DOCTORAL (PHD) DISSERTATION

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Narcissism and self-esteem dynamics – towards a process-based conceptualization

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1. Introduction and objectives of the dissertation

Narcissism is one of the oldest constructs in psychology, and it is still one of the most debated ones. It has become an especially popular topic in recent years both from the point of view of clinical psychology, both from social and personality science (Miller, Lynam, Hyatt, & Campbell, 2017; Pincus & Lukowitsky, 2010). Moreover, this interest extends far beyond academia: narcissism is often mentioned in the media, for example asking whether younger generations are more narcissistic than previous ones, (Trzesniewski, Donnellan & Robins, 2008), it has important implications for social media use (for a review see McCain & Campbell, 2018), and it even has been linked with US president's strategy in international conflicts (Harden, 2021).

In recent years, substantial progress has been made both in terms of measurement, conceptualization, and methodology (Miller, Back, Lynam & Wright, 2021), however – despite the intense attention – several controversies are still under debate (Miller et al., 2017). The lack of consistency between clinical theoretical models and trait-based conceptualizations, the central traits of narcissism (i.e. the core of narcissism), differentiation of adaptive and maladaptive features of the construct, or the lack of understanding of the underlying processes that lead to narcissistic functioning are just some of the areas where further development is needed (Edershile & Wright, 2022).

The objectives of this dissertation are therefore twofold. On the one hand, I aim to summarize what we already know, regarding the hierarchical structure of narcissism, the differentiation of subclinical or "normal" narcissism from narcissistic personality disorder, the correlates and consequences of narcissistic functioning on other areas of personality functioning and the important aspects of current measurement options.

On the other hand, this work also aims to contribute to the open questions, with three empirical research topics divided into two parts. In the first part, narcissism is viewed from the currently dominant trait perspective and the first research topic proposes a new, hierarchical measurement model for a widely used assessment tool of grandiose narcissism reflecting on the recent theoretical advances of the area, to enable a more nuanced distinction of central and peripheric aspects of grandiosity.

The second part on the contrary applies a more dynamic view of narcissistic manifestations changing from moment to moment, building on recent advances in intensive longitudinal data analysis. Therefore, the second research topic aims to create and validate a new measurement tool specifically to assess changes and fluctuations in narcissistic behavior in everyday life. The use of this instrument allows the study of fluctuations in narcissistic states in longitudinal settings. Building on these results, the third research topic is focusing on disentangling possible dynamic processes of state level self-esteem and narcissism, while also considering the effect of important daily events on momentary fluctuations. We believe that it is very important to understand narcissistic functioning on a deeper, more dynamic level as this may eventually help fill the gap between clinical and personality models.

PART I – CURRENT VIEW ON NARCISSISM AS A TRAIT

2. Current view on narcissism

2.1. Perspectives of narcissism

2.1.1. Characteristics of vulnerable and grandiose narcissism

There is an ongoing debate about which characteristics are central to narcissism (Miller et al., 2017), as former conceptualizations were mainly identifying narcissism with phenotypic grandiose manifestations e.g., the 3rd edition of the Diagnostic Statistical Manual of the American Psychiatric Association (DSM–III; APA, 1980) and measurement also was considering mostly grandiosity elements (e.g. the widely used Narcissistic Personality Inventory, Raskin & Terry, 1988; Donnellan, Ackerman & Wright, 2021). In contemporary research, narcissistic behaviors can be categorized into at least two broader subtypes, namely *grandiose* and *vulnerable* narcissism, each having different nomological networks (Kohut, 1972; Wink, 1996; Pincus & Lukowitsky, 2010; Miller et al., 2011; Miller et al., 2021). Individuals with grandiose narcissistic traits are described as arrogant, exploitative, and entitled (Cain, Pincus & Ansell., 2008), and they often engage in self-aggrandizement, self-promotion, and devaluation of others (Miller, Lynam & Hyatt, 2017; Zeigler-Hill, Clark, & Pickard, 2008). By contrast, vulnerable narcissism is characterized by contingent self-esteem, self-inhibition, and substantial reliance on the approval of others for feelings of self-worth (Cain et al., 2008; Zeigler-Hill et al., 2008). At the same time, these individuals also hold grandiose expectations of oneself and others (Wink, 1996; Kealy & Rasmussen, 2012) to avoid feelings of embarrassment and shame (Edershile et al., 2019).

It is also important to differentiate between the view of subclinical versus clinical / pathological narcissism. In personality and social psychological research narcissism is mostly understood as a stable trait, or individual difference which makes some people more “narcissistic” than others (Campbell & Miller, 2012). Therefore, research is rather focusing on the levels of narcissistic traits associated with other relevant measures.

On the other hand, the clinical perspective derived from the early (e.g. Freud, 1914; or Jones, 1974/1913) and later (Kernberg, 1970 or Kohut, 1972) works of psychoanalysts

focusing on pathological manifestations and personality structure. Narcissistic personality disorder was considered as a more severe type of functioning, and the focus was rather on the internal processes that lead to narcissism. In current hierarchical models, theorists are aiming to build a continuity between these two distinct views where the higher end of the spectrum of narcissistic traits can be associated with clinically relevant pathological narcissism (Krizan & Herlache, 2018).

2.1.2. Narcissistic Personality Disorder (NPD)

Before moving on to current hierarchical models of trait narcissism it is important to briefly introduce the clinical perspective of the Narcissistic Personality Disorder (NPD) as this served as a basis for previous research. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; APA, 2013), NPD is characterized by a pervasive pattern of grandiosity in either fantasy or behaviour, a constant need for admiration and lack of empathy, present in a variety of contexts. Diagnostic criteria are fulfilled if five or more of the following is present:

1. Having a grandiose self of self-importance including the exaggeration of achievements and talents
2. Being preoccupied with fantasies of unlimited success, power, etc.
3. Having a belief of being special and unique, who only should be associated with and understood by other special people or institutions.
4. Requires excessive admiration.
5. Having a sense of entitlement by expecting special treatment and compliance from others.
6. Being exploitative interpersonally by taking advantage of others.
7. Lacking empathy by not not recognizing and validating needs and feelings of others.
8. Being envy constantly and perceiving others as envious of them.
9. Showing off by being arrogant in attitudes and behaviour.

Lifetime prevalence estimates of NPD range from 0-6.2% in community samples (APA, 2013). A national epidemiologic survey (Stinson et al., 2008) estimated 6.2%, with greater rates for men (7.7%) than woman (4.8%). It was in high co-occurrence rates with substance use, mood disorders, anxiety disorders and other personality disorders. For women it was mostly comorbid with generalized anxiety disorder, specific phobia and bipolar II disorder, while it was comorbid with alcohol related problems, drug

dependence, histrionic and obsessive-compulsive personality disorders in men (Stinson et al., 2008). Despite the validity of the diagnosis, these criteria have also been questioned mainly based on the similarities (and therefore the considerable overlap) shared with other Cluster B disorders (Ronningstam, 2008). For example, grandiose fantasies, envy and entitlement are shared with antisocial PD, while exhibitionistic and dramatic behavior is similarly conceptualized in histrionic PD. Furthermore, criteria explicitly list external symptomatic behaviour, although internal dynamic personality processes and impairment is overlooked (e.g. lack of empathy, feelings of loneliness, self-criticism, feelings of shame and inferiority), and it also lacks guidance regarding the treatment process (Ronningstam, 2010).

NPD itself is not necessarily associated with impairments in work ability or everyday social functioning as long as significant failure inducing events are not present in important domains (e.g. losing a job, experiencing rejection in romantic relationships). Therefore Miller, Campbell and Pilkonis (2007) argue, that the commonly associated "depressed mood" (which is rather a result of expert opinions than empirical findings) should not be considered endemic to NPD and should be understood as a factor that might lead to psychological distress. On the other hand, interpersonal impairment, which is reflected upon in the diagnostic criteria and is consistently found in relation to NPD (for more details see Section 2.3.1.1.) is of primary importance, and it causes distress mainly to significant others. They also highlight the differences in findings in clinical and non-clinical samples, as clinical samples are often collected after some failure-related event occurred, while the low level of psychological distress found on non-clinical samples might mean that failure was not experienced (yet).

2.2. Hierarchical structure of narcissism

2.2.1. Narcissism Spectrum Model

Recently, two proposals have emerged to integrate the seemingly incoherent nature of narcissistic grandiosity and vulnerability (Wright & Edershile, 2018). Both models are hierarchical in nature, meaning that they distinguish more layers of traits behind a construct, one factor being at the core (i.e. the general factor which is most important in

narcissism), and more specific factors which influence the manifestation in affects, cognition, and behavior.

Krizan and Herlache (2018) offered the narcissism spectrum model (NSM) emphasizing self-importance and entitlement as the core features of the spectrum present in both vulnerable, both grandiose narcissism. This concept argues that even though specific behaviors or manifestations might differ from person to person, but a similar generative process can be identified behind narcissistic functioning.

In this model, narcissism can be defined as *entitled self-importance*, meaning that the individual views themselves as more deserving, important or special, while also considering their goals and needs as more important than others'. With this definition Krizan and Herlache (2018) aimed to clear the construct from previously incorporated additional attributes (e.g. ambition, leadership, secret insecurity etc.) and also differentiate narcissism from pure disagreeableness and hostility. As a second goal, the focus shifts to the organization of narcissistic features identifying central and peripherical aspects. Therefore, the NSM views narcissistic traits as a spectrum, where narcissistic personality disorder (NPD) is at the higher end of the scale.

According to the NSM, besides the generative process (entitlement and sense of self-importance) to some degree every individual show features of grandiosity and vulnerability. Vulnerability is associated with the avoidance-oriented functional orientation and grandiosity with the approach oriented functional orientation (for a general overview see Gray & McNaughton, 2000). The role of approach orientation in narcissism is conceptualized as boldness by Krizan and Herlache (2018), when the individual has a heightened motivational orientation to *acquire rewards*, seize opportunities compared to the concerns over the costs associated with them. This intensive focus on rewards can come in a way of continuous assertion of power, status and dominance in interpersonal domains (Campbell & Campbell, 2009), accompanied by the quest of becoming and remaining admired, to validate the inflated self-image, being the best and remaining in the center of attention (eg. Back et al., 2013).

In contrast, vulnerability was conceptualized as reactivity, which is a rather an avoidance oriented functioning with constant vigilance over and preparation for threats. It comes as behavioral inhibition, motivated by *punishments* (Gray & McNaughton, 2000; Krizan and Herlache, 2018). Therefore, narcissistic vulnerability in this model is

more closely connected to an inhibited, angrily ruminating, emotionally labile style, where the person's narcissistic needs are frequently and systematically frustrated.

Although the NSM conceptualizes grandiosity and vulnerability as generative processes, considerable differences might exist in severity (i.e. the lower and higher end of the spectrum). For example, a person with lower vulnerability might react to threats of self-esteem in only some specific areas of life with less intensive feelings of shame and that person might also have more adaptive ways of coping with different situations. On the contrary, the higher end of the spectrum might be associated with more rigid personality functioning (i.e. personality disorders in general), more intensive negative feelings and constant preoccupation with monitoring the environment for the slightest hint of criticism, or any kind of potentially threatening situation.

Empirical evidence also confirmed these concepts, as Krizan and Herclache (2018) identified a best fitting three-factor solution based on most of the currently used measures of narcissism (for more details see Chapter 2.5 on measurement of narcissism) using an exploratory maximum likelihood factor analysis to overcome the difficulties coming from the multidimensionality and correlation between these factors.

In sum the NSM argues that a sense of entitlement and elevated self-views serve as the general narcissistic process, and behavioral consequences will be marked by approach orientation or boldness in grandiosity and avoidance orientation or reactivity in vulnerability.

2.2.2. Narcissism and the five-factor model

The second recent conceptualization of the hierarchical structure of narcissism was utilizing the five-factor model (FFM) of personality (Miller et al., 2016). Miller and colleagues (2016) argued that based on the FFM, narcissistic manifestations can be associated with specific facets under the five traits. Similarly to the NSM, they identified a core feature that is associated with both grandiose, both vulnerable narcissism, although this is somewhat different from the NSM's entitled self-importance.

In this model antagonism with facets such as arrogance, entitlement, manipulativeness and exploitation of others serves as the narcissistic core. Vulnerable manifestations can be understood as a combination of narcissistic neuroticism (with facets such as shame,

reactive anger, distrust, or need for admiration) and antagonism, where grandiose narcissism comprises agentic extraversion (e.g. authoritativeness, grandiose fantasies, exhibitionism) and antagonism. Therefore, they tend to explain the phenotypical differences in the manifestation of narcissism by different combinations of the FFM traits in agreeableness, extraversion and neuroticism.

These two solutions are similar in nature arguing that there is an underlying core of narcissistic functioning (entitlement vs. antagonism), where extraversion (or exhibitionism, or boldness) and neuroticism (or vulnerability or reactivity) are personality level moderators of the exact expression of these tendencies (Wright & Edershile, 2018).

2.2.3. Narcissistic Admiration and Rivalry Concept (NARC)

Besides these hierarchical models another recent conceptualization of narcissism is aiming to separate two social strategies of how narcissistic individuals aim to maintain their grandiose self. In the Narcissistic Admiration and Rivalry Concept (NARC; Back et al., 2013; Back, 2018) the pathway of narcissistic admiration serves as an assertive self-enhancement strategy to approach positive social incentives (e.g. grandiose fantasies, striving for uniqueness), while narcissistic rivalry aims to prevent social failure by protecting the self in an antagonistic manner (e.g. devaluation of others, striving for supremacy), although these strategies can be considered as agentic or antagonistic behavior patterns from the viewpoint of the five-factor model (Back, 2018). Similarly to the hierarchical conceptualizations, the NARC model also identifies a general, overarching goal behind distinct narcissistic behaviors, namely the maintenance of the grandiose view of the self.

2.3. Correlates of narcissism

Vulnerable and grandiose narcissism has substantially different nomological networks (Miller et al., 2011), furthermore the adaptive or maladaptive nature of specific narcissistic manifestations is still debated (e.g. Aghababaei and Błachnio, 2015; Rose, 2002).

Narcissism (especially grandiosity) is generally positively associated with agentic domains of personality functioning (for example see the agency model of narcissism; Campbell & Foster, 2007), which refer to the achievement of goals, being competent, assertive and decisive in different situations (for a review see Abele & Wojciszke, 2014). On the other hand, communion, which is related to social functioning, building, and maintaining relationships, engaging in social situations (e.g. communal traits include being helpful, trustworthy, or benevolent) is mostly in negative relationship with narcissism. The following chapter aims to cover in greater detail the most important correlates of narcissism and summarize current research on how narcissistic functioning effects different aspects of psychological functioning. First, general associations with psychological well-being are discussed, second the framework of the self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2017) is applied to specify effects on three main areas of functioning, namely competence, autonomy, and relatedness. Last, correlates with general personality traits and psychopathology are also detailed.

2.3.1. Well-being and psychological functioning

Self-report measures show a moderately strong positive relationship between grandiose narcissism and most indicators of well-being, including subjective well-being (Czarna, Zajenkowski, & Dufner, 2018; Egan, Chan, & Shorter, 2014; Rose, 2002), eudaimonic well-being (Aghababaei & Błachnio, 2015), life satisfaction (Sedikides, Rudich, Gregg, Kumashiro, & Rusbult, 2004), or the frequent experience of positive emotions (Rhodewalt, Madrian, & Cheney, 1998). Jonason and colleagues argue that grandiose narcissism acts as a buffer to protect physical health (Jonason, Baughman, Carter, & Parker, 2015), it predisposes to an energetic, optimistic, upbeat state through increasing self-esteem (Sedikides et al., 2004), and some researchers even consider subclinical grandiose narcissism to be useful in maintaining a well-functioning life (Aghababaei & Błachnio, 2015). In a 14-day longitudinal study, it was shown that daily grandiose narcissism scores are positively related to a person's life satisfaction and self-confidence (Giacomin & Jordan, 2016b), and in a recent meta-analysis, grandiose narcissism and subjective well-being combined with low depressive states were found to be in a moderate significant positive association (Dufner, Gebauer, Sedikides, & Denissen, 2019). Based on these findings grandiose narcissism is associated with life-satisfaction,

happiness and subjective well-being – as long as grandiosity enables the person to maintain a positive self-esteem (Dufner et al., 2019).

Vulnerable narcissism, on the other hand, is negatively associated with subjective well-being (Rose, 2002), all factors of eudaimonic well-being (Kaufman, Weiss, Miller, & Campbell, 2020), and positively associated with negative emotionality, depression, anxiety, and low self-esteem (Miller et al., 2011), which can be explained partly with the substantial overlap with neuroticism (Miller et al., 2017). However, in the study of Miller and colleagues (2017), neuroticism did not explain the relationship between vulnerable narcissism and various psychopathologies (Kaufman et al., 2018), which draws attention to the differences between the two constructs.

Most of the aforementioned studies were based on self-report measures of narcissism and self-esteem, which is a common practice in current research, although these results should be treated with caution. Maintaining and presenting an inflated, positive (internal and external) self-image is central in the construct of grandiose narcissism (Zeigler-Hill et al., 2008), therefore we can also consider, that social desirability and an exaggerated self-presentation might play a role in reporting unrealistically positive well-being. Furthermore, grandiosity might also affect awareness of one's reported well-being on the one hand and the willingness of sharing doubts in research on the other hand (e.g. Kernis, 2003). Therefore, a more nuanced view on the effects of narcissistic functioning on specific aspects of personality functioning is needed, which will be examined through the framework of the self-determination theory (Ryan & Deci, 2017).

Based on the self-determination theory, psychological well-being can be described as a striving towards a fully functioning human state of being, in which the person is vivid, free of defenses, and aware of their own inner needs and states (Ryan & Deci, 2017). A fully functioning person therefore has deeper and more meaningful relationships, sees his own goals and values more clearly, and views his life as meaningful (Ryff, 1989). Moving towards this fully functioning state of existence, the optimal satisfaction of three basic human needs, autonomy, relatedness and competence, is necessary (Deci & Ryan, 1985; Ryan & Deci, 2017).

The need for autonomy means that the person is responsible for his own behavior, can act according to his own will, and at the same time can experience that his actions originate from internal motivation, not from external (or internalized external)

controlling pressure. Effectance is at the core of the need for competence: the person can interact effectively with his environment, experience opportunities and support for the expression and further development of his abilities and talents (Ryan & Deci, 2017; White, 1959). Finally, the need for relatedness can be satisfied if the person experiences others as sensitive and reactive, while also being able to respond sensitively to others, and if the person experience belongingness to others (Ryan & Deci 2017).

2.3.1.1. Relatedness

Among the basic needs that determine psychological well-being, most research has examined the relationship between relatedness and narcissistic functioning, on the one hand because most previously described mechanisms that serve the maintenance a positive self-view - for example, comparison, devaluation, admiration - can be interpreted directly or indirectly in relationships with other people (Campbell et al., 2006). On the other hand, the first psychoanalytic theories of narcissism explained the development of narcissistic functioning with the quality of early relationships and with unsatisfied emotional needs in these stages of development. Kernberg (1970) argued, that anger and hostility (which are considered as the antagonistic core of narcissism in current theories also) are part of a self-defense system, that developed against the feeling of abandonment, while Kohut rather emphasized the shortcomings of adequate idealization and reflection from the caregivers (Kohut, 1972). These two theories are similar in nature, stating that a person develops narcissistic behaviors as a defense in response to adverse early experiences, moreover these relationship patterns (or schemas) are also affecting later relationships (Campbell et al., 2006). To capture the effects of narcissistic functioning to relatedness, the differentiation of long-term and short-term effects are crucial.

At first glance, people using narcissistic behaviors appear attractive, and are rated higher than others in terms of social skills, intelligence, and self-confidence (Paulhus, 1998). To the opposite sex, they seem fun, likable and sexually attractive based on external physical features, (Brunell & Campbell, 2011; Dufner, Rauthmann, Czarna, & Denissen, 2013). They are successful in initiating and creating new relationships (Brunell & Campbell, 2011) and thus can get the admiration they need (Wurst et al., 2017). In addition, they are more successful in finding short-term partners (Foster, Shrira, & Campbell, 2006; Koladich & Atkinson, 2016) and report more sexual partners overall (Adams, Luevano, & Jonason, 2014). Since first interactions are more about

attraction and getting to know the partner and less about commitment (Reese-Weber, 2015; Wurst et al., 2017), an attractive appearance, fun personality, and confidence can lead to short-term success and admiration. Narcissistic functioning can also affect the motivations for choosing a partner, since the search for the “ideal” partner becomes a priority to whom a person can look up to, who have similarly attractive agentic traits such as high status, success, and physical appearance. The ideal partner thus corresponds to the constructed ideal self and is often sharing similar narcissistic tendencies (Lamkin, Campbell, van Dellen, & Miller, 2015).

