



LUNDS
UNIVERSITET

DEPARTMENT OF PSYCHOLOGY

Grit and Different Aspects of Well-being: Direct and Indirect Effects via Sense of Coherence and Authenticity

Mia Tiittanen

Master's Thesis
Spring Term 2014

Supervisor: Daiva Daukantaitė

Abstract

Grit, the “passion and perseverance for long-term goals” (Duckworth, Peterson, Matthews & Kelly, 2007, p. 1087) is strongly related to success in goal attainment even under challenging circumstances. The current thesis investigated how grit relates to three aspects of well-being: psychological well-being (PWB), life satisfaction, and harmony in life. This relationship is approached through the organismic valuing theory, which proposes that people are naturally motivated to grow towards their highest potential; grit is proposed as being akin to such growth motivation. In two studies (Study 1 with 196 university students, and Study 2 with 396 non-students), structural equation modeling was employed to test for direct and indirect effects between grit and well-being. Sense of coherence (SOC) and authenticity were used as mediators, and gender as a moderator. As expected, grit was highly positively related to all well-being factors, and SOC and authenticity were highly significant mediators (partial for PWB and full for life satisfaction and harmony). This suggests that being gritty about one’s goal pursuits requires both a sense that the world is coherent and an authentic connection with the self in order for it to fully benefit well-being. Two gender-moderated differences were found: in both studies, men showed a stronger direct effect between grit and well-being (in Study 1, between grit and harmony; in Study 2, between grit and PWB) even after the mediators were controlled for. Therefore, some preliminary indications of gender differences between grit and well-being were found.

Keywords: Grit, Psychological well-being, Life satisfaction, Harmony, Sense of coherence, Authenticity, Organismic valuing theory, Gender.

Grit and Different Aspects of Well-being: Direct and Indirect Effects via Sense of Coherence and Authenticity

“The good life is a *process*, not a state of being. It is a direction, not a destination” Carl Rogers (1961, p. 186).

This is in a nutshell the view of the good life, or of well-being by the pioneer of the humanistic psychology approach, Carl Rogers. He described the fully-functioning human being as someone who is growing to being able “to be that self that one truly is” (Rogers, 1961, p. 173), away from oughts, facades and inauthenticity. A person who is capable of doing this may be able to fulfil their highest potential and approach self-actualization. The humanistic perspective of well-being views well-being as a continuous growing process, a movement towards greater connection with the self and the world, fulfilment of one’s potential and satisfaction of one’s psychological needs. According to the organismic valuing theory of growth (Rogers, 1961; 1964), individuals who are able to be fully-functioning (nowadays it is called “flourishing”, Seligman, 2012) are moving more towards their true self, are capable of being in touch with their own emotions, direct themselves towards meaningful goals and pursuits and gear towards prosocial values that enable the harmonious existence with themselves and various other beings around (Rogers, 1961; 1964). Thus, the main concept of growth and movement is the natural motivation that an organism has towards positive growth. The organismic valuing theory further proposes that each individual is naturally intrinsically motivated to grow and fulfil themselves, and that such tendency can either be expressed when the circumstances are favourable, or hindered when this organismic process is suffocated by external pressures and conditions of worth (Rogers, 1961;1964). Sheldon, Arndt and Houser-Marko (2003) discussed this motivation as our inclination to search and gear towards more intrinsic goals over time, and searching for activities that make us happier. Their study showed that people tended to enhance in intrinsically motivated and well-being enhancing goal endeavours over time (after 20 minutes, and 6 weeks). This view is very similar to the more recent self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2001), which proposes that when three basic human needs of autonomy, relatedness and competence are met, a person can pursue valued goals with intrinsic motivation, attain greater authenticity and well-being.

The drive to succeed in the pursuit of goals has recently been conceptualized as the dispositional characteristic of “grit” (Duckworth, Peterson, Matthews & Kelly, 2007). Grit is defined as a motivational orientation of “passion and perseverance to long-term goals” (Duckworth et al., 2007, p. 1087), and was developed considering what those individuals who do attain their

highest potentials have in common (i.e., people who are particularly talented in certain fields, have high achievements and high expertise). Rather than having merely talent, high achievers tend to show persistence over time (see Duckworth et al., 2007). Grit is a characteristic particularly relevant for predicting high achievement in various domains due to being a motivation of persevering and giving a high effort to task even in dire external circumstances (Duckworth et al., 2007). As such, grit is a characteristic highly relevant for the self-actualization view of well-being, but so far the research on grit and well-being is very scarce, with one study (Singh & Jha, 2008) showing that grit is positively correlated with life satisfaction and positive affect. The present thesis, therefore, aims to fill this gap in the research by studying grit in relation to different aspects of well-being, psychological well-being, life satisfaction and harmony in life put together with the basis in the organismic valuing process of growth perspective. Since it is also a possibility that a gritty person's determination reflects rigidity, which might question flexible responding to life's circumstances and undermine well-being, a direct relationship between grit and well-being and indirect relationships, via sense of coherence and authenticity, are investigated in this thesis. Specifically, it will be investigated whether individuals who are gritty have inner psychological resources enabling them to pursue goals with a sense that the world around is comprehensible, manageable and meaningful, and are able to use their resources in a purposeful way to help in the pursuit of goals; in other words, they have developed high sense of coherence (SOC; Antonovsky, 1987). It will furthermore be investigated whether highly gritty people may have higher well-being due to the fact that they know which goals are personally meaningful. In other words they are in contact with their values and beliefs, and like the organismic valuing process, are able to follow their own process of growth; that is, they have high authenticity (Wood, Linley, Maltby, Baliousis, & Joseph, 2008). All these concepts will be discussed and brought together next.¹

Grit

As it was mentioned above, grit is the motivation to keep persevering towards one's goals (Duckworth et al., 2007) that might be important for the self-actualization view of well-being. It has been shown to predict many aspects of success, by containing a determination and sustenance to stay on one's course towards goals even if there are no clear signs of positive feedback on the way, or one is faced with various set-backs (Duckworth et al., 2007; Maddi, Erwin, Carmody, Villarreal, White, & Gundersen, 2013). Grit is conceptually rather close to conscientiousness, but it has been shown to have predictive validity over and above conscientiousness (Duckworth et al., 2007; Reed,

¹ It is important to point out that this thesis does not set out to investigate the organismic valuing process as a maturational growth process, which would require a longitudinal design. Instead, the growth framework is used as a theoretical background illustrating how the discussed traits may be related.

Pritschet, & Cutton, 2013), and does not include the aspects of tidiness and orderliness that conscientiousness is connected with (Duckworth et al., 2007; Reed et al., 2013). Also, grit is a future-oriented motivation, pursuing goals in the long-term, rather than being conscientious only in current and short-term endeavours (Duckworth et al., 2007). This long-term aspect is something that separates grit also from self-control (Duckworth, 2006). Similarly, grit and need for achievement are related concepts, but grit differs in the sense that a gritty individual does not require feedback to keep persevering, but can continue even in the absence of clear indicators that the effort is paying off, or even if the pursuit is not itself very pleasurable (Duckworth et al., 2007; Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2010). For instance, grit has been shown to be an important characteristic to use when choosing novel teachers, who in their daily job may not see the results of their work directly and are subject to challenges and stress (Duckworth, Quinn & Seligman, 2009). Grit predicted teacher retention over the academic year (gritty novice teachers were twice as likely to remain in the position) as well as 31% higher student success defined by better grades (Duckworth et al., 2009). Therefore it is possible that grit is also an important resiliency dimension, helping one to effectively deal with life situations without losing focus for what may ultimately be important and meaningful (see Kleiman, Adams, Kashdan, & Riskind, 2013), even if evidence of success is not immediately present.

Being gritty may relate to being aware of what is personally meaningful and therefore worthy of putting effort into. The subcomponents of grit are *perseverance of effort* and *consistency of interest*, which refer to continuing a strenuous effort to task for the former, and having a stable knowledge of one's interests over the long-term for the latter (Duckworth et al., 2007). An interesting illustration of the functioning of these subcomponents comes from a study by Silvia, Eddington, Beaty, Nusbaum, and Kwapil (2013) who showed that people who had high *perseverance of effort* subcomponent of grit were particularly likely to show high autonomic reactions when performing a parity task on the computer indicating that those participants estimated using effort for the task as more important. However, people who were particularly high on *consistency of interest* subcomponent of grit were less likely to show high autonomic reactions, therefore, in an opposite way showing less effort to task. This suggests that while a gritty individual may be highly prone to exert much effort to task, simultaneously they may be estimating of the self-relevance of the task. The parity task may not have been estimated as personally meaningful, and therefore less important for effort. This reflects that a gritty individual may have a particularly high knowledge of their own motivations, interests, and a connection to the self and their own values. Such a connection would reflect one's goal pursuits to be self-concordant, in other words highly self-relevant (Sheldon & Elliot, 1999). These types of goal pursuits have been shown to be

especially likely to promote higher effort to task, even for longer time periods, as well as enhance the feeling of satisfaction when achieved (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) as opposed to self-disconcordant tasks that may reflect goal pursuits that are based on external pressures and demands (Niemic, Ryan, & Deci, 2009). In fact, Sheldon and Kasser (2001) illustrate the ability to engage in self-concordant goal striving as being highly in touch with one's organismic valuing process, and argue that a continuous ability to engage in self-concordant goal pursuits can help one grow towards higher well-being (see Sheldon & Kasser, 2001).

Along the humanistic view, self-concordance, or *congruence*, of one's goals reflects a connection to the self, and goals that bridge the gap between one's true self and ideal self (enhancing a sense of growing towards one's idealized goals) reflects a greater connection to the self, to authenticity (Rogers, 1961; 1964; Sheldon & Elliot, 1999). Similarly, Rogers (1961; 1964) originally proposed with his organismic valuing theory that people have the tendency to be able to judge quite quickly and accurately whether a certain situation and goal pursuit is one that can promote their own growth or not. Recently Von Culin, Tsukayama and Duckworth (in press) found in two different studies that highly gritty individuals are particularly likely to have motivation to seek for engagement (flow experiences) and meaning. The authors suggested that seeking of flow reflects a motivation to engage one's skills and to learn, in other words to pursue of one's highest potentials. This was analysed by the approaches to happiness theory, which suggests that people are motivated to pursue well-being through qualitatively different means either through engagement, meaning or pleasure (Seligman, 2002). Individuals high on grit were less likely to pursue pleasure, which the authors suggested to be due to the short-term satisfaction of pleasurable experiences that are in contrast with the long-term endeavours of the gritty individual. This is in line with the current organismic valuing theory for grit and well-being: gritty individuals may be most likely to pursue highly engaging and personally meaningful goals over a long period. The sustenance of engagement and meaning over time may require a particular connection to the self and feeling that the world can support one's pursuits in the long-term.

Because grit is both a future-oriented motivation, and a gritty individual will accumulate a sense of meaning with the goals they pursue in life (Kleiman et al., 2013; Von Culin et al., in press), it seems highly likely that a gritty individual would show high levels of psychological well-being. Similarly, when one's needs are satisfied by achieving of meaningful goals one may feel particularly satisfied with their lives, as it was also shown by Singh and Jha (2008), who found a positive correlation of $r = .32$ between life satisfaction and grit, and $r = .44$ between positive affect and grit.

Considering different socio-demographic variables, grit has previously been shown to relate strongly to higher levels of education attained, as well as to higher age (Duckworth et al., 2007), suggesting that grit may grow over time. However, there is no research regarding gender differences in grit. While there is no clear theoretical reason for why grit, per se, would be stronger for either gender, the way grit relates to well-being could potentially reveal some interesting gender differences worthy to discover.

Well-Being from the Organismic Valuing Perspective: Psychological Well-Being, Life Satisfaction And Harmony in Life

Within the research literature, there is no single definition of well-being. Ryan and Deci (2001) defined well-being as “optimal psychological functioning and experience” (p. 142). Two research paradigms on well-being have emerged from distinct Greek philosophies: hedonism and eudaimonism (Ryan & Deci, 2001). The concept of hedonic well-being includes maximizing happiness and pleasures as well as minimizing pain, suffering, and misfortune (Diener, Scollon, & Lucas, 2004). Subjective well-being (SWB) is a key approach within the hedonic paradigm and refers to a cognitive and affective evaluation of a person’s life (Diener, 1994). Grit has been shown to be related to the subcomponents of subjective well-being (Singh & Jha, 2008). However, the humanistic psychologist emphasis on the good life as the organismic valuing process is very strongly reflecting of the eudemonic philosophical approach to well-being that emphasises the importance of growth towards self-fulfilment, and actualization (Ryan & Deci, 2001). As discussed by Huta and Waterman (2013), the eudemonic view of well-being identifies well-being most centrally in terms of excellence, growth, meaning and authenticity, and therefore, the connection to the perspective of humanistic organismic valuing theory is apparent. Psychological well-being is a key approach within the eudemonic paradigm (Ryff & Singer, 2008) suggesting that high psychological well-being is attained when one has the inner resources for maintaining of a state of well-being by having built a sense of acceptance of the self, positive relationships to others, feeling of mastering the environment, sense of autonomy to follow along one’s own direction, sense of personal growth, which refers to being a process constantly able to change along the fluctuations of life, and purpose in life, referring to feeling a connection to something greater than the self (Ryff, 1989; Ryff & Singer, 2008). Particularly emphasizes on purpose in life, and personal growth set the psychological well-being approach apart from other well-being concept, such as subjective well-being (Keyes, Shmotkin & Ryff, 2002), suggesting that PWB is highly relevant for a growth perspective for well-being. Given that a gritty individual tends to prefer to seek out engagement and

meaning over pleasure (Von Culin et al., in press), grit may be strongly related to psychological well-being.

