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IS ‘MEANINGFULNESS’ A GENERAL MEDIATING FACTOR?

The Salutogenic Revolution of Question-Setting in Health Science and Occupational Psychology

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According to our earlier researches – stating that on the one hand in the career competency of the examined subjects, out of the Core Job Dimensions present in the Hackman-Oldham Job Characteristic Model, only Meaningfulness (task significance) contributed significantly to inducing favourable Personal and Work Outcomes, and on the other hand, among the components of the Sense of Coherence, portrayed as a health and well-being factor in Antonovsky’s Salutogenic Model, it was Meaningfulness that had a preeminent role – we asked the question: to what extent can this positive effect of Meaningfulness be further generalized? That is, regarding women in Hungary who choose a healthcare career, whether Meaningfulness felt within their job motivates them with a significant enough force to be a counter-effective factor to job abandonment (especially frequent in Hungary), to persevere despite the difficult circumstances. From a methodical point of view, we completed a quasi-case study in the circle of 158 female students taking healthcare courses and 79 women working in healthcare for at least five years. As control groups we used the age- and sex-standardized random samples of non-healthcare students as well as workers. Here, Meaningfulness within the Sense of Coherence proved to be the significant factor for staying in the healthcare profession. Practical conclusion of the research: during the training in healthcare courses, an emphasis has to be laid upon developing the Sense of Meaningfulness in the person, by means of establishing life-career models, personal career design, and creating the chances of a healthier lifestyle.

Keywords: meaningfulness, salutogenic approach, sense of coherence, nurse education, manageability, comprehensibility, paramedical training, nurse turnover, female students, female employee

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Inwiefern ist „Sinnhaftigkeit“ („meaningfulness“) ein allgemeines Motiv? Ein Beitrag zur revolutionären salutogenetischen Fragestellung in Gesundheitswissenschaft und Beschäftigungspsychologie: Auf der Grundlage unserer Ergebnisse aus zwei früheren Forschungsprojekten, die sich gegenseitig bestätigten – einerseits hatte sich gezeigt, dass im Arbeitsbereich unserer Probanden von den motivationsfördernden Bedingungen der Arbeitssituation nach dem Hackman-Oldham-Modell allein die empfundene Bedeutsamkeit und Sinnhaftigkeit (meaningfulness) in signifikantem Maße zu positiven Ergebnissen in Bezug auf die Person und die Tätigkeit führten, andererseits kam „meaningfulness“ auch unter den Komponenten des Kohärenzsinn (Sense of Coherence, SOC), der im salutogenetischen Modell nach Antonovsky als Faktor für Gesundheit und Wohlbefinden verstanden wird, eine besondere Rolle zu – gingen wir der Frage nach, inwiefern diese positive Wirkung von „meaningfulness“ weiter zu verallgemeinern ist. Insbesondere haben wir untersucht, ob positive „meaningfulness“ bei weiblichen Fachkräften im Gesundheitswesen in Ungarn, bei denen die Zahl der Berufswechsler besonders hoch ist, signifikant dazu beiträgt, dass sie ihren Beruf nicht aufgeben. Als Methode wurde eine Art Fallstudie gewählt, die bei Frauen, die ein medizinisches Fach belegt haben (n = 158) und bei Frauen, die seit mindestens fünf Jahren im Gesundheitswesen tätig sind, durchgeführt wurde. Als Kontrollgruppen dienten für Alter und Geschlecht standardisierte Zufallsstichproben von Studierenden anderer Fächer und von nicht im Bereich des Gesundheitswesens Tätigen. Unsere Ergebnisse bestätigten, dass „meaningfulness“ innerhalb des Kohärenzsinn einen signifikanten Faktor für das Verbleiben in einem medizinischen Beruf darstellt. Praktische Konsequenz der Forschung: In der Ausbildung in medizinischen Fächern sollte mehr Wert auf die Entwicklung des Kohärenzsinn beim einzelnen Studierenden gelegt werden. Mögliche Maßnahmen hier bei sind: Erstellung von Laufbahnmodellen, individuelle Karriereplanung, Schaffung von Möglichkeiten für eine gesündere Lebensführung.

Schlüsselbegriffe: Bedeutsamkeit/Sinnhaftigkeit der Arbeit, salutogenetischer Ansatz, Kohärenzsinn, Krankenschwesternausbildung, Bewältigbarkeit, paramedikale Ausbildung, Berufswechsel von Krankenschwestern, weibliche Studierende, weibliche Beschäftigte

1. Our salutogenic research precedents

The reports of our salutogenesis studies (VARGA 2004, 2005) as directed toward a broader international readership started in the very first issue of *European Journal of Mental Health*, which was launched in 2006. We also published an article in the 4th issue of 2009. This third report reasons along lines partly similar to those two – insofar as the independent variable of the model is again the *Sense of Coherence* (SOC),¹ assumed to be the essence of salutogenesis by ANTONOVSKY (1979, 1988) – and, in relation to the *state of the art* outlined in the above issues, partly moves forward with a few new results, felt to be ‘serendipitous’ discoveries. On the one hand, for example, because we passed here from the territory of health science into the territory of another discipline – that of occupational psychology –, and so we could undertake the experiment of a meta-level of generalization, based on the mutual regularities perceived in both research fields; on the other hand, through having

¹ Although we are aware that ANTONOVSKY himself (1996) regularly reminded people that SOC was but one idea to answer the salutogenic question (BECKER et al. 2010).

gained evidence (based on the thus more comprehensively probabilized connections) that practical consequences can be drawn concerning the choice, training, and complex vocational preparation of persons suitable for the health care profession.