In the longer term, however, the side effects and negative consequences associated with narcissistic functioning begin to appear. Behaviors, which initially seems attractive and confident, appears rather arrogant by the seventh meeting, and these individuals are described as boastful and hostile, who overestimate themselves (Paulhus, 1998; Campbell et al., 2006). At the more committed stages of relationship development, where stronger dependence develops between the parties, warmth, mutual respect, trust and selfless behavior become important elements, and their absence reduces relationship satisfaction (Huston & Vangelisti, 1991). Those who use narcissistic behaviors intensively are less interested in forming close relationships, appear selfish, have less respect and acceptance of others, and are characterized by lower empathy in long-term relationships (Campbell et al., 2006; Campbell & Campbell, 2009). They are less committed to maintaining relationships, invest fewer resources in those, and cheat on their partners more often (Brewer, Hunt, James, & Abell, 2015; Brunell & Campbell, 2011; Campbell & Foster, 2002; Shackelford & Buss, 1997). They start their intimate partnerships with very high satisfaction in the short-term phase, but it drops significantly when participants are asked to evaluate their already ended partnerships (Brunell & Campbell, 2011). Campbell illustrated this process with the "chocolate cake" metaphor: eating a chocolate cake is a particularly enjoyable activity, but in the long run we have to reckon with costs and guilt (Foster & Campbell, 2005).

As previously discussed, narcissistic functioning makes the person extremely dependent on social feedback, therefore an essential part of the behavior must be aiming the achievement and maintenance of a grandiose self-image (Morf & Rhodewalt, 2001). Since the person believes that it is crucial to keep his sense of worth in the eyes of himself and others in order to maintain the relationships, less energy, motivation and attention is going to be placed on the partner (which can explain the lower empathy and

the long-term drastic decrease in relationship satisfaction). Since the person devotes most of his resources to maintaining his own self-image, the well-being of the other party, the development of mutual respect and altruism are becoming less of a focus (Paulhus, 1998). The choice of the partner also reinforces this internal view, since instead of communal traits signs of agency are becoming more important, therefore a partner relating to the grandiose self-image is also likely to have similar way of functioning and focus (Campbell, Rudich, & Sedikides, 2002). With such companions, the learned methods of self-presentation will reach their goal more effectively, reinforcing current functioning. Moreover, antagonistic behaviors associated with rivalry and the avoidance of a negative self-image, such as devaluation of the other party, lack of warmth, trust, and forgiveness, further reduce the chance of positive long-term outcomes (Wurst et al., 2017). Based on these, the mechanisms related narcissistic functioning leads the person to experience less depth in relationships. Moreover, this is further complicated by the fact that in long-term relationships, the partner becomes more "real" after a while, with problems and imperfections, reducing the attractiveness of the partner overall (Morf & Rhodewalt, 2001).

All in all, it seems that narcissistic functioning might be beneficial in the short run, it might lead to higher status and social acceptance, but it hinders long-term, warmth-based, trusting relationships – needed for the adequate satisfaction of the basic need for relatedness - thereby reducing the person's level of well-being.

2.3.1.2. Competence

The need for competence aims effective interactions with the environment, meaning that the person has opportunities and adequate support for the effective expression of abilities and talents (Ryan & Deci, 2017). Therefore, competence have a key role in narcissistic functioning, as it can help bolstering and maintaining the grandiose self-image, it can motivate the person to develop in agentic domains, which are important in both the internal and external evaluation of the person (Gebauer, Sedikides, Verplanken, & Maio, 2012). Previous research examined the role of competence mostly from the viewpoint of subjective and objective assessment of academic performance and cognitive abilities.

People with a higher level of narcissistic functioning see themselves as competent, and their own cognitive abilities are generally judged positively (Paulhus & Williams,

2002). Based on a recent meta-analysis, these individuals report higher subjectively assessed intelligence (O'Boyle, Forsyth, Banks, & Story, 2013), and this effect remained even after controlling for objectively measured abilities (Gabriel, Critelli, & Ee, 1994; Paulhus & Williams, 2002). Additionally, for those who rated their own intelligence low, higher narcissism scores were associated with lower life satisfaction, and these individuals reported higher stress and lower hedonic well-being (Zajenkowski & Czarna, 2015). However, the benefits associated with narcissistic functioning do not appear in objective data. For example, Farwell and Wohlwend-Lloyd (1998) showed that there is no significant difference in academic results of groups characterized by low and high narcissism scores, and neither the results of verbal nor fluid intelligence tasks showed a correlation with grandiose narcissistic traits (Zajenkowski & Czarna, 2015). Paulhus and Williams (2002) also demonstrated the distorting effect of self-aggrandizement with an cunning self-developed measurement tool. Participants needed to report the familiarity of events, persons and objects, some of which did not even exist in reality. Those who reported higher narcissistic traits were more likely to confirm the familiarity of several - non-existent - concepts.

The experiment of Stucke (2003) can also help us shed light on the underlying processes. Participants were given either positive or negative feedback on their results after completing an intelligence test. People characterized by a higher narcissism score were more inclined to attribute positive feedback to their own abilities, and negative feedback to luck or the difficulty of the task (Stucke, 2003). We can draw two conclusions: on the one hand, subjective assessment of competence is an important element of maintaining a positive self-image and on the other hand, narcissistic functioning also protects the person from any experiences discrepant with the positive self-image.

Based on these, the subjective assessment of one's own intelligence level and competence, the subjective sense of a competent - and more competent than others - self-image contributes to higher well-being, and the positive illusion related to the self (Taylor & Brown, 1988) can be a protective factor. This may partially explain the strong association between grandiose narcissistic traits and subjective well-being observed on self-report questionnaires.

However, besides subjective and objective assessment of competence, the framework of the self-determination theory also views competence on a deeper level. It is considered

more than a set of existing abilities and skills, rather as a process, in which a person can become more and more competent in personally important areas by continuous practice of abilities, perseverance, and tolerance of frustration related to failure (Ryan & Deci, 2017). Therefore, the need for competence can be satisfied by continuous skill development and reaching the potential of the person. From this point of view, attributing negative feedback on competence to environmental factors or luck - protecting the self-image - will not encourage the person to make further effort to improve. For example, Besser and Priel (2010) demonstrated, that people characterized by higher grandiose narcissistic traits react to threats affecting their sense of competence with a higher negative emotional response and anger. Furthermore, in the experiment of Rhodewalt and Eddings, (2002), participants with high narcissism scores recalled previous relationship successes after a relationship rejection at a much higher rate than the group characterized by a low narcissism score. This function, with a high degree of sensitivity might protect the person from the feeling of worthlessness through inhibition or avoidance even before triggering cues reach awareness (Horvath & Morf, 2009). In summary, narcissistic functioning can help the person to perceive himself as subjectively competent with a positive self-image, however, the protection of this self-image can prevent the satisfaction of own competence related needs properly by hindering deep-diving into activities despite failures and difficulties.

2.3.1.3. Autonomy

The relationship between narcissistic functioning and autonomy is perhaps the most difficult to interpret, on the one hand, because narcissism is built around an extremely positive, competent self-image, in which the person feels dominant and entitled, is often placed in leadership positions, can devalue or even manipulate others in order to achieve his own goals (Corry, Merritt, Mrug, & Pamp, 2008). Therefore, we might conceptualize narcissism as being autonomous and self-centered. On the other hand, the continuous need to maintain the positive self-image makes the person overly dependent on feedback (Morf & Rhodewalt, 2001). From the perspective of self-determination theory, autonomous behavior is self-initiated, driven by a person's own, true interests, values, and goals (Ryan & Deci, 2017). However, in terms of motivation behind actions can be placed along a continuum (Sheldon, Osin, Gordeeva, Suchkov, & Sychev, 2017), with one endpoint being fully controlled and the other being fully autonomous. Controlled behavior is driven by external regulators, taking possible rewards and

punishments into account when acting. Introjected regulation - which is closely related to feelings of shame and guilt - can also be interpreted as controlled motivation, by internalizing an external framework. As we move further along the scale, identified motivation presupposes one's own will or conviction with less focus on external factors, whereas the autonomous endpoint of the continuum is intrinsic motivation: when the person performs an activity based on personal will and pleasure, he also enjoys it, and he can experience the fulfilment of the need for autonomy, and the results of his actions (Sedikides et al., 2019).

Goals motivated by narcissistic functioning – serving the maintenance of positive self-esteem, external validation and status – are likely to be located at the more controlled end of the continuum, since their essential goal is to gain the recognition, acceptance and admiration of others (Back et al., 2013; Sedikides et al., 2019). With vulnerable narcissism this relationship is even clearer, as experience of shame and guilt occurs regularly, while search for the approval and acceptance is at the core of narcissistic vulnerability (Kealy & Rasmussen, 2012).

Less research is focusing on the relationship between autonomy and narcissistic traits, moreover the differing conceptualizations of autonomy hinder the interpretation of results. Grandiose narcissism was found to be unrelated to autonomy – defined as the need for individual achievement, perceived control, and independence of action – although it was negatively related to actions taken to please others (Rose & Anastasio, 2014). In the case of young people, grandiose narcissistic traits show a positive relationship with the determination of setting and achieving individual, agentic goals, which can affect social status positively (i.e. self-aggrandizement; Findley & Ojanen, 2013). Individualistic cultures that emphasize the importance of maintaining high self-esteem also provide a good catalyst for strengthening self-aggrandizing strategies related to narcissism (Baumeister, Campbell, Krueger, & Vohs, 2003), which can deflect towards from autonomous goal achievement. Furthermore, individuals scoring higher on grandiose narcissism experience more positive feelings and enjoyment in an experimental situation after receiving positive feedback for their self-aggrandizement goal compared to a self-development goal (Morf, Weir, & Davidov, 2000).

All in all, based on current research, the exact effects of narcissistic functioning on the need for autonomy are controversial, although whether the aim of actions is limited to

achieving recognition and maintaining self-esteem, the basic need for autonomy might remain unfulfilled.

2.3.2. Personality traits

The usage of current personality trait theories in hierarchical models of narcissism (see Chapter 2.2.) provided an important step in on the one hand understanding the structure of the construct, and on the other hand in synthetizing diverging correlates, especially related to personality traits. The trifurcated concept therefore helped differentiating the nomological network of vulnerable and grandiose narcissism and the antagonistic, entitled core.

From the perspective of the five-factor model (FFM), grandiose narcissism is found to be positively related to extraversion (e.g. facets assertiveness and excitement seeking) and negatively to agreeableness (e.g. facets compliance and modesty) and neuroticism, while vulnerable narcissism is positively related to neuroticism (e.g. facets depression and angry hostility) and negatively to extraversion and agreeableness (Miller et al., 2011; Miller et al, 2016). Although the negative association with agreeableness is shared in both manifestations, facet modesty produces the highest negative correlation in grandiosity, while facet trust in vulnerability (Miller et al., 2010). These results suggest that antagonistic behavior may serve different roles in grandiosity (e.g. self-enhancement) and narcissistic vulnerability (e.g. hostile attribution bias; Miller et al., 2011).

Based on the substantial overlap vulnerable narcissism and neuroticism share in their nomological networks some researchers even argue, that vulnerability can simply be considered as the combination of mostly neuroticism and partly disagreeableness (Miller et al., 2018). However, others suggest, that narcissistic vulnerability is special in predicting signs connected to “narcissistic injury”, like anger, envy and paranoia (Krizan & Johar, 2015; Krizan & Herlache, 2018) which goes beyond these two basic traits.

2.3.3. Self-esteem

The association between self-esteem and narcissism is well-documented in the trait perspective. Based on a recent meta-analysis (Hyatt et al., 2018), grandiose narcissism

is in a medium-sized positive relationship with self-esteem, although their nomological networks differ. Both have positive relationship with agentic traits, extraversion and assertiveness but show differences in communal traits e.g. antagonism, manipulativeness or deceitfulness which are closely related to grandiose narcissism. Furthermore, grandiose narcissism is unrelated to anxiety, depression or negative affect while self-esteem is in negative association with those making self-esteem a rather adaptive construct (Hyatt et al., 2018). Vulnerable narcissism on the other hand is considered mostly maladaptive with a strong negative association to self-esteem (Miller et al., 2018).

Self-esteem is mostly conceptualized using explicit measures, for example the Rosenberg self-esteem scale (Rosenberg, 1965), although there is also a considerable interest in measuring implicit forms of self-esteem. These tools offer different approaches to measure unconscious processes of self-evaluation, which – in theory – can be less affected by the biasing effects of self-report measures (for a review see Buhrmester, Blanton & Swann, 2011). Most research in this area aim to integrate combinations of implicit and explicit self-esteem to offer a deeper understanding of associations with narcissism, however different measurement procedures produce largely different results. Mota and colleagues (2020) tested different theoretical models of implicit and explicit self-esteem combinations and neurotic, agentic and antagonistic narcissism separately combining data from 18 samples. In accordance with previous results agentic (or grandiose) narcissism is associated with positive explicit self-views, while antagonistic and vulnerable narcissism is associated with negative ones. However, none of their hypotheses related to implicit self-esteem, or different combinations of implicit and explicit self-esteem could be associated to different forms of narcissism.

Besides empirical findings from the trait perspective, self-esteem processes were always considered central in narcissism. Early psychoanalytic models of Freud (1914), Kohut (1966) and Kernberg (1986) conceptualized narcissism as having overinflated positive self-views as a protective mask (i.e. the mask model of narcissism) against deep-seated feelings of inferiority and insecurity (Kuchynka & Bosson, 2018). This process was also named the discrepant self-esteem hypothesis stating, that high self-esteem on the surface is different form deeper low self-esteem. Some authors emphasized the fragility or instability of self-esteem in relation to narcissism, building on findings capturing the fluctuation of state level self-esteem (Kernis, 2008; Kuchynka & Bosson, 2018).

Although these hypotheses are also supported by clinical observations, proper empirical testing is still lacking (Hart, Kinrade & Breeden, 2020). In this dissertation we aim to examine this dynamic interplay of self-esteem processes and narcissism, however this is accomplished by moving away from the trait perspective of narcissism and self-esteem (for more details see Part II and Section 7.1).

2.3.4. Psychopathology

Although narcissism is mostly conceptualized as a trait in personality research and narcissistic tendencies are viewed in a dimensional approach, it is hard to draw a clear line between "*normal narcissism*" , "*pathological narcissism*", "*subclinical narcissism*" and narcissistic personality disorder (NPD). Some researchers argue, that findings with normal narcissism only apply to this non-pathological population (Pincus & Lukowitsky, 2010), furthermore vulnerability is more often considered pathological than grandiosity because of the subjective distress caused, underemphasizing negative consequences grandiosity might have on others (Miller, Campbell & Pilkonis, 2007; Miller et al, 2017). On the contrary Miller and colleagues argue (2017), that the main question is rather the inflexibility, the pervasiveness and the extremity of narcissistic tendencies used, and how seriously they are affecting normal personality functioning. Therefore, narcissistic traits become more and more pathological (causing more and more functional impairment) if we are moving towards the extremes of the dimensions (see also Chapter 2.1.2.; Miller & Campbell, 2010; Krizan & Herlache, 2018). In this dissertation, this conceptualization of narcissistic dimensionality is applied.

From this viewpoint NPD may not be qualitatively different from sub-clinical manifestations of narcissism and it can be explained with the same underlying traits studied in personality science. Supporting this idea Miller et al. (2016) found, that measures of NPD are capturing all three narcissistic factors identified in hierarchical models well, however the relationship is stronger with antagonism (average r = .61), moderate with grandiosity (agentic extraversion; average r = .39) and weak with vulnerability (average r = .23). These results are less surprising if we consider that the focus of the Diagnostic Statistical Manual (DSM-V; APA, 2013) – which conceptualizes NPD – also shifted towards the assessment of grandiosity after the 3rd version of the diagnostic system (e.g. Cain, Pincus, & Ansell, 2008).

Regarding other personality disorders (PDs), grandiose narcissism had a positive association with paranoid, antisocial and histrionic and negative association with avoidant PD. Other forms of psychopathology showed no significant relationship, including anxiety, global distress, somatization or obsessive-compulsive disorder (Miller et al., 2011).

Vulnerable narcissism on the other hand is in a medium-strong positive relationship with most personality disorders except for antisocial and schizoid PD, moreover it is also positively related to interpersonal sensitivity, obsessive compulsive disorder (OCD), psychoticism, experiencing and expressing anger, internalizing psychopathology, depression and negative affect (Miller et al., 2011; Miller et al., 2018). Vulnerable narcissism is therefore considered maladaptive (or "pathological"), and some researchers even argue that we should rather consider it as a disorder of neuroticism (see Chapter 1.3.2.; Miller et al., 2018).

2.3.5. Adaptive and maladaptive facets of narcissism

Lastly, after summarizing correlates of narcissism it is important to distinguish maladaptive and adaptive aspects of the construct (for a review see Cai & Luo, 2018). Some researchers argue that, to some extent, facets of narcissism can be adaptive (e.g. Back et al., 2010) including assertivity, an approach-oriented interpersonal style (e.g. Sedikides et al., 2004), leadership qualities or even subjective well-being (see Chapter 2.3.1.). Therefore – through the lenses of the trait perspective – a more nuanced understanding of the underlying narcissism subfactors might be crucial in differentiating adaptive and maladaptive features.

A considerable body of research applying the widely used Narcissistic Personality Inventory (see Chapter 2.5 for more details; Raskin & Terry, 1988) has shown that grandiosity subtrait exploitativeness and entitlement are mostly linked to maladaptive aspects for example greater neuroticism and mood variability (Emmons, 1984; 1987), lower self-esteem (Brown et al., 2009) physical aggression (Reidy et al., 2008) or lower empathy and willingness to take the perspectives of others (Watson & Morris, 1991).

In our view, recent hierarchical models of narcissism (Chapter 2.2.) might play an important role in overcoming these controversies in distinguishing adaptive and maladaptive facets of narcissism. Both models argue that a dimensional approach

should be applied focusing on the narcissistic core – although they conceptualize this core rather differently. In the Narcissistic Spectrum Model (NSM; Krizan & Herlache, 2018), this core is related to the feeling of self-importance and entitlement, while the five-factor model (FFM; Miller et al., 2018) conceptualizes the core as antagonism. Both models argue that higher levels of the narcissistic core are related to more severe manifestations, more interpersonal problems, aggression, manipulativeness or attention seeking (Krizan & Herlache, 2018). On the other hand, the lower-medium levels of this core can be viewed as subclinical individual differences, that could be adaptive to some extent. For example, if a person has a lower level of the narcissistic core in the NSM combined with a higher level of the approach-oriented functional system, that person might be assertive, dominant, and thrill-seeking (i.e. the adaptive side of grandiosity) while experiencing less interpersonal problems, being less manipulative or derogating with others. On the other hand, if a person is close to the higher end of the spectrum (even qualify for the Narcissistic Personality Disorder diagnosis) problematic behaviours, interpersonal difficulties, lack of empathy or perspective taking will be more characteristic and maladaptive aspects become dominant. This view is also in line with empirical evidence regarding the non-linear association between grandiose narcissism and self-esteem: at lower levels of grandiose narcissism the strength of the relationship is medium, but it becomes weaker at higher levels of narcissism (Foster et al., 2016, Miller et al., 2022).

2.4. Developmental origins of narcissism

2.4.1. Theories on the development of narcissism

Several theoretical models were formed around the developmental origins of narcissism (Donnelann, Ackerman & Wright, 2021), however these origins are still under debate (Brummelman et al., 2015). There is a consensus, that specific aspects of parental behavior will be responsible for the development of narcissism (Horton, Bleau & Drwecki, 2006), however three sets of theories, psychodynamic models, social learning theory and the schema therapy framework are identifying different mechanisms behind.