While psychological well-being contains aspects that refer to growth related constructs relevant for well-being, the satisfaction with life scale directly assesses the subjective estimation that people hold of how happy they feel with their life based on a person's own criteria of what makes them satisfied (Huta & Waterman, 2013). The reasons for why someone judges their lives as satisfying or not satisfying may be related to any contents of one's life – either judgements on positive mood, or judgments of having good relationships, life purpose or important achievements (Diener, Fujita, Tay & Biswas-Diener, 2012). Diener et al. (2012) found that estimations of satisfaction regarding daily life are highly related to experiencing of positive emotions, but over the longer-term purpose in life seemed to be more relevant for satisfaction. Such purpose could be gained by meaningful goal pursuits, therefore a gritty motivation (see also Von Culin et al., in press).

Although the two conceptualizations of well-being, psychological and subjective, seem to contain important aspects of well-being, Kjell (2011) noticed that the hedonic and eudemonic theories of well-being emphasize a primary control view of human well-being, that is having the locus of control within the self, and therefore trying to have control over one's life (Haase, Poulin, & Heckhausen, 2012). According to both conceptualizations of well-being a person has the highest form of well-being while they themselves have control over their environment, and no higher moral is required considering other beings and other systems (see Kjell, 2011). Kjell (2011) discussed, therefore, the importance to consider a different aspect of well-being, that of secondary control: namely, being able to let go of one's own control and live in harmony with the world. Such a view is important for the growth perspective of well-being, given that the person who is in touch with their organismic valuing process is considered to not only strive for selfish goals, but also grow towards a prosocial connection with the world (Rogers, 1961; 1964). Secondary control, in a similar vein, refers to having the locus of control outside of the self, or being able to accept that one cannot control everything and life will bring about fluctuations that the individual will need to deal with (see Haase et al., 2012). Therefore, rather than having the impulse to adjust the environment to meet one's own needs, one adjusts themselves to fit with the environment, and thereby lives in higher harmony with it (Kjell, 2011). This view seems close to having "existential courage" (Maddi et al., 2013, p. 132), which refers to the ability to flexibly respond the life's changing circumstances (Maddi et al., 2013). A person who has harmony in life feels restful with the surrounding world without an impulse to change it (Kjell, 2011) Thus, taking into account that grit is a characteristic defined with high and enduring persistence, which may also be seen as reflecting of rigidity – the

incapacity to adjust to the fluctuating circumstances flexibly and change one's path or goals when necessary (see Maddi et al., 2013) – it is possible that grit is less related to harmony in life, due to this rigidity. However, so far no clear indication that grit would reflect a rigidity factor can be found in the literature. Instead, having high levels of perseverance and consistency of interest (i.e., grit) may reflect a form of consistency with the self (i.e., identity consistency), which Daukantaitė and Soto Thompson (2014) recently showed to be highly related to different aspects of well-being. Therefore, based on the reviewed studies, grit may enhance different aspects of well-being via high internal consistency (i.e., sense of coherence) and good connection with the self (i.e., high authenticity).

Sense of Coherence

Thus, the first possible mediator connecting grit to different aspects of well-being is suggested to be the sense of coherence (SOC). With the salutogenic model, which considers the aspects relevant for the growth and maintenance of well-being, Antonovsky (1987; 1993a) suggested that SOC is an essential psychological resource disposition that relates to a sense that the world and oneself in the world are *comprehensible* (i.e., a cognitive evaluation of things inside the self and around oneself make sense), *manageable* (i.e., a behavioural aspect of being able to use one's resources for one's benefit), and *meaningful* (i.e., the motivation to use these resources for oneself, feeling that such engagement is worthy of the effort) (Antonovsky, 1987; Antonovsky & Sagy, 1986). A sense of meaning to use one's resources seems to be an aspect that is shared by both grit and SOC. However, while grit is a motivation to keep pursuing one's goals, SOC is a sense that the world holds the resources one will need in such a quest.

SOC has been shown to predict various positive effects in life, such as higher life satisfaction (Moksnes, Lohre, & Espnes, 2013; Wiesmann, & Hannich, 2013; Pallant & Lae, 2002), higher positive affect, self-esteem, feeling of mastery, and lower levels of perceived stress and negative affect (Pallant & Lae, 2002). Interestingly, higher SOC was also associated with the resistance towards giving up when facing adversity (Pallant & Lae, 2002), therefore suggesting that SOC might be related to grit. Also, having high SOC enables one to use various relevant psychological resources to cope with demanding situations, such as when taking care of a family member with dementia (Orgeta & Lo Sterzo, 2013). Furthermore, it serves as a mediator in reducing depressive symptoms among family members taking care of terminally ill cancer patients (Tang, Chen, Lee, Chen & Liu, 2013), predicts less stress and depression among patients suffering from fibromyalgia (Weissbecker, Salmon, Studts, Floyd, Dedert, & Sephton, 2002), predicts lower school stress among adolescents (Garcia-Moya, Rivera & Moreno, 2013), and serves as a buffering mediator between feelings of anxiety, stress, and worry and higher life-satisfaction (Gana, 2001).

Similarly to the father of the existential psychology tradition, Viktor Frankl, who was himself a concentration camp survivor, both Antonovsky (Antonovsky, Maoz, Dowty, & Wijsenbeck, 1971) and Frankl (1946/1984) considered meaning in life to be particularly relevant for sustaining of well-being despite life's difficulties. Thriving towards meaningful goals with passion, or grit, may be related to developing higher sense of coherence, and this could facilitate higher well-being.

As mentioned earlier, sense of coherence has been previously shown to be strongly related to both psychological well-being, as well as to life satisfaction (Moksnes et al., 2013; Gana, 2001). However, its relationship to the harmony in life is a new research endeavour. Antonovsky (1993b) discusses human life from a chaos-theoretical perspective, how we inevitably face difficulties that need to be resolved, and a healthy way to approach this is facilitated by a strong SOC. He also discusses how someone with a strong SOC does not feel in control themselves (i.e., primary control) of their important resources, *per se*, but can trust the resources in the hands of others (secondary control), i.e. trusting the support from a close other, for instance. This would imply a close link between SOC and harmony in life.

Based on the reviewed studies, in the present thesis it is expected that a gritty person who is perseverant in pursuing his/her goals has managed to build the capacity to both sense the world around oneself is comprehensible, knows one's resources, is capable of using them for one's benefit, and feels that employing of the resources, as well as keeping towards one's goals are meaningful pursuits. Therefore it is expected that grit and SOC are highly positively related to each other, and that SOC serves as a mediator between grit and different aspects of well-being.

Authenticity

Authenticity, a good connection with the self, is proposed to be the second mediator in the relationship between grit and well-being in the present thesis. Rogers (1961; 1964) initially emphasized authenticity in the organismic valuing theory that relates to the feeling of a true connection to the self, transparency of emotions and their meaning to the self, understanding of and following of one's values and rejecting of external pressures and limitations on the self (Rogers, 1961; Schlegel & Hicks, 2011; Wood et al., 2008). This would see grit from a growth-perspective (organismic valuing), as a tendency to seek authenticity with one's goal pursuits. Wood and colleagues (2008) conceptualised the authentic personality as a disposition with three main components: (1) *authentic living*, referring to being able to follow one's true emotions and values and live according to them, (2) *alienation from the self*, referring to the fact that one who is highly authentic has high connection to the self, and therefore does not feel like one is alienated from one's true self, and finally (3) *acceptance of external influence* relates to the ability to reject pressures and

introjection of others' values, and rather being able to not be overly influenced by them.

Authenticity has been shown to be related to feelings of self-worth, higher life satisfaction, and less negative affect (Goldman & Kernis, 2002).

There is evidence that people exhibit different levels of state authenticity in varying social roles (Robinson, Lopez, & Ramos, 2014; Robinson, Lopez, Ramos, & Nartova-Bochaver, 2012; Sheldon, Ryan, Rawsthorne, & Illardi, 1997). As for instance, people tend to feel more authenticity with peers than with colleagues (Robinson, 2009), and even the big five aspects of personality differ in strength between situations and with whom someone is dealing with (Robinson, 2009; Sheldon et al., 1997). However, generally high variability for the self across different roles and social situations reduces well-being, and increases stress and negative affect (Sheldon et al., 1997; Campbell, Assanand, & Di Paula, 2003), likely due to a sense of needing to hide aspects of the self in different roles, and therefore feeling higher alienation from the self. Identity consistency (feeling that one has a unified, coherent self across situations) was shown to be particularly high on flourishing individuals (reporting high SWB, PWB and social well-being), and somewhat less so among moderately mentally healthy individuals (Daukantaité & Soto Thompson, 2014). This would suggest that a coherent self-image, or high authenticity, enhances well-being, and may reduce the sense of fragmented self, or self-alienation. High authenticity has also been found to be related to feeling of coherence with the self also across various social situations (see Sheldon et al., 1997). The fact that a gritty individual has high levels of persistence and consistency of interest may be related to a rather consistent and coherent self-concept over time (i.e., reduced self-alienation, and enhanced authenticity).

On a similar vein, Debats, Drost and Hansen (1995) found that when participants were asked to describe events in their lives that were the most meaningful, they tended to contain descriptions of feeling connection with the self, whereas least meaningful stories depicted feelings of self-alienation. Also, Lenton, Bruder, Slabu and Sedikides (2013) found that when people described their "most me", authentic-self experiences, the descriptions included mostly low arousal positive emotional situations (satisfaction, peacefulness, helping, being creative), and reflected highly idealistic views of the self. The authors therefore concluded that people feel most authentic when they can act in ways that are closer to their ideal self. Therefore, it is expected that someone who feels highly authentic may accumulate positive emotions towards the self, and have higher well-being. Similarly such low-arousal positivity seem to suggest that being in touch with the self in an authentic way may be a calm experience, rather similar to feeling harmony in life, and therefore authentic experience may lead to a harmonious experience.

The relationship between authenticity and harmony in life is interesting to consider, since authenticity with its particular emphasis on the autonomy of the self may be particularly geared towards primary control view on well-being in contrast to the secondary control view reflecting acceptance and harmony in life. However, harmony in life has previously been shown to be related particularly highly to *environmental mastery* and *self-acceptance* subcomponents of PWB (Garcia, Al Nima, & Kjell, 2014). The authors suggested that individuals experiencing harmony with the environment can choose environments that make them feel at ease, therefore can have acceptance of their conditions, and acceptance of their self, feeling harmony with the self that might be related to being in connection with the self in an authentic way.

In sum, based on the reviewed research it is expected that authenticity is positively related to different aspects of well-being. Furthermore, it is expected that gritty individuals pursue their goals for self-relevant reasons; in other words, their sustained persistence may be reflected in how much they can place personal relevance and meaning to the goals, develop higher connection to the self, (i.e., higher authenticity), that leads to higher levels of well-being. It is also possible, however, that someone is high on grit, but low on authenticity, which may then indicate that such an individual is pursuing goals that are not self-selected (or intrinsically motivated) and this may therefore lead to lower well-being.

The Current Study

Building from the growth-related perspective with the background in the organismic valuing theory, the general purpose of this thesis is to examine the relationships between grit and three aspects of well-being, psychological well-being, life satisfaction and harmony in life, and whether the relationships are mediated by SOC and authenticity. Since the effect that gender may have for the relationships between grit and well-being is not yet researched upon, and may provide interesting insights into the area, this study examines a mediation model between grit and well-being, with gender as the moderator. Based on the reviewed research, it is expected that grit is positively related to psychological well-being, life satisfaction and harmony in life, but that these relationships are lowered or insignificant when adding SOC and authenticity as mediators indicating partial or full mediation, respectively. The mediation will be investigated separately with each well-being component.

Because correlational designs have been used in both studies, it is important to emphasize that only a theoretical mediational model is tested and no causal inferences may be done based on the cross-sectional data.

The above specified relationships are investigated in two studies: Study 1 includes a university student sample, and Study 2 includes a more mature non-student sample

Study 1. University Student Sample

Method

Participants. For Study 1, university students from Lund University were contacted through email asking them to take part in a study on well-being. Overall 204 students responded to the survey. Out of these 8 had to be excluded from further analysis due to either not giving consent (1 participant), leaving significant portion (40-100%) of the questions unanswered (3 participants) or being an outlier (4 participants; see details below), yielding a final sample size of 196 students. Out of these 120 (61%) participants were studying on undergraduate level, and 75 (39%) reported studying at graduate level. The ages of the participants ranged from 19 to 42 years old, with the mean age of 26.4 years ($SD = 5.9$). More than half of the sample ($n = 117$, 59.7%) were women, 76 (38.8%) participants were men (3 participants reported “other” for gender and were not included in analyses due to gender being the moderator). The vast majority, 140 participants, of the sample were Swedish (71.4%), and 12 participants (6.1%) had double nationality with Swedish. The rest were from other Nordic countries ($n = 10$, 5.1%), other European countries ($n = 23$, 11.7%), and from outside Europe ($n = 10$, 5.1%). One participant did not report her/his nationality.

Procedure. The survey was online, accessed through a university survey system *Survey & Report* that requires each participant to have a personalized password. The purpose of the survey was explained to the participants in the email message, including information that their responses would be held strictly anonymous, and asked to give consent. The survey could be accessed and filled in either in English or Swedish. The scales in Swedish were obtained from previously validated versions, except for the grit scale and authenticity scale, which have not been used in Swedish before (note, however, that for HILS the manuscript for validation study is still in progress). Therefore these two scales were translated to Swedish by a PhD student, and back-translated to English by three native Swedish speakers (see below for details). A small pilot study ($n = 5$) was conducted to check the functioning of the online system, the comprehensibility of the scales and time taken to participate. The participation was estimated to take 15 minutes, and no difficulties or misunderstandings were reported. One of the pilot participants filled out the survey in Swedish, reporting high comprehension.