1.1. 'Unravelling the Mystery of the Sense of Coherence'

In our first report that bore the above title (JEGES & VARGA 2006, 2008), we reported on the validation of Antonovsky's 29-item 'Sense of Coherence' (SOC) scale for County Baranya in Hungary with the help of a representative survey of 1,400 people through *complex health criteria* (data of self-assessment of health (JEGES et al. 1997), vegetative lability (HENNENHOFER & HEIL 1975) and chronic diseases (TAHIN et al. 1993)), which were combined into the index of the Ease/Disease Continuum (EDEC). We also reported on SOC's predicting power of *well-being indices*, in some cases, with a strength surpassing that of health criteria, the criterion data of well-being indices viz. cognitive satisfaction, affective happiness by Warr, Cook & Wall (WARR et al. 1979). Thirdly and fourthly, the attitudinal and value system contents of SOC were explored for convergent validation with the *entrepreneurial attitude scale* by SCANLAN and FLEXMAN (1982) and the *conceived value* test by MORRIS (1956) respectively (VARGA 2003).

In this first research report of ours, the thematic broadening is already mirrored with which the BECKER et al. (2010) study 'Salutogenesis 30 Years Later: Where do we go from here?' characterises the development arc of the past three decades of salutogenic research, inasmuch as the emphasis of salutogenic outcomes has shifted from the probabilization of *health status* ('*unsickness*') (1st level) to the identification and measuring of *health potential* as well as *health capital* in the broader sense: namely, on the one hand, to the promotion of *well-being and general quality of life* (2nd level), and on the other hand, markedly to the promotion of '*measurable high levels of performance, work success and progress toward reaching human potential*' (3rd level). As it is, we did not only get new results related to the second-level outputs but also as a point of balance precisely related to these third-level outputs (that is why we have given our article the title 'Unravelling the Mystery of the Sense of Coherence' as a paraphrase of Antonovsky's book title *Unraveling the Mystery of Health*. As did Antonovsky with the *mystery* of health in SOC, so did we '*unravel*' the *mystery* of the Sense of Coherence: on the one hand, on the more concretely subject-dependent attitudinal level, in the *entrepreneurial attitude* (and within its core, in *responsibility-taking*; and on the other hand, on the deeper value system level in the concepts of the planetary values,² the integrative *Maitreyan*

² As for making a difference between attitudes and values, cf. ROKEACH's (1976, 109–77) explication, according to which the scarcity of values is connected to behaviour by means of attitudes more by orders of magnitude, and that in attitude (and even in the superordinate '*belief*' category) the existential

value ('Integrate action, enjoyment, and contemplation'), the proactive *Promethean* value ('Constantly master changing conditions') and the *Christian* value, which fosters mutual social support ('Show sympathetic concern for others'). In that first research report we sketched a further research task within the topic of Sense of Coherence as a *group property*: an examination, and a project for the development of the SOC level of the *Hungarian national community* which we started to expound in our second research report (VARGA et al. 2009).

1.2. 'Health Capital in the "Cis-Elbanian" vs. "Trans-Elbanian" Grand Regions'

Three years later, in the same *European Journal of Mental Health*, under the above title supplemented by the subtitle 'Frame Disputes About Framing Ambiguities and Misframings' (VARGA et al. 2009) we reported on the first results of the task undertaken in the outlook paragraph of the authors' earlier article to study with the help of the Sense of Coherence (SOC) as a *group property*, the health and general well-being of the *Hungarian national community* in an international comparison. With Hungary being the only Eastern Central European ('Trans-Elbanian') country joining the *Corporate Culture and Regional Embeddedness* (CURE) EU project, we Hungarians tried to help achieve this goal by making the following proposal to the researchers of the five Western European ('Cis-Elbanian') countries taking part in the project: the drastically different Health Capital level of the Grand Regions situated on the two sides of the Elbe–Leitha boundary ('centrum versus semi-periphery') should be inserted as a control variable into the original research model of the project, which has propounded the hypothesis that the interaction between the organizational culture of the corporations operating in the sample region of the indi-