Psychodynamic models (Freud, 1914; Kohut, 1972; Kernberg 1970) also differ in the main mechanisms. In Kohut's view (1972) three important aspects need to be

considered. First, parental lenience and permissiveness can lead to a grandiose, entitled self-view, which is not frustrated optimally with reality. Second, a strictly controlled environment, which is not optimal for learning independence. Third the enmeshment of the self with the parent, where the child is used to fulfil the narcissistic needs of the parent and is not considered as an individual who needs need satisfaction from the parents. This enmeshment is going to result in a constant approval-seeking behavior, as the child's self is not allowed to set own standards of success and is going to rely on the approval of another person (Horton et al., 2006). In contrast, Kernberg (1970) argues, that a cold, unsupportive interpersonal pattern with lacking warmth and positive affect towards the child with a demanding parenting formed around high expectations is leading to a pathologically organized narcissistic self.

Social learning theories are arguing that parental overvaluation is leading to the development of narcissistic processes, with parents overvaluing, seeing children as special and more entitled than other children leading to internalized self-beliefs of being special and privileged (Brummelman et al., 2015).

In the context of schema therapy four distinct origins of narcissistic functioning are identified (Young, Klosko & Weishaar, 2003). First, emotional deprivation – with a lack of affectionate emotional attachment from the parent – combined with an intensive attention to the child. Second, insufficient limits are playing an important role, where the child can disregard the feelings of others, and staying mainly unsupervised until narcissistic gratification is provided for the parent. Third, a child is often manipulated, as the caregiver gratifies their own needs for admiration or emotional support through the relationship. They receive attention and admiration but without basic emotional nurturing and understanding. Lastly, conditional approval, related to meeting high parental standards might incline the feeling of being special.

To sum up, most theories argue, that some parenting styles or practices might ground for narcissistic functioning, the difference between them is how they view the relative importance of these factors. The lack of optimal limit setting, the overvaluation leading to the internalization of an entitled, grandiose self-view, and the lack of warm, autonomy-supporting parenting practices can be important factors in the development of narcissism.

2.4.2. Empirical evidence on the development of narcissism

The aforementioned theories of the development of narcissism were getting some empirical validation through cross-sectional and longitudinal studies (Donnellan et al., 2021).

Cross-sectional studies (eg. Horton, Bleau & Drwecki, 2006; Horton & Tritch, 2014) were using the later recollection of parenting practices on different parental functions, warmth, monitoring and psychological control. Monitoring refers to the attempts the parents do, to enforce rules, set boundaries and keeping track of what the child is doing, where and with whom. Psychological control on the other hand is rather undermining the autonomous development of the child, includes manipulation, withdrawal of love or expressing disappointment and shame in a child (Horton et al., 2006). According to these results increased psychological control, parental warmth and low parental monitoring were associated with higher narcissism (after partialling out the effect of self-esteem, Horton et al., 2006), or at least the entitlement part of narcissism (Horton &Tritch, 2014, Donnellan et al., 2021).

Although cross-sectional data can be of some use, it is holding serious limitations. These studies rely on adult recollection of early life parental practices, when individuals with narcissistic traits tend to feel overvalued and admired by others (Brummelman et al., 2015). Clinical observations also suggest that narcissistic individuals are mostly not aware of the parental influences of emotional deprivation and the lack of nurturing, moreover they tend to mistake warm basic nurturing with the reflected feeling of being special (Young et al., 2003). Moreover, these cross-sectional designs are not sufficient to decide on the direction of causality (narcissistic functioning on parenting or vica versa, Brummelman et al, 2015).

Longitudinal studies were performed to assess these shortcomings. Brummelman and colleagies (2015) found supporting evidence of the role of overvaluation in a two year long four wave longitudinal study with children aged 7-11 (n=565). Their results suggests that overvaluation at a previous wave was significantly affecting the forthcoming wave's narcissism score, but the other direction was not significant. On the other hand, child-reported parental warmth was a significant predictor of self-esteem in the following wave, but it was unrelated to narcissism. Therefore, we can conclude, that overvaluation is playing some role in the development of narcissistic traits (although the

standardized coefficients were smaller than 0.1), and parental warmth is rather important in the development of self-esteem. Although this study was an important step in understanding the effects of parenting, some limitations regarding the operationalization are of importance. First, parental warmth was measured only with self-report items like “my father/mother treats me gently and with kindness”, which can be biased by the interpretation of the child. Second, measurement of narcissism was administered with a unipolar construct, not differentiating between maladaptive and adaptive characteristics (Wetzel & Robins, 2016).

To overcome these limitations Wetzel and Robins (2016) conducted a large three-wave longitudinal study (n=674) where parenting variables were also measured with observational coding along with child reports, self-reports and spouse reports. According to their results parental hostility was associated with higher levels of maladaptive narcissistic tendencies (exploitativeness) replicating in all measures except the self-report, but only between wave 1 and wave 2 (ages 12-14). Higher levels of parental monitoring perceived by the child on the other hand were associated with lower levels of exploitativeness at the next wave (between ages 12-14). The feeling of superiority, which was conceptualized as the adaptive side of narcissism was related to neither parental monitoring, nor parenting hostility. Despite providing some support, these results are also inconclusive in understanding effects of parental practices, moreover the specific role of these age categories are also debatable.

On a third study, based on self-report measures on parenting Cramer (2011) found, that high responsiveness (being permissive and authoritative) from the parents may result in higher feelings of superiority and grandiosity compared to low responsiveness authoritarian parents. However, maladaptive aspects of narcissism were not found to be related to parenting practices.

To sum up, although theory of the development of narcissism suggests specific parenting practices that might lead to narcissism, cross-sectional and longitudinal studies could provide only partial explanation. Parental overvaluation, partly psychological control and parental hostility has positive, while parental monitoring seem to have a negative association with the development of narcissistic tendencies.

2.5. Measurement of narcissism

Measurement of narcissism was also subject to clarification recently, as several measures of grandiosity and vulnerability emerged over the years, and different underlying conceptualizations made the synthetization of results difficult (Miller et al., 2021). Narcissism measures can therefore fall into two categories: measuring either vulnerable or grandiose narcissism separately or measuring them both with one instrument. Furthermore, currently narcissism is predominantly assessed as a stable trait (for a review, see Campbell & Miller, 2012), although other approaches are also gaining more popularity, for example capturing narcissistic states (for more details see Chapter 6). In the following chapter current trait measures are introduced first, then hierarchical models of narcissism (see Chapter 2.2) are applied to evaluate the unique properties of different measurement tools. Last, a new bifactoral measurement model of the Narcissistic Personality Inventory (Raskin & Terry, 1988) is introduced in Research Topic 1. Hungarian versions of the measures used in this dissertation can be found in Appendix 3.

2.5.1. Narcissistic Personality Inventory (NPI)

From the trait perspective, currently the most widespread measure of grandiose narcissism is the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988; Cain et al., 2008). This instrument originally consists of 40 items, each item containing two statements, one representing the narcissistic response and the other representing the non-narcissistic one. Participants have to decide which of the two statements represents their inner experience (e.g. "*I can usually talk my way out of anything*" versus "*I try to accept the consequences of my behavior*."). Trait grandiose narcissism score is calculated by summing the number of narcissistic responses chosen by the participant. Despite the dominance of the NPI in the measurement of grandiosity the factor structure of the measure is still debated. Raskin and Terry (1988) identified seven principal components in their original study, but due to the high correlations between them several other structures were recommended [e.g. a two-factor solution by Corry and colleagues (2008) or a three-factor solution by Ackerman et al. (2011)]. In order to contribute to this debate we compared the fit of different current approaches and also

tested a bifactoral model specifying a general grandiosity factor and several specific factors (for more details see Research Topic 1 in Chapter 3).

As the force-choice response format of the NPI was questioned based on the unequal social desirability of specific statements (Wetzel et al., 2016), a single-stimulus response format also emerged, in which only the narcissistic statements are presented in either a dichotomous or a 5-point Likert scale (for more details on the differences in factor structures according to the response format see Ackerman, Donnellan, Roberts & Fraley, 2016). More detailed description of the NPI and on the different factor structures recommended can be found in Chapter 3).

2.5.2. Five-Factor Narcissism Inventory (FFNI)

The need for clarifying central and peripherical traits of narcissism through structural models also affected measurement. Miller and colleagues argued (2011, 2018) that from a hierarchical point of view narcissism should be defined through the lens of the five-factor model (FFM). Therefore, they created the Five-Factor Narcissism Inventory (FFNI; Glover, Miller, Lynam, Crego & Widiger; 2012), which focus on the maladaptive side of FFM facets (e.g. narcissistic angry hostility defined from reactive anger facet). Out of the fifteen subscales administered, four subscales are forming vulnerable narcissism *(Reactive Anger, Distrust, Shame, Need for Admiration)* and eleven subscales measure grandiose narcissism *(Exploitativeness, Lack of Empathy, Entitlement, Arrogance, Manipulativeness, Thrill Seeking, Indifference, Acclaim Seeking, Authoritativeness, Grandiose Fantasies and Exhibitionism)*. Items of each subscale (e.g. *"I have at times gone into a rage when not treated rightly"* on the Reactive Anger subscale) are rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Specific subscales are calculated with simple summation, while vulnerable and grandiose narcissism are summed from the subscales.

2.5.3. Pathological Narcissism Inventory (PNI)

The PNI (Pincus et al., 2009) is a 52-item measure combining originally three subscales of narcissistic vulnerability *(Contingent Self-esteem, Hiding the Self, Devaluing)* and four subscales of narcissistic grandiosity *(Entitlement Rage, Exploitativeness, Grandiose Fantasy, Self-sacrificing Self-enhancement)* administered with a 7-point

Likert scale. Items refer to trait-like qualities (e.g. *"I often fantasize about being rewarded for my efforts"*). Specific subscales are calculated with simple summation, while vulnerable and grandiose narcissism are summed from the subscales. Further results with the PNI indicated, that subscale *Entitlement Rage* rather belongs to the vulnerability factor (Wright et al., 2010). The original scope of the PNI was the extension of trait-narcissism measurement focusing on the pathological, maladaptive aspects of narcissistic functioning, considering vulnerable and grandiose aspects parallelly. This was in contrast with the approach of the widely used NPI, which also measures adaptive expressions of the construct (Pincus et al., 2009). More details, scope and limitations of the PNI can be found in Chapter 6.

2.5.4. Narcissistic Grandiosity Scale (NGS) and Narcissistic Vulnerability Scale (NVS)

The NGS (Crowe, Carter, Campbell & Miller, 2016; Rosenthal et al., 2007) and the NVS (Crowe et al., 2018) are adjective-based measures designed to capture narcissistic grandiosity and vulnerability separately. Participants are presented with the 16 grandiosity-related *(e.g., Glorious, Prestigious)* or the 11 vulnerability-related adjectives *(e.g. Underappreciated, Fragile)* and are asked to rate how much these adjectives describe them. Vulnerable and grandiose narcissism are calculated with simple summation. These measures provided good psychometric properties, furthermore they also correlated with expert ratings of narcissistic personality functioning. The NVS and NGS are also frequently used in longitudinal designs, as abbreviated versions show appropriate reliability and consistent associations with the original measures (for more details see Chapter 6).

2.5.5. Narcissistic Admiration and Rivalry Questionnaire (NARQ)

In contrast to previously discussed measures, Back and colleagues (2013) applied a new approach in measuring narcissism. In their process-based view, two separate but correlated social strategies aim to maintain the positive view of the self, namely admiration and rivalry (see Chapter 2.2). These social strategies can be assessed with the NARQ (Back et al., 2013), an 18-items long questionnaire. Nine items measure admiration with facets grandiosity, uniqueness and charmingness and nine assess rivalry with facets devaluation, supremacy and aggressiveness. Item generation for the NARQ

was theoretically driven, therefore the authors did not use items from previously developed narcissism measures (Back et al., 2013). Items (e.g. *"I deserve to be seen as a great personality.*") are rated on 6-point Likert-type scales ranging from 1 (not agree at all) to 6 (agree completely). Specific subscales are calculated with simple summation. The NARQ showed acceptable psychometric properties regarding internal consistency, and regarding the hypothesized factor structure also. A shorter version of the NARQ is also available applicable in longitudinal designs (Leckelt et al., 2018).

2.5.6. Hypersensitive Narcissism Scale (HSNS) and Maladaptive Covert Narcissism Scale (MCNS)

The HSNS (Hendin & Cheek, 1997) is the most widespread measure of trait vulnerable narcissism containing ten items (e.g. *"My feelings are easily hurt by ridicule or by the slighting remarks of others."*), rated on a 7-point Likert scale. Vulnerable narcissism is calculated with simple summation. The measure is originally derived from Murray's Narcism Scale (1938) after correlating the items with the MMPI covert narcissism composite score (Hendin & Cheek, 1997). A new, updated version of the scale is also available (MCNS; Hendin & Cheek, 2013), although it contains 23 items.

2.5.7. Using the hierarchical models of trait narcissism to evaluate different measurement tools

In the previous chapter several measurement tools were introduced, capturing different aspects of narcissism. Samuel and Widiger (2008) tested the convergent correlations of five measures finding only a moderate association (.45), moreover narcissism measures also diverged in their associations with FFM traits, especially with extraversion and neuroticism. This heterogeneity in measurement not only makes interpretation of results harder, but also point out the importance of understanding what central and peripherical processes are in narcissistic functioning. Coming from this need for clarification – with recent hierarchical models conceptualizing vulnerability and grandiosity as personality moderated expressions of the same core (Wright & Edershile, 2018) – a three-dimensional approach has also been applied in evaluating different measurement methods.

The role of differentiating narcissistic domains in measurement is mainly to enable a more unified approach when using different tools, as measures capture different

underlying factors more precisely. After merging the concepts from existing hierarchical models – extending the scope of Krizan and Herlache (2018) – Wright and Edershile (2018) identified three main narcissistic domains: exhibitionism (grandiosity in the NSM and agentic extraversion in the FFM), entitlement (self-importance in the NSM and antagonism in the FFM) and vulnerability (vulnerability in the NSM and neuroticism in the FFM). These domains were used to identify the exact scope of popular narcissism measures (see Table 1; excluding the Narcissistic Vulnerability Scale, which was not available at the time of the study and the Maladaptive Covert Narcissism Scale, which was substituted by a better-known and mostly identical measurement tool, the Hypersensitive Narcissism Scale.)

Table 1: Scope of narcissism measures based on the captured narcissistic domains. (Source: Wright & Edershile, 2018)

	Narcissistic domain		
Measures	Grandiosity (Grandiosity) [Extraverted]	Entitlement (Self-importance) [Antagonistic]	Vulnerability (Vulnerability) [Neurotic]
PNI grandiosity factor	x	**X**	x
PNI vulnerability factor		x	**X**
NPI Leadership/ Authority	**X**	x	
NPI Grandiose Exhibitionism	**X**		
NPI Entitlement/ Exploitativeness		**X**	
FFNI Grandiosity	**X**	x	
FFNI Vulnerability		x	**X**
NARQ Admiration	**X**		
NARQ Rivalry		**X**	x
NGS	**X**		
HSNS			**X**

Note. **X**=scale considered to be primarily captured by the domain; x=scale considered to be secondarily captured by the domain. PNI = Pathological Narcissism Inventory; NPI = Narcissistic Personality Inventory; FFNI = Five-Factor Narcissism Inventory; NARQ = Narcissistic Admiration and Rivalry Questionnaire; NGS = Narcissistic Grandiosity Scale; HSNS = Hypersensitive Narcissism Scale. NPI scales based on analyses by Ackerman and colleagues (2011).

According to Wright & Edershile (2018) most assessments combine the measurement of narcissistic domains besides having one dominant scope. Grandiosity (or exhibitionism)

is the strongest scope of two subfactors of the NPI, the FFNI grandiosity scale, the admiration dimension of the NARQ and the NGS. Entitlement (or antagonism) on the other hand is captured dominantly by the grandiosity subscale of the PNI, the Entitlement / Exploitativeness subscale of the NPI, and the rivalry dimension of the NARQ. It is important to highlight, that the entitlement core of narcissism is partly captured by nearly all of the measurement tools except the NGS and HSNS, and it is most dominant in the PNI. Vulnerability is the strongest scope of the HSNS (and the NVS, which was not available at the time of this research; Crowe et al., 2019), while the vulnerability subscales of the FFNI and PNI also measure entitlement partly. This nuanced distinction between the measurement capacities of existing tools might shed light on the mixed results of narcissism with external correlates (see Chapter 2.3).

Aims of Research Topic 1

As hierarchical models of narcissism enabled a more detailed understanding of specific domains captured by different measurement tools from a theoretical point of view, we aimed to also test different measurement models in widely used narcissism measures. Therefore, we chose the NPI, one of the most popular questionnaires of narcissistic grandiosity in social- and personality psychology research for testing competing hierarchical measurement models.

3. RESEARCH TOPIC 1

3.1. Introduction

Despite recent advances in both the theoretical background and measurement of narcissistic grandiosity, the Narcissistic Personality Inventory (NPI, Raskin & Terry, 1988) is still one of the most widespread assessment tools (Cain et al. 2008, Miller et al., 2021). Along with the fact, that a large amount of data accumulated with the NPI, its internal measurement model is still unclear, and different factor structures have been proposed. Raskin and Terry (1988) originally identified seven principal components: Authority, Exhibitionism, Superiority, Entitlement, Exploitativeness, Self-Sufficiency and Vanity. The large correlations among the primary factors implied a secondary general factor, though it was not tested (Raskin and Terry, 1988). Corry et al. (2008) offered a two-factor solution with only *Leadership/Authority* and *Exhibitionism/Entitlement* factors; however, these factor structures could not be confirmed in independent confirmatory research (Ackerman et al., 2011). Ackerman et al. (2011) proposed a three-factor solution distinguishing the adaptive *Leadership/Authority* (*L/A*) factor from the maladaptive *Grandiose Exhibitionism (GE)* and *Entitlement/Exploitativeness (E/E)* factors. One of the greatest advantages of the results from Ackerman and colleagues' work (2011) is the appearance of the possible social adaptational value of narcissistic tendencies, which is consonant with current interest around the construct of 'healthy' narcissism (Solan, 2015). Nevertheless, the confirmation of this three-factor solution in independent samples is necessary to accept it as a measurement model.

Previous research mainly tested models with primary factors, though to understand the possible uni- or multidimensionality of the Narcissistic Personality Inventory, hierarchical models within confirmatory factor analysis framework should be considered, especially as hierarchical models gain popularity in theory also (see Chapter 2.2). If we view narcissism as a dynamic self-regulatory process, all narcissistic traits or behaviours should have a common underlying aim of maintaining a positive self-view, questioning the dimensionality of the constructs used. It is of increasing interest to

apply both second-order and bifactor models in personality research (Reise, 2012), in order to clarify the dimensionality questions of a given construct. In second-order models, the higher order factors are said to explain the correlation between the primary factors, while the bifactor model approach aims to differentiate the amount of variance explained by a single general factor and specific relevant factors. The other advantage of the bifactor approach is that specific and general factor's relationship with external variables can be captured separately (Reise et al., 2010). Moreover, recent studies suggested that bifactor models can be applied to general psychopathology as well (the "p" factor) supporting a transdiagnostic approach (Caspi et al., 2015), and this general factor is stable over time, and describes temporal changes in psychopathology well (Gluschkoff, Jokela & Rosenström, 2019).

As there was no clear agreement on the different factor structures, and higher order factor models were not or rarely tested previously, the first aim of our three studies was to compare the competing measurement models with a series of confirmatory factor analyses (CFA) to identify the best fitting solution to our data collected with both the Hungarian and English versions of the NPI. The second aim was to test the concurrent validity and associations of the best fitting model in two sets of confirmatory factor analysis models with covariates including self-esteem, other measures of vulnerable and grandiose narcissistic traits and well-being measures.

Grandiose narcissism and explicit self-esteem are constantly found to be positively correlated (Hyatt et al., 2018; Campbell et al., 2002; Kernis and Sun, 1994), because both constructs capture positive perceptions of the self and are positively related to agentic traits, however the difference lies between their association to communal traits (Hyatt et al., 2018). Out of the subscales of NPI, *Entitlement/Exploitativeness* has the strongest negative associations with communal traits (Pryor et al., 2008), while *Leadership/Authority* and *Grandiose Exhibitionism* are positively associated with agentic traits (Gentile et al., 2013). Therefore, self-esteem seems to be an appropriate construct to test the construct validity of the NPI. Moreover, if we consider narcissism as a self-regulatory process for maintaining positive self-views we can expect a positive relationship between explicit self-esteem and grandiose narcissism in general.