Measures.

Grit. This was measured by the 12-item Grit scale (Duckworth et al., 2007). This scale includes two sub-scales: *perseverance of effort* (e.g., “I have overcome setbacks to conquer an important challenge”) and *consistency of interest* (e.g., “I often set a goal but later choose to pursue a different one”, reverse coded). The response alternatives range on a 5-point Likert-scale from “not like me at all” to “very much like me”. This scale has previously received high internal consistency

(Cronbach's alpha) ranging between .77 and .85 across 6 studies (Duckworth et al., 2007). In the present study the Cronbach's alpha for whole scale was .83, for subscales *perseverance of effort* $\alpha = .81$, and *consistency of interest* $\alpha = .80$.

The grit scale has not been used in the Swedish population before, and has not been translated into Swedish. This was done for this study by the standardized back-translation procedure. A native Swedish speaking PhD psychology student from the Lund University with a background of studying in the UK (therefore fluency also in English) translated the grit scale into Swedish. Afterwards three native Swedish speaking international Master's programme students were contacted to back-translate the Swedish version, and discuss the match of meaning. Afterwards the PhD student checked over the back-translation. Also, a native English speaker compared the original scale items with the back-translated English items to check for similarity in meaning. All involved people agreed upon a high match of translations and similarity in meaning.

Sense of coherence (SOC). This was measured with the 13-item SOC scale (Antonovsky, 1987). A permission to use this scale was obtained from the Executor of the Estate of Aaron Antonovsky. The scale has been widely used previously, and has received high internal consistency ratings (ranging between .74 and .91; Antonovsky, 1993a) and construct validity (Pallant & Lae, 2002). In the current study the whole scale had high internal consistency, Cronbach's alpha of .81. The subscales received somewhat lower Cronbach's alphas: *comprehensibility*, (e.g. "Do you have mixed-up feelings and ideas?" reverse coded), $\alpha = .65$, *manageability* (e.g. "Do you have the feeling that you are being treated unfairly?", reverse coded) $\alpha = .50$, and *meaning* (e.g. "Do you have the feeling that you don't really care about what goes on around you?", reverse coded) $\alpha = .74$. The responses range on a 7-point Likert-scale.

Authenticity. This was measured with the 12-item Authenticity scale developed by Wood et al. (2008). This scale has three sub-scales: *authentic living* (e.g. "I live in accordance with my values and beliefs"), *alienation from the self* (e.g. "I feel out of touch with the "real me"", reverse coded), and *accepting external influence* (e.g. "I always feel I need to do what others expect me to do", reverse coded). The response alternatives range on a 7-point Likert-scale from "not like me at all" to "very much like me". Wood et al. (2008) found the scale to have acceptable internal consistency ($\alpha = .69$ for *authentic living*, and $\alpha = .78$ for both *self-alienation* and *accepting external influence*). In the current study the Cronbach's alpha for the whole scale was .86, for subscale *authentic living* was $\alpha = .74$, *Self-alienation* $\alpha = .87$, and *accepting external influence* $\alpha = .82$.

Similarly to the grit scale, a standardized back-translation process was undertaken with the same people involved. After discussing the match between the translated scales, and item meanings, the translators agreed upon a high match in meaning for all items, except for one item ("I feel

alienated from myself”) that was further discussed by two native Swedish speakers until a suitable Swedish sentence was obtained (agreed upon the Swedish version of “Jag känner mig främmande för mig själv”, back-translated to “I feel like a stranger to myself”, which was agreed upon to match highly with the original item).

Psychological well-being (PWB). This was measured by Ryff and Keyes’ (1995) 18-item Psychological Well-being scale, which contains six subscales: *autonomy* (e.g. “I have confidence in my opinions, even if they are contrary to the general consensus”), *environmental mastery* (e.g. “I am quite good at managing the many responsibilities of my daily life”), *personal growth* (e.g. “For me, life has been a continuous process of learning, changing and growth”), *self-acceptance* (e.g. “I like most aspects of my personality”), *purpose in life* (e.g. “Some people wander aimlessly through life, but I am not one of them”) and *positive relationships* (e.g. “I have not experienced many warm and trusting relationships with others”, reverse coded). Responses range on a 6-point Likert-scale from “strongly disagree” to “strongly agree”. The internal consistency of the whole scale in this study was $\alpha = .85$. The Cronbach’s alphas for subscales were: *self-acceptance* $\alpha = .77$, *autonomy* $\alpha = .52$, *positive relationships* $\alpha = .62$, *personal growth* $\alpha = .61$, *environmental mastery* $\alpha = .76$, and *purpose in life* $\alpha = .52$.

Life-satisfaction. This was measured by the Satisfaction with Life scale (SWL; Diener, Emmons, Larsen, & Griffin, 1985). This is a 5-item scale (e.g. “In most ways my life is close to my ideal”), with the responses ranging on a 7-point scale (from “strongly disagree” to “strongly agree”). SWL has previously been reported to have high internal consistency ($\alpha = .85$; Pavot, Diener, Colvin & Sandvik, 1991). In this study the internal consistency was very high, $\alpha = .90$.

Harmony in life. This was measured by the Harmony in Life Scale (HILS; Kjell, Garcia, Daukantaitė, Hefferon, & Sikström, manuscript in progress). This is a 5-item scale (e.g., “My lifestyle allows me to be in harmony”), with responses ranging on a 7-point Likert-scale (from “strongly disagree” to “strongly agree”). Previously the scale received high internal consistency of $\alpha = .91$ (Garcia et al., 2014). The scale received high internal consistency rating of $\alpha = .90$ also in the present study.

Statistical procedures. Pearson correlations, independent samples t-tests and one-way analysis of variance (ANOVA) were conducted to investigate relationships between sociodemographic variables and grit and the other variables of interest using SPSS. Preliminary data checks were conducted to examine attrition and outliers and then to ensure that there were no violations of the assumptions of linearity, normality, and homogeneity of variances. Considering internal attrition, 3 participants were excluded from data-analysis due to significant portion of unanswered items. The dataset had some missing values, however no item exceeded 1%

missingness. Overall percentage of missing values was 4%. The missing values were estimated with Little's MCAR test with a non-significant result, $\chi^2(2224) = 2169.51, p = .79$, indicating that the missing values were missing completely at random (MCAR), and therefore the missing values were replaced by expectation-maximization (EM) procedure recommended by Tabachnick and Fidell (2007).

Furthermore, 4 participants were considered outliers and excluded from data-analysis: 3 of them were univariate outliers significantly higher in age (58, 70 and 76 years old), and through an inspection of boxplots one person was found to be a multivariate outlier, and therefore excluded.

Inspection of histograms showed no clear deviations from normality. All scales showed some negative skewness, as is common to well-being scales (-.34 for HILS, -.43 for SWL, -.5 for PWB, and -.41 for authenticity). The skewness, however, was clearly below a commonly used cut-point-range, i.e. between -1 and 1 (Hair, Anderson, Tatham & Black, 1998), and the trend of skewness was to the same direction and degree between the variables (all slightly negatively skewed), therefore no transformations were performed.

Mediational analyses were performed using SPSS AMOS 20.00. According to Frazier, Tix, and Barron (2004), mediational analyses have four main stages, the first three involve establishing significant relationships between (1) the independent (grit) and outcome variables (the three well-being measures); (2) the independent variable (grit) and the mediators (SOC and authenticity); and (3) the mediator (SOC and authenticity) and the outcome variables (well-being measures). In the final stage, it must be shown that once the mediators are accounted for, the relationship between the independent variable (grit) and the outcome variable (well-being measures) is significantly reduced, either by becoming non-significant after mediation (i.e., full mediation), or weaker but still significant (i.e., partial mediation). The preliminary steps (1 to 3) were investigated and established by Pearson's correlations. Furthermore, Frazier and colleagues (2004) recommend that appropriate mediators should be ones that have an equal or stronger interrelation with the dependent variable than they have with the predictor (grit) variable. All these recommendations were followed in the mediational analyses (see below).

Results

Preliminary analyses. Preliminary analyses were performed to investigate whether demographic variables (i.e., gender, educational level and age) were related to grit, SOC, authenticity and the three measures of well-being. No significant gender or educational level differences were found. Similarly, Pearson correlations were not significant examining relationships between age and the various scales.

Correlational analyses. Correlational analyses examining relationships between grit and other variables were performed for women and men, separately. Highly significant correlations were found among all variables (see Table 1). As shown in Table 1, most of the correlations are similar between the genders, with the biggest difference between grit and harmony in life, which is almost twice as strong for men ($r = .59$) than for women ($r = .31$). Harmony in life is also more strongly correlated to SOC and PWB in men than in women (SOC: men, $r = .72$, women, $r = .58$; PWB: men, $r = .82$, women, $r = .68$). Women have a higher correlation between authenticity and SWL ($r = .54$) than men do ($r = .34$), as well as between grit and authenticity (women: $r = .49$; men: $r = .36$) (all correlations $p < .001$).

The recommendations for appropriate mediators by Frazier and colleagues (2004: see Statistical procedures) were followed and met: grit showed a moderate to strong positive correlation to all well-being factors, while the mediators SOC and authenticity showed equal or stronger positive correlations with well-being (see Table 1 for details). All correlations were significant at the $p < .001$ level. Given that all variables were significantly positively correlated, the assumption of significant interrelations between the model variables made further constructing and testing of the mediation and moderation with structural equation modelling (SEM) possible.

Table 1

Summary of Intercorrelations Between the Variables for Women and Men Separately

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------|-----|-----|-----|-----|-----|-----|
| 1.Grit | -- | .50 | .36 | .59 | .42 | .59 |
| 2.SOC | .49 | -- | .57 | .71 | .51 | .72 |
| 3.Authenticity | .49 | .65 | -- | .64 | .34 | .49 |
| 4.PWB | .63 | .68 | .72 | -- | .73 | .82 |
| 5.SWL | .44 | .55 | .54 | .76 | -- | .76 |
| 6.HILS | .31 | .58 | .55 | .68 | .75 | -- |

Note. Intercorrelations for women ($n = 117$) are presented below the diagonal, and intercorrelations for men ($n = 76$) are presented above the diagonal. SOC = Sense of Coherence; PWB = Psychological Well-being; SWL = Satisfaction with Life; HILS = Harmony in Life Scale. All correlations are significant at $p < .001$.

Mediation analyses. After checking for assumptions, and calculating preliminary analyses, the next step was to test the hypothesized mediation via SOC and authenticity for the relationship between grit and the three well-being measures. Although mean differences were not significant

between the genders, correlational analyses revealed somewhat different correlations between women and men (see Table 1). Due to these observed gender differences in correlations, and additionally because there is lack of previous research on gender differences with grit, gender was used as a moderator in the mediation analyses. Thus the mediation analyses were performed for PWB, SWL and HILS, separately, and results are presented in Figures 1 – 6 as well as in Tables 2 and 3 for women and men separately.

Mediation analyses for the relationship between Grit and PWB. As it can be seen from the Figure 1 and Figure 2 the standardized regression coefficients between grit and PWB were very similar between the genders and highly significant. The direct effect prior to mediation (women: $\beta = .62$; men: $\beta = .59$, both at $p < .001$) became lower after mediation, yet still significant (women: $\beta = .32$, $p < .001$; men: $\beta = .30$, $p < .005$) and the total indirect effect through the mediators was significant (women: $\beta = .35$; men: $\beta = .32$, both at $p < .001$. See Table 2 and Table 3), therefore indicating that the relationship between grit and PWB is partially mediated by SOC and authenticity. The significance of the indirect effect was tested by bootstrapping 1000 samples. The bootstrapped unstandardized indirect effects were 6.03 (95% CI [4.29, 8.31]) and 6.25 (95% CI [3.91, 9.37]) for women and men, respectively, indicating statistically significant indirect effect. No moderation by gender was found.

Figure 1.

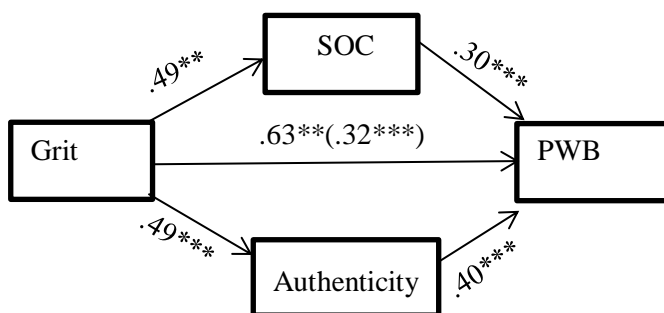


Figure 2.

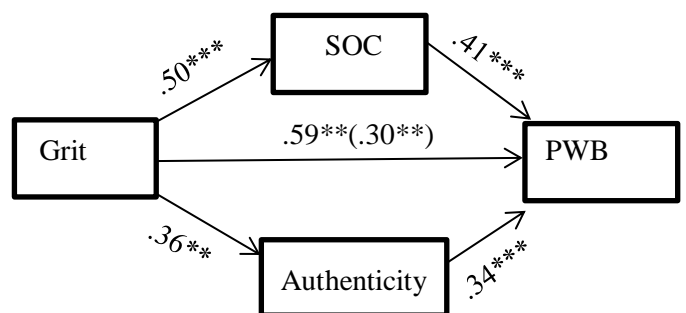


Figure 1 (women) and Figure 2 (men). Relationship between grit and psychological well-being (PWB), as mediated by sense of coherence (SOC) and authenticity, with the standardized regression coefficients between the variables. The standardized regression coefficients of the relationship between grit and PWB, while controlling for the mediators SOC and authenticity, are in parentheses.