(cognitive) and evaluative (affective and prescriptive) elements are inseparable. As for a more precise interpretation of the SOC construct – which we did not touch on in our 2006 article, only brought home its importance on the trail of Becker et alii's meta-analysis – the distinctions elaborated by Rokeach are needed. Although values are manifested in action, they are not constitutive elements of action. Before the individual transforms his values into deeds, he has to define the situation. That is, he has to oversee the field of action, come clear about chances and constraints as well as the status of objects and persons in this field of action. Thus, values are elements 'behind' attitudes, and the perception of *patterns assembled from the combination of various attitudes* suggests that here, some kind of unobservable phenomenon or process – the effect of value – is occurring. Values determine neither the attitudes nor the processes of action. If we find that some sort of force of coherence draws certain attitudes into one pattern, then on the level of these values ('conceptions of desirability') we do not assume one determining value either, but a constellation of more values. The conceptions of *desirability are apprehended as value orientations*. These value orientations play a decisive role in the effect that value change practices on social and political changes. They indicate the direction of these changes, their permanence, and even their irreversibility (BECKER et al. 2010). As for where SOC can be placed in this continuum – belief, value orientation, value, attitude, behaviour –, this is dependent on theoretical and practical approaches, requiring further research (see also VARGA 2008).

vidual countries and the national culture of the respective regions has had an impact on the development of the region.

We have presumed that this enormous difference between the Health Capital levels can shed some light on the true historical-social-economical impact factors which first appear to be ‘cultural’. The leadership of the project allowed the Hungarian team to check, beyond the qualitative research design of the project, with the quantitative method of the research, the model variation enriched with a Health Capital variable. The conclusive results thus gained anticipate an achievement of the results aimed at in the original qualitative variation of the project design and may serve as an example for the whole research team to also implement an internationally exact investigation of the effect of the Health Capital as a control variable of the cultural impact in a possible follow-up. Our *EJMH* report displayed the first pilot study results of this research undertaking, to be implemented in our country within the frame of the CURE project, and to be valid internationally if it proves successful. These preliminary results illustrated the interdependency of the cultural dimensions and the Health Capital apprehended in a salutogenic cross section.³

2. The salutogenic revolution of question setting in health science and occupational psychology

Several scientific experiences justify the overriding importance of *question setting*. The spring of innovative answers and even shifts of paradigm is usually a brand new question setting. A good example of this is the paradigm shift taking place in biogerontology, thus apostrophized by Hayflick:

So far, we have been asking: ‘Why do we get old?’ And yet, from what we learned, we have a knowledge of what happens but hardly any of the why. That is why George Sacher suggested: ‘Up to now, we’ve been asking the wrong question. Instead of asking: “Why do we get old?”, we ought to ask: “Why do we live exactly this long?”’ It is inherent to this question that the human life span has become longer, and it might get even longer.

(HAYFLICK 1994, 321–22)

That the direction of question setting in health care was a problem is indicated by the devastating verdict of the Charta of Ottawa (1986): medicine and health care infrastructure only contributes to the health of the citizens *to a very slight extent*.

³ In the meantime, the CURE project was finished. Unfortunately, we were unable to convince our partners in the Western European (‘Cis-Elbanian’) countries to include the Health Capital control variable operationalized with Antonovsky’s SOC questionnaire into the complex research model. Therefore, the objectives set in our article of 2009 could not be accomplished within the frame of CURE. Hypothetical results achieved with soft (‘qualitative’) methodology of the international research need to be confirmed with further quantitative investigations in order to arrive at conclusive results to base an EU strategy on. (But *all is not lost that is delayed*, although for the time being we can only promote our research results which were generated in salutogenic question setting by processing this empiry, which was obtained in another field.)

The revolution of question setting in healthcare is well illustrated by ANTONOVSKY's (1988) simple question attached to the results of DIRKS et al. (1982). (These are about the predictable *rehospitalization* of 587 severely asthmatic patients within six months, which, according to the hypothesis of the author, was to be foretold by the *panic/fear* answers obtained in the MMPI test, and which did prove to be true.)

But 68 percent of the patients were not rehospitalized. Had the researchers been salutogenically oriented, they might have sought hypotheses about strengths, predicting *non-rehospitalization* among this severely ill population. (ANTONOVSKY 1988, 6)

Well, the question that we asked in the title of our study is whether 'meaningfulness' – as one of the main ingredients (effective agents) of the 'Sense of Coherence' construct – is indeed a 'general mediating factor', more precisely and specifically whether its significantly predictable positive effect can be empirically perceived and theoretically interpreted beyond its validity indicated in the field of healthcare, that is, in another discipline, namely occupational psychology.

Although in another healthcare context, but concerning its inner structure and deeper implications it is completely identical with the approach of Antonovsky's salutogenic model. It is a devastating fact that although the high degree of nurse turnover is an internationally observed trend (CAVANAGH & COFFIN 1992), the proportion of those leaving the profession in Hungary is reaching a downright catastrophic level.⁴

We also know why this is so. We could make a long and convincing list – just as the traditional pathogenic view has been registering why people get sick. Similar to the salutogenic approach that has produced *reliable and valid knowledge* concerning why those who *ought to be* sick or more permanently sick do *not* become sick or cure faster, so do we expect knowledge formulated in a reliable and valid model about *what it is that keeps a significant part of nurses in their profession despite the depressing circumstances*.