Furthermore, there is a growing interest in differentiating the adaptive and maladaptive sides of narcissism (for a review see Cai & Luo, 2018; Rose, 2002); therefore, eudaimonic well-being, as in living a complete, authentic, self-directed life with

satisfying relationships (Ryff and Keyes, 1995), seems to be another useful construct with which to test our model. Previous research showed that narcissism is positively related to greater eudaimonic and hedonic well-being especially when controlled for other dark triad traits (Aghababaie & Blachnio, 2015) and this relationship is mediated through self-esteem (Zuckerman & O'Loughlin, 2009); we thus expect positive relationships with both self-esteem and eudaimonic well-being.

Lastly, the differentiation between vulnerable and grandiose narcissistic traits also presents a useful opportunity to test discriminant validity, as previously no significant relationship was found between grandiose and vulnerable narcissism using the NPI (Miller et al., 2018; Cheek et al., 2013; Hendin and Cheek, 1997). Only *Entitlement/Exploitativeness* subscale have shown a positive association with measures of vulnerable narcissism in previous studies (e.g. Crowe et al., 2018; Krusemark et al., 2018).

Therefore, the aim of this Research Topic is to enable the differentiation of the variance between the general narcissism factor and the specific factors offered by previous research - measured with the single-stimulus format of the NPI in cross-sectional designs.

In Study 1 we tested the different measurement models and the association of those with covariates on a large sample (N=791) using the Hungarian version of the NPI, while in Study 2 we tested the associations of the best-fitting model with other contemporary measures of vulnerable and grandiose narcissism with the English version of the NPI (N=319). To assess measurement invariance between the Hungarian and English versions of the NPI, and to provide further evaluation of the bifactor model across different response formats we also conducted a third study (Study 3; N = 237).

3.2. Study 1

3.2.1. Methods

Participants and procedure

We pooled three convenience samples in the current study. Participants in the first sample (Sample 1) were 226 university students (76.5% women, mean age = 21.17; SD

= 2.57) from a large university in Budapest; for the second (Sample 2; n=414) and third samples (Sample 3; n=152) 566 university students (76.9% women, mean age = 27.29; SD = 10.95) were recruited from a university in Pécs. As more samples were pooled in Study 1, ethical approvals were granted in both universities for conducting data collection, to comply with research ethical guidelines (reference numbers 2017/65 in Pécs and 2018/229 in Budapest).

Participants were recruited through safe internal university portals, where students could register for different research studies in exchange for course credits. After registration participants were given detailed information about the aim and tasks related to the study and were asked for their consent. For those agreed to participate surveys were distributed through email messages which participants could fill out online.

Measures

Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988)

The original NPI forced participants to choose from 40 pairs of statements, one being the non-narcissistic and the other being the narcissistic option. This response format, however, only offered the elimination of socially desirable responses if very similar statements were compared, which is not the case in the NPI (Wetzel et al., 2016). On the other hand, in another study response format was shown to effect the factor structure of the NPI, where a three factor solution was more adequate for the forced-choice format, while a five factor solution offered better fit for the single-stimulus response formats (Ackerman, Donnellan, Roberts & Fraley, 2016). In this study, we used single-stimulus dichotomous items as the response format of NPI.

The translation was carried out in accordance with the standard test-adaptation procedure. The items were translated into Hungarian by three members of the research group. This process was followed by cross-checking, to explore the source of any possible differences and to find the most suitable alternatives. We also applied back-translation by a linguist with advanced linguistic and psychological knowledge; this helped us to improve linguistic validity and avoid translational biases. The differences between the original and back-translated texts were reviewed and revised during the final refining of the items**.**

Explicit self-esteem

Explicit self-esteem was assessed using the Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965), a widely used 10-item instrument capturing global self-esteem. Participants respond to questions (e.g., 'I am able to do things as well as most other people') on a 4-point Likert scale ranging from 0 – 'strongly disagree' to 3 – 'strongly agree'. The measure consists of five reversed items. In the present study we have used the Hungarian translation of the measure (Urbán et al., 2014). This scale was administered only to Sample 1. The internal consistency of the scale was adequate (α = .90).

Eudaimonic well-being

To measure psychological well-being, we used the Ryff and Keyes well-being scale (1995). It measures Ryff's original six factors of eudaimonic well-being (1989), with three questions for each factor: autonomy, self-acceptance, positive relations, environmental mastery, purpose in life and personal growth. The Hungarian version of the test has adequate psychometric properties (Oláh, 2012), and also offers good internal consistency in our sample (α = .86). This scale was administered only to Sample 1.

Vulnerable narcissism

Vulnerable narcissism was assessed using the Maladaptive Covert Narcissism Scale (Hendin and Cheek, 2013) which is the updated version of the Hypersensitive Narcissism Scale (HSNS, Hendin and Cheek, 1997), developed previously. The measure consists of 23 questions, and internal consistency of the questionnaire was adequate in this study (α = .86). Preliminary results show that the Hungarian translation of the scale has adequate psychometric properties (Bandi, 2014). This scale was administered only to Sample 2.

Statistical analysis plan

We applied confirmatory factor analysis with Mplus 8.0 (Muthén and Muthén, 1998–2015) to estimate the degree of fit of previously proposed measurement models to the data. We tested four different measurement models that included one-factor, two-factor (Corry et al., 2008), three-factor (Ackerman et al., 2011) and seven-factor (Raskin and

Terry, 1988) models (for the models see Figure 1 and Appendix 2). We also checked meaningful error covariances in each model. Due to the strong correlations between the first-order factors, we also tested the second-order factor models in which the secondary factor is specified to account for the covariation among multiple factors. We estimated the secondary factor model with three and seven first-order factors. In these cases second-order represents the narcissism trait. Furthermore, we also tested the bifactor models. A bifactor model represents a general narcissism dimension on which each item loaded; and specific factors on which only the specific items were loaded; and the correlations between specific factors were fixed to zero. The specification of a bifactor model requires that the specific factors correlate neither with each other nor with the general factor (Reise et al., 2010).

The advantage of bifactor modelling is the opportunity to quantify the degree of unidimensionality. Therefore, we applied the percentage of common variance attributable to the general factor through the use of the explained common variance (ECV; Bentler, 2009; Ten Berge and Sočan, 2004). We also used omega and omega hierarchical indices to measure how precisely a specific factor score assesses the combination of general and specific constructs and a certain target construct (Brunner et al., 2012). These two measures generally help us consider how general and specific factors can be interpreted in later research with the bifactor model.

Because of the binary responses to items, we used the weighted least squares mean and variance adjusted estimation method (WLSMV; Brown, 2006; Finney and DiStefano, 2006). In confirmatory factor analysis, a satisfactory degree of fit requires the comparative fit index (CFI) and the Tucker-Lewis Index (TLI) to be higher than or close to 0.95, and the model should be rejected when these indices are less than 0.90 (Brown, 2006). The next fit index was the root mean square error of approximation (RMSEA). RMSEA below 0.05 indicates excellent fit, a value around 0.08 indicates adequate fit, and a value above 0.10 indicates poor fit. Closeness of model fit using RMSEA (CFit of RMSEA) is a statistical test (Brown, 2006), which evaluates the statistical deviation of RMSEA from the 0.05–value. Non-significant probability values ($p > 0.05$) indicate acceptable model fit (Brown, 2006).

Furthermore, to test the concurrent validity of the best fitting models, we used CFA with covariates in two separate university student samples from two large universities in

Hungary. The covariates in the first sample were gender, explicit self-esteem and psychological well-being and, in the second sample, gender and vulnerable narcissism.

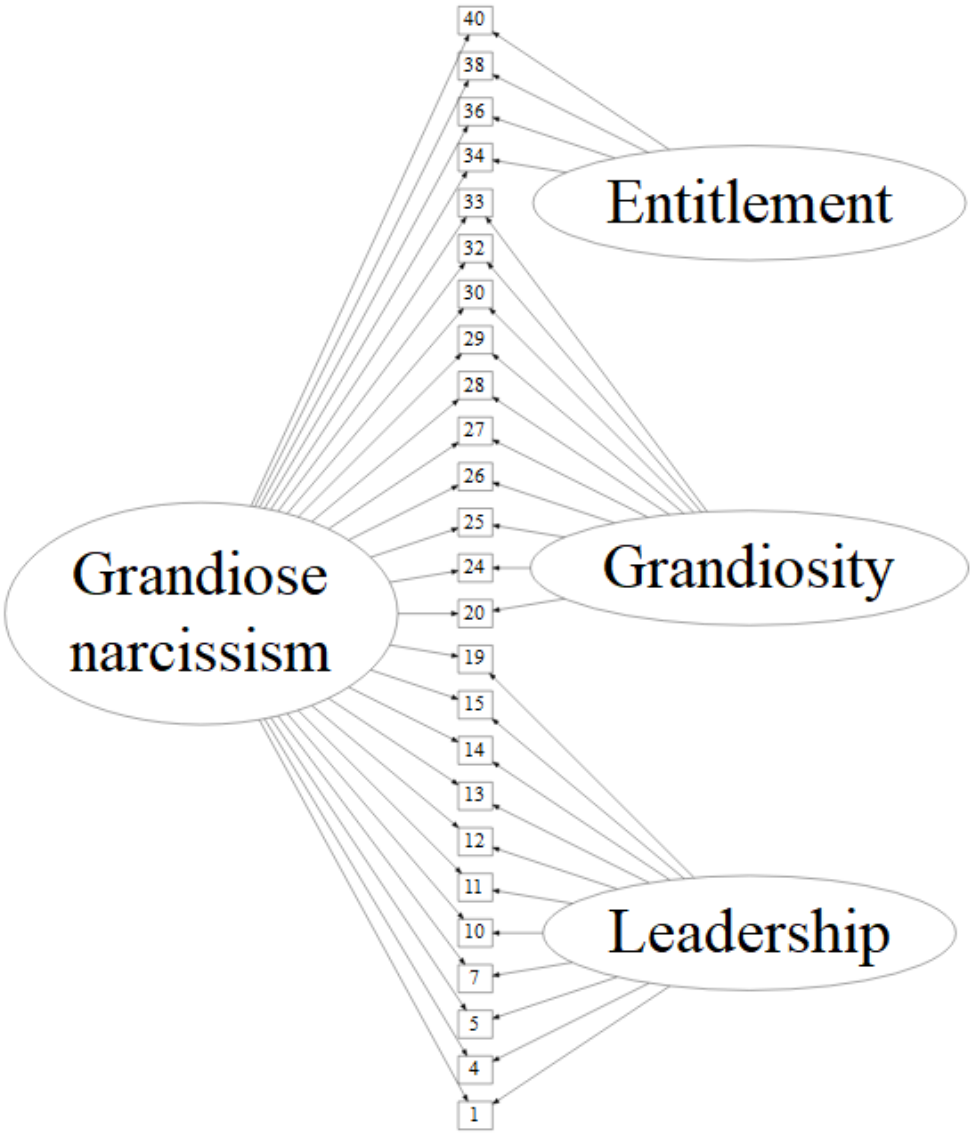


Figure 1. Bifactor Model of the NPI with three specific factors (Model 8).

3.2.2. Results

Testing alternative measurement models of the NPI

We tested nine measurement models on the combined sample of the three subsamples, Sample 1, Sample 2 and Sample 3 (N = 791). The fit indices are reported in Table 2. According to current traditions, only Model 2, 2a, 3a, 5, 7 and 8 provided acceptable fit indices. The bifactor model with three specific factors (Model 8) fitted best to the data (χ^2=617.0, CFI=0.971, TLI=0.965, RMSEA= 0.044, CI [0.039-0.048]) compared to the

competing solutions; however, the bifactor model with two specific factors (Model 7) produced nearly as good fit indices. Therefore, factor loadings are presented for both Model 8 (Table 2) and Model 7 (Appendix 1). In both bifactor models with two and three specific factors (Model 7 and Model 8) all items loaded significantly on the *general narcissism factor*, and the factor loadings ranged from 0.20 to 0.66, and 0.28 to 0.67, respectively. Four items (Items 8, 11, 32 and 3) in Model 7 and two items in Model 8 (Items 32 and 34) did not load significantly on the specific factors Model 7, both rather representing a global narcissism factor.

In Model 8 only three items produced lower factor loadings than the recommendations of Tabachnick and Fidell (2014), where .32 can be considered as a cut-off value for poor factor loadings. These three items were item 19, 26 and 14 with factor loadings ranging from .27 to .31 on the General factor. These items however, had higher loadings for the specific factors *Grandiose Exhibitionism* and *Entitlement/Exploitativeness* ranging from 0.37 to 0.58.

We estimated common variance index in the models and found that the global narcissism factor explains 58.9% of the common variance in the bifactor model with two specific factors (Model 7) and 53.5% in the three specific factors solution (Model 8); therefore, a meaningful global factor seems to be present. The explained variances of the specific factors are also reported in Table 3 and Appendix 1.

We evaluated the internal consistency of the factors by calculating Cronbach's alpha, omega and omega hierarchical coefficients. Omega coefficients assess how certain scale scores' variance is the combination of general and specific factors, therefore estimating the reliability of a latent factor (Brunner et al., 2012). The omega hierarchical coefficient, on the other hand, estimates the reliability of a latent factor, with all other latent construct variances removed (Brunner et al., 2012; Reise et al., 2010). Reise and colleagues (2013)

Table 2. Competing measurement models of grandiose narcissism: confirmatory factor analysis.

No	Models	No of items	$\chi 2$	df	CFI	TLI	RMSEA [90% CI]	Pclose of RMSEA
Study 1								
First-order models								
1	One-factor model with error covariances[#]	40	2685.1	735	0.865	0.856	0.058 [0.056-0.060]	< 0.001
2	Two-factor model (Corry et al., 2008)	23	1298.0	229	0.912	0.903	0.077 [0.073-0.081]	0.001
2a	Two-factor model (Corry et al., 2008) with error covariances[#]	23	822.8	226	0.951	0.945	0.058 [0.054-0.062]	0.001
3	Three-factor model (Ackerman et al., 2011)	25	1705.0	272	0.889	0.877	0.082 [0.078-0.085]	< 0.001
3a	Three-factor model (Ackerman et al., 2011) with error covariances[##]	25	1011.7	268	0.942	0.935	0.059 [0.055-0.063]	< 0.001
4	Seven-factor model (Raskin and Terry, 1988)	40	2400.0	719	0.883	0.873	0.054 [0.052-0.057]	0.002
4a	Seven-factor model (Raskin and Terry, 1988) with error covariances[##]	40	2134.1	715	0.901	0.892	0.050 [0.048-0.053]	0.479
Second-order models (one second-ordered factor with first-order factors)								
5	Three first-order factors based on Model 3a[###]	25	947.3	267	0.947	0.941	0.057 [0.053-0.061]	0.002
6	Seven first-order factors based on Model 4a[###]	40	2140.8	730	0.902	0.895	0.049 [0.047-0.052]	0.655
Bifactor models (one general and specific factors)								
7	Two specific factors based on Model 2a[##]	23	579.9	204	0.969	0.962	0.048 [0.044-0.053]	0.729
8	Three specific factors based on Model 3a[###]	25	617.0	246	0.971	0.965	0.044 [0.039-0.048]	0.993
9	Seven specific factor based on Model 4[###]	40	1927.8	698	0.915	0.904	0.047 [0.045-0.050]	0.968
Study 2								
1	Bifactor model with two specific factors[##]	23	524.4	204	0.955	0.944	0.070 [0.063-0.078]	<0.001
2	Bifactor model with three specific factors[###]	25	588.4	246	0.954	0.944	0.066 [0.059-0.073]	<0.001
Study 3								
1	Bifactor model with two specific factors[##]	23	507.17	204	0.928	0.911	0.079 [0.071-0.088]	<0.001
2	Bifactor model with three specific factors[###]	25	529.34	246	0.939	0.925	0.070 [0.062-0.078]	<0.001

Note: Study 1: N = 792. Study 2: N = 319. Study 3: N = 237 [#]: Error covariances are allowed between Item 7 (*I like to be the centre of attention*) and Item 30 (*I really like to be the centre of attention*); Item 19 (*I like to look at my body*) and Item 29 (*I like to look at myself in the mirror*); Item 19 (*I like to look at my body*) and Item 15 (*I like to display my body*). [##]: Error covariances are allowed between Item 7 and Item 30; Item 19 and Item 29; Item 19 and Item 15; Item 1 (*I have a natural talent for influencing people*) and Item 13 (*I find it easy to manipulate people*). [###]: Error covariances are allowed between Item 7 (*I like to be the centre of attention*) and Item 30 (*I really like to be the centre of attention*); Item 1 (*I have a natural talent for influencing people*) and Item 13 (*I find it easy to manipulate people*).

Table 3. Factor loadings, explained common variance, omega and omega hierarchical scores of the bifactor model of grandiose narcissism: one general and three specific factors (Model 8) in Study 1, Study 2 and Study 3.

Item (number)	Leadership/ Authority			Grandiose Exhibitionism			Entitlement/ Exploitativeness			General		
	Study 1	Study 2	Study 3	Study 1	Study 2	Study 3	Study 1	Study 2	Study 3	Study 1	Study 2	Study 3
I have a natural talent for influencing people (1)	**0.254**	**0.269**	**0.157**							**0.535**	**0.529**	**0.622**
If I ruled the world, it would be a much better place (5)	**0.151**	**0.138**	0.040							**0.394**	**0.405**	**0.420**
I see myself as a good leader (10)	**0.733**	**0.681**	**0.657**							**0.516**	**0.535**	**0.519**
I am assertive (11)	**0.212**	**0.237**	0.038							**0.568**	**0.462**	**0.574**
I like having authority over people (12)	**0.270**	**0.311**	**0.342**							**0.650**	**0.693**	**0.625**
I have a strong will to power (27)	**0.278**	**0.219**	**0.267**							**0.640**	**0.540**	**0.711**
People always seem to recognise my authority (32)	0.121	**0.466**	0.092							**0.457**	**0.614**	**0.630**
I would prefer to be a leader (33)	**0.737**	**0.602**	**0.639**							**0.534**	**0.591**	**0.539**
I am going to be a great person (34)	-0.118	0.007	-0.133							**0.472**	**0.500**	**0.476**
I am a born leader (36)	**0.695**	**0.678**	**0.641**							**0.570**	**0.574**	**0.620**
I am an extraordinary person (40)	**-0.177**	0.099	**-0.202**							**0.548**	**0.521**	**0.662**
I know that I am good because everybody keeps telling me so (4)				**0.166**	**0.238**	**0.151**				**0.476**	**0.317**	**0.511**
I like to be the centre of attention (7)				**0.181**	**0.210**	**0.313**				**0.636**	**0.657**	**0.526**
I like to display my body (15)				**0.795**	**0.655**	**0.559**				**0.362**	**0.381**	**0.373**
I like to look at my body (19)				**0.581**	**0.400**	**0.383**				**0.308**	**0.316**	**0.269**
I am apt to show off if I get the chance (20)				**0.271**	**0.316**	**0.202**				**0.364**	**0.558**	**0.365**
I like to be complimented (26)				**0.373**	**0.448**	**0.391**				**0.284**	**0.278**	**0.218**
I like to start new fads and fashions (28)				**0.167**	**0.168**	-0.012				**0.362**	**0.490**	**0.405**
I like to look at myself in the mirror (29)				**0.687**	**0.620**	**0.597**				**0.356**	**0.385**	**0.350**
I really like to be the centre of attention (30)				**0.212**	**0.217**	**0.333**				**0.671**	**0.685**	**0.559**
I get upset when people don't notice how I look when I go out in public (38)				**0.475**	**0.428**	**0.567**				**0.347**	**0.353**	**0.303**
I find it easy to manipulate people (13)							**-0.165**	**-0.215**	-0.072	**0.597**	**0.561**	**0.642**
I insist upon getting the respect that is due to me (14)							**0.484**	**0.526**	**0.485**	**0.309**	**0.433**	**0.295**
I expect a great deal from other people (24)							**0.479**	**0.288**	**0.534**	**0.277**	**0.400**	**0.324**
I will never be satisfied until I get all that I deserve (25)							**0.813**	**0.503**	**0.356**	**0.348**	**0.351**	**0.591**
Average factor loading Mean (SD)	0.29 (0.31)	0.34 (0.24)	0.23 (0.31)	0.39 (0.23)	0.37 (0.17)	0.35 (0.20)	0.40 (0.41)	0.28 (0.34)	0.33 (0.28)	0.46 (0.13)	0.49 (0.12)	0.49 (0.14)
Explained common variance	17.3%	17.6%	14.7%	18.7%	15.9%	15.5%	10.5%	6%	6.4%	53.5%	60.6%	63.3%
Omega	0.89	0.89	0.90	0.84	0.84	0.80	0.71	0.65	0.69	0.92	0.92	0.92
Omega hierarchical	0.23	0.25	0.15	0.39	0.35	0.36	0.41	0.24	0.25	0.76	0.77	0.80

Note: Study 1: N = 792. Study 2: N=319. PUC value = 0.65 for Study 1, Study 2 and Study 3. Boldfaced factor loadings are significant at least $p < 0.05$

proposed a strict rule that the omega hierarchical coefficients should be higher than 0.5 for the specific factors. Omega coefficients are presented in Table 3 and Appendix 1 showing that the specific scale scores adequately represent the mixture of general narcissism and the respective specific factors. However, our results (coefficients ranging from 0,23–0,41) suggest that the specific factors explain at least 23% of the variance in specific factor scores, underlying again the importance of a general narcissism factor and highlight the fact, that specific factors should only be interpreted with caution in later research.

