). Springer, Cham.

Eriksson, M., & Lindström, B. (2005). Validity of Antonovsky's sense of coherence scale: a systematic review. Journal of Epidemiology & Community Health, 59(6), 460-466.

Eriksson, M., & Lindström, B. (2006). Antonovsky's sense of coherence scale and the relation with health: a systematic review. Journal of Epidemiology & Community Health, 60(5), 376-381.

Fealy, G. M. (2004). 'The good nurse': visions and values in images of the nurse. Journal of advanced nursing, 46(6), 649-656.

Foureur, M., Besley, K., Burton, G., Yu, N., & Crisp, J. (2013). Enhancing the resilience of nurses and midwives: Pilot of a mindfulnessbased program for increased health, sense of coherence and decreased depression, anxiety and stress. Contemporary nurse, 45(1), 114-125.

Galbraith, N. D., & Brown, K. E. (2011). Assessing intervention effectiveness for reducing stress in student nurses: quantitative systematic review. *Journal of advanced nursing*, *67*(4), 709-721.

García-Izquierdo, M., Ríos-Risquez, M. I., Carrillo-García, C., & Sabuco-Tebar, E. D. L. Á. (2017). The moderating role of resilience in the relationship between academic burnout

and the perception of psychological health in nursing students. Educational Psychology, 1-12.

Goff, A. M. (2011). Stressors, academic performance, and learned resourcefulness in baccalaureate nursing students. International Journal of Nursing Education Scholarship, 8(1).

Grayson, J. P. (2007). Sense of coherence, problem freedom and academic outcomes of Canadian domestic and international students. Quality in Higher Education, 13(3), 215-236.

He, F. X., Lopez, V., & Leigh, M. C. (2012). Perceived acculturative stress and sense of coherence in Chinese nursing students in Australia. Nurse Education Today, 32(4), 345-350.

Khamisa, N., Peltzer, K., & Oldenburg, B. (2013). Burnout in relation to specific contributing factors and health outcomes among nurses: a systematic review. International journal of environmental research and public health, 10(6), 2214-2240.

Lahti, M., Hätönen, H., & Välimäki, M. (2014). Impact of e-learning on nurses' and student nurses knowledge, skills, and satisfaction: a systematic review and meta-analysis. International journal of nursing studies, 51(1), 136-149.

Lee, Y. E., Kim, E., & Park, S. Y. (2017). Effect of Self-Esteem, Emotional Intelligence and Psychological Well-Being on Resilience in Nursing Students. Child Health Nursing Research, 23(3), 385-393.

Leino- Loison, K., Gien, L. T., Katajisto, J., & Välimäki, M. (2004). Sense of coherence among unemployed nurses. Journal of advanced nursing, 48(4), 413-422.

Levi, U., Einav, M., Ziv, O., Raskind, I., & Margalit, M. (2014). Academic expectations and actual achievements: the roles of hope and effort. European Journal of Psychology of Education, 29(3), 367-386.

Lizarbe-Chocarro, M., Guillén-Grima, F., Aguinaga-Ontoso, I., & Canga Armayor, N. (2016, August). Validación del Cuestionario de Orientación a la Vida (OLQ-13) de Antonovsky en una muestra de estudiantes universitarios en Navarra. In Anales del Sistema Sanitario de Navarra (Vol. 39, No. 2, pp. 237-248). Gobierno de Navarra. Departamento de Salud.

Malinauskiene, V., Leisyte, P., Romualdas, M., & Kirtiklyte, K. (2011). Associations between self-rated health and psychosocial conditions, lifestyle factors and health resources among hospital nurses in Lithuania. Journal of Advanced nursing, 67(11), 2383-2393.

Mayer, C. H., & Boness, C. (2011). Interventions to promoting sense of coherence and transcultural competences in educational contexts. International Review of Psychiatry, 23(6), 516-524, DOI: 10.3109/09540261.2011.637906

Mayer, C. H., & Krause, C. (2011). Promoting mental health and salutogenesis in transcultural organizational and work contexts. Psychiatry, 23(6), 495-500.

McLaughlin, K., Moutray, M., & Moore, C. (2010). Career motivation in nursing students and the perceived influence of significant others. Journal of Advanced Nursing, 66(2), 404-412.

Meyer, C. H. (2011). The meaning of sense of coherence in transcultural management (Vol. 563). Waxmann Verlag.

Nilsson, P., Andersson, I. H., Ejlertsson, G., & Troein, M. (2012). Workplace health resources based on sense of coherence theory. International Journal of Workplace Health Management, 5(3), 156-167.

Ofori, R., & Charlton, J. P. (2002). A path model of factors influencing the academic performance of nursing students. Journal of Advanced Nursing, 38(5), 507-515.