2.1. The construct meaningfulness in earlier research with influential models

Here, first of all, we refer to the specifically marked role of *Meaningfulness* in Antonovsky's Sense of Coherence construct (particularly in the strengthening of health potential, but perceivably in some other implications as well). After this, we will point out that Meaningfulness simultaneously plays a similar point-of-balance role

⁴ 'Within three to five years there will not be any specialists and nurses to care for patients. During Tuesday's background discussion organized on the issue, experts characterised the lack of professionals that has developed in healthcare as critical, catastrophic, and tragic.' Hungarian News Agency (MTI) report in 2008. According to a Semmelweis University study, the lack of nurses in Hungary has become critical. Today 2,500 doctors and 3,500 nurses are missing from healthcare. According to the surveys, two-thirds of fresh graduates are considering a foreign-based position (7 March, 2008, Friday, 14:45, HavariaPress).

in another discipline, namely in an influential model of occupational psychology. Then, after reflecting on these two perceptions together, we will formulate our hypothesis guiding our present empirical investigation, according to which SOC is a significant factor in the issue of healthcare workers staying in their profession, and within it, Meaningfulness has a differential effect.

2.1.1. Meaningfulness in Antonovsky's salutogenic model

Antonovsky defines Sense of Coherence by expounding its components:

The Sense of Coherence is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that:

- (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable;
- (2) these sources are available to one to meet the demands posed by these stimuli; and
- (3) these demands are challenges, worthy of investment and engagement.

(ANTONOVSKY 1988, 19)

Joining this, we emphasize his remark which maintains a key function for Meaningfulness (3), out of the three components: Because what happens – argues Antonovsky – if, for example, in a life situation someone sees clearly through ‘what affects what’, and the tangled mass of effect mechanisms is organized into well interpretable patterns for him (that is, in the line of Comprehensibility, everything is all right with him); however, in some cases it is precisely this ordered comprehensive vision that makes it clear for him that the power sources at his disposal are not sufficient to solve this problematic situation (that is, in the line of Manageability, nothing is all right)? In such cases – according to the founder of the salutogenic model – the third element of the Sense of Coherence, Meaningfulness, decides; that is, the positively or negatively oriented answer to the question, ‘Does it have a meaning for us?’ Here, if the answer is yes, this is important for us, then the person will try to close up the low realisation of the state of facts to his existing feeling of high interpretability and overseeability. He begins to seek and procure the power sources by means of which he might garner a higher chance of managing the factually miserable state. And thus, this instable formula gets stabilized upwards: the higher comprehensibility and significance ‘draw up to themselves’ the lower manageability as well. However, if we do not see the sense in making efforts any more (or we never did), that is, we are not really motivated to fight, then the stability of the insecure state is reset as levelled downwards. Following the missing importance and the missing manageability, the interpretability and overseeability that were all right before will begin to crumble as well: the lines of force that are already not very promising and therefore do not encourage one to clarify them get confused – and we lose (ANTONOVSKY 1988).

In our studies we also found data reinforcing this – for example, the highly significant multivariate result that if in the prediction of each SOC component

(Comprehensibility, Manageability, Meaningfulness) taken one by one, we take the two other remaining elements as independent variables (that is, considering one of them to be dependent, and the other one explanatory), then according to the multiple regression models, Meaningfulness will explain both the variabilities of Comprehensibility and Manageability relatively to an extent approximately 20% higher (!) than vice versa; that is, if we have Meaningfulness predicted with the other two (JEGES & VARGA 2006).

2.1.2. The Herzberg approach and the Hackman-Oldham model

As for the question asked from the salutogenic view (Why can some exert a negentropic counter-effect on the negative factors which have an entropic effect on others?), to answer it with a validity beyond the thematic of sickness and health, we need a model of *occupational social psychology* that examines the questions of job satisfaction as well as motivation with a direction-turning view similar to that of Antonovsky's approach.

Such a model is HERZBERG's (1964) two-factor or hygiene-motivation theory, which, astonishingly similarly to Antonovsky's assumption (that we have to look for the factors of health independently of the factors of sickness, and not as mere counterparts of them), hypothesized with a paradigmatic audacity that the factors effecting job satisfaction create a dimension as different from job dissatisfaction 'as seeing from hearing'. Herzberg reasoned that because the factors causing satisfaction are different from those causing dissatisfaction, the two feelings cannot simply be treated as opposites of one another. He argued that there are two distinct human needs portrayed. First, there are physiological needs that can be fulfilled by money. Second, there is the psychological need to achieve and grow, and this need is fulfilled by activities that cause one to grow. These factors, situated in dimensions different from each other, are indicated by *Figure 1*:

<p><i>Leading to dissatisfaction</i></p> <p>Company policy, Supervision, Relationship with boss, Work conditions, Salary, Relationship with peers</p>	<p><i>Leading to satisfaction</i></p> <p>Achievement, Recognition, Work itself, Responsibility, Advancement, Growth</p>
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Figure 1

Dimensions of dissatisfaction and satisfaction according to the Herzberg approach

The new view was operationalized by fellow researchers HACKMAN and OLDHAM (1975, 1976; HACKMAN et al. 1979) in whose international research the senior author of the present study also participated (VARGA 1982, 1988). Therefore, passing on to the identically viewed but better elaborated Hackman-Oldham model: the Job Characteristics Model suggests five core job dimensions that must be present to generate positive work outcomes. These then lead to three psychological states, and these states influence desirable work outcomes. This is shown in *Figure 2*.