Confirmatory Factor Analysis with covariates

To assess the concurrent validity of the best fitting three-factor model we used confirmatory factor analysis with covariates. The standardized coefficients are presented in Table 4.

Explicit self-esteem had a significant medium-sized positive relationship with the *general narcissism factor* and *Grandiose Exhibitionism* while it was negatively related to the *Entitlement/Exploitativeness* specific factor. Female participants scored significantly higher on the *Entitlement/Exploitativeness* specific factor.

In the second sample, vulnerable narcissism had a negative relationship with the *general factor* and *Leadership/Authority* specific factor. Female participants scored higher on both the *general narcissism factor* and *Entitlement/Exploitativeness* specific factor and scored lower on the *Leadership/Authority* specific factor.

3.3. Study 2

3.3.1. Method

Participants

Participants in Study 2 were 319 university students (73% women, mean age = 20.18; SD = 2.31) from a first-year international student pool at a large Dutch university. Participants were recruited through safe internal university portals, where students could register for different research studies in exchange for course credits. After registration

participants were given detailed information about the aim and tasks related to the study and were asked for their consent. For those agreed to participate surveys were distributed through email messages which participants could fill out online. The study was approved by the university research ethical committee (registration number: 18102-S).

Measures

Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988)

In Study 2 the rating-scale version of the Narcissistic Personality Inventory (NPI-40) was used, which presents the original 40 narcissistic options of the NPI. Participants need to decide to which degree from a scale from 1 to 5 are those statements are describing them (e.g. "*I can usually talk my way out of anything*"). This response format is recently gaining popularity (Wetzel et al., 2016; Miller, 2018), and it offers the opportunity to evaluate the bifactor model with a different response format as well. In Study 2 we used the original English version of the NPI.

Narcissistic Grandiosity Scale (NGS; Rosenthal, Hooley & Steshenko, 2007)

The NGS is an adjective scale that contains 16 items. Participants are presented with the 16 adjectives (eg. *Glorious, Prestigious*), and they need to rate how much these adjectives describe themselves. The scale has good psychometric properties (Crowe et al., 2016), and it is in strong association with other measures of narcissistic grandiosity. The internal consistency of the scale was adequate ($\alpha = .94$).

Pathological Narcissism Inventory (PNI; Pincus et al., 2009)

The PNI assesses seven factors of both vulnerable and grandiose narcissism. Wright et al. (2010) proposed a factor structure of two higher order dimensions: factors Exploitativeness, Self-Sacrificing Self-Enhancement and Grandiose Fantasies form the grandiosity factor while Contingent Self-Esteem, Hiding the Self, Devaluing and Entitlement rage factors form the vulnerability factor. Items are rated from "Not at all like me" as 0 to "Very much like me" as 5. Items refer to trait-like qualities (e.g. *"I often fantasize about being rewarded for my efforts"*). Specific subscales are calculated with simple summation, while vulnerable and grandiose narcissism are summed from the subscales. The internal consistency of the scale was adequate ($\alpha = .94$).

Narcissistic Vulnerability Scale (NVS; Crowe et al., 2018)

The NVS is also an adjective based measure similarly to the NGS, with 11 items such as *Underappreciated, Insecure* or *Fragile*. Participants needed to decide on a scale from 1 to 7 how much these adjectives describe them. The internal consistency of the scale was adequate (α = .87).

Maladaptive Covert Narcissism Scale (MCNS; Hendin & Cheek, 2013)

The MCNS is the updated version of the Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997) developed previously to assess vulnerable narcissism. The measure consists of 23 items (e.g. *"My feelings are easily hurt by ridicule or by the slighting remarks of others."*), rated on a 7-point Likert scale. Vulnerable narcissism is calculated with simple summation. The internal consistency of the scale was adequate (α = .85).

Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965)

Explicit self-esteem was assessed using the Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965), a widely used 10-item scale capturing global self-esteem. Participants respond to questions (e.g., "I am able to do things as well as most other people") on a 4-point Likert scale ranging from 0 - "strongly disagree" to 3 - "strongly agree". The measure consists of five reversed items. The internal consistency of the scale was adequate (α = .88).

3.3.2. Results

In Study 2 we tested the fit of the two bifactor models on a different sample with confirmatory factor analysis using the weighted least squares mean and variance adjusted estimation method (WLSMV; Brown, 2006; Finney and DiStefano, 2006) similarly to Study 1, using Mplus version 8.0. We used the full information maximum likelihood estimator to deal with missing data (Muthén and Muthén, 1998–2015). The fit indices are reported in Table 1. The models showed acceptable fit to the data according to current traditions, although the fit was slightly more modest than in Study 1. Standardized factor loadings of the general factor ranged from 0.28 to 0.69 on both the two and three factor models (Table 2). In Model 8 only one item produced lower factor loadings (0.28) than the proposed cut-off value of 0.32, item 26 on the General factor. This item however, had higher loading for the specific factor *Grandiose Exhibitionism* (0.45). Two items (34 and 40) did not load significantly on the specific

factors in neither Model 7 nor Model 8 (Items 32 and 34), both rather representing a global narcissism factor.

We estimated common variance index in the models and found that the global narcissism factor explains 63.6% of the common variance in the two-factor model and 60.6% in the three-factor model (see Table 2 and Appendix 1 for more details). These results suggest that the relevance of the global factor was also supported in Study 2. Specific factors on the other hand had slightly lower omega hierarchical coefficients (ranging from 0.25 to 0.35) suggesting again, that specific factors need to be interpreted with caution.

Associations of the general and the specific factors

To assess the associations of the best fitting three-factor model we used confirmatory factor analysis with covariates, where we regressed the factors on the covariates. The standardized coefficients are presented in Table 3. Each covariate was regressed separately.

Table 4. Correlates of the bifactor model of grandiose narcissism: confirmatory factor analyses with covariates *(Study 1, Study 2 and Study 3).*

Study 1 (N = 629)				
	General factor	Leadership/ Authority	Grandiose exhibitionism	Entitlement/ Exploitativeness
Sample 1 (N=215)				
Gender	-0.07	-0.13	0.01	**0.23**
Eudaimonic well-being	0.13	0.04	-0.17	0.05
Explicit self-esteem	**0.27**	-0.12	**0.25**	**-0.36**
R^2	15%	2%	3%	19%
Sample 2 (N=414)				
Gender	**0.20**	**-0.18**	0.13	**0.43**
Vulnerable narcissism	**-0.18**	**-0.19**	0.03	0.11
R^2	7%	8%	2%	21%
Study 2 (N = 319)				
	General factor	Leadership/ Authority	Grandiose exhibitionism	Entitlement/ Exploitativeness
Gender	**-0.20**	-0.01	**0.23**	**0.23**
PNI	**0.32**	-0.02	**0.24**	**0.59**
PNI Vulnerability factors	0.09	-0.07	0.13	**0.53**
PNI Grandiosity factors	**0.55**	-0.08	**0.36**	**0.57**
MCNS	**0.15**	-0.02	**0.19**	**0.51**
NVS	0.03	-0.07	0.05	**0.36**
NGS	**0.54**	**0.30**	**0.43**	**0.16**
Explicit self-esteem with gender controlled				
Gender	**-0.16**	-0.05	**0.17**	**0.24**
Explicit self-esteem	0.11	**0.27**	**0.39**	-0.10
R^2	4%	8%	17%	7%
Study 3 (N=237)				
	General factor	Leadership/ Authority	Grandiose exhibitionism	Entitlement/ Exploitativeness
Extraversion	**0.36**	**0.37**	**0.21**	0.06
Agreeableness	**-0.24**	-0.10	-0.04	0.01
Conscientiousness	-0.06	**0.20**	-0.08	0.16
Negative emotionality	**-0.24**	-0.01	0.11	**0.38**
Open-mindedness	**0.18**	0.02	0.08	-0.02

Note: Boldfaced regression coefficients are significant at least $p < .05$. Each covariate is regressed separately in order to avoid the multicollinearity of covariates. PNI: Pathological Narcissism Inventory; MCNS: Maladaptive Covert Narcissism Scale; NVS: Narcissistic Vulnerability Scale; NGS: Narcissistic Grandiosity Scale.

The *general factor* of grandiose narcissism was in positive medium sized association with other commonly used measures of grandiose narcissism for example the grandiosity factors of the PNI, or the NGS. Furthermore, most measures of vulnerable narcissism were unrelated with the *general factor*. *Leadership/Authority* specific factor was associated significantly only with the NGS. *Grandiose Exhibitionism* moderately associated with other grandiose narcissism measures, and weaker but not negligible associations with vulnerability measures. *Entitlement/Exploitativeness* on the other hand

showed medium-strong associations with both measures of narcissistic vulnerability and grandiosity. We also observed modest gender differences on the *general narcissism factor* favoring men, and on both the *Grandiose Exhibitionism* and *Entitlement/Exploitativeness* factor favouring women.

Explicit self-esteem had significant positive relationship only with *Grandiose Exhibitionism* and *Leadership/Authority* factors while having a non-significant negative relationship with the *Entitlement/Exploitativeness* specific factor.

3.4. Study 3

3.4.1. Method

Participants and procedure

Participants in Study 3 were 237 university students (75% women, mean age = 22.10; SD = 3.91) from a student pool at a large Hungarian university. Participants were recruited through safe internal university portals, where students could register for different research studies in exchange for course credits. After registration participants were given detailed information about the aim and tasks related to the study and were asked for their consent. For those agreed to participate surveys were distributed through email messages which participants could fill out online. The study was approved by the university research ethical committee (registration number: 2018/229).

Measures

Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988)

In Study 3 also the Likert version of the Narcissistic Personality Inventory (NPI-40) was used (Wetzel et al., 2016; Miller, 2018), administered in Hungarian. Item response distributions were skewed, therefore we handled the scale as ordinal in our analysis.

Big Five Inventory (BFI-2; Soto & John, 2017)

The big five personality traits were measured with the Big Five Inventory (BFI-2), which contains 60 items forming the factors Extraversion, Agreeableness, Conscientiousness, Negative emotionality and Open-mindedness. Participants need to decide to which degree from a scale of 1 to 5 are the statements describing them. The

Hungarian version of the test was translated based on the protocol of Beaton et al. (2000). The internal consistency was mostly acceptable of the trait measures, except for the open-mindedness trait, which offered limited reliability: extraversion (α = .82), agreeableness (α = .79), conscientiousness (α = .72), negative emotionality (α = .86), open-mindedness (α = .49).

3.4.2. Results

In Study 3 we tested the fit of the two bifactor models with a confirmatory factor analysis using the weighted least squares mean and variance adjusted estimation method (WLSMV; Brown, 2006; Finney and DiStefano, 2006) similarly to Study 1 and Study 2, using Mplus version 8.0. We used the full information maximum likelihood estimator to deal with missing data (Muthén and Muthén, 1998–2015). The fit indices are reported in Table 1. The models showed acceptable fit to the data according to current traditions, the fit indices were similar than in Study 2. Standardized factor loadings of the general factor ranged from 0.22 to 0.71 on both the two and three factor models (Table 3 and Appendix 1). In Model 8 only three items (14, 19 and 26) produced lower factor loadings than the proposed cut-off value of 0.32 on the General factor, ranging from 0.22 to 0.27. These items however, had higher loadings for the relevant specific factors ranging from 0.38 to 0.48. Six items (5, 11, 32, 34, 28 and 13) did not load significantly on the specific factors in Model 8 rather representing a global narcissism factor. Omega hierarchical coefficients ranged from 0.15-0.36 for the specific factors.

Measurement invariance

In Study 3 we used the Likert version of the NPI similarly to Study 2, however we administered the test in Hungarian. Item response distributions were skewed, therefore we handled the scale as ordinal in our analysis following the recommendation of Finney and DiStefano (2006). They argued, that although it is a common practice in psychological research to handle rating scales as linear, in case of non-normally distributed data maximum likelihood-based χ^2 values can be inflated, and model fit indices can also be underestimated (Finney & DiStefano, 2006). To overcome the possible differences with the translation we tested the invariance of the measurement with the adapted version of the NPI applying Model 8. Metric invariance could not be calculated due to the bifactor model and the categorical items, although scalar invariance also contains metric invariance. The configural and scalar model were

significantly different from each other (χ^2 = 389.41, df=117; p<0.001), however the differences in the fit indices (configural model: χ^2=1112.55, CFI=0.948, TLI=0.937, RMSEA= 0.067, CI [0.062-0.073]; scalar model: χ^2=1434.50, CFI=0.931, TLI= 0.932, RMSEA= 0.070, CI [0.065-0.075]) diminished less than the recommended cut-off values proposed by Chen (2007). The allowed difference in CFI measure across the configural and scalar model could not be higher than 0.02 (Chen, 2007), which was 0.017 in our study.

Associations of the general and the specific factors

In Study 3 the associations of the bifactor model of the NPI was also tested with a Big Five personality inventory (Table 4). Extraversion was positively associated with the *general*, the *Leadership/Authority* and the *Grandiose exhibitionism* factors. Agreeableness was negatively related with the general factor and it was unrelated to the specific factors. Conscientiousness was in a significant positive association with only the *Leadership/Authority* factor, while open-mindedness was only positively associated with the *general factor*. Negative emotionality on the other hand was negatively related to the *general factor*, while positively to the *Entitlement/Exploitativeness* factor.

3.5. Discussion

Our study supported the bifactor measurement models of grandiose narcissism. Besides the strong general narcissism factor, the specific factors also have meaningful, but much less, explanatory power. Previous research found mixed results regarding the factor structure of the Narcissistic Personality Inventory (NPI), applying either principal components analysis (Emmons, 1987; Raskin & Terry, 1988) or exploratory factor analysis (Ackerman et al., 2011, 2015; Corry et al. 2008; Kubarych et al., 2004) or confirmatory factor analysis (Ackerman et al., 2011; Kubarych et al., 2004).

Applying bifactor modelling in clinical measurement is gaining more popularity as it can differentiate between the shared variance of an underlying general factor and a subset of items which share variance in addition to this general factor (Rodriguez, Reise, & Haviland, 2016).

In bifactor models every item is determined by two separate latent factors, therefore two factor loadings exist: the loading on the general factor, and the loading on one of the specific factors. In our three studies the Explained Common Variance was ranging from 53.5%-63.3% and the Omega hierarchical coefficient was ranging from .76 to .80 for the General narcissism factor. Therefore, we can conclude, that this General factor plays the most important role in interpreting the results, while the specific factors have a substantially lower explanatory power, although a few items seem to reflect these specific factors to a greater extent. As the specific factors offered lower omega hierarchical coefficients (ranging from 0.23 to 0.41) than the recommendation of 0.5 from Reise and colleagues (2013) we can conclude that the specific factors need to be interpreted with caution in future research. Moreover, the good fit of the model and the strong associations of the General factor with other measures of grandiose narcissism support the validity of the bifactor model.

Both the competing two- and three-factor solutions yielded an adequate fit to the data, however the three-factor solution provided a slightly closer fit, and it uses more items from the original construct. The three-factor solution also have advantages from a theoretical perspective, because Grandiose Exhibitionism as a more adaptive facet of grandiose narcissisim is differentiated from Entitlement/Exploitativeness which is related to more maladaptive and socially challenging consequences (for more details see Section 2.3).

As Ackerman and his colleagues argued (2016) based on a series of exploratory factor analyses, differences can occur between the factor structure of the single stimulus and forces choice response formats. In their study a five-factor solution was well-suited to the single stimulus format of the NPI. Three items formed a separate Vanity factor, although these items also had moderate cross-loadings with their Exhibitionism factor (.44-.50). In our solution the bifactor model offered the chance of disentangling the variance coming from the General narcissism factor and the specific factor of *Grandiose Exhibitionism*, which was originally proposed for the forced-choice response format of the NPI (Ackerman et al, 2011). The significant factor loadings of the items in both the general, both the specific factors and the good fit of the measurement model suggest, that the original factor solution of Ackerman et al. (2011) could be used in the NPI with a single-stimulus format as well when a bifactorial model is applied.

Therefore, our study also implies that it can be advisable to use the NPI in a bifactor measurement setting as latent variables in further research.

In these studies, we used two separate single-stimulus response formats of the NPI, namely the binary and the rating scale option in two different languages. Regardless of the differences in response formats used, the bifactor model with one general factor and three specific factors offered good fit to the data. Neither the Omega hierarchical measures nor the factor loadings were substantially different between the binary and the rating scale options (for the details see Table 3). Based on these results, we can conclude, that the underlying constructs measured in the NPI seem to be similar when applying the bifactor model, especially when we are using ordinal scaling following the recommendation of Finney and DiStefano (2006).

We also tested measurement invariance between the Hungarian and English versions of the NPI in a rating scale setting. Our results supported the assumption that the measurement model was invariant across the translations which further improves the generalizability of the bifactor model, showing similar factor structure in two different cultural settings.

Despite the acceptable fit provided by bifactor models in general results should be interpreted with caution (Bonifay, Lane & Reise, 2017; Rodriguez et al., 2016). The two main concerns raised are that first, bifactor models tend to fit better to any possible data therefore can result in overfitting the studied model (Bonifay & Cai; 2017). Second, it might be hard to interpret what remains of a specific factor, after accounting for an orthogonal general factor (for details see Rodriguez et al., 2016). These are indeed serious concerns, however our aim with the present study was not only to report a well-fitting model, but to investigate to what degree does the NPI seem a multidimensional construct by nature. Our results suggest, that with relevant criterion variables and other concurrent measures of narcissism our bifactor model showed mostly well-interpretable findings.

The results of the bifactor measurement model of the NPI were mainly in line with previous research. Both the other two measures of narcissistic grandiosity shown a strong positive association with the *general factor*, and weaker but still significant association with *Grandiose Exhibitionism* and *Entitlement/Exploitativeness*. Vulnerable narcissism on the other hand was mainly unrelated with both the general factor both the

specific factors except for the *Entitlement/Exploitativeness* factor. This positive medium sized association is in line with other studies (Crowe et al., 2018; Krusemark et al., 2018), sometimes *Entitlement/Exploitativeness* has been treated as an index of vulnerable narcissism (Rhodewalt & Peterson, 2009) despite the several differences between the two constructs including their different associations with self-esteem, or that people scoring higher on *Entitlement/Exploitativeness* are less concerned about social evaluation and avoiding aversive states (Hart et al., 2017). Furthermore, the vulnerable narcissism involves being self-inhibited and constantly feeling uncertain, with a great reliance on others' approval (Kealy & Rasmussen, 2012; Morf & Rhodewalt, 2001), all of which are in contrast with the content of the other specific factors.