** $p < .005$, *** $p < .001$.

Mediation analysis for the relationship between Grit and SWL. Figure 3 and Figure 4 illustrate mediation between grit and SWL and show the standardized regression coefficients found. Full mediation is found for both women and men when a direct effect that is statistically significant prior to mediation ceases to be significant when the mediators are added, while the indirect effect is significant (Frazier et al., 2004). The significant direct effect prior to mediation (women: $\beta = .44$; men: $\beta = .42$, both at $p < .001$) became non-significant after adding the mediators (women: $\beta = .17$; men: $\beta = .22$, *ns*) while the standardized indirect effect was significant (women: $\beta = .29$; men: $\beta = .20$, both at $p < .001$: see Table 2 and Table 3), therefore indicating that the relationship between grit and SWL is fully mediated by SOC and authenticity. The significance of the indirect effect was tested by bootstrapping 1000 samples. The bootstrapped unstandardized indirect effects were 2.99 (95% CI [1.94, 4.43]) and 2.53 (95% CI [1.20, 4.41]) for women and men, respectively, indicating statistically significant results. Therefore significant full mediation was found between grit and SWL for both genders.

Although the indirect effect between grit and SWL via authenticity is stronger for women ($\beta = .27$, $p < .001$) as compared to men ($\beta = .08$, $p < .05$), the difference was not statistically significant and therefore, no significant moderation by gender was found (see Table 2 and Table 3).

Figure 3.

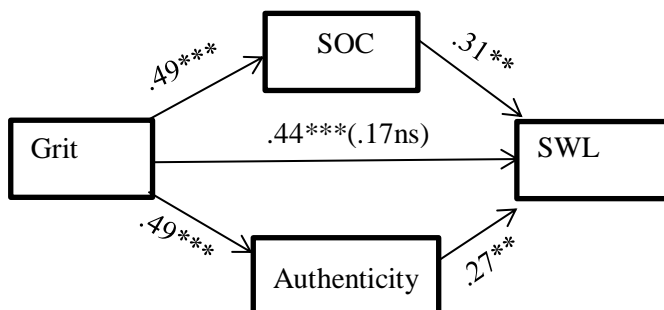


Figure 4.

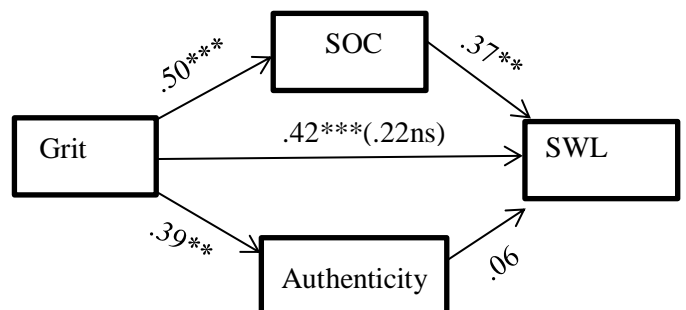


Figure 3 (women) and Figure 4 (men). Relationship between grit and satisfaction with life (SWL) as mediated by sense of coherence (SOC) and authenticity, with the standardized regression coefficients between the variables. The standardized regression coefficients of the relationship between grit and PWB, while controlling for the mediators SOC and authenticity, are in parentheses.

** $p < .005$, *** $p < .001$.

Mediation analysis for the relationship between Grit and HILS. Figure 5 and Figure 6 illustrate mediation between grit and HILS and show the standardized regression coefficient found. For women, the highly significant direct effect prior to mediation ($\beta = .31, p < .005$) became non-significant with the mediators added ($\beta = -.04, ns$), while the standardized indirect effect was significant ($\beta = .37, p < .001$; see Table 2), indicating significant full mediation. The bootstrapped (1000 bootstrapped samples) unstandardized indirect effect was 3.29 (95% CI [2.30, 4.46]), indicating a significant results. Thus, the relation between grit and HILS was fully mediated by SOC and authenticity for women.

However, for men this relationship was only partially mediated by SOC and authenticity. The highly significant direct effect prior to mediation ($\beta = .59, p < .001$), was lower, yet still significant after mediation ($\beta = .30, p < .05$), while the standardized indirect effect ($\beta = .30, p < .001$; see Table 3) was significant, indicating partial mediation. The mediated indirect effect ($\beta = .30$) was found highly significant after testing with 1000 bootstrapped samples (B = 3.49, 95% CI [2.13, 5.57]). Therefore, the relation between grit and HILS was significantly partially mediated for men. Thus, moderation by gender was found: for men the mediation was partial, but for women it was full.

Furthermore, the direct relationship between grit and HILS prior to mediation was significantly stronger for men ($\beta = .59, p < .001$) as compared to women ($\beta = .31, p < .005$; $z = 2.94, p < .01$). This difference between grit and HILS remained significant also when the mediators were added (men: $\beta = .30, p < .05$; women: $\beta = -.04, ns$; $z = 2.80, p < .01$). This indicates that men showed a stronger direct relationship between grit and HILS than women did. Although the indirect effect via authenticity was stronger for women ($\beta = .26, p < .001$) than for men ($\beta = .12, p < .001$), this difference was not statistically significant.

Figure 5.

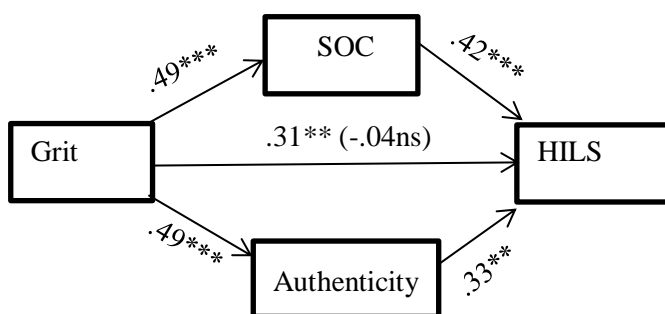


Figure 6.

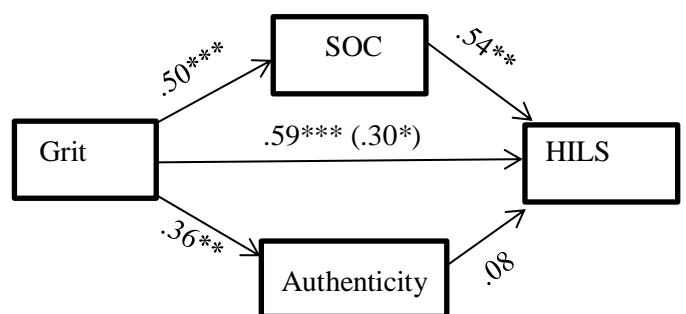


Figure 5 (women) and Figure 6 (men). Relationship between grit and harmony in life (HILS) as mediated by sense of coherence (SOC) and authenticity, with the standardized regression coefficients between the variables. The standardized regression coefficients of the relationship between grit and HILS, while controlling for the mediators SOC and authenticity, are in parenthesis.

** $p < .005$, *** $p < .001$.

Table 2

Summary of Mediation Results for Women (n = 117), including Standardized Regression Coefficients for both Mediators when Analysed Together and Separately

| Hypothesis | Direct Beta w/o Mediation | Direct Beta w/Mediation | Indirect Beta | Mediation type observed |
|--|------------------------------|----------------------------|------------------|----------------------------|
| Grit – PWB | .63** | | | |
| Mediation via both SOC and authenticity | | .32*** | .35*** | Partial |
| Mediation via SOC | | .39** | .24*** | Partial |
| Mediation via authenticity | | .37*** | .27*** | Partial |
| Grit – SWL | .44*** | | | |
| Mediation via both SOC and authenticity | | .17(ns) | .29*** | Full |
| Mediation via SOC | | .22** | .22*** | Partial |
| Mediation via authenticity | | .37*** | .27*** | Partial |
| Grit – HILS | .31** | | | |
| Mediation via both SOC and authenticity | | -.04(ns) | .37*** | Full |
| Mediation via SOC | | .03(ns) | .28*** | Full |
| Mediation via authenticity | | .05(ns) | .26*** | Full |

Note. PWB = Psychological well-being; SOC = Sense of Coherence; SWL = Satisfaction with Life; HILS = Harmony in Life Scale.

* $p < .05$, ** $p < .005$, *** $p < .001$.

Table 3

Summary of Mediation Results for Men (n = 76), Including Standardized Regression Coefficients for both Mediators when Analysed Together and Separately

| Hypothesis | Direct Beta w/o Mediation | Direct Beta w/Mediation | Indirect Beta | Mediation type observed |
|--|------------------------------|----------------------------|------------------|----------------------------|
| Grit – PWB | .59** | | | |
| Mediation via both SOC and authenticity | | .30** | .32*** | Partial |
| Mediation via SOC | | .31** | .28*** | Partial |
| Mediation via authenticity | | .41** | .18*** | Partial |
| Grit – SWL | .42*** | | | |
| Mediation via both SOC and authenticity | | .22(ns) | .20*** | Full |
| Mediation via SOC | | .15(ns) | .20*** | Full |
| Mediation via authenticity | | .34* | .08* | Partial |
| Grit – HILS | .59*** | | | |
| Mediation via both SOC and authenticity | | .30* | .30*** | Partial |
| Mediation via SOC | | .30* | .28*** | Partial |
| Mediation via authenticity | | .47*** | .12*** | Partial |

Note. PWB = Psychological well-being; SOC = Sense of Coherence; SWL = Satisfaction with Life; HILS = Harmony in Life Scale.

* $p < .05$, ** $p < .005$, *** $p < .001$.

Discussion

The aim of Study 1 was to investigate how grit relates to well-being (PWB, SWL and HILS), and examine whether these relationships are mediated by SOC and authenticity in a student sample. Due to indications of correlational differences between genders, and the lack of research so far regarding gender differences in grit, gender was used as a moderator in the mediation analyses.

As it was expected, grit was significantly highly related to all well-being measures, and the mediators for both genders. Furthermore, the relationship between grit and well-being was highly significantly mediated by SOC and authenticity, either as partial mediation (grit and PWB for both genders, grit and HILS for men) or full mediation (grit and SWL for both genders, grit and HILS for women). Moderation effect by gender was found in mediation analyses between grit and HILS, in that for men the relationship was only partially mediated by the two mediators while it was fully mediated for women. This was found to be the case since the direct effect between grit and HILS

was significantly stronger for men, both prior to mediation, and after the mediators were accounted for, so that the mediators could not fully explain this strong direct effect. The results suggest that men find the gritty pursuit of goals more harmonious than women do.

To discuss this relationship between grit and HILS further, for women this relationship was significantly fully mediated by SOC and authenticity, but the mediation was only partial for men. This means that SOC and authenticity seem to be important to consider with regards to the relationship between grit and harmony in life particularly for women, but not as much for men. Men, therefore, show also significant direct relationship between grit and HILS even when the mediators are controlled for, which suggests that grit seems to be an important source of harmony by itself only for men. Also the correlations between the variables would support this difference: men showed clearly stronger positive correlation between grit and HILS ($r = .59, p < .01$), than women did ($r = .31, p < .01$). Furthermore, these effects can be further examined by inspecting the mediators on their own, each being partial mediator for men, but full ones for women. Therefore, the results suggest that grit does not on its own help women find harmony in life, but that they also require the development of sense of coherence and authenticity with their pursuits to be harmonious.

The partial mediation between grit and PWB for both women and men would indicate that being gritty is both directly related to higher psychological well-being, and indirectly, by enhancing a sense of coherence of the world, trust in one's resources, as well as an authentic connection with the self, and ability to reject external pressures. Therefore, grit seems to be directly related to particularly this type of well-being, since the mediation was significant and partial for both genders. The passionate pursuit of goals, therefore, has a significant direct relation with higher psychological well-being.

The significant full mediation found between grit and SWL indicates that the relationship is more complicated and that other variables, in this case, SOC and authenticity, to high level account for the relationship. That is, the development of high SOC and authenticity seem to be important factors for gritty people to report high life satisfaction. In other words, being gritty makes one feel more satisfied with life once one also recognizes and can use the resources available for the passionate pursuit of goals, as well as has a sense of connection with the true self.

Moreover, another interesting finding regarding mediation analyses for the relationship between grit and SWL is that for women, when indirect effects were tested for SOC and authenticity, separately, each mediator on its own acts as a partial mediator between grit and SWL, indicating that each on their own is not enough to fully explain the relationship between grit and SWL, but when analysed together in the model, they are. However, this is different for the men, for

whom the results indicated that SOC on its own serves as a full mediator, but authenticity only partially mediated the relationship. Therefore for men, SOC seems to be the stronger mediator in the relationship between grit and SWL. However, these gender differences, while interesting, were not significant.

With interpreting the findings caution needs to be exercised, however, especially when inferring gender differences (i.e., the ones found for grit and HILS) since the sample size for this study was rather small (especially for the male participant group). Also, since the sample was a student sample, it may be hard to draw generalizations to other populations.

Study 2. Non-Student Sample

In order to examine whether the findings indicated in Study 1 hold for a more mature sample, a new study, Study 2, was performed with a non-student sample. The correlational and mediation analyses described in Study 1 were also performed in Study 2. It was of interest to see if the findings regarding gender differences (moderation) between grit and harmony in life would be replicated in Study 2.