Pitt, V., Powis, D., Levett-Jones, T., & Hunter, S. (2012). Factors influencing nursing students' academic and clinical performance and attrition: an integrative literature review. Nurse Education Today, 32(8), 903-913.

Posadzki, P., Stockl, A., Musonda, P., & Tsouroufli, M. (2010). A mixed-method approach to sense of coherence, health behaviors, self-efficacy and optimism: Towards the operationalization of positive health attitudes. Scandinavian Journal of Psychology, 51(3), 246-252.

Pulido-Martos, M., Augusto-Landa, J. M., & Lopez-Zafra, E. (2012). Sources of stress in nursing students: a systematic review of quantitative studies. International Nursing Review, 59(1), 15-25.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. Psychological bulletin, 138(2), 353.

Ríos-Risquez, M. I., García-Izquierdo, M., Sabuco-Tebar, E. D. L. A., Carrillo-Garcia, C., & Martinez-Roche, M. E. (2016). An exploratory study of the relationship between resilience, academic burnout and psychological health in nursing students. Contemporary nurse, 52(4), 430-439.

Rudman, A., & Gustavsson, J. P. (2012). Burnout during nursing education predicts lower occupational preparedness and future clinical performance: a longitudinal study. International Journal of Nursing Studies, 49(8), 988-1001.

Skodova, Z., & Lajciakova, P. (2013). The effect of personality traits and psychosocial training on burnout syndrome among healthcare students. Nurse Education Today, 33(11), 1311-1315.

SÖderfeldt, M., SÖderfeldt, B., Ohlson, C. G., Theorell, T., & Jones, I. (2000). The impact of sense of coherence and high-demand/low-control job environment on self-reported health, burnout and psychophysiological stress indicators. Work & stress, 14(1), 1-15.

Stephens, T. M. (2013, April). Nursing student resilience: a concept clarification. In Nursing forum (Vol. 48, No. 2, pp. 125-133).

Thomas, J., Jack, B. A., & Jinks, A. M. (2012). Resilience to care: a systematic review and meta-synthesis of the qualitative literature concerning the experiences of student nurses in adult hospital settings in the UK. Nurse Education Today, 32(6), 657-664.

Thomas, L. J., & Asselin, M. (2018). Promoting resilience among nursing students in clinical education. Nurse education in practice, 28, 231-234.

Tsuno, Y. S., & Yamazaki, Y. (2007). A comparative study of sense of coherence (SOC) and related psychosocial factors among urban versus rural residents in Japan. Personality and Individual Differences, 43(3), 449-461.

Virués-Ortega, J., Martínez-Martín, P., del Barrio, J. L., & Lozano, L. M. (2007). Validación transcultural de la Escala de Sentido de Coherencia de Antonovsky (OLQ-13) en ancianos mayores de 70 años. Medicina clínica, 128(13), 486-492.

Williamson, G. R., Health, V., & Proctor-Childs, T. (2013). Vocation, friendship and resilience: a study exploring nursing student and staff views on retention and attrition. The open nursing journal, 7, 149.

TABLES

Table 1.

*Categorization and recoding of the '**Career choice motivation**' variable*

Category	Recoding
I've always been very keen on studying CNA career or other studies related to care	**Professional motivation**
I was not accepted in other/further studies for not reaching the minimum admission scores	**Impossibility of access to other studies or further education**
I believe CNA studies will improve my options to get a better work	**Seeking better work choice**
I don't feel any special motivation to be enrolled in CNA studies	**No motivation**
I got enrolled in CNA studies for other reasons	**Other**

Table 2.

Correlations *between Sense of Coherence and components and related factors*

		1	2	3	4	5	6	7
1	**Age** (years)	1	-.215**	.242**	.207**	.269**	.194**	.272**
2	**Income**		1	-.080*	-0.051	-0.039	-0.055	-0.057
3	**Academic Performance**			1	.176**	.140**	.244**	.219**
4	**Manageability (MNG)**				1	.684**	.477**	.861**
5	**Comprehensibility (CMP)**					1	.452**	.880**
6	**Meaningfulness (MFL)**						1	.752**
7	**Sense of Coherence** (SOC-13)							1

***p < 0.01 (bilateral); * p < 0.05 (bilateral)*

Table 3.