The validity of a bifactor model was also tested with covariates. General and specific factors have shown different relationships with explicit self-esteem: whereas the general factor and the *Grandiose Exhibitionism* specific factor were positively related to explicit self-esteem, the *Entitlement/Exploitativeness* factor was negatively related to it both in Study 1 and Study 2, in different strength. This might have several explanations. Grandiose narcissism is consistently found to be in positive relationship with explicit self-esteem (Hyatt et al., 2018; Di Pierro et al., 2016; Maxwell et al., 2011); however, our results show that this, on the one hand is based on the *general factor* and, on the other, on *Grandiose Exhibitionism*. Individuals with defensive high self-esteem can be afraid to admit negative self-feelings, therefore presenting an overly positive or grandiose image might affect answering self-esteem related items (Kernis, 2003). In this sense, reported high self-esteem can also be part of grandiosity itself. *Entitlement/Exploitativeness*, on the other hand, is in negative relationship with self-esteem. This also is consistent with previous results assessing the *Entitlement/Exploitativeness* subscale (Ackerman and Donnellan, 2013) alone, explaining this type of entitlement as being driven by vulnerability.

Big Five personality traits were also assessed in Study 3, and the results were mostly consistent with previous studies (Ackerman et al., 2011; Dinić & Vujić, 2018), however the general factor plays a significant role in all big five traits except conscientiousness. Agreeableness was rather negatively associated with the *general factor*, and it was unrelated to the *Entitlement/Exploitativeness* specific factor, which is different from previous studies (eg. Ackerman et al., 2011; Dinić & Vujić, 2018). Negative

emotionality on the other hand was negatively related to the *general factor* and positively to *Entitlement/Exploitativeness* which might also confirm, that this specific factor can be considered the maladaptive aspect of grandiose narcissism. It also means, that the general narcissism factor is masking the association between *Entitlement/Exploitativeness* and negative emotionality. Similarly, specific factor's association with Agreeableness and Open-mindedness is negligible if the general factor is already accounted for. These results also support the advantages of the bifactor model, as it can differentiate the effect of the general and specific factors in the associations with other covariates.

Although in both studies gender was a significant covariate, there were some differences between the studies. Women tended to score higher on the *Entitlement/Exploitativeness* specific factor in both studies, while men scored higher on the *general factor*. *Grandiose Exhibitionism* was also higher in female participants in 2 out of the 3 samples. Our findings are in contrast with a recent meta-analysis (Grijalva et al., 2015), which found that men scored higher on every specific narcissistic factor than women. This discrepancy may highlight the possibility that culture moderates gender differences in narcissism; however, our results in both studies were captured from samples of university students, and therefore do not represent the general population of neither Hungary, nor the Netherlands. Students applying to psychological studies in both countries may face significant competition, which might be in connection with higher levels of narcissism.

A further possible explanation is that recent generations are more narcissistic than previous ones, in particular, women have become more similar to men with the changing social roles (Grijalva et al., 2015). This, however, only provides a partial explanation as, in most studies – despite the changes – men are found to be more exploitative and to feel more entitled. The exact items that show the biggest gender difference favoring women were: 'I expect a great deal from other people' and 'I insist upon getting the respect that is due to me'. This finding is consistent with the observation of a strong gender inequality, implying higher awareness among women about receiving the same respect as is afforded men. Furthermore, these differences are larger in the sample of psychology students, whose curricula and social psychological studies often contain gender inequality. Therefore, it is likely that this difference is not closely connected to feeling entitled. The other item related to the specific factor, 'I find

it easy to manipulate people', was found to be endorsed more often by male, as opposed to female, participants. This finding is consistent with previous results (Grijalva et al., 2015).

3.6. Limitations

The present study also has its limitations. First, we used self-report data solely in university samples in cross-sectional designs in both studies. On the one hand, these samples do not represent the general population of the two countries, on the other hand self-report data can be biased especially in sensitive topics like narcissism. However most of the current literature of narcissism is based on student samples and self-report measures. Second, a wider range of covariates might be included into the analyses in the future supplemented with observation-based or expert rating variables. Third, in all of our studies, we used the single-stimulus response format versions of the NPI. Further studies are needed to validate, if this bifactorial model could also be applied in the original, forced choice response format.

3.7. Conclusions

According to our findings, grandiose narcissism as a general factor accounts for at least half of the variance captured in the NPI while the role of specific factors remains limited. Therefore, the measurement of this general narcissism factor seems important when we would like to understand the associations with other psychological constructs. Based on our results the general narcissism factor and the relevant specific factors offered by Ackerman and his colleagues (2011) can be assessed using a shorter version of the NPI containing 25 items. Associations of these factors with other relevant variables seem to justify the validity of the bifactor model, although further research is needed to identify the associations with other relevant constructs, in other languages or other cultural settings. Moreover, further studies are needed to identify the role of the specific factors, namely what remains of these factors after the variance accounted for by the general grandiose narcissism factor is substracted from them, and how these specific factors are related to other relevant psychological constructs.

Based on these results we can recommend using the bifactor model of the NPI

Our study also aims to offer results regarding the response format used in the NPI. According to our findings, the factor structure offered for the forced-choice response format of the NPI (Ackerman et al., 2011) offers acceptable fit to the data if the single-stimulus response is used with the bifactor measurement model.

All in all, based on our results we recommend using the NPI in a single-stimulus response format, applying a bifactor measurement model mostly to capture the general grandiose narcissism factor and partly for interpreting the specific factors with appropriate caution.

4. Conclusions and summary of Part I.

Although the considerable advancements in measurement, the identification of the hierarchical structure of the construct, the differentiation of central and peripherical traits of narcissism, and their correlates with other aspects of personality functioning the dynamic personality processes behind narcissistic functioning are still under debate. To gain more insight into these questions new forms of measurement, new data collection methods and new theoretical frameworks are needed in narcissism research. In Part II, our focus shifts to this dynamic view.

PART II – THE DYNAMIC INTERPLAY BETWEEN PROCESSES OF SELF-ESTEEM AND NARCISSISM

5.1. General introduction

Trait concepts offer a reliable and convenient way of conceptualizing and measuring narcissism through validated self-report measures of aggregated qualities however this method tends to summarize underlying personality processes and only leaves us with assumptions regarding the real within-level dynamics (Edershile & Wright, 2022). Research suggested that considerable variability is shown in narcissistic tendencies on the within-subject level (Edershile & Wright, 2021a, Giacomin & Jordan, 2016b), furthermore clinical observations and earlier theoretical models (e.g. the mask model) are often difficult to reconcile with actual data (Kuchynka & Bosson, 2018; Edershile & Wright, 2022).

To overcome these difficulties there is a growing body of literature focusing on narcissism as a complex system of several personality processes, in which phenotypic narcissistic manifestations can be best understood by disentangling the effects of these central and peripherical processes (Edershile & Wright, 2022). In this dissertation, narcissistic processes were conceptualized and measured in a naturalistic setting (for more details see Fleeson, 2001), which enables the observation of unfolding processes in everyday life. These studies usually measure shifts in narcissistic states of individuals throughout longer time periods (e.g. 10 days) with several measurements over a day. This longitudinal experience sampling methodology (for more details see Hektner et al., 2007) enables the distinction of variance in the within and between-subject levels and also allows the modelling of temporal associations between variables (e.g. Edershile & Wright, 2021a). This methodology therefore enables the observation of narcissistic processes interacting within individuals through multiple measurement occasions (i.e. within subject effects), to measure how reactive these processes are to external circumstances (i.e. the contextual nature of narcissism) and to account for the possible variability in these processes in real-time. In this sense narcissism can indeed be observed as a dynamic self-regulatory process as originally proposed by Morf & Rhodewalt (2001), which provides not only a theoretical explanatory framework, but also enables empirical validation.

5.2. Aim of the Research Topics in Part II.

Zooming in on the narcissistic *process* (which we refer to as including actions, feelings, and thoughts) that characterize narcissistic traits can help in understanding why and when this process operates and in which circumstances does it result in positive versus negative subjective experiences. As discussed in the previous chapters recent models of narcissism are beginning to conceptualize the construct as a dynamic self-regulatory process with the aim of maintaining positive self-views (Morf & Rhodewalt, 2001; for a review, see Giacomin, 2016). This growing focus on the understanding of within-individual processes underlies the need to measure narcissistic actions, feelings, and thoughts from moment-to-moment enabling us to observe individual trajectories of momentarily narcissistic tendencies and how the stability of this process emerges over time (i.e., the stability that characterizes traits). Furthermore, focusing on these trajectories of behaviors would allow us to understand how vulnerable and grandiose narcissistic tendencies are temporally associated (Edershile & Wright, 2019). This is crucial because vulnerable and grandiose behaviors correlate weakly on the trait level (Miller, Widiger & Campbell, 2010), they have different nomological networks (Miller et al., 2011), although both of them can occur within the same individual present at different times or situations according to clinical theories and observations (Edershile & Wright, 2019; Wink, 1996). Moreover, a recent study by Jauk and his colleagues (2022) emphasized a nonlinear association between grandiose and vulnerable traits indicating, that at higher levels of grandiosity vulnerability increases, indirectly reflecting the possible effects of state changes.

Changes or shifts in narcissistic manifestations can be viewed as the operation of a complex system which consists of a set of unfolding psychological processes besides state grandiosity and vulnerability (Edershile & Wright, 2022), for example negative and positive emotionality (Czarna, Zajenkowski & Dufner, 2018), processes of admiration and rivalry (Mota et al., 2022) or state self-esteem and self-esteem variability (Edershile & Wright, 2021a, Geukes et al. 2017).

Therefore, the two following studies of this dissertation are presented in a complementary manner: first, a measurement tool was designed and validated, which enabled state-level assessment of narcissistic grandiosity and vulnerability. Second,

temporal, and contemporaneous processes of narcissism and self-esteem were examined with also accounting for contextual factors coming from the everyday life of participants.

6. RESEARCH TOPIC 2

6.1. Introduction

With a growing interest in the processes that underlie narcissistic functioning (Edershile et al., 2019; Geukes, et al., 2017), there are different approaches for measuring grandiose and vulnerable narcissism as momentary assessments (i.e., states). Giacomin (2016), for example, mainly used trait measures adapted to capture states by changing the instructions such that participants were asked to reflect on their *current* states. This, however, might not be ideal because most items refer to general or aggregated personal qualities. Nevertheless, this step toward a state measure revealed moderate fluctuations across contexts.

In other studies, the adjective-based Narcissistic Grandiosity Scale (NGS) and the Narcissistic Vulnerability Scale (NVS) were used as state measurement, (e.g., Edershile et al., 2019; Edershile & Wright, 2019; Edershile & Wright, 2021a) where participants needed to decide how they feel about themselves at the moment. Originally, the NGS consists of 16 adjectives (e.g. glorious, prestigious) while the NVS offers 11 (e.g. underappreciated, insecure), although in most studies using intensive longitudinal data a shorter version of the scales with 4-4 items demonstrated good psychometric properties (Crowe et al., 2016; Crowe et al., 2018; Edershile et al., 2019).

Narcissism viewed from the dynamic self-regulatory perspective (Morf & Rhodewalt, 2001) can be understood as a set of feelings, actions and behaviors that the individual tends to use to maintain positive self-views. Therefore, limiting the scope of study to the self-related feelings, might limit our ability to evaluate every aspect connected to narcissistic states when they are not accompanied by stronger feelings.

The state-like measures of narcissism demonstrate an important step toward capturing the dynamics of narcissistic behaviors. However, to collect higher-frequency longitudinal data in experience sampling method studies (Hektner et al., 2007), it is crucial that researchers use the shortest assessment possible while ensuring that validity

is protected. Furthermore, researchers need to minimize the chance, that a time-consuming assessment might interfere with the process they wish to study.

In this study we aimed to develop a tool for assessing narcissistic states, which is necessary to study how and when the narcissistic process emerges. We assessed the psychometric properties of a state measure of narcissism focusing on momentary narcissistic behaviors. It consists of seven items, making it shorter than the previous measures used (NGS and NVS; Edershile et al., 2019), assessing both vulnerable (four items) and grandiose (three items) narcissistic functioning. On two different samples we assessed the convergent and discriminant validity of the measure with the currently used trait measurements of narcissism and self-esteem in a cross-sectional design. On the third sample, we tested its within- and between-subject level associations using structural equation modelling and multilevel analyses, based on a longitudinal five-days long experience sampling method setting. We hypothesized that state-level vulnerable narcissism would be in positive relationship with other current measures of vulnerable narcissism and in negative relationship with self-esteem and psychological well-being (Miller et al., 2018). We also expected that grandiose narcissistic states would be in positive correlation with other contemporary measures of grandiosity, and in positive correlation with self-esteem and psychological well-being (Miller et al., 2011; Hyatt et al., 2018). In this research we selected the criterion variables based on their consistent and well-established associations with grandiose and vulnerable narcissism in previous studies (e.g. Miller et al., 2011; Kaufman et al., 2018; Aghababaei, & Błachnio, 2015).

Lastly, we expected weak but positive relationship between grandiose and vulnerable states on the between-subject level representing the entitlement core of the distinct manifestations. In contrast, on the within-subject level we expected negative relationship between grandiose and vulnerable states as with context-dependent fluctuations grandiosity and vulnerability were not expected to be present at the same time (Edershile & Wright, 2022; Wink, 1996).

6.2. Materials and methods

6.2.1. Method

Participants and procedure

In this study three different samples were administered in different languages and with different settings.

In Sample 1 (S1), participants were recruited from a pool of fluent speaking first-year international students from a large Dutch university who participated in exchange for course credits. The measures were administered in English. Participants registered for the study through a secure online portal from which they were redirected to the online surveys. A total of 319 participants (73% female; mean age = 20.18; SD = 2.31) filled out the measures. The study was approved by the Ethical Committee of Psychology, University of Groningen (registration number: 18102-S).

In Sample 2 (S2) participants were recruited from a pool of students from a large Hungarian university who participated in exchange for course credits. The PNI-S was administered in Hungarian. Participants registered for the study through a secure online portal from which they were redirected to the online surveys. A total of 236 participants (75% female; mean age = 22.10; SD = 3.91) filled out the measure. In Sample 1 and Sample 2 we used a cross-sectional design.

In Sample 3 (S3), participants were recruited from a large university in Hungary who participated in exchange for course credits. The measures were administered in Hungarian. A total of 128 participants completed the first wave of the study in which they filled out trait measures (see Table 10) and provided their mobile phone numbers. 123 participants completed the second part of the study with at least 80% fill-out rate (66.4% female; mean age = 21.84; SD = 3.53) in which participants had to fill out three measurements per day for five consecutive days. The five-day period started on a Tuesday and lasted until Saturday as we intended to gather data from both weekdays and weekends, although we aimed to avoid overburdening of the participants with a longer measurement setting. Participants were sent a short message with the current questionnaire's link, which could be easily filled out on an Android or iOS smartphone. Three momentary questionnaires were sent out at a random time within three separate time frames: from 8:00 to 11:00, from 12:00 to 15:00, and from 16:00 to 19:00. Questionnaires were distributed at least two hours after the previous measurement. The study containing Sample 2 and Sample 3 was approved by the Ethical Committee of Eötvös Loránd University, Hungary (registration number: 2018/229).

Measures

Narcissistic Personality Inventory (NPI-40; Raskin & Terry, 1988)

The Likert version of the original English version of the NPI-40 was administered in Sample 1, which presents only the original 40 narcissistic items. Participants stated how much each item described them on a scale from one to five. This response format of the NPI is recently gaining popularity (Engyel, Urbán, Bandi & Nagy, 2020; Miller et al., 2018; Wetzel, Roberts, Fraley & Brown, 2016). The NPI was administered in Sample 1 and Sample 3.

Pathological Narcissism Inventory (PNI; Pincus et al., 2009)

The PNI assesses seven factors of both vulnerable and grandiose narcissism. A factor structure was proposed of two higher-order dimensions (Wright, Lukowitsky, Pincus & Conroy, 2010): Exploitativeness, Self-Sacrificing, Self-Enhancement, and Grandiose Fantasies together form the grandiosity factor while Contingent Self-Esteem, Hiding the Self, Devaluing, and Entitlement Rage form the vulnerability factor. Items are rated from "Not at all like me" as zero to "Very much like me" as five. The PNI was administered in Sample 1 and Sample 3.

Narcissistic Grandiosity Scale (NGS; Crowe, Carter, Campbell & Miller, 2016; Rosenthal et al., 2007)

The NGS is an adjective scale that contains 16 items. Participants are presented with the 16 adjectives (e.g., Glorious, Prestigious) and asked to rate how much these adjectives describe themselves. The scale has been recently demonstrated to have good psychometric properties (Crowe et al., 2016). The NGS was administered in Sample 1.

Narcissistic Vulnerability Scale (NVS; Crowe et al., 2018)

The NVS is also an adjective-based measure similar to the NGS with 11 items such as *Underappreciated*, *Insecure*, and *Fragile*. Participants are asked to state how much these adjectives describe them on a scale from one to seven. The NVS was administered in Sample 1.

Maladaptive Covert Narcissism Scale (MCNS; Cheek, Hendin & Wink, 2013)

The MCNS is a Likert-type measure assessing hypersensitive or vulnerable narcissism. It consists of 23 items with answer options ranging from one to seven (e.g. *"My feelings are easily hurt by ridicule or by the slighting remarks of others."*). Vulnerable narcissism is calculated with simple summation. This scale is considered as a significantly improved version (Cheek, Hendin & Wink, 2013) of the original Hypersensitive Narcissism Scale (Hending & Cheek, 1997). The MCNS was administered in Sample 1 and Sample 3.

Self-esteem

Self-esteem was assessed using the Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965), a widely used 10-item scale capturing global self-esteem. Participants respond to questions (e.g., "I am able to do things as well as most other people") on a 4-point Likert scale ranging from zero – "strongly disagree" to three – "strongly agree". The measure consists of five reversed items and overall scores are calculated with simple summation. The RSES was administered in Sample 1 and Sample 3.

Eudaimonic well-being

To measure eudaimonic well-being the Hungarian version of the Ryff and Keyes Well-Being Scale (1995) was used which assesses Ryff's original six factors of eudaimonic well-being (1989) with three items for each factor: purpose in life, autonomy, personal growth, self-acceptance, positive relations and environmental mastery. The measure offered good internal consistency in our sample ($\alpha = .86$). This scale was administered in Sample 3.

Momentary measures

State Self-esteem

State self-esteem was assessed in Sample 3 as a momentary assessment. We used one positive and one negative statement from the Rosenberg self-esteem scale (RSES; 1965), changing the framing to capture momentary states. The two items were *"Right now, I feel that I cannot be proud of anything"* and *"Right now, I feel that I have a number of good qualities"*.

Pathological Narcissism Inventory - State Version (PNI-S)

We aimed to assess both vulnerable and grandiose narcissism as states. Based on our preliminary analysis, using a combination of data-driven psychometric and judgmental content-related considerations (for a review see Kruyen, Emons & Sijtsma, 2013) we used one item from each of the seven subfactors of the Pathological Narcissism Inventory (PNI; Pincus et al., 2009). Items were considered appropriate if they represented the latent factors well based on the factor loadings in the original study of Pincus et al. (2009). First, items with factor loadings higher than .7 were selected in each subfactor of the PNI, following the recommendation of Tabachnick, Fidell & Ullman (2007). Second, items were selected if they could be understood as a current state of mind *(e.g. "I often fantasize about having a huge impact on the world around me.")* rather than just aggregated personal qualities. Selected items were judged by the members of our research team regarding their ability to capture the content of the PNI subscale well. Last, the highest rated items were tailored to measure the momentary experience of the participant *(e.g. "Right now, I am having fantasies of having a huge impact on the world around me.")*. The phrase "Right now," was included in all items to avoid possible effects of skipping the measure instructions and to help participants focusing on their current state of mind. The vulnerable narcissistic state was therefore assessed with four items while the grandiose state was captured with three items. Items of the PNI-S are presented in Table 7.

We recruited Sample 2 to enable the study of measurement invariance between the English and the Hungarian version and to further evaluate the factor structure of the measure. The Hungarian translation of the items was carried out following the guidelines of the standard test-adaptation procedure: first, two members of the research group translated the items separately, then a back-translation was applied. The internal consistency of the subscales is presented in both the English and Hungarian measures in Table 3. The subscale measuring vulnerable narcissistic states offers acceptable reliability in both samples, however the α for grandiose states remains moderate, due to the limited number of items, and due to the fact, that two items out of the three had substantially higher factor loadings in the scale.