Methods

Participants. Altogether 402 participants responded to the survey, and 6 needed to be dropped from further analysis due to not giving consent (2 participants), leaving many questions unanswered (40-100% unanswered questions, 3 participants), or being multivariate outlier (1 participant). This left a sample size of 396 participants, with 256 women (64.6%), 134 men (33.8%) (6 people who reported “other” as gender were not included in analyses since gender was the moderator). Out of these 198 participants (50%) were teachers, 17 (4.3%) were within education (other than teaching), 35(8.9%) were from health care sector, 9 participants (3%) were researchers, 17 (4.3%) were consultants, 110 (25.5%) reported various other occupations (e.g. IT, managers, baristas, etc.), 12 (2.8%) were unemployed. The ages ranged between 20 to 68 years, with a mean age of 40.8 years ($SD = 12.4$). Most participants were Swedish ($n = 291$, 73.5%, or had double nationality, $n = 15$, 3.8%). Twenty-seven participants (6.8%) were from other Nordic countries (Norway, Denmark, Finland, Iceland), 31 (7.8%) were from various other European countries, 15 (3.8%) were from USA, 14 (3.6%) reported other nationalities. Three participants did not report their nationality. The majority of the participants had higher education, including a bachelor’s degree ($n = 145$, 36.6%), a Master’s degree ($n = 201$, 50.8%), or a PhD ($n = 30$, 7.6%), while 17 (4.3%) did not have higher education.

Procedure. Similar procedure as in Study 1 was employed. The participants were approached by email to participate in an online survey on well-being. The purpose, voluntary nature

and anonymity were explained to the participants and they were asked to give consent for participation. Two main sources of contacts were used for recruiting participants: (1) previous Lund University students who had entered work life were recruited through email and (2) online searches were made to find contacts for various schools around Sweden (Malmö, Lund, Stockholm, Uppsala, Göteborg), and a sample of teachers and other school staff were recruited also through email.

Measures. The same measures were used as in Study 1.

Grit scale (Duckworth et al., 2007) showed overall high internal consistency in this study: $\alpha = .81$, with $\alpha = .73$ for the *perseverance of effort* subscale, and $\alpha = .82$ for the *consistency of interest* subscale.

The 13-item **SOC scale** (Antonovsky, 1987) had an overall high internal consistency of $\alpha = .84$, with lower Cronbach's alphas for subscales $\alpha = .70$ for *comprehensibility*, $\alpha = .64$ for *manageability* and $\alpha = .61$ for *meaning* subscales.

For the **Authenticity scale** (Wood et al., 2008), the Cronbach's alpha in the present study was high $\alpha = .84$. All subscales also showed high internal consistency: $\alpha = .75$ for *authentic living*, $\alpha = .84$ for *acceptance of external influence*, and $\alpha = .83$ for *self-alienation*.

PWB scale (Ryff & Keyes, 1995) had overall high internal consistency of .81. Rather low internal consistency was found for the subscales: $\alpha = .73$ for *self-acceptance*, $\alpha = .67$ for *environmental mastery*, $\alpha = .58$ for *autonomy*, $\alpha = .52$ for *positive relationships*, $\alpha = .52$, $\alpha = .43$ for *personal growth*, and $\alpha = .25$ for *purpose in life*. Such low internal consistencies have been reported before for the subscales of PWB, and therefore some authors argue that six subscales should not be included in the construct (Springer & Hauser, 2006). However, studies have supported the existence of a higher-order PWB factor beyond the subscales (Keyes et al., 2002), and therefore in this thesis, PWB has been analysed as a higher-order construct rather than looking at subscales separately.

Both the **SWL scale** (Diener et al., 1985) and **HILS** (Kjell et al., manuscript in progress) had very high internal consistencies of $\alpha = .90$ each.

Statistical procedures. Pearson correlations, independent samples t-tests, and one-way analysis of covariance (ANCOVA), were conducted to investigate relationships between sociodemographic variables and grit and the other variables of interest. Preliminary data checks were conducted to examine attrition and outliers and then to ensure that there was no violation of the assumptions of linearity, normality, and homogeneity of variances. Internal attrition was shown by in the dataset both by having 3 participants who left significant parts of the questionnaire unanswered (40-100% unanswered), and were therefore exclude from analysis. Another form of internal attrition appeared with missing values in the data set, altogether 5.6% of item values missing. Since no item had 5% of variables missing (no item exceeded 1.5% of missing values),

SPSS Missing value analysis (MVA) did not find patterns in the data. A further inspection of patterns of missing values with the Multiple Imputation pattern analysis showed no patterns, and it was therefore concluded that the data was missing at random (MAR). Expectation-maximization (EM) procedure is an appropriate method to use with randomly missing data (Tabachnick & Fidell, 2007), and was therefore employed. Analyses were run on both the original data set and the data set with missing values, showing no significant differences in results.

Inspection of boxplots revealed some univariate outliers (between 2 to 6 outliers per scale). According to Tabachnick and Fidell (2007) a good way to deal with outlying values is to change the extreme score to the lowest non-outlying score minus one. This was done to all outlying extreme scores in order to reduce their impact on the results. As is common with well-being scales, all scales showed negative skewness. However, with large samples ($N = 200$ and over), skewness and kurtosis will not make a big difference in results (Tabachnick & Fidell, 2007, p. 80). Also, all variables were skewed clearly below the -1 limit also used by Hair and colleagues (1998). The inspection of histograms showed that the distributions looked close to normal. The assumption of homogeneity of variance was met. Also, the inspections of scatterplots showed linear relationships among all scale variables.

In order to establish mediation, the four stages recommended by Frazier et al. (2004; see Study 1) were performed. First the interrelations between predictor-outcome, predictor-mediator and mediator-outcome have to be established. Furthermore, the mediator-predictor relationship has to be shown to be equally strong, or stronger than the predictor-mediator relationship, indicating that the choice of mediators is appropriate (Frazier et al., 2004). The final step is to show that the significant predictor-outcome relationship gets significantly weaker, or non-significant, after mediation. All these recommendations were followed in the analyses (see Results).

Results

Preliminary analyses. Preliminary analyses, as in Study 1, were performed to investigate whether demographic variables (i.e., gender, educational level and age) were related to grit, SOC, authenticity and the three measures of well-being. Significant gender differences were found on grit scores, indicating that women reported significantly higher scores ($M = 3.64$, $SD = .57$) than men did ($M = 3.42$, $SD = .59$, $t(388) = 3.59$, $p < .001$, $d = 0.38$). Similarly, women reported significantly higher scores on both SWL (women: $M = 5.07$, $SD = 1.22$; men: $M = 4.73$, $SD = 1.47$, $t(388) = 2.42$, $p < .05$, $d = 0.25$), and PWB (women: $M = 4.81$, $SD = .54$; men: $M = 4.64$, $SD = .65$; $t(388) = 2.84$, $p < .05$, $d = 0.28$). Although significant, however effect sizes (Cohen's d) show small gender differences for well-being measures and somewhat higher for grit indicating that the gender differences in the mean scores were not very large. No other gender differences were found.

Furthermore, age was found to be weakly to moderately related to SOC ($r = .35$), grit ($r = .23$), authenticity ($r = .19$), PWB ($r = .16$), SWL ($r = .18$) and HILS ($r = .24$, all at $p < .01$).

Further analyses were made to examine if there were differences in well-being as well as SOC and authenticity due to educational level. Since the vast majority of the sample had either undergraduate level (Bachelor's), or post-graduate level (Master's or PhD) education, these two groups were compared. The results indicated that the educational level significantly affected scores on SOC, so that the post-graduate level participants had higher mean scores ($M = 5.1$, $SD = .92$) than the undergraduate level participants did ($M = 4.9$, $SD = .89$, $t(374) = 2.13$, $p < .05$, $d = 0.22$). Similar results were also found on SWL scores (post-graduates: $M = 5.2$, $SD = 1.3$; undergraduates: $M = 4.8$, $SD = 1.3$, $t(374) = 2.52$, $p < .05$, $d = 0.31$), and HILS (post-graduates: $M = 5.3$, $SD = 1.1$; undergraduates: $M = 5.0$, $SD = 1.2$; $t(374) = 2.11$, $p < .05$, $d = 0.26$). Effect sizes indicate small effects. An analysis of covariance (ANCOVA) was further performed to see if these differences would still hold after controlling for the effect of age. The results indicated that the educational level differences were not significant once the effect of age was controlled for. This indicates that the potential educational level differences among the groups could be due to differences in age between the participants who had attained different educational levels.

Given significant gender differences and significant though rather small correlations between age and other variables, a mediation analysis was performed with gender as a moderator (as in Study 1) and controlling for age.

Correlational analyses. Pearson's correlation showed significant correlations between all variables (see Table 4). The intercorrelations between the mediators and well-being variables are similar between the genders, but it can be seen that women show somewhat lower intercorrelations between grit and the other variables of interest, with grit and PWB showing the biggest gender difference (women $r = .44$, men $r = .66$), followed by grit and SWL (women $r = .29$, men $r = .43$) (see Table 4 for details).

The criterion for the strength of the grit-mediator and mediator-outcome relationships for choosing appropriate mediators was again met (see Study 1; Frazier et al., 2004): grit showed a moderate to strong positive correlation to all well-being factors, while the mediators SOC and authenticity showed equal or stronger positive correlations with well-being. All correlations were significant at the $p < .001$ level. Given that all variables were significantly positively correlated, the assumption of significant interrelations between the model variables made further constructing and testing of the mediation with SEM possible.

Table 4

Summary of Intercorrelations Between the Variables for Women and Men Separately

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------|-----|-----|-----|-----|-----|-----|
| 1.Grit | -- | .55 | .51 | .66 | .43 | .48 |
| 2.SOC | .43 | -- | .50 | .65 | .55 | .64 |
| 3.Authenticity | .41 | .52 | -- | .66 | .44 | .51 |
| 4.PWB | .44 | .59 | .65 | -- | .65 | .70 |
| 5.SWL | .29 | .56 | .50 | .65 | -- | .78 |
| 6.HILS | .38 | .60 | .52 | .67 | .77 | -- |

Note. Intercorrelations for women ($n = 256$) are presented below the diagonal, and intercorrelations for men ($n = 134$) are presented above the diagonal. SOC = Sense of Coherence; PWB = Psychological well-being; SWL = Satisfaction with Life; HILS = Harmony in Life Scale.

All correlations are significant at $p < .001$.

Mediation analyses. After checking for assumptions, and calculating preliminary analyses, the next step was to test the hypothesized mediation via SOC and authenticity for the relationship between grit and the three well-being measures. SPSS AMOS 20.00 was again used for testing of mediation. A mediation analysis was performed with gender as the moderator while controlling for age, given the significant effects found in the preliminary analyses for both these sociodemographic variables. Thus, the mediation analyses were performed for PWB, SWL and HILS, separately, and results are presented in Figures 7 – 12 as well as in Tables 5 and 6 for women and men separately. For clarity, Table 7 summarizes the main results found in Study 1 and Study 2.

Mediation analyses for the relationship between Grit and PWB. Figure 7 and Figure 8 illustrate the mediation between grit and PWB, and shows the standardized regression coefficients found for both gender groups. Significant partial mediation by SOC and authenticity was found for both genders: the standardized direct effect prior to mediation (women: $\beta = .42, p < .001$; men: $\beta = .66, p < .005$) become lower after mediation, yet still significant (women: $\beta = .13, p < .05$; men: $\beta = .33, p < .001$) and the total indirect effect through the mediators was significant (women: $\beta = .31$; men: $\beta = .35, p < .001$: see Table 5 and Table 6), therefore indicating that the relationship between grit and PWB is partially mediated by SOC and authenticity. The significance of the indirect effect was tested by bootstrapping 1000 samples. The bootstrapped unstandardized indirect effects were 5.07 (95% CI [3.81, 6.48]) and 6.79 (95% CI [5.01, 8.82]), for women and men respectively, indicating statistically significant result.

Furthermore, the direct effect between grit and PWB was found to be significantly stronger for men as compared to women, before testing for mediation (women: $\beta = .42, p < .001$; men: $\beta = .66, p < .001$; $z = 3.62, p < .01$), and even when adding SOC (women: $\beta = .23, p < .001$; men: $\beta = .44, p < .001$; $z = 2.93, p < .01$), authenticity (women: $\beta = .20, p < .001$; men: $\beta = .44, p < .001$; $z = 3.34, p < .01$), and both mediators (women: $\beta = .13, p < .05$; men: $\beta = .33, p < .001$; $z = 2.63, p < .05$) indicating some moderation effects by gender. That is, men showed a stronger direct relationship between grit and PWB than women did.

Figure 7.

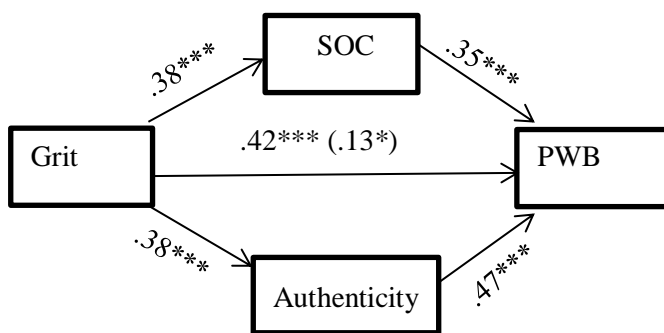


Figure 8.

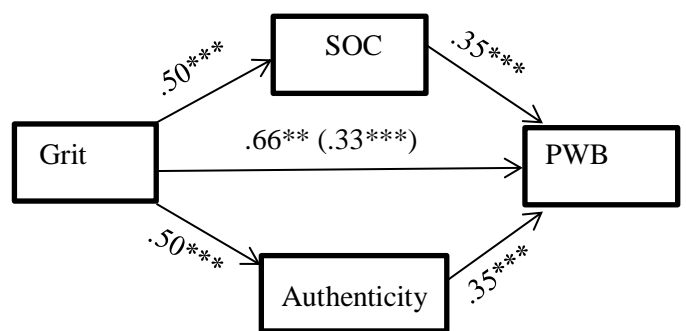


Figure 7 (women) and Figure 8 (men): Relationship between grit and psychological well-being (PWB), as mediated by sense of coherence (SOC) and authenticity while controlling for age, with the standardized regression coefficients between the variables. The standardized regression coefficient of the relationship between grit and PWB, while controlling for the mediators SOC and authenticity, are in parentheses.