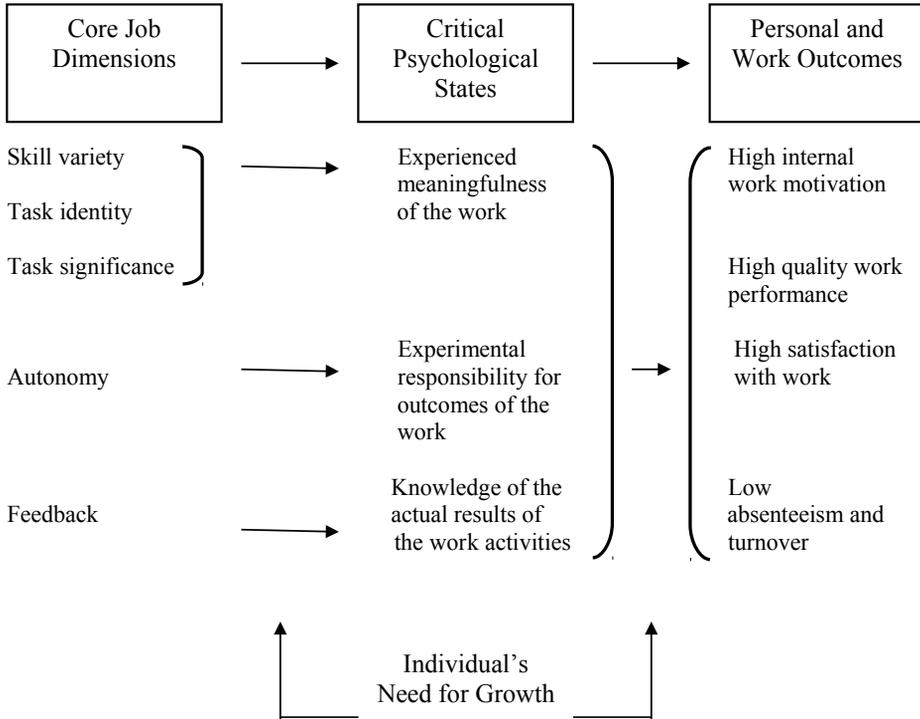


Figure 2
Hackman and Oldham's Job Characteristics Model

According to the model, *only where people provably experience these psychological states* do they improve their outcomes, do higher quality work, and contribute more meaningfully to the organization. The critical psychological states are:

- *Experienced meaningfulness of the work* – This is the extent to which people believe that their job is meaningful, and that their work is valued and appreciated.
- *Experienced responsibility for the outcomes of work* – This is the extent to which people feel accountable for the results of their work and for the outcomes they have produced.
- *Knowledge of the actual results of the work activity* – This is the extent to which people know how well they are doing.

From the Hungarian research – which was implemented with the Hackman-Oldham model (VARGA 1982, 1988) – sprang precisely the specific result that has a determining relevance for the conception of a nurse research (carried through nearly three decades later) which we reported on here. It is this conception from which we deduced the hypothetic answer to the question we asked in the title of our study, and from which we probalized the hypothesis with a significant empiry.

Namely, the result of this earlier Hungarian research was that love of work only 'grows' where the employee feels that he does a meaningful thing. From the whole Hackman-Oldham model, in our empirical validation operation ($n = 154$), working with merely one significant path coefficient (level $p < 0.01$) out of the three components of the hypothesized Critical psychological states, merely the Experienced meaningfulness of the work ensured the validity of the model. (Namely its prediction that the favourableness of Personal and work outcomes cannot be explained directly from Core dimensions of the job but rather from the Critical psychological states induced by these.

The Meaningfulness component gave of its light to the other two Critical psychological states (namely Experienced responsibility for the outcomes of the work as well as Knowledge of the actual results of the work activities), which two did not contribute at all to the variance of the work outcome development ($p > 0.05$). (Similarly to the prediction of Antonovsky's later encountered Sense of Coherence (SOC) model – according to which, if the first two elements of SOC, Comprehensibility and Manageability get in conflict with each other, then the third element, namely Meaningfulness decides which of the two the other one is levelled up to. – See above.)⁵

Thus, to a certain extent it is a valid tendency (and accordingly, it is a trivial assumption) in probably all sorts of job types that it is those who find a meaning in their work that stay in their respective professions permanently. Formulating this regularity as the central message of our article goes beyond triviality inasmuch as our empirical research data supports that this tendency – generally in our Hungarian milieu, but especially in the field of healthcare – comes to effect with such a force that it can be used as a mutual key in interpreting several phenomena investigated by two disciplines: work psychology and health psychology. Thus, in the next section, we will focus on this question, examined via fresh empiry.