6.2.2. Statistical analysis plan

Descriptive statistics and intraclass correlation coefficients

To compare the nomological network of PNI-S grandiosity and vulnerability factors with other contemporary measures of narcissism and other correlates intraclass correlation coefficients (ICC) were calculated. ICC values above 0.8 are regarded as signs of good reliability (Koo & Li, 2016; Liljequist, Elfving & Skavberg Roaldsen, 2019). First, PNI-S factors were compared to the original PNI grandiosity and vulnerability factors. Second, other grandiosity measures, vulnerability measures and external correlates were used excluding the PNI due to the considerable overlap between the state and trait constructs.

Exploratory factor analysis (EFA)

First, we applied an exploratory factor analysis (EFA) using SPSS version 25 on the data to explore the factor structure of the 7-item long measure. We applied the Maximum Likelihood method for factor extraction, with a direct oblimin rotation on both the English version (S1), both the Hungarian version (S2) of the measure. Factors with eigenvalues greater than 1 were extracted.

Confirmatory factor analysis (CFA) with covariates

Second, we performed confirmatory factor analyses (CFA) using Mplus 8.3 (Muthén & Muthén, 1998–2017). In a CFA, a satisfactory degree of fit requires the comparative fit index (CFI) and the Tucker-Lewis Index (TLI) to be close to 0.95, and the model should be rejected when these indices are less than 0.90 (Brown, 2006). The next fit index was the root mean square error of approximation (RMSEA). RMSEA below 0.05 indicates excellent fit, a value around 0.08 indicates adequate fit, and a value above 0.10 indicates poor fit (Hu & Bentler, 1999).

We applied a CFA on S1 to assess the associations of the two-factor measurement model of grandiose and vulnerable states with other measures of narcissism and personality functioning using a CFA with covariates analysis.

Furthermore, we conducted a multilevel CFA on the data from Sample 3 to differentiate the within-subject and the between-subject level in our analysis (Muthén & Muthén, 1998–2017).

Within-subject level analysis

We also tested the intra-individual associations of the state measures in an experience sampling method setting on Sample 3. We used fifteen measurement points, and therefore the standard methods for evaluating the association could not be used without violating the assumption of independence of observations.

Therefore, the present study applied the dynamic structural equation modelling framework (DSEM) using Mplus (McNeish & Hamaker, 2019), which enables the integration of both SEM models and time-series analysis (Asparouhov, Hamaker & Muthén, 2018). Our data contained information on two levels, 15 measurement points were nested within a person. Therefore, using multilevel modelling, the within-subject level dynamics of narcissistic states can be separated from the associations captured in the between-subject level.

Our model is presented in Figure 1. As we had two outcome variables collected at each measurement, besides the autoregression (when a variable from the previous time point predicts the same variable in a following time point) we were also interested in the cross-lagged associations between them (meaning the effect of the first variable collected in a time point on the second variable in the preceding time point), we used a multilevel cross-lagged vector autoregressive model [multilevel VAR(1)]. These autoregressive relationships are also good measures for examining construct stability (Hamaker, Ceulemans, Grasman & Tuerlinckx, 2015), which was one of our main aims in this study.

To capture easily comparable results, we used standardized estimates in our analysis. Following the recommendations of Schuurman, Ferrer, de Boer-Sonnenschein and Hamaker (2016) we used within-subject standardization. The process was the following: first we standardized the regression coefficients for each person separately based on their within-subject variances. On the between-person level, standardization was based on the between person variances (McNeish & Hamaker, 2019). As our data collection technique was based on unequally spaced measurements the lagged effects of the model had to be corrected due to the time elapsed between the evening and morning data collection. Therefore, following the recommendation of Asparouhov et al. (2018) we used a 6 hour interval as a baseline in our analyses.

Associations on the between-subject level

Regarding the associations of the PNI-S with other criterion variables in the momentary assessment, first we used repeated-measures correlation (Bakdash & Marusich, 2017) with the R package "Rmcorr" (R Core Team, 2017) to evaluate the association between vulnerable and grandiose states of narcissism and state self-esteem. Repeated-measures correlation also eliminates the problem of ergodicity between the different levels of analysis (Molenaar, 2004).

Lastly, we averaged all the momentary measurement points of narcissistic states and tested the between-subject level associations of the averaged scores with other contemporary measures of narcissism and criterion variables on Sample 3 using multiple regression. Grandiose and vulnerable states were used simultaneously as predictors to account for the unique variance each one explains.

6.3. Results

Descriptive statistics and intraclass correlation coefficients (ICC)

Descriptive statistics and a correlation table on all study variables is reported in Table 5. The nomological networks of PNI-S grandiosity and vulnerability factors were compared using intraclass correlation coefficients The following measures were used in comparison: Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988), Narcissistic Grandiosity Scale (NGS; Crowe, Carter, Campbell & Miller, 2016), Maladaptive Covert Narcissism Scale (MCNS; Cheek, Hendin & Wink, 2013), Narcissistic Vulnerability Scale (NVS; Crowe et al., 2018), Rosenberg Self-esteem Scale (Rosenberg, 1965) and state self-esteem. Our results suggest that both the grandiosity (ICC ranges from .835 to

Table 5: Descriptive statistics, internal consistency, and associations of all study variables (Sample 1).

International Students, Sample 1 (n=319)													
	M	SD	α	PNI-S-G	PNI-S-V	PNI Total	PNI Gran.	PNI Vuln.	NPI	NGS	MCNS	NVS	SE
PNI-S-G	123.7	58.9	.44										
PNI-S-V	113.8	83.8	.76	.127*									
PNI Total	170.8	37.2	.94	.291**	.605**								
PNI Grandiosity	63.8	13.9	.85	.504**	.254**	.768**							
PNI Vulnerability	106.9	28.0	.90	.136*	.678**	.948**	.524**						
NPI	110.9	21.1	.91	.552**	.036	.386**	.576**	.227**					
NGS	40.9	17.0	.94	.468**	-.058	.179**	.336**	.071	.671**				
MCNS	63.2	13.2	.85	.079	.579**	.753**	.439**	.783**	.198**	.045			
NVS	30.0	11.6	.87	.023	.645**	.559**	.261**	.614**	.021	.000	.614**		
SE	28.1	5.5	.88	.189**	-.439**	-.396**	-.102	-.476**	.308**	.401**	-.512**	-.560**	
State SE	14.1	3.8	.89	.144**	-.414**	-.311**	-.077	-.376**	.222**	.329**	-.413**	-.632**	,745**

Note. PNI-S-G = Pathological Narcissism Inventory State Version, Grandiosity Factor; PNI-S-V = Pathological Narcissism Inventory State Version, Vulnerability Factor; PNI Total = Pathological Narcissism Inventory Total Score; PNI Grandiosity = Pathological Narcissism Inventory Grandiosity Factor; PNI Vulnerability = Pathological Narcissism Inventory Vulnerability Factor; NPI = Narcissistic Personality Inventory; NGS = Narcissistic Grandiosity Scale; MCNS: Maladaptive Covert Narcissism Scale; NVS = Narcissistic Vulnerability Scale; SE = Self-esteem; State SE = State Self-esteem.

* $p < .05$

** $p < .001$

Table 6: Comparing the nomological networks of the PNI-S factors with intraclass correlation coefficients (ICC) in Sample 1.

	PNI-S Grandiosity	PNI-S Vulnerability
	Intraclass correlation coefficient (ICC)	
PNI Grandiosity factor	.518	
NPI	.835	
NGS	.844	
PNI Vulnerability factor		.965
MCNS		.978
NVS		.968

Note: PNI-S = Pathological Narcissism Inventory State Version; PNI = Pathological Narcissism Inventory; NPI = Narcissistic Personality Inventory; NGS = Narcissistic Grandiosity Scale; MCNS = Maladaptive Covert Narcissism Scale; NVS = Narcissistic Vulnerability Scale.

Table 7. Items of the PNI-S with the related facets from the original PNI and an exploratory factor analysis of the PNI-S in the international and Hungarian samples.

		International Students Sample 1 (n=319)		Hungarian Students Sample 2 (n=236)	
Facets of the original PNI	Items of the PNI-S	Vulnerable narcissistic state α=.76	Grandiose narcissistic state α=.44	Vulnerable narcissistic state α=.74	Grandiose narcissistic state α=.51
Contingent Self-esteem	Right now, I am feeling bad about myself because other people do not notice me.	**.80**	.06	**.81**	-.03
Entitlement Rage	Right now, I am feeling annoyed because others are not interested in what I am saying or doing.	**.76**	.13	**.70**	.07
Devaluing	Right now, I am avoiding people, because I am concerned, that they will disappoint me.	**.54**	.15	**.62**	-.10
Hiding the Self	Right now, I am hiding my needs for fear that others will see me as needy and dependent.	**.57**	-.03	**.51**	.11
Exploitative	Right now, I feel that I can make anyone believe anything I want them to.	.08	**.70**	.07	**.55**
Self-Sacrificing Self-Enhancement	Right now, I feel that I am important because others can rely on me.	-.04	**.31**	-.34	**.50**
Grandiose Fantasy	Right now, I am having fantasies of having a huge impact on the world around me.	.25	**.58**	.07	**.47**
	Eigenvalues	2.47	1.49	2.45	1.49
	Explained Variance	35.2%	21.3%	35.1%	21.2%

Note: The correlations between factors were r=0.11 in the international student sample (Sample 1) and r=-.05 in the Hungarian sample (Sample 2). PNI-S = Pathological Narcissism Inventory State Version; PNI = Pathological Narcissism Inventory. Boldfaced factor loadings are representing the original factor structure of the PNI facets.

.844) both the vulnerability factor (ICC ranges from .968 to .978) has similar associations with other measures of narcissism and external correlates. Furthermore, PNI-S factors were also compared to the original factors of the PNI. The ICC was high between vulnerability factors (ICC=.965) while moderate between grandiosity factors (ICC=.518). The most substantial difference in the associations of the PNI-S and PNI grandiosity factors were with measures of narcissistic vulnerability (NVS and MCNS) indicating, that the original PNI grandiosity factor also measures aspects of vulnerability, while the PNI-S grandiosity factor does not (see Table 6).

Exploratory factor analysis (EFA)

An EFA was applied on the 7-item long measure both using the English (S1) and the Hungarian version (S2) of the test. Results indicate that the seven items form two distinct factors in both samples, factor loadings ranging from 0.31 to 0.81 (for the details see Table 7).

Confirmatory factor analysis (CFA) with covariates

In order to perform CFA with covariates analysis, we estimated the model fit of the two-factor measurement model of *PNI-S* on Sample 1. The results supported that the two-factor solution offers acceptable fit indices according to current traditions (RMSEA = .058; CFI = .961; TLI = .937; χ^2= 374.6; df = 21; p<.001). Standardized factor loadings ranged from .53 to .79 for the vulnerability factor and .23 to .81 for the grandiosity factor. Grandiosity and vulnerability factors were moderately positively associated (.28).

To examine the convergent and discriminant validity of the PNI-S, we applied a series of confirmatory factor analyses with covariates. The results are presented in Table 8. The grandiosity factor had a medium-strong positive relationship with the other standard measures of grandiose narcissism, but it was mostly unrelated to vulnerability measures. The vulnerability factor, on the other hand, was positively related to other measures of narcissistic vulnerability. Self-esteem and state self-esteem both had medium negative associations with the vulnerability factor while the grandiosity factor was not significantly related to any measures of self-esteem.

Table 8. Associations of the PNI-S in Sample 1: confirmatory factor analysis with covariates.

	Vulnerable narcissistic state	Grandiose narcissistic state	Difference p*
Narcissistic Personality Inventory (NPI)	.05	**.75**	<.01
Pathological Narcissism Inventory (PNI)	**.66**	**.43**	<.01
PNI Grandiosity factors	**.27**	**.68**	<.01
PNI Vulnerability factors	**.75**	**.24**	<.01
Narcissistic Vulnerability Scale (NVS)	**.72**	**.18**	<.01
Narcissistic Grandiosity Scale (NGS)	-.05	**.61**	<.01
Maladaptive Covert Narcissism Scale (MCNS)	**.63**	**.20**	<.01
Rosenberg Self-Esteem Scale (RSES)	**-.46**	.15	<.01
State Self-Esteem (SSE)	**-.44**	.08	<.01
Gender (1 = male, 2 = female)	.02	**-.17**	.20

Note: N=319. Standardized coefficients. Boldfaced scores are significant at least p<.05. Each covariate is regressed separately to avoid the multicollinearity of covariates. *Wald-test was used in comparison of βs.

Measurement invariance

Measurement invariance was tested between the original English version of the measure and the Hungarian translation. The configural and the metric model were significantly different from each other (χ^2 = 14.23, df=5; p=0.014), while the differences in the fit indices (configural model: χ^2=49.44, CFI=0.958, RMSEA= 0.062, CI [0.036-0.088]; metric model: χ^2=71.65, CFI=0.928, RMSEA= 0.069, CI [0.048-0.090]; scalar model: χ^2=115.22, CFI=0.859, RMSEA= 0.089, CI [0.071-0.107]) were mixed. Following the recommendations of Chen (2007) whether sample sizes are adequate (total N > 300) measurement invariance between the models can be assumed if changes in the CFI measure is less than -0.01 supplemented by a change in the RMSEA measure less than 0.01. Between the configural and metric model CFI diminished with 0.03 while RMSEA increased by 0.012 indicating noninvariance. The metric and scalar model showed nonivariance (CFI measure dropped by 0.07, RMSEA increased with 0.02). These results suggest that direct cultural comparison with the PNI-S should be applied with caution and further research is needed to test the invariance of the construct in these settings.

Multilevel confirmatory factor analysis

The multilevel CFA used 1741 observations and offered acceptable fit indices according to current traditions (RMSEA = .035; CFI = .938; TLI = .900; χ^2= 960.2; df = 42; p<.001; SRMR $_{\text{within-subject}}$= 0.035; SRMR$_{\text{between-subject}}$= 0.093). Standardized factor loadings and intraclass correlations are presented on Table 9.

On the within-subject level the association between the grandiosity and vulnerability factors is weakly negative. (r = -.32). On the between subject level however, the association between the two factors is weakly positive (r = .26).

Table 9. Standardized factor loadings and intraclass correlations of the multilevel CFA.

Item	Intraclass correlation	Within-level factor loadings		Between-level factor loadings	
		Vulnerable state	Grandiose state	Vulnerable state	Grandiose state
SV* item 1	.49	**.67**		**.99**	
SV* item 2	.57	**.44**		**.71**	
SV* item 3	.41	**.60**		**.92**	
SV* item 4	.46	**.56**		**.82**	
SG** item 1	.64		**.52**		**.71**
SG** item 2	.47		**.61**		**.60**
SG** item 3	.60		**.48**		**.80**

Note: * state vulnerability item. ** state grandiosity item. Standardized coefficients. Boldfaced scores are significant at least p<.05.

Within-subject level analysis

In the multilevel VAR(1) model we used Bayesian estimation based on Markov Chain Monte Carlo chains in Mplus 8.3 (Muthén & Muthén, 2017). We estimated statistical significance by 95% credibility intervals (CI), meaning that each parameter has a 95% chance of falling into this range. If this CI does not contain zero, we can conclude, that the estimate is different from zero (McNeish & Hamaker, 2019).

Our model (DIC = 39129.6; Estimated number of parameters: 1207.3) estimates are presented in Figure 2.

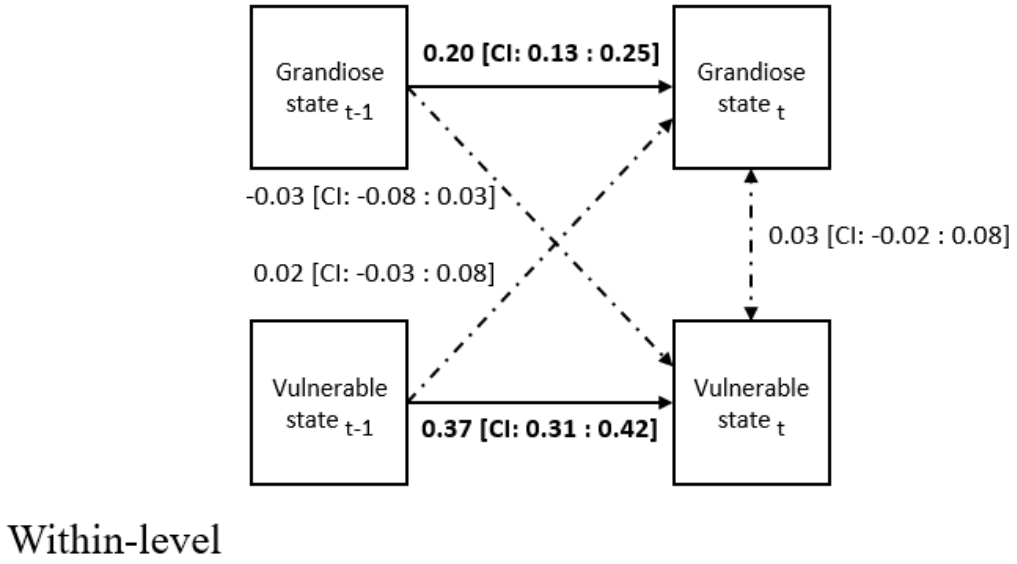


Figure 2. The stability of state constructs: Within level analysis of the multilevel cross-lagged autoregressive model.

Note: All estimates are standardized, bold estimates are significant on p<0.001. CI: 95% credibility interval.

Based on the model estimates both the grandiose, both the vulnerable narcissistic state produced significant autoregressive effect on the within subject level. The within-level explained variance (R^2) was .04 for the grandiose narcissistic state while .14 for the vulnerable narcissistic state.

Associations on the between-subject level (momentary assessment, Sample 3)

First, to test the association between the PNI-S and state self-esteem, we used repeated-measures correlation (Bakdash & Marusich, 2017). State vulnerable narcissism was in moderate negative association with state self-esteem (r= -.40; df = 1621; p<.001; CI [-.44 - -.36]) while state grandiose narcissism was in a moderate positive association with it (r=.35; df = 1621; p<.001; CI [.31 - .40]). The two state measures of narcissism were in weak negative association (r= -.18; df = 1621; p<.001; CI [-.23 - .12]).

Table 10: Associations of the PNI-S in Sample 3: Regression based on averaged scores from the momentary assessments. Momentary assessments were used as predictors in the analysis.

	Explained variance (R^2)	Vulnerable narcissistic state (β)	Grandiose narcissistic state (β)
Narcissistic Personality Inventory (NPI)	.26	-.07	**.49**
Pathological Narcissism Inventory (PNI)	.20	**.28**	**.28**
PNI Grandiosity factors	.21	.16	**.39**
PNI Vulnerability factors	.15	**.32**	.17
Maladaptive Covert Narcissism Scale (MCNS)	.15	**.40**	-.08
Rosenberg Self-Esteem Scale (RSES)	.23	**-.35**	**.42**
State Self-Esteem (SSE)	.49	**-.65**	**.46**
Eudaimonic well-being	.26	**-.45**	**.37**

Note: N=123. Standardized coefficients. Boldfaced coefficients are significant at least p<.05. Each covariate is regressed separately to avoid the multicollinearity of covariates.

Lastly, we tested the associations of the averaged scores of all measurement points of the narcissistic states with other contemporary measures of narcissism and some criterion variables with a set of multiple regression analyses. Grandiose and vulnerable states were used simultaneously as predictors to account for the unique variance each one explains. The results were in line with previous research (see Table 10).

State vulnerable narcissism had a medium positive association with other measures of narcissistic vulnerability while state grandiose narcissism had a medium positive association with grandiosity measures. Self-esteem on the trait level and state self-esteem are both negatively associated with state vulnerable narcissism while grandiose narcissism shows positive associations with them.

6.4. Discussion

The present study was designed to develop a state-level measurement tool for grandiose and vulnerable narcissism. As the personality process behind narcissism is gaining more interest, there is a growing need for appropriate measurement tools for capturing momentary fluctuations.