* $p < .05$, ** $p < .005$, *** $p < .001$.

Mediation analysis for the relationship between Grit and SWL. Figure 9 and Figure 10 illustrate mediation between grit and SWL and show the standardized regression coefficients. For both genders, full mediation by SOC and authenticity was found. The significant direct effect prior to mediation (women: $\beta = .27$; men: $\beta = .40$, both at $p < .001$) became non-significant after the mediation was accounted for (women: $\beta = -.05$; men: $\beta = .12, ns$), while the standardized indirect effects were highly significant ($\beta = .29$ for both women and men, $p < .001$: see Table 5 and Table 6 for details). The bootstrapped unstandardized indirect effects were 2.94 (95% CI [2.19, 3.82]) and 3.59 (95% CI [2.25, 5.09]), for women and men respectively, indicating statistically significant result. Therefore, significant full mediation was found between grit and SWL for both genders. No moderation by gender was found.

Figure 9.

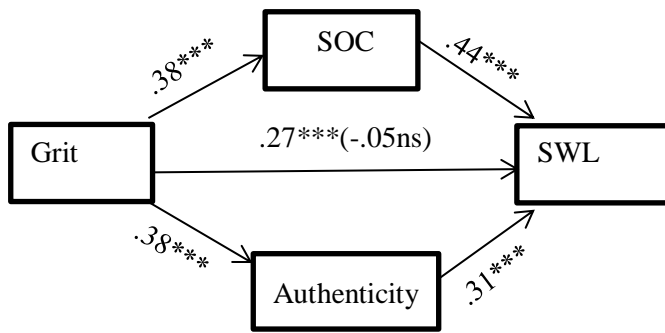


Figure 10.

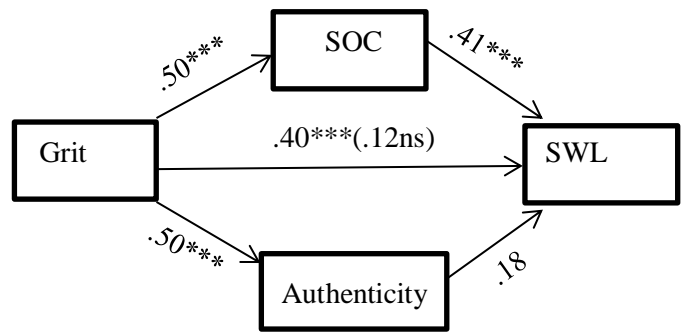


Figure 9 (women) and Figure 10 (men): Relationship between grit and Satisfaction with Life (SWL), as mediated by sense of coherence (SOC) and authenticity while controlling for age, with the standardized regression coefficients between the variables. The standardized regression coefficients of the relationship between grit and SWL, while controlling for the mediators SOC and authenticity, are in parentheses.

** $p < .005$, *** $p < .001$.

Mediation analysis for the relationship between Grit and HILS. Figure 11 and Figure 12 illustrate mediation between grit and HILS and show the standardized regression coefficient. For both women and men, full mediation was found: significant direct effect (women: $\beta = .34$; men: $\beta = .45$, both at $p < .001$) became non-significant after mediators were added (women: $\beta = .09$; men: $\beta = .11$, both *ns*), while the standardized indirect effects were significant (women: $\beta = .27$; men: $\beta = .35$, $p < .001$: see Table 5 and Table 6). The bootstrapped unstandardized indirect effects were 2.61, (95% CI [1.94, 3.36]) and 3.79 (95% CI [2.60, 5.24]) for women and men respectively, indicating a significant result. Therefore, the relationship between grit and SWL was fully mediated by SOC and authenticity for both women and men. No moderation by gender was found.

Figure 11.

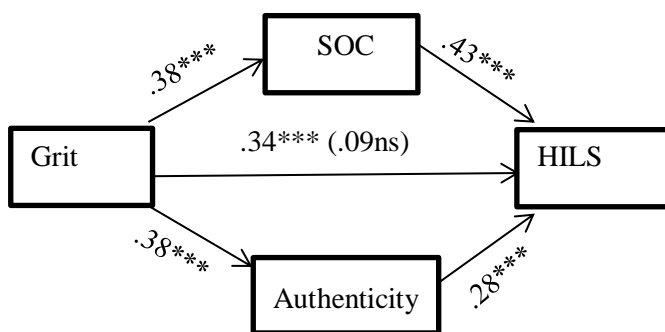


Figure 12.

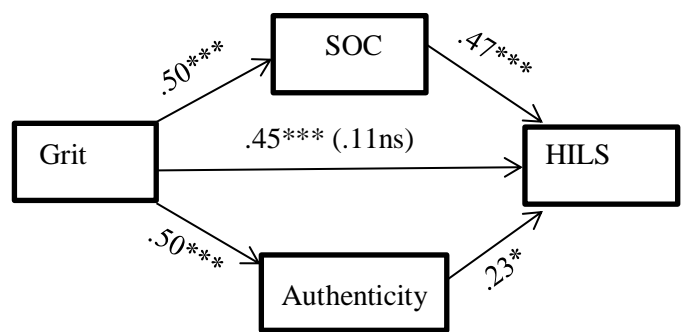


Figure 11 (women) and *Figure 12* (men): Relationship between grit and Harmony in Life (HILS), as mediated by sense of coherence (SOC) and authenticity while controlling for age, with the standardized regression coefficients between the variables. The standardized regression coefficients of the relationship between grit and HILS, while controlling for the mediators SOC and authenticity, are in parentheses.

* $p < .05$, ** $p < .005$, *** $p < .001$.

Table 5

Summary of Mediation Results for Women (n = 256) Including Standardized Regression Coefficients for both Mediators when Analysed Together and Separately

| Hypothesis | Direct Beta w/o Mediation | Direct Beta w/Mediation | Indirect Beta | Mediation type observed |
|--|------------------------------|----------------------------|------------------|----------------------------|
| Grit – PWB | .42*** | | | |
| Mediation via both SOC and authenticity | | .13* | .31*** | Partial |
| Mediation via SOC | | .23*** | .20*** | Partial |
| Mediation via authenticity | | .20*** | .22*** | Partial |
| Grit – SWL | .27*** | | | |
| Mediation via both SOC and authenticity | | -.05(ns) | .29*** | Full |
| Mediation via SOC | | .06(ns) | .21*** | Full |
| Mediation via authenticity | | .09(ns) | .18*** | Full |
| Grit – HILS | .34*** | | | |
| Mediation via both SOC and authenticity | | .09(ns) | .27*** | Full |
| Mediation via SOC | | .14* | .20*** | Partial |
| Mediation via authenticity | | .18** | .16*** | Partial |

Note. PWB = Psychological well-being; SOC = Sense of Coherence; SWL = Satisfaction with Life; HILS = Harmony in Life Scale.

* $p < .05$, ** $p < .005$, *** $p < .001$.

Table 6

Summary of Mediation Results for Men (n = 134) Including Standardized Regression Coefficients for both Mediators when Analysed Together and Separately

| Hypothesis | Direct Beta w/o Mediation | Direct Beta w/Mediation | Indirect Beta | Mediation type observed |
|--|------------------------------|----------------------------|------------------|----------------------------|
| Grit – PWB | .66** | | | |
| Mediation via both SOC and authenticity | | .33*** | .35*** | Partial |
| Mediation via SOC | | .44*** | .23*** | Partial |
| Mediation via authenticity | | .44*** | .22*** | Partial |
| Grit – SWL | .40*** | | | |
| Mediation via both SOC and authenticity | | .12(ns) | .29*** | Full |
| Mediation via SOC | | .17(ns) | .23*** | Full |
| Mediation via authenticity | | .26** | .15** | Partial |
| Grit – HILS | .45*** | | | |
| Mediation via both SOC and authenticity | | .11(ns) | .35*** | Full |
| Mediation via SOC | | .18(ns) | .27*** | Full |
| Mediation via authenticity | | .27** | .18*** | Partial |

Note. PWB = Psychological well-being; SOC = Sense of Coherence; SWL = Satisfaction with Life; HILS = Harmony in Life Scale.

* $p < .05$, ** $p < .005$, *** $p < .001$.

Table 7

Summary of Mediation Effects from Study 1 and Study 2 Separate for Genders

| | Sample | Type of Mediation Found for | |
|-------------|-----------------------|-----------------------------|---------|
| | | Women | Men |
| Grit - PWB | Study 1. Students | Partial | Partial |
| | Study 2. Non-students | Partial | Partial |
| Grit - SWL | Study 1. Students | Full | Full |
| | Study 2. Non-students | Full | Full |
| Grit - HILS | Study 1. Students | Full | Partial |
| | Study 2. Non-students | Full | Full |

Note. PWB = Psychological Well-being; SWL = Satisfaction with Life; HILS = Harmony in Life Scale.

Discussion

The general purpose of Study 2 was to replicate the findings of Study 1 in a more heterogeneous (in terms of age, occupation, and educational level) sample. In Study 2, the aim was to examine the relationship that grit has with three different well-being measures—PWB, SWL, and harmony in life—and to examine whether these relationships are mediated by SOC and authenticity while controlling for age. The findings in Study 2 showed that, as expected, SOC and authenticity were full or partial mediators in the relationship between grit and all well-being variables. Significant gender differences (i.e., moderation by gender) were found.

Both relationships between grit and SWL as well as grit and harmony were fully mediated by SOC and authenticity, indicating that these relationships are more complicated, and grit on its own does not account for higher levels of either of these types of well-being. Instead, to have higher satisfaction and harmony in life, individuals must not only be gritty about their goals, but also must have developed a strong SOC (i.e., the capacity to recognize, trust, and utilize one's resources) as well as authenticity (connection with the true self, and rejection of external influences). These results, therefore, were in support of the expected relationships.

PWB was the only well-being measure that was only partially mediated by both mediators (SOC and authenticity) for both gender groups. This indicates that PWB shows a relationship with grit directly, and is not completely explained by the indirect effects of the mediators. In other words, grit by itself is related to higher levels of PWB. Therefore, these findings suggest that grit is particularly relevant for this type of well-being over the other two types (SWL and HILS) studied. However, the relationship between grit and PWB is also significantly affected by having high SOC and feeling an authentic connection with the true self and one's values, and being able to reject external pressures. These results were in support of the expected relationships.

Women showed significantly lower direct effects between grit and PWB than men did. Therefore, this indicates that for women being gritty is not as strongly related to high PWB as it is for men. This effect could already be noticed in the correlations, indicating much lower correlation between grit and PWB for women (women $r = .44$, $p < .001$) than for men ($r = .66$, both $p < .001$). This moderated effect by gender is interesting, and may suggest that women do not gain equal benefits from being gritty on the level of their psychological well-being than men do.

Similar trends could be seen in other correlations between grit and all the variables of interest (i.e., both the mediator and well-being variables), in that women showed lower correlations

as compared to men. Although these effects were not statistically significant, it is still interesting to point out the trend, which may suggest that grittiness, per se, has lower direct effects on well-being *for women*, while for men the direct relationship is much stronger. Another interesting finding is regarding the t-test results, which indicated that women had higher mean scores on grit, SOC, and SWL than men did; however, the relationships among the variables seem to be stronger for men. These findings give some preliminary knowledge regarding gender differences in grit, however, no definitive conclusions can be drawn from these results before more delineation of the results and research on potential underlying processes have been made.

Another interesting trend in the results could be seen with the mediator of authenticity, which was weaker for men in explaining the relations of grit with SWL and HILS. Although these differences were not statistically significant, such trend may suggest gender differences in the need for authenticity in ensuring that a gritty motivation enhances well-being. However, again, more research is needed to ensure the differences.

General Discussion

The present thesis includes two studies that aimed to investigate how grit is related to different aspects of well-being, including PWB, SWL, and harmony in life, and whether these relationships are mediated by SOC and authenticity. Gender differences were investigated by studying gender as the moderator in the mediation analyses in both studies. In Study 1, the relationships were studied in a university student sample, while Study 2 examined the relationships in a more mature, non-student sample. Furthermore, Study 2 was conducted to examine whether the findings of Study 1 held for a more heterogeneous (in terms of age and educational level) sample, thereby enabling greater generalization of the results.

In both studies, significant, strong relationships were found between grit and the three well-being measures, as well as between grit and both mediators. This study provides further support for a positive interrelation between grit and SWL, as was found previously (Singh & Jha, 2008: although they showed only correlational results), and expands on them by showing that other variables, in this case SOC and authenticity, mediate the relationship fully in student and non-student samples and for both women and men. Furthermore, in the present thesis, relationships between grit and PWB as well as harmony in life were examined which have not been investigated previously. Similarly, the interrelations that grit showed with both SOC and authenticity are new research findings, adding further findings in the research on grit.

The findings of this thesis also show that the relationships between grit and the three measures of well-being are only partially direct, while the other variables (SOC and authenticity) account for significant indirect effects. Furthermore, so far, grit has been studied together with some

sociodemographic variables such as age and educational level (Duckworth et al., 2007), but the current thesis adds a new variable, gender, to the investigation. The findings indicated some preliminary suggestions regarding gender differences in the relationships between grit and well-being. In general, the results indicate that men seemed to have stronger positive direct relationships between being gritty and reporting higher levels of well-being, as was indicated by stronger direct relations of grit with harmony in Study 1, and grit with PWB in Study 2. This was also evident in the correlational analyses, wherein men showed stronger coefficients between grit and well-being (especially in Study 2) than women did. The indirect relationship via authenticity was found to be stronger for women as compared to men, however, the gender differences were not significant. Although preliminary and inconclusive, these effects might reflect some interesting underlying differences between the genders. Men, for example, might find gritty pursuits more conducive to some aspects of well-being (harmony and PWB) than women do, while women might require a higher connection to their authentic selves in pursuing their goals, in order for those goals to benefit their well-being. However, as mentioned previously, interpreting any reasons for such gender differences are only speculations at this stage, and no clear conclusions can be made before further research is conducted.