2.2. The salutogenic approach explaining the nurse turnover – differential impacts of stress situations on the struck subjects according to their SOC level

When trying to transfer some of our insights gained in the foregoing salutogenic approach to the thematic of nurse turnover, first of all, we have to debate the reasoning of HAYES et al. (2006) who, according to the evidences of CAVANAGH and COFFIN (1992), emphasize among the negative outcomes of the nurse turnover its harm-

⁵ In the 1980s, we attributed the overwhelming demand for meaningfulness of task in this result to the 'meaninglessness' dominant 'in the dying Socialist work organizations' (cf. VARGA 1990). However, the permanently chaotic state after the Capitalist turn that took place in the early 90s conserved the same experience of lack of professionals in many places and many aspects (VARGA 2002). And since – as we referred to it – Meaningfulness is also a key category of Antonovsky's SOC model, we utilized it with a double intention: to bring into prominence the central message of our present study.

ful repercussion *on the morale of those staying in the profession*: ‘At the nursing unit level, high turnover affects the morale of nurses and the productivity of those who remain to provide care while new staff members are hired and oriented.’ (CIVANAGH & COFFIN 1992, 1372).

Already previous to our own studies, we can find a momentous reference in Antonovsky to a classical author who maintains that the impact of uniformly miserable circumstances does not uniformize but much rather markedly differentiates the effect induced in each single person.

This is about the KZ-survivor Viktor E. Frankl (prison number 119 104), referred to by Antonovsky as an original source, about whom Antonovsky admits that he was the one he borrowed the concept of *Meaningfulness* from, creating the specific leading category of his SOC model. Frankl contrasts his own *real-world* experience with Sigmund Freud’s famous thought experiment: ‘Sigmund Freud once said, “Let us attempt to expose a number of most diverse people uniformly to hunger. With the increase of the imperative urge of hunger all individual differences will blur, and in their stead will appear the uniform expression of the one un-stilled urge”’ (FRANKL 1985, 52).

According to Viktor Frankl’s experience, however, it is *the exact opposite* of the Freudian thought experiment that is true! ‘In the concentration camps, however, the reverse was true. People became more diverse. The beast was unmasked – and so was the saint. The hunger was the same but people were different. In truth, calories do not count’ (FRANKL 1985, 52).

Here it is precisely the radical phrasing of the whole salutogenic approach (as general as it is) that we can pose against the thesis by HAYES et al. (2005), against which we can set up with a polemic edge the central hypothesis of our study, operationalized for empirical control. According to this, identical negative factors may induce negative reactions in some people while inducing markedly positive reactions in others.

Thus below we introduce data regarding the staying in profession of healthcare staff, about the effect of SOC (and within that, about the effect of Meaningfulness⁶).

From the first level, we mention the evidences of the actually real effects of SOC (because appearing in significant regression Beta-data), thus its basic importance which, with a validity spreading over from health psychology to work psychology, prepares the probabilization of an actually positive effect in the latter as well. From the second and third level, we refer on the one hand to the data of the effect promoting the SOC well-being as well as satisfaction/happiness, which effect is capable of counterbalancing the general dissatisfaction conditioned by Herzberg’s external factors (for example, atrocious wages); on the other hand, beyond that, we

⁶ Although in our data of 2006 – when examining the role of each component one by one – both health and satisfaction/happiness was predicted directly by Comprehensibility with the strongest regression coefficient, from behind this *manifest* impact of Comprehensibility, we managed to uncover the *latent influence* of Meaningfulness practised on Comprehensibility (while vice versa, this dynamic did not come to effect).

bring evidence of the impact of SOC inducing such a positive outcome that helps form the endeavours of high levels of performance as well as continuous improvement in the respective fields of work; moreover, within this, we point out that the Sense of Coherence is, even more specifically, a work-success-generating character trait (which therefore helps keep one in profession) precisely within healthcare jobs, inasmuch as it is transmissible through personal charisma to the sick people the employees care for, thus implicating an attitude that develops health potential in the former as well.⁷

As it is probable that the persons stronger in SOC are more capable of moving forward continuously in their capacity of performance and thus bringing their satisfaction to the level again and again than those who are weak in SOC, here we can also find first-hand evidence that the higher SOC values that appear in our survey results obtained from healthcare workers really staying in their profession – by means of their professional progress and the renewing satisfaction connected to it – can be considered as explanatory factors of the fact that it was the persons strong in SOC that persisted in their professions.

3. Objectives

We are also interested in the morale of non-leavers as opposed to leavers of the healthcare profession, and according to Antonovsky's appeal addressed towards the 'next researching generation', we do not want to fail to set up and control specific hypotheses about these.