Sense of Coherence scores according to the ***sociodemographic description***

	Study variable	SOC-13	Manageability (MNG)	Comprehensibility (CMP)	Meaningfulness (MFL)
1	**GENDER**				
	Male	56.73 (±12.10)	16.52 (±4.67)	19.22 (±5.64)	19.02 (±4.5)
	Female	54.84 (±12.73)	16.44 (±4.50)	19.27 (±5.64)	21.02 (±4.40)
2	**AGE GROUP**				
	<30	53.75 (±12.03)**	15.70 (±4.63)**	18.10 (±5.46)**	19.94 (±4.47)**
	30-45	60.75 (±10.44)**	17.76 (±3.78)**	20.96 (±5.06)**	22.03 (±4.27)**
	>45	60.86 (±12.66)**	17.63 (±4.51)**	21.72 (±5.90)**	21.51 (±4.22)**
3	**GEOGRAPHIC CONTEXT**				
	Rural areas	54.05 (±13.07)	15.97 (±4.52)	17.92 (±5.96)*	20.15 (±4.72)
	Urban areas	56.83 (±12.24)	16.52 (±4.62)	19.62 (±5.53)*	20.69 (±4.43)
	Large cities	56.15 (±12.05)	16.44 (±4.39)	19.01 (±5.71)*	20.70 (±4.53)
4	**EMPLOYMENT SITUATION**				
	Employed	59.12 (±11.65)*	17.11 (±4.27)*	20.41 (±5.73)*	21.51 (±4.22)*
	Unemployed	55.51 (±12.29)*	16.24 (±4.59)*	18.91 (±5.57)*	20.35 (±4.53)*
5	**INCOME**				
	Low	57.95 (±12.14)	17.02 (±4.24)	19.60 (±5.82)	21.33 (±4.36)
	Medium/Low	55.93 (±12.18)	16.12 (±4.29)	19.30 (±5.39)	20.51 (±4.83)
	Medium	56.49 (±11.47)	16.68 (±4.32)	19.11 (±5.46)	20.69 (±4.05)
	Medium/High	55.82 (±13.00)	16.31 (±5.41)	19.08 (±5.80)	20.43 (±5.00)
	High	54.31 (±13.25)	14.92 (±4.07)	18.54 (±7.79)	20.85 (±5.11)

Gender and Employment Situation (*U Mann-Whitney*). Age Group and Geographic Context (*Kruskal-Wallis*). Significant results at * $p<0.05$; ** $p<0.01$.

Table 4.

Sense of Coherence scores and components according to ***Academic Performance***

ACADEMIC PERFORMANCE	Factor (SOC)	Minimum	Maximum	Mean *(M)*	DE
Fail *(n=25; 2.7%)*	MNG	5	27	13.48	5.10
	CMP	9	27	16.68	5.30
	MFL	10	28	16.92	4.22
	SOC	28	82	47.08	11.90
Pass *(n=119; 12.9%)*	MNG	5	26	15.49	4.41
	CMP	5	32	17.92	5.69
	MFL	7	28	19.55	5.31
	SOC	25	81	52.96	13.04
Good *(n=242; 26.3%)*	MNG	4	27	16.14	4.54
	CMP	5	33	18.83	5.69
	MFL	5	28	19.63	4.42
	SOC	22	85	54.60	12.30
Remarkable *(n=303; 32.9%)*	MNG	4	28	16.58	4.43
	CMP	5	35	19.91	5.41
	MFL	9	28	21.33	4.13
	SOC	20	91	57.83	11.53
Outstanding *(n=179; 19.4%)*	MNG	6	27	17.11	4.53
	CMP	5	32	19.65	5.47
	MFL	9	28	21.45	4.08
	SOC	32	83	58.21	11.46
With Distinction *(n=53; 5.8%)*	MNG	10	26	18.45	3.74
	CMP	8	31	20.72	6.32
	MFL	14	28	22.96	3.48
	SOC	33	83	62.13	11.54

Table 5.

Sense of Coherence scores and components according to ***Career Choice Motivation***

CAREER CHOICE MOTIVATION	Factor (SOC)	Minimum	Maximum	Mean *(M)*	DE
Other *(n=115;12.5%)*	MNG	4	27	15.95	4.51
	CMP	5	32	19.13	5.36
	MFL	9	28	20.43	4.41
	SOC	22	83	55.51	11.84
No Motivation *(n=25; 2.7%)*	MNG	8	24	14.04	4.41
	CMP	10	23	16.64	3.75
	MFL	7	25	16.12	4.63
	SOC	28	66	46.80	11.16
Seeking better work choice *(n=316; 34.3%)*	MNG	5	28	16.71	4.69
	CMP	5	35	19.37	5.92
	MFL	5	28	20.28	4.67
	SOC	20	91	56.36	12.87
Impossibility of access to other studies or further education *(n=21; 2.3%)*	MNG	8	27	16.24	5.01
	CMP	7	29	17.10	6.62
	MFL	9	22	16.86	3.45
	SOC	31	78	50.19	12.66
Professional motivation *(n=444; 48.2%)*	MNG	4	27	16.55	4.36
	CMP	5	34	19.50	5.50
	MFL	9	28	21.41	4.12
	SOC	24	88	57.45	11.60