The relationship between grit and PWB was found to be partially mediated by SOC and authenticity for both women and men in the student and non-student samples. Therefore, the results suggest that being gritty is strongly related to high PWB, both indirectly and directly. That is, the relationship between grit and PWB is importantly affected by how much one perceives the world to be coherent and manageable, how meaningful one sees the pursuit, how one uses important resources, and how much authenticity one has. Therefore, grit, the passionate pursuit of long-term goals (Duckworth et al., 2007), is highly important for PWB, directly and indirectly via SOC and authenticity. This finding is in line with the organismic valuing theory (Rogers, 1961, 1964) that the pursuit of long-term goals with passion and perseverance can be seen as a growth process towards one's full potential and higher well-being, in how it is related to a strong connection to the self and the ability to reject external pressures.

The direct relation between grit and PWB makes sense, given that the PWB construct consists of the aspects of *personal growth*, *purpose in life*, and *environmental mastery*, which seem closely linked to the motivation to strive towards meaningful goals. This finding is in support to the findings of Von Culin et al. (in press), who showed that a gritty motivation particularly reflects motivations to seek engagement and meaning, which are in line with the eudemonic perspective of well-being as well as PWB. Furthermore, since grit has previously been shown to be related to multiple success factors and achieving of goals (Duckworth et al., 2007; Reed et al., 2013; Maddi,

Matthews, Kelly, Villarreal, & White, 2012), grit seems to be an important characteristic that may enable a meaningful pursuit of goals that are self-relevant, in connection with the true self, and related to a high SOC of the surrounding world.

The relationship between grit and SWL in this model could fully be explained by SOC and authenticity and the result was found in both samples and for both women and men. This would imply that being gritty by itself is not enough to guarantee higher SWL, but that SOC and an authentic connection to the self are needed. This is an intriguing finding considering that pursuing goals might be an important source of SWL (Sheldon, Abad, Ferguson, Gunz, Houser-Marko, Nichols, & Lyubomirsky, 2010) so long as this pursuit is self-relevant and connected to one's true motives—that is, the pursuit must be meaningful in order for one to feel satisfied with it (see also Sheldon et al., 1999). Sheldon et al. (2010) similarly found that a persistent engagement with goals that satisfied one's needs over a 6-month period enhanced well-being. Therefore, persisting with satisfying goals might be particularly conducive to well-being.

A similar mediation effect was found between grit and harmony in life in that SOC and authenticity fully mediated this relationship, with the exception of the student male sample in Study 1 (which showed a significant partial mediation). A further analysis of the mediation revealed that each mediator was a significant partial mediator when analyzed on its own. Therefore, being gritty relates to higher harmony through higher SOC and authenticity when considered together, although these mediators on their own do not fully mediate the relationship between grit and harmony. Therefore, as discussed in the introduction, the primary control view on well-being (i.e., being an active source of control of one's environment), and that is generally considered as motivation to take action to pursue goals and endure adversities along the way (Haase et al., 2012), which is the case with a gritty individual, can be related to a secondary type of well-being, harmony in life, which enables an ability to accept not having control over everything in one's life, and having an ability to adjust and find peace. However, the results suggest that they are related once the pursuits are highly self-directed—namely, one can easily manage the resources involved in that pursuit and the pursuit is governed by a sense of comprehensibility and meaning (i.e., SOC), and one has a high connection with the true self (i.e., authenticity). Therefore, as with SWL, being gritty on its own is not directly related to feeling harmonious with the world, rather the pursuit needs to be self-relevant, or in Sheldon et al.'s (1999) terminology, self-concordant. Only the men in Study 1 showed a significant direct relationship between grit and harmony when both mediators were controlled for, suggesting that for the student males, being gritty may itself be a harmonious experience. However, since a similar trend regarding the genders differences was not found in Study 2, further research is needed to investigate the relationship.

Maddi et al. (2013) mentioned the concept of “existential courage” (p. 132), which refers to the ability to respond flexibly and courageously to life’s challenges, as something that may be lacking in the current definition of grit. However, the present results may suggest that grit in fact contains, at least to some degree, such courage, particularly given its relation to harmony in life. Specifically, the results give some support that gritty people can pursue their passions, yet still have a harmonious connection to the surrounding world, so that while being strong-willed about their own goals, they can simultaneously consider the importance of balance with others. This might suggest that a gritty individual can answer life’s challenges flexibly, rather than rigidly, thereby ensuring the maintenance of well-being.

Another interesting aspect that the results may indicate is that grit might reflect a particularly strong connection with the self. Both SOC and authenticity are aspects of high self-knowledge and connection (see Antonovsky, 1987; Wood et al., 2008), and this self-knowledge might serve as a sort of compass for a gritty individual while pursuing their goals. Thus, grit may not reflect a rigid determination to pursue goals no matter what comes along, but rather might reflect one’s inner values and trust in the comprehensibility of the world. As such, grit might reflect a consistency of self (i.e., a high consistency of pursuits and interests in connection with the true self), much like identity consistency, which has been shown to be particularly high in flourishing individuals (Daukantaitė & Soto Thompson, 2014).

Since grit is a future-oriented motivation, it might induce a sense of hope, which in turn might make one feel a sense of meaning in one’s life (see also Kleiman et al., 2013). This hope and meaning may be based on the strong SOC found to be related to grit. Perhaps the strong SOC is necessary in order for a gritty person to feel able to successfully pursue their goals in the long-term, and thereby attain higher well-being; in other words, it is possible that the aspects of SOC (comprehensibility, manageability, and meaning) are necessary to grit. In both studies, a strong and highly significant relationship between grit and SOC was found, both as strong positive correlations and strong regression coefficients in the mediation models. Furthermore, this thesis replicated the findings of a strong connection of SOC with PWB and SWL (Gana, 2001; Moksnes et al., 2013), and provide new results by showing the correlation between SOC and harmony in life.

Considering the eudemonic well-being tradition, which emphasizes aspects of authenticity and personal growth (Huta & Waterman, 2013; Ryff & Singer, 2008), it is particularly interesting to notice that authenticity served in this study as an important mediator particularly between grit and PWB. PWB is a key aspect of the eudemonic paradigm (Ryff & Singer, 2008) and shares essential theoretical views with organismic valuing theory (Rogers, 1961; 1964), for which the concept of authenticity is central. Therefore, the strong indirect effects of grit via authenticity to PWB in

particular might give some support for the organismic valuing theory, suggesting that the concept of the true self might be particularly important for a growth perspective of well-being, and slightly less so for cognitive aspects of well-being (SWL) and harmony in life.

The fact that the relations of grit with SWL and harmony in life were not as strongly mediated by authenticity for men compared with women is an intriguing finding, even though the difference was not statistically significant. Perhaps for women, the authenticity of goal pursuits brings about a stronger sense of harmony, a harmony with the self (see a discussion by Garcia et al., 2014), which may be particularly important for women. However, this is mere speculation so far, and the reason for such gender differences cannot be inferred from the current findings, so caution must be exercised in this interpretation. Further research should be conducted to reveal the underlying mechanisms.

Although it was suggested in the introduction that someone with high grit and low authenticity might have lower well-being, this profile could not be investigated due to the scarcity of participants who showed a high-grit/low-authenticity profile (three participants overall). This may mean that high grit does not tend to co-occur with low authenticity, which was the relationship that was both expected and found in this study. However, it may be that the samples studied in the thesis were generally very high on grit and well-being, so it would be interesting to study further different profiles of grit and authenticity – whether someone who is highly gritty could be lower on well-being due to not feeling authentic, and likely therefore not being gritty for self-concordant, or *congruent*, reasons.

The findings reported in both studies of the thesis can be linked to the previous theoretical accounts discussed in the introduction. Antonovsky (1993b) discusses the idea of chaos theory of human life and that because human life is inevitably full of uncertainties, potential adversities, and fluctuations, it is important to have something within the self that remains stable and coherent in order to remain well. Because grit is perseverance for long-term goals, such goals can be far ahead in the future, and life may take on many turns and twists in between. Therefore, it is important for a gritty individual to not just rigidly hold onto the future, disregarding what life brings in the meantime, but to have a stable connection to the self and be able to orient to the world with a sense of trust for its resources and the ability to manage those resources. Thus, it makes sense that the relation of grit with authenticity and SOC was particularly important for experiencing harmony in life and SWL. This view of life as a process, with its fluctuations and changes, and one's ability to grow along it, is also inherent for the organismic valuing theory (Rogers, 1961, 1964).

Limitations

The thesis has some limitations. First, the studies were correlational and therefore causal inferences cannot be made. Thus, the mediation effects reported in the thesis cannot infer that being gritty *causes* one to have higher SOC or authenticity, which in turn *cause* enhancements in well-being. Other variables, not discussed in the study, may also explain the studied relationships. In order to infer causal relationships, an experimental and/or longitudinal design should be employed. Furthermore, in order to find clearer support for the organismic valuing process theory, a longitudinal design would be advisable, because this would allow for greater clarity in how this growth process takes place and the specific causal links between the concepts. In other words, the concept of growth in the present thesis relates more to a theoretical growth (as captured in the relationships of certain traits), rather than an actual maturational process (which needs a longitudinal design).

Secondly, only self-reported data was collected. People might not have the self-knowledge about concepts such as well-being and grit to be able to answer the measures accurately. Moreover, social desirability may have influenced how participants responded. Although Wood et al. (2008) showed that answers on the authenticity scale were not dependent on social desirability responses, this bias would be important to check for all the scales used. Nevertheless, social desirability bias was partially controlled by emphasizing in the instructions for each scale to answer as honestly as possible, indicating that there are no right or wrong answers, which may have emphasized the importance of response honesty.

Because the participants were approached by email, the reasons for external attrition (i.e., non-response) are not clear (e.g., could be failure for email delivery, those sent the email did not check the email). The sample, therefore, was self-selected, consisting of people who were particularly interested in answering a survey on well-being and it may be that only those who experience high well-being chose to participate. Another shortcoming in the sampling procedure was that the participants were reached by the university email system, or through schools, indicating that the participants were a highly educated population. This reduces the generalizability of the findings to a less educated population. Previously, it has been shown that grit is higher among high achievers, such as university students (Duckworth et al., 2007), and also among teachers (Duckworth et al., 2009). Thus, different results might be found in other populations, and more low-grit profiles could be found, which would illustrate how low grit is related to well-being. Therefore, a different sampling technique is needed in order to reach a more heterogeneous regarding educational level to further examine relationship between grit and different aspects of well-being as well as SOC and authenticity.

Considering the analysis, the possibility of a multiple comparisons problem (Tabachnick & Fidell, 2007) is present when numerous statistical analyses are calculated simultaneously, possibly raising the likelihood for a type 1 error. However, most of the results were significant to either 1%, 0.5% or even 0.1% level, which is a much stricter significance level than the commonly used 5%. Therefore, the concern that the results would be due to type 1 error is low.

Conclusions and Future Directions

Despite the above-mentioned limitations, the present thesis reports important results regarding the relationships between grit, well-being, SOC, and authenticity. Grit is significantly and strongly related to PWB, SWL, and harmony in life, and these relationships are mediated fully or partially by SOC and authenticity. Furthermore, this thesis shows some preliminary gender differences in the relations of grit with well-being: men showed stronger direct relationships between grit and certain aspects of well-being (i.e., a stronger link between grit and harmony in Study 1, and stronger link between grit and PWB in Study 2) than women did.

Research on grit and its relationships to various aspects of well-being, as well as to the variables accounting for these relationships, is scarce. The results from the two studies add to the research on positive psychology, providing new knowledge on the complexity of the relationships of variables that were previously discussed separately. As such, this thesis also furthers the research around the ideas of humanistic psychology of well-being as a growth process, the fulfilment of one's potential, and finding authenticity.

Further research on the relation of grit with well-being should examine the nature of the goal pursuits in detail: would an intrinsic goal orientation be related to higher well-being, and would those gritty individuals who pursue extrinsic, self-disconcordant goals instead have lower well-being? Although high authenticity could be suggested as being indicative of authentic behavior and self-concordant goal pursuits, the actual nature of goals was not directly investigated in this study. This question would merit more focus and could further illustrate important conditions under which grit relates to higher well-being.

Furthermore, given the results by Von Culin et al. (in press) that people high in grit tend to seek out engagement and meaning over pleasure, it would be interesting to investigate this area further by examining more closely whether gritty individuals are also high in emotional well-being (positive and negative affect). That is, whether highly gritty individuals have different profiles regarding emotional well-being and engagement. For example, are gritty individuals more serious-minded pursuer types, or do high grit and high levels of positive affectivity co-occur?