Our research is a 'quasi' case-control study whose aim is to control our hypothesis, formed on the basis of the description above, that namely *ceteris paribus* (that is, in the case of identically depressing external circumstances, or with Herzberg's terminology, beside the identical negativity of hygiene factors), healthcare employees staying in their profession in greater proportion will be those in whom the strongest motivation factor, the meaningfulness of the work – both according to Antonovsky's model and the Hackman-Oldham model – is stronger than in those who left the profession. In order to be able to control this hypothesis, we needed an empirical research based on a 2x2 pre-post experimental control design, in which we compared, on the one hand, the Sense of Coherence data of female university students training for the nursing profession with female non-healthcare college students as a control group, and on the other hand, the SOC data of women working in

⁷ From BECKER et al. (2010) we feel it relevant from the point of view of our subject that the realization of the positive salutogenic effect (and that of Meaningfulness in it) is expanded to the theme of 'progress toward reaching human potential' in a way that in the light of two principles, the *progress principle* as well as the *adaptation principle*, they demonstrate that 'the highest levels of satisfaction come from making progress toward rather than achieving goals, because humans adapt quickly to improved or worsening life conditions . . . After adaptation to the new condition, results document that people's satisfaction level returns to baseline.'

healthcare professions with the data of women working in non-healthcare professions as a control group. Of course it is not directly possible to compare the samples of students and workers because of an average of 20 years' age difference, so we could only obtain the result probabilizing our hypothesis indirectly that the lower proportion of those with a strong SOC, as compared to other students, plays a role in the relatively high proportion of those who leave the healthcare profession, and among them, it is precisely those who still (!) have or initially had the disposition of the Sense of Coherence who persist in their occupied nursing jobs.

3.1. Method

Samples: the women out of the randomly chosen samples of nursing and caregiver students ($n = 187$) versus non-healthcare (physical education, recreation, health science teaching, art) students ($n = 205$) attending a regular course at the University of Pécs, and two worker samples: age-standardized, equally random samples of women who have been working in healthcare for at least five years ($n = 79$) vs. women working in non-healthcare professions ($n = 420$). The average age of female students is 22.0 ± 0.7 years, while that of workers is 40.5 ± 10.0 years. According to age, there is no significant difference within the student and worker samples.

Instruments after cross-validating ANTONOVSKY'S (1988) 29-item Sense of Coherence-scale on the Hungarian population ($n = 1400$) in 2005 (JEGES & VARGA 2006) with various different health indicators (HENNENHOFER & HEIL 1975) as well as with well-being indicators (WARR et al. 1979), entrepreneurial attitude indicators (SCANLAN & FLEXMAN 1982) and conceived value indicators (MORRIS 1956) in its predictive force directed this way, we condensed a 6-item scale out of the 29-item one, equal in its predictive force, in which we included of all three components of the SOC those two possessing the strongest significance. In our case control research ($n = 802$), implemented between 2007 and 2009, we carried out a survey of data with this 6-item scale in an anonymous self-completing form. As an illustration, we recall one item of each three components of the SOC scale:

- *Comprehensibility*: Does it happen that you have feelings inside you would rather not feel? – Very often versus very seldom or never.
- *Manageability*: When something unpleasant happened in the past your tendency was: 'To eat yourself up' about it versus to say 'OK, that's that, I have to live with it', and go on.
- *Meaningfulness*: You anticipate that your personal life in the future will be: 'Totally without meaning or purpose versus full of meaning and purpose.'

3.2. Results

Our astonishing first result – contrasting the antecedent probability, and thus establishing the following from a negative direction – is indicated by the upper zone of *Figure 3*. Thus, the average values of the global indicator of Sense of Coherence diverge significantly into a specific direction among the student samples: those of students preparing for a healthcare profession is fundamentally lower than those of the control group of students preparing for other professions. In the lower zone of *Figure 3*, however, the pendant of this is present: among the worker samples, this difference disappears.

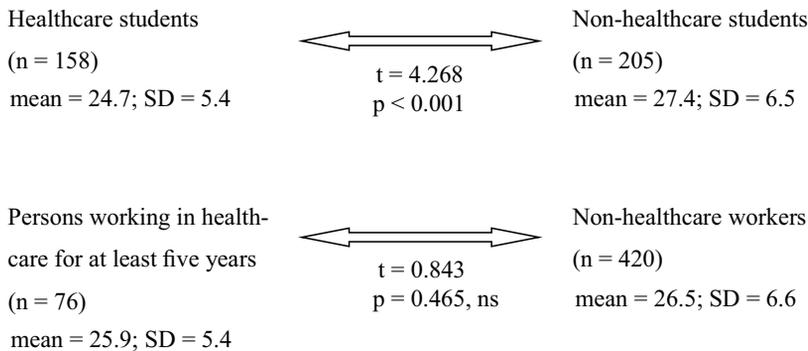


Figure 3
 Comparison of Sense of Coherence between each two examined samples,
 with a two-sample test

This central result of ours, as summarized in *Figure 3*, which we regard as the most important pillar of our argument, is expounded in the next two tables in more detail.