The consideration of dispositions that might be relevant for growth over time is another unanswered area within the research. Further studies could shed light into whether authenticity

grows over the lifetime, and whether a gritty motivation truly predicts enhancements in authenticity and SOC in a causal manner. Similarly, given these high interrelations between the concepts in the model, how can one promote the healthy growth of grit, SOC, and authenticity? Grit is a motivational aspect that could be enhanced in students via interventions (see Tough, 2013), in a similar manner to gratitude, which has been successfully enhanced through interventions (Seligman, Steen, Park & Peterson, 2005; Seligman, Ernst, Gillham, Reivich & Linkins, 2009). In fact, the concept of grit seems to be taken on board in some writings on new approaches to learning and teaching at schools: specifically, emphasizing perseverance of effort instead of different levels of talent between children (see Tough, 2013). Both SOC and authenticity seem likely to develop over time. SOC is a dynamic construct that develops in early life and can keep developing even throughout adulthood (Feldt, Leskinen, Koskenvuo, Suominen, Vahtera, & Kivimäki, 2011). The sense of authenticity, then again, is affected by the type of relationships one is faced with (Robinson, 2009; Robinson et al., 2014; Robinson et al., 2012), and most likely grows as one's self-concept becomes more consistent with maturity. Perhaps this sense of authenticity could be enhanced via discovery of one's own values and goals, which may be a worthy future research area. In general, given the highly positive connection between grit and well-being, a promising future step would be to consider interventions to raising of grit and helping people to be in touch with their own organismic valuing process, by making sure important resources (for a strong SOC) and self-relevance (authenticity) are considered.

References

- Antonovsky, A., (1987). *Unravelling the mystery of health: how people manage stress and stay well*. San Francisco: Jossey-Buss Publishers.
- Antonovsky, A. (1993a). The structure and properties of the sense of coherence scale. *Social Science and Medicine*, 36(6), 725–733.
- Antonovsky, A. (1993b). Complexity, conflict, chaos, coherence, coercion and civility. *Social Science and Medicine*, 37(8), 969–981.
- Antonovsky, A., Maoz, B., Dowty, N., & Wijisenbeck, H. (1971). Twenty years later: a limited study of the sequelae of the concentration camp experience. *Social Psychiatry*, 81, 186–193.
- Antonovsky, H., & Sagy, S. (1986). The development of a sense of coherence and its impact on responses to stress situations. *The Journal of Social Psychology*, 126(2), 213–225.
- Campbell, J. D., Assanand, S., & Di Paula, A. (2003). The structure of the self-concept and its relation to psychological adjustment, *Journal of Personality*, 71(1), 115–140. DOI: 10.1111/1467-6494.t01-1-00002.
- Daukantaité, D., & Soto Thompson, E. (2014). The relationship between identity consistency across social roles and different aspects of mental health varies by age group. *Identity: An International Journal of Theory and Research*, 14, 81–95.
- Debats, D. L., Drost, J., & Hansen, P. (1995). Experiences of meaning in life: A combined qualitative and quantitative approach. *British Journal of Psychology*, 86, 359–375.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268.
- Diener, E. (1994). Assessing subjective well-being: progress and opportunities. *Social Indicators Research*, 31(2), 103–157.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71–75.
- Diener, E., Fujita, F., Tay, L., & Biswas-Diener, R. (2012). Purpose, mood, and pleasure in predicting satisfaction judgments. *Social Indicators Research*, 105, 333-341. DOI 10.1007/s11205-011-9787-8
- Diener, E., Scollon, C. N., & Lucas, R. E. (2004). The evolving concept of subjective well-being: The multifaceted nature of happiness. In P. T. Costa & I. C. Siegler (Eds.), *Advances in cell aging and gerontology: Vol. 15* (pp. 187–220). Amsterdam: Elsevier.
- Duckworth, A. L. (2006). Intelligence is not enough: non-IQ predictors of achievement. *Dissertation Abstracts International*, 67(3-B), 1741.

- Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. (2010). Deliberate practice spells success: why grittier competitors triumph at the National Spelling Bee. *Social Psychological and Personality Science*, 2(2), 174–181. DOI: 10.1177/1948550610385872
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087–1101.
- Duckworth, A. L., Quinn, P. D., & Seligman, M. E. P. (2009). Positive predictors of teacher effectiveness. *The Journal of Positive Psychology*, 4(6), 540–547.
- Feldt, T., Leskinen, E., Koskenvuo, M., Suominen, S., Vahtera, J., & Kivimäki, M. (2011). Development of sense of coherence in adulthood: a person-centered approach. The population-based cohort study. *Quality of Life Research*, 20, 69–79. DOI: 10.1007/s11136-010-9720-7
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counselling psychology research. *Journal of Counselling Psychology*, 51(1), 115–134.
- Frankl, V. E. (1946/1984). *Man's search for meaning*. New York: Washington Square Press.
- Gana, K. (2001). Is sense of coherence a mediator between adversity and psychological well-being in adults? *Stress and Health*, 17, 77–83.
- Garcia, D., Al Nima, A., & Kjell, O. N. E. (2014). The affective profiles, psychological well-being and harmony: environmental mastery and self-acceptance predict the sense of a harmonious life. *PeerJ*, 2, e259. DOI: 10.7717/peerj.259
- García-Moya, I., Rivera, F., & Moreno, C. (2013). School context and health in adolescence: The role of sense of coherence. *Scandinavian Journal of Psychology*, 54, 243–249.
- Goldman, B. M., & Kernis, M. H. (2002). The role of authenticity in healthy psychological functioning and subjective well-being. *Annals of the American Psychotherapy Association*, 5(6), 18–20.
- Haase, C. M., Poulin, M. J., & Heckhausen, J. (2012). Happiness as a motivator: Positive affect predicts primary control striving for career and educational goals. *Personality and Social Psychology Bulletin*, 38(8), 1093–1104. DOI: 10.1177/0146167212444906
- Hair, J. F. Jr., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data-analysis* (5th ed.). New Jersey: Prentice-Hall.
- Huta, V., & Waterman, A. S. (2013). Eudaimonia and its distinction from hedonia: Developing a classification and terminology for understanding conceptual and operational definitions. *Journal of Happiness Studies*. DOI: 10.1007/s10902-013-9485-0

- Keyes, C. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of Personality and Social Psychology*, *82*(6), 1007–1022. DOI: 10.1037/0022-3514.82.6.1007
- Kjell, O. N. E. (2011) Sustainable well-being: a potential synergy between sustainability and well-being research, *Review of General Psychology*, *15*(3), 255-266.
- Kjell, O. N. E., Garcia, D., Daukantaite, D, Hefferon, K., & Sikström, S. (in progress). Harmony in life scale complements the satisfaction with life scale: Expanding the conceptualization and measurement of the cognitive component of subjective well-being.
- Kleiman, E. M., Adams, L. M., Kashdan, T. B., & Riskind, J. H. (2013) Gratitude and grit indirectly reduce the risk of suicidal ideations by enhancing meaning in life: Evidence for a mediated moderation model. *Journal of Research in Personality*, *47*, 539–546.
- Lenton, A. P., Bruder, M., Slabu, L., & Sedikides, C. (2013) How does “being real” feel? The experience of state authenticity. *Journal of Personality*, *81*(3), 276–289.
- Maddi, S. R., Matthews, M. D., Kelly, D. R., Villarreal, B., & White, M. (2012). The role of hardiness and grit in predicting performance and retention of USMA cadets. *Military Psychology*, *24*, 19–28.
- Maddi, S. R., Erwin, L. M., Carmody, C. L., Villarreal, B. J., White, M., & Gundersen, K. K. (2013). Relationship of hardiness, grit, and emotional intelligence to internet addiction, excessive consumer spending, and gambling. *The Journal of Positive Psychology*, *8*(2), 128–134.
- Moksnes, U. K., Lohre, A., & Espnes, G. A. (2013) The association between sense of coherence and life satisfaction in adolescents, *Quality of Life Research*, *22*, 1331–1338.
- Niemiec, C. P., Ryan, R. M. & Deci, E. L. (2009) The path taken: consequences of attaining Intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality*, *43*(3), 291–306. DOI: 10.1016/j.jrp.2008.09.001
- Orgeta, V., & Lo Sterzo, E. (2013). Sense of coherence, burden, and affective symptoms in family carers of people with dementia. *International Psychogeriatrics*, *25*(6), 973–980.
- Pallant, J. F., & Lae, L. (2002) Sense of coherence, well-being, coping and personality factors: further evaluation of the sense of coherence scale. *Personality and Individual Differences*, *33*, 39–48.
- Pavot, W. G., Diener, E., Colvin, C., & Sandvik, E. (1991) Further validation of the satisfaction with life scale: evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment*, *57*(1), 149–161. DOI: 10.1207/s15327752jpa5701_17

- Schlegel, R. J., & Hicks, J. A. (2011). The true self and psychological health: emerging evidence and future directions. *Social and Personality Psychology Compass*, 5(12), 989–1003.
- Seligman, M. E. (2002). *Authentic happiness*. New York, NY: Free Press.
- Seligman, M. E. P. (2012) *Flourish: A Visionary New Understanding of Happiness and Well-being*. New York, NY: Free Press.
- Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005) Positive psychology progress: empirical validation of interventions. *American Psychologist*, 60(5), 410–421.
- Seligman, M. E. P., Ernst, R. M., Gillham, J., Reivich, K., & Linkins, M. (2009). Positive education: Positive psychology and classroom interventions. *Oxford Review of Education*, 35(3), 293–311.
- Sheldon, K. M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: the human motive to towards beneficial goal choices, *Journal of Personality*, 71(5), 835–870.
- Sheldon, K., M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: the self-concordance model. *Journal of Personality and Social Psychology*, 76(3), 482–497.
- Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: can there be an upward spiral? *Journal of Personality and Social Psychology*, 80(1), 152–165.
- Sheldon, K. M., Abad, N., Ferguson, Y., Gunz, A., Houser-Marko, L., Nichols, C. P., & Lyubomirsky, S. (2010). Persistent pursuit of need-satisfying goals lead to increased happiness: A 6-months longitudinal experimental study, *Motivation and Emotion*, 34(1), 39–48. DOI: 10.1007/s11031-009-9153-1
- Sheldon, K. M., Ryan, M. N., Rawsthorne, L. J., & Ilardi, B. (1997) Trait self and true self: Cross-role variation in the big five personality traits and its relations with psychological authenticity and subjective well-being. *Journal of Personality and Social Psychology*, 73(6), 1380–1393.
- Sheldon, K. M., & Kasser, T. (2001). Goals, congruence, and positive well-being: new empirical support for humanistic theories. *Journal of Humanistic Psychology*, 41(30), 30–50.
- Silvia, P. J., Eddington, K. M., Beaty, R. E., Nusbaum, E. C., & Kwapil, T. R. (2013). Gritty people try harder: Grit and effort-related cardiac autonomic activity during an active coping challenge. *International Journal of Psychophysiology*, 88, 200–205.

- Singh, K., & Jha, S. D. (2008). Positive and negative affect, and grit as predictors of happiness and life satisfaction. *Journal of the Indian Academy of Applied Psychology, 34*, 40–45.
- Springer, K. W., & Hauser, R. M. (2006). An assessment of the construct validity of Ryff's Scales of Psychological Well-Being: method, mode, and measurement effects. *Social Science Research, 35*, 1080–1102.
- Reed, J., Pritschet, B. L., & Cutton, D. M. (2013). Grit, conscientiousness, and the transtheoretical model of change for exercise behaviour. *Journal of Health Psychology, 18*(5), 612–619.
- Robinson, O. C. (2009). On the social malleability of traits: Variability and consistency in Big 5 trait expression across three interpersonal contexts. *Journal of Individual Differences, 30*(4), 201–208. DOI: 10.1027/1614-0001.30.4.201
- Robinson, O. C., Lopez, F. G., Ramos, K., & Nartova-Bochaver, S. (2012). Authenticity, social context, and well-being in the United States, England, and Russia: A three country comparative analysis. *Journal of Cross-Cultural Psychology, 44*(5), 719–737.
- Robinson, O. C., Lopez, F. G., & Ramos, K. (2014). Parental antipathy and neglect: Relations with Big Five personality traits, cross-context trait variability and authenticity. *Personality and Individual Differences, 56*, 180–185.
- Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. London: Constable.
- Rogers, C. R. (1964). Toward a modern approach to values: the valuing process in the mature person. *Journal of Abnormal and Social Psychology, 68*(2), 160–167.
- Ryan, R. M., & Deci, E. L. (2001) On happiness and human potentials: a review of research on hedonic and eudaimonic well-being, *Annual Review of Psychology, 52*, 141–166.
- Ryff, C. D. (1989) Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081.
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology, 69*(4), 719–727.
- Ryff, C. D., & Singer, B. H. (2008). Know thyself and become what you are: a eudaimonic approach to psychological well-being, *Journal of Happiness Studies, 9*, 13–39. DOI 10.1007/s10902-006-9019-0
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th Edition). Boston: Allyn and Bacon.
- Tang, S. T., Cheng, C. C. J., Lee, K. C., Chen, C. H., & Liu, L. N. (2013). Mediating effects of sense of coherence on family caregivers' depressive distress while caring for terminally ill cancer patient. *Cancer Nursing, 36*(6), E25–E33.

- Tough, P. (2013). *How children succeed: Grit, curiosity, and the hidden power of character*. New York: Mariner Books.
- Von Culin, K. R., Tsukayama, E., & Duckworth, A. L. (in press). Unpacking grit: motivational correlates of perseverance and passion for long-term goals. *The Journal of Positive Psychology*, 9(4). DOI: 10.1080/17439760.2014.898320
- Weissbecker, I., Salmon, P., Studts, J. L., Floyd, A. R., Dedert, E. A., & Sephton, S. E. (2002). Mindfulness-based stress reduction and sense of coherence among women with fibromyalgia. *Journal of Clinical Psychology in Medical Settings*, 9(4), 297–307.
- Wiesmann, U., & Hannich, H.-J. (2013). The contribution of resistance resources and sense of coherence to life satisfaction in older age. *Journal of Happiness Studies*, 14, 911–928.
- Wood, A. M., Linley, P. A., Maltby, J., Baliousis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the authenticity scale. *Journal of Counseling Psychology*, 55(3), 385–39.