Thus, *Table 2* indicates that on the level of students, among the SOC components, Meaningfulness is the strongest differentiating factor, and even in Manageability, healthcare students are essentially weaker than the control group, whereas in Comprehensibility, no significant difference can be pointed out. It is obvious that within the latter one, the variability of students within each sample is larger than among the samples.

And according to *Figure 3*, on the job level, the difference already disappears in all three components of Sense of Coherence.

Table 1
Comparison of student samples based on SOC components

<i>Variable</i>	<i>Sample</i>	<i>N</i>	<i>Mean</i>	<i>Std. deviation</i>	<i>p*</i>
<i>Manageability</i>	Healthcare student	158	7.4	2.09	0.023
	Non-healthcare student	205	7.8	2.65	
<i>Meaningfulness</i>	Healthcare student	158	9.9	2.20	< 0.001
	Non-healthcare student	205	11.6	2.18	
<i>Comprehensibility</i>	Healthcare student	158	7.4	2.54	0.168
	Non-healthcare student	205	7.9	3.33	

* significance level of t-test

Table 2
Comparison of employee samples based on SOC components

<i>Variable</i>	<i>Sample</i>	<i>N</i>	<i>Mean</i>	<i>Std. deviation</i>	<i>p*</i>
<i>Manageability</i>	Healthcare employee	76	7.5	2.13	0.316
	Non-healthcare employee	420	7.8	2.61	
<i>Meaningfulness</i>	Healthcare employee	76	10.5	2.21	0.943
	Non-healthcare employee	420	10.5	2.59	
<i>Comprehensibility</i>	Healthcare employee	76	7.9	2.87	0.493
	Non-healthcare employee	420	8.1	3.11	

* significance level of t-test

4. Discussion

According to our results, the Sense of Coherence of *students* attending healthcare courses compared to those attending other courses is weaker in all its dimensions, but especially regarding Meaningfulness. There are significantly more people among healthcare students than among other students who feel the least that their life and the events going on around them have a meaning, an aim. Regarding their future, they are rather pessimistic.

The global Sense of Coherence of those already *working* in healthcare, how-

ever, is NOT weaker than that of the control group, and precisely concerning Meaningfulness, it is significantly stronger than that of healthcare students.

Comparing the non-healthcare student and non-healthcare worker samples, however, exactly the opposite of this can be observed. Compared to the employees, the students are stronger regarding Meaningfulness, while in the other two dimensions of the Sense of Coherence, there is no significant difference between them.

Based on this data, the large proportion of those leaving the profession among healthcare graduates and their finding jobs in non-healthcare professions can be explained to a great extent by the relatively low Sense of Coherence that healthcare employees possess (also compared to students attending other courses as well as healthcare workers).

Therefore, our significant empirical results probabilize our hypothesis that as the Sense of Coherence of healthcare students is significantly weaker than that of those already working in the profession, only people who initially possess a stronger Sense of Coherence will stay in healthcare. Or else, the results probabilize the alternative explanation that (for those for whom it actually becomes a vocation), in the healthcare profession, the Sense of Coherence strengthens by means of a stronger well-being and performance capacity correlating with SOC. Their life goals become clearer; eventually, the seriously sick patients, the occurrence of death during nursing rounds mobilizes the individual's internal power sources, and 'drills' those who choose this profession. In a segment of the cases, this peculiarity of the profession itself plays a role too, as the same phenomenon cannot be observed in non-healthcare control groups.

5. Conclusions

Based on all this, it is justifiable to draw the conclusion that during the training given at healthcare courses, and even in the circle of those preparing for this training, the strengthening of the individual's Sense of Coherence has to be emphasized. Accepting the fact – although debated in the professional literature – that by reaching adulthood, the Sense of Coherence of the individual becomes rather stabilized, and with getting older, it can be influenced to an always smaller extent, we assert that during university and college years, that is, in one's young adulthood, there is still a chance to strengthen the Sense of Coherence – which is acknowledged by ANTONOVSKY (1988) as well.

During the training given at healthcare courses, chances have to be sought to strengthen the Sense of Coherence with a great probability (as for example the curriculum content of theoretical and practical training, setting up life career models, individual career design, creating the chances of a healthier lifestyle, and eventually even providing compulsory regular recreation-aimed physical activities for students). Already during the training, partly through the content of the curriculum, for example by good choice of recommended literature, the students can be motiv-

ated to understand the meaning and life goal more clearly, to set their own aims that they can achieve. It is important that there should be life career models available to match their chosen courses and an individual career design be provided for them.

And, along another line, a greater chance has to be provided to accomplish their healthier lifestyle, and within this the possibility for recreation-aimed physical activity. At present, students attending healthcare courses hardly have a chance of practicing sports and other regular physical activities at all, and do not have an intention to do so either – even though according to our research (TÓTH et al. 2009) the Sense of Coherence of physically active students (who practice physical exercise with a daily regularity) is essentially on a higher level, and their perceived health status indicators are significantly better compared to those (not only healthcare) students who do not participate in any physical activities or do so only minimally.

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