In this study, the *Pathological Narcissism Inventory - State Version (PNI-S)* was first administered in two samples of undergraduates in a cross-sectional design to test the factor structure and between-subject level associations with contemporary measures of

narcissism (S1 and S2). The two-factor solution yielded an appropriate fit to our data. Vulnerable narcissistic states captured with four items offered higher internal consistency on our first sample, while the factor loadings and the internal consistency of the three-item long state-level grandiose narcissism subscale remained moderate. In S3 we tested the measurement tool in a multilevel confirmatory factor analysis, which provided appropriate fit and factor loadings on both the within-subject, both the between-subject level. These results are in line with our intention, to create a measurement tool as short as possible, not to interfere with the process we study while keeping the reliability and validity of the measure.

State level narcissistic vulnerability and grandiosity were positively associated on the between-subject level, which is in line with previous research using the PNI (Pincus et al., 2009), and it may reflect the entitlement core of narcissism (Wright & Edershile, 2018). The two factors of the PNI-S provided the expected associations with the contemporary measures of trait-level grandiose and vulnerable narcissism and gender. Previous research with the PNI argued that either the grandiosity factor might not be represented sufficiently (Crowe et al., 2019) or vulnerability should be partialed out from the grandiosity construct (Edershile, Simms & Wright, 2018), our results suggest that the PNI-S Grandiosity factor is in strong association with other contemporary grandiosity measures (e.g. the NPI, NGS) and weakly or non-significantly associated with measures of vulnerability (NVS, MCNS/HSNS) in both cross-sectional, both ESM designs (for more details see Table 5, Table 6, Table 7 and Table 8). Furthermore, according to our results the nomological network of the PNI-S grandiosity factor is different from the original PNI grandiosity factor especially in associations with narcissistic vulnerability (see Table 6), suggesting that the limited number of state-based items can be effective in partialing out narcissistic vulnerability from the grandiosity factor (Edershile, Simms & Wright, 2018).

Moreover, in accordance with our previous expectations (based on Edershile & Wright, 2022), on the within-subject level the association between vulnerable and grandiose states were negative suggesting that these states are not likely to be present at the same time in individuals, which is consistent with previous clinical observations (see Section 2.3). In other words, experiencing momentary reinforcement for the grandiose self for example, might serve as a protective factor against negative self-views and vulnerability. Based on these associations we argue that the PNI-S can sufficiently

capture both grandiose both vulnerable narcissistic states and can also differentiate between them.

We also tested the psychometric properties and associations of vulnerable and grandiose narcissistic states on the within- and between person level during a five-day long ESM study. This differentiation is of great importance, because between-subject relations are a good source of information from dispositional, structural variables, that differentiate people from each other, while within-subject associations are offering insights into the internal dynamic process between variables and their dependence on situational factors (Bolger, Davis & Rafaeli, 2003). This measurement tool was specifically designed to enable researchers gathering momentary data in multiple data-collection points.

First, we conducted a multilevel confirmatory factor analysis to examine the fit of the two-factor solution in both the within- and the between-person level. Our results suggest that the scale performs well in both settings, the association between the grandiose and vulnerable states is negative on the within-subject level, while positive on the between-subject level. According to our explanation, vulnerable and grandiose narcissistic states can be associated as overall narcissistic tendencies or traits when we compare individuals [similar to the narcissistic core by Krizan and Herlache (2018)], however those states are not likely to be present at the same time as the result of an internal personality process. The results from the repeated measures correlation show a similar, somewhat weaker association, where narcissistic states are negatively associated. It is also worth mentioning, that this rather small effect could not be reproduced in the multilevel Var(1) model. These findings highlight the importance of understanding the narcissistic process itself, not limited to the trait level of narcissism, as everyday functioning might be strongly affected by the internal personality process. This weak negative association should although be investigated further by future research.

Second, the within-person contemporaneous, autoregressive and cross-lagged effects of both vulnerable and grandiose narcissistic states were tested on a multilevel Var(1) model. Our results suggest that the autoregressive effect for both grandiose and vulnerable narcissistic states is meaningful, underlining the stability aspect of these constructs, and their reliability over time (Hamaker et al., 2015). On the other hand, we did not find significant associations between the two constructs neither on a contemporaneous nor a crossed lagged setting. In other words, we conclude, that a

person has observable stability in their narcissistic states, but they are affected by internal and external circumstances.

The relationship between narcissistic states and self-esteem also served as an important aspect of the validation process of the PNI-S. State level vulnerable narcissism was in medium negative association with both state and trait level self-esteem in all of our analyses which is in line with previous research (e.g. Miller et al., 2011; 2016; 2018). Grandiose narcissism on the other hand has shown non-significant association with self-esteem on a rather trait-like measurement (S1), but moderate positive association on our longitudinal study (S3). On the trait level this weak association is in line with the results of Hyatt et al. (2018) who used a meta-analytic approach and found that the strength of this relationship was between r=.10 and r=.43 across different samples. The stronger association on a longitudinal setting on the other hand might highlight the value of capturing the dynamic fluctuations of self-esteem in relation to narcissistic states. At the most general level, these temporal associations suggest that studying narcissism as a fluctuating process consisting of state iterations might enable a deeper understanding of the underlying personality processes of narcissism (Edershile & Wright, 2019; Edershileet al., 2018; Giacomin, 2016). Our results also suggest therefore, that momentary self-esteem and narcissism are indeed going hand in hand in our everyday life.

6.5. Limitations

Despite the strengths of the present study including the different languages of administration, samples, data collection techniques and statistical methods used there are also limitations worth mentioning. The measures used were all self-report measures and they were administered in student samples overrepresented by women in partly cross-sectional designs. Also, the international student sample consisted of students speaking English as a second language. While using student samples is common practice in current narcissism research, future studies would benefit from collecting informant reports or observing the process of narcissistic personality functioning in laboratory settings and from doing so with clinically diagnosed samples. Furthermore, the administration of other currently available state measures (e.g. the NVS and the

NGS) in S3 would have offered more opportunities to study convergent validity, however we aimed to limit the number of items presented to the participants in order to avoid interfering with the internal personality processes we wished to study. Further research with more diverse samples and more balanced gender distributions should also aim to study measurement invariance across genders, cultural settings and age ranges, particularly with the grandiose narcissistic states factor, in which internal consistency remained moderate.

6.6. Conclusions

The present study demonstrated the usefulness of the seven items long *Pathological Narcissism Inventory - State Version (PNI-S).* This measure can perform better than original trait measures of grandiose and vulnerable narcissism (e.g. the NPI or the HSNS) in momentary data collection research where short and current state-related items are crucial in capturing internal states of personality processes. Compared to other currently used momentary measures the PNI-S can be applicable if the entitlement-related core of narcissism is also in focus besides vulnerability and exhibitionism/grandiosity (e.g. the NVS or the NGS) and if vulnerable aspects of narcissistic functioning is equally important in measurement (compared to the process-oriented Narcissistic Admiration and Rivalry Questionnaire (Leckelt et al., 2018). Furthermore, our results also highlighted the differences between the within- and between person associations, enabling us to take a closer look into the personality processes behind narcissistic functioning.

7. RESEARCH TOPIC 3

7.1. Introduction

The role of negative and positive self-esteem processes in narcissistic functioning

The association between self-esteem and narcissism is well-documented in the trait perspective (see Chapter 1.2.3), furthermore these associations are mostly replicated in studies measuring state self-esteem (e.g. Edershile & Wright., 2021), although state self-esteem is usually captured as a global tendency, measuring self-esteem with positive items from the Rosenberg Self-Esteem Scale (Rosenberg, 1965), tailored for momentary assessment. In the current study we argue that positive and negative self-esteem processes are not simply two sides of the same coin, but also operating separately to some extent. Differentiating positive and negative self-esteem processes was already proposed by Owens (1993, 1994) arguing that combining positive and negative self-evaluations (so-called self-deprication) in a single measure may hide important features of the self-esteem process. Even in terms of traits, low self-esteem appears to be more complex than being the opposite of high self-esteem (Rosenberg & Owens, 2001), as the low self-esteem cluster is closely related to other variables e.g., depression and anxiety. Moreover, clinical observations applying the mental states perspective also suggest, that high and low self-esteem states, or grandiose and vulnerable narcissistic states can oscillate or even co-occur (Levy, 2012).

Moving forward from the trait perspective, de Ruiter, van Geert & Kunnen (2017) offered a different theoretical background for understanding dynamic self-esteem processes. In the Self-Organizing Self-Esteem (SOSE) model the dynamic systems approach is applied (for more details see van Geert, 2011) which uses two terms to explain both stability, both variability in personality processes. Attractor states are higher-order patterns of cognitions, behaviours and affects that lead the current state of self-esteem to a previously established, coherent state built up from prior self-experiences. These attractor states are rather stable, and a person can reach them with a relatively little energy (e.g. effort, motivation or attention; Kunner & Van Geert, 2012) similar to practicing a habit rather than trying out a new set of behaviour (de Ruiter, van

Geert & Kunnen, 2017). Different attractor states of self-esteem can be present at the same system (for example a negative self-esteem attractor and a positive self-esteem attractor), which is called multistability in the SOSE model. The totality of all possible self-esteem states forms the attractor landscape of an individual's self-esteem. In this view state self-esteem can oscillate between different states, although it is easier (i.e. requiring less energy) to be attracted to a specific, well-established state, and the more one visits a particular attractor state, the deeper it becomes. As an attractor state deepens, more and more energy is needed for the individual to leave it. Trait self-esteem therefore can be considered as an attractor landscape consisting of multiple states. If we average these distinct self-esteem states, we might also end up losing our ability to differentiate distinct processes.

With this concept in mind our aim was matching positive and negative self-esteem processes with grandiose and vulnerable narcissistic states. We hypothesised that grandiose narcissistic states would be more closely related to positive self-esteem processes, while vulnerable narcissistic states are rather related to negative self-esteem processes. This view has already been supported by some studies using different methodologies, for example Weiss and Huppert (2022) found, that grandiosity is related to positive explicit while vulnerable narcissism is related to both explicit, both implicit negative self-appraisals in a social rejection context.

The role of context

Multistability in the SOSE model suggests, that more attractor states exist in the self-esteem attractor landscape, therefore more than one possible and stable state can attract momentary self-esteem. Moreover, several internal and external factors are influencing which state is activated in different situations. In the current study we aimed to account for the role of context (Edershile & Wright, 2022) of narcissism dynamics with capturing the daily experiences of individuals in two main domains of personality functioning, agency, and communion. Agentic experiences refer to situations in connection with competence, assertiveness and decisiveness (how someone achieve goals) and communion, refers to social functioning and relationship maintenance (being helpful, trustworthy and benevolent; for a review see Abele & Wojciszke, 2014). Narcissism (especially grandiosity) is generally associated with agentic domains (for example see the agency model of narcissism; Campbell & Foster, 2007), although Gebauer and colleagues (2012) argued that grandiose self-enhancement could also be

served by communal means, for example being the most helpful person (agency-communion model of narcissism). The study of Besser & Priel (2010) also suggests that negative events of both domains are important, because negative affect and anger was associated with achievement failure in grandiose narcissism and interpersonal threats in vulnerable narcissism.

To account for the effects of context, we argue that the differentiation of positive and negative events on both agentic, both communal domains is crucial. From the point of view of the narcissistic process, positive events can help in reinforcing and maintaining the positive view of the self, while negative events can serve as ego-threats. Studying ego-threatening situations (when specific cues from the environment triggers the feeling of self-worth) has a long history in previous narcissism research (for a review see vanDellen, Campbell, Hoyle & Bradfield, 2010), either in agentic, or communal domains. For example, Roche and colleagues (2013) found, that trait grandiosity was in a positive association with agentic nonreciprocative behavior while trait vulnerability was unrelated to these patterns of interaction. Mota and colleagues (2022) found that perceived status success has a positive association with positive affect, perceived admiration and assertive behavior, while it was in weak negative association with rivalry and perceived rejection. Regarding the communal domain, Weiss and Huppert (2022) found in an experimental social rejection situation that both implicit, both explicit self-appraisals can be affected by current, ego-threatening situations depending on the person's trait vulnerability and grandiosity.

Previous studies play an important role in understanding how a person would react to a triggering situation, on the other hand a more nuanced understanding of the changes in processes of state level self-esteem, grandiosity and vulnerability is still lacking. Moreover, previous studies indicate that there is a considerable variability in narcissistic states, and higher grandiosity has a stronger positive association with daily agentic outcomes and a positive but weaker association with daily communal outcomes (Giacomin & Jordan, 2016b). Furthermore, grandiose narcissistic states were positively associated with warmer social exchanges, while state vulnerability was in positive association with negative affect and colder interpersonal transactions (Wright et al., 2017; Edershile & Wright, 2021b; Giacomin & Jordan, 2016b).

To account for the effect of context in a naturalistic setting we measured daily events related to social (or communal) and performance (or agency) situations, while also

differentiating the effect of positive events from negative ones (Nezlek & Gable, 2001) in the current study. Previous contradictory results from the state and trait levels of narcissism also contributed to our study design, as according to Zeigler-Hill, Myers and Clark (2010) more performance related negative events were associated the most with trait level grandiosity, while positive events were unrelated. On the contrary, Giacomin and Jordan found (2016) that both positive performance-related, both social events were in association with higher levels of state level grandiosity.

The present study

The aim of the present study is to capture four distinct central processes of narcissistic functioning, namely state-level positive and negative self-esteem and state-level grandiose and vulnerable narcissism while also considering the effect of context. Previous studies suggest that negative self-esteem processes and negative self-experiences can be associated with narcissistic vulnerability (when the grandiose self-image cannot be reached or validated by self or others), and positive self-esteem processes, positive self-experiences can be associated with narcissistic grandiosity (when the grandiose self-image can be reached or validated by self or others). Furthermore, our aim is to also capture the dynamic interplay of these processes in the everyday life of individuals.

7.2. Methods

7.2.1. Procedure and participants.

The current research consists of two largely identical studies *(Study 1, Study 2)* the only difference being the usage of different measurement tools (for more details see section Measures). In both *Study 1* and *Study 2*, participants were recruited from a large university in Central Europe who participated in exchange for course credits. To be eligible for the course credits every participant had to fill-out at least 40% of the questionnaires distributed.

In the first wave of the studies participants filled out trait measures and provided their mobile phone numbers. The second wave consisted of a longitudinal experience sampling method setting, where participants had to complete four measurements per

day for five consecutive days as we aimed to avoid overburdening of the participants with a longer measurement setting. Participants were sent a short message to their smartphone with a link to the current questionnaires, which they could easily fill out on Android or iOS devices. Daily data collection consisted of three momentary questionnaires sent out at a random time within three separate time frames: from 8:00 to 11:00, from 12:00 to 15:00, and from 16:00 to 19:00. Questionnaires were distributed at least two hours after the previous measurement. At 22:00 a daily summary questionnaire was sent out related to experiences of the entire day.

In *Study 1* a total of 128 participants completed the first wave of the study and 123 participants completed the second part of the study (66.4% female; mean age = 21.84; SD = 3.53). Participants were excluded if their fill-out rate was less than 40%. The five-day period started on Tuesday and lasted until Saturday.

In *Study 2* a total of 129 participants completed the first wave of the study and 109 participants completed the second part of the study (78.9% female; mean age = 22.03; SD = 3.91). Participants were excluded if their fill-out rate was less than 40%. The five-day period started on Wednesday and lasted until Sunday.

7.2.2. Measures

The main difference between *Study 1* and *Study 2* was the usage of different measurement tools. This approach enabled us to account for measurement differences between currently used state narcissism measures, as they can capture different aspects of narcissistic grandiosity, vulnerability and entitlement (for more details see Engyel, de Ruiter & Urbán, 2022; Wright & Edershile, 2018).

Grandiose and vulnerable narcissistic states

In *Study 1* both grandiose and vulnerable narcissistic states were measured with the state version of the Pathological Narcissism Inventory (PNI-S; Engyel, de Ruiter & Urbán, 2022; Pincus et al., 2009). Vulnerable narcissistic state was assessed with four items (e.g. *"Right now, I am feeling bad about myself because other people do not notice me"*), while state grandiose narcissism was captured with three items (e.g. *"Right now, I am having fantasies of having a huge impact on the world around me"*). Overall scores were calculated using simple summation. Results from a multilevel confirmatory factor analysis indicate, that the measure had acceptable fit indices according to current traditions (RMSEA = 0.035; CFI = 0.938; TLI = 0.900; $\chi 2 = 960.2$; df = 42; $p < 0.001$;

$SRMR_{within\text{-}subject}$ = 0.035; $SRMR_{between\text{-}subject}$ = 0.093; for more details see Engyel, de Ruiter & Urbán, 2022)

In *Study 2* state-level grandiose narcissism was captured with the Narcissistic Grandiosity Scale (NGS; Crowe et al., 2016; Rosenthal, Hooley, & Steshenko, 2007). Participants were asked to rate how much an adjective (e.g. *prestigious, glorious*) describe their current state of mind. In the original version sixteen adjectives are presented, although a four item long version is recommended to studies using intensive longitudinal data (Crowe et al., 2016). Items were administered using a 100-point sliding scale with anchors *Extremely (100), Moderately (50)* and *Not at all (0)*. Overall scores were calculated using simple summation.

In *Study 2* state-level vulnerable narcissism was administered using the shorter, four adjectives long version (e.g. *underappreciated, ignored*) of the Narcissistic Vulnerability Scale (NVS; Crowe et al., 2018), used similarly than the NGS with a 100-point sliding scale.

State self-esteem

State self-esteem was assessed in both *Study 1* both *Study 2* with one positive and one negative item from the Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965). Wording of the original scale was changed only to capture momentary states. The negative self-esteem item was "*Right now, I feel that I cannot be proud of anything*" while the positive item was "*Right now, I feel that I have a number of good qualities.*" Items were administered using a 100-point sliding scale with anchors *Extremely (100), Moderately (50),* and *Not at all (0).*

Positive and negative daily events

Positive and negative daily events during the five-day long study were administered in both *Study 1* and *Study 2* using the Daily Events Survey (DES; Nezlek & Gable., 2001). This measure contains 26 event types as items *(e.g. "Completed work on an interesting project or assignment.")* which often occur in students' lives. Participants had to decide on a 4-point Likert scale if the specific event happened during the day and how important they rated them 1 (it did not happen or it was not important) to 4 (it was very important). The events were divided into social- and performance-related sub-categories, with an equal number of positive and negative events in every sub-category. Overall scores were calculated to both positive and negative events, social and

performance related events and the combination of the two (e.g. negative performance related events). The DES was administered at the end of each day at 22:00, asking the participants to summarize their experiences of the entire day.

7.3. Statistical analysis plan

As the data from the five-day long studies had a multilevel structure (fifteen observations nested within persons), multilevel vector autoregressive models (VAR1) were used in the dynamic structural equation modelling framework (DSEM) of Mplus 8.3 (McNeish & Hamaker, 2019). This method enables the integration of both SEM models and time-series analysis (Asparouhov, Hamaker & Muthén, 2018). Two types of models were used: first, we differentiated effects within a specific observation window (time *t*) using Residual DSEM (Model 1). This model enables us to model contemporaneous associations while differentiating the autoregressive part (i.e. the variable at time *t-1* predicts the same variable at time *t*) from the structural part of the model (Asparouhov & Muthén, 2019). Second the lagged effects of time *t-1* on time *t* (temporal associations) were modelled using a regular DSEM model (Model 2). This model helps us in differentiating the associations between positive and negative state self-esteem and grandiose and vulnerable narcissistic states. This differentiation of the temporal and contemporaneous associations is common in studies using intensive longitudinal data (e.g. Kiekens et al., 2020).

Within-subject standardization was applied following the recommendation of Schuurman, Ferrer, de Boer-Sonnenschein and Hamaker (2016), therefore the regression coefficients of each person were separately standardized based on within-level variances. On the between-subject level between person variances were used as a basis for standardization (McNeish & Hamaker, 2019). Due to the nature of the data collection (three measurements from morning to evening) unequally spaced measurements were used in both studies: time difference between evening and the following morning was longer than between intra-day measurements. To overcome these difficulties, we corrected our models using a 6-hour time interval following the recommendation of Asparouhov & Muthén (2018).

7.4. Results

Descriptive statistics and repeated measures correlation

During the 5-day long ESM protocols a total of 2337 assessments were registered in *Study 1*, and 2035 assessments in *Study 2*. Means, standard deviations and variance proportions are presented in Table 11. Furthermore, repeated measures correlation was applied to evaluate the within-subject level associations of the momentary variables (Table 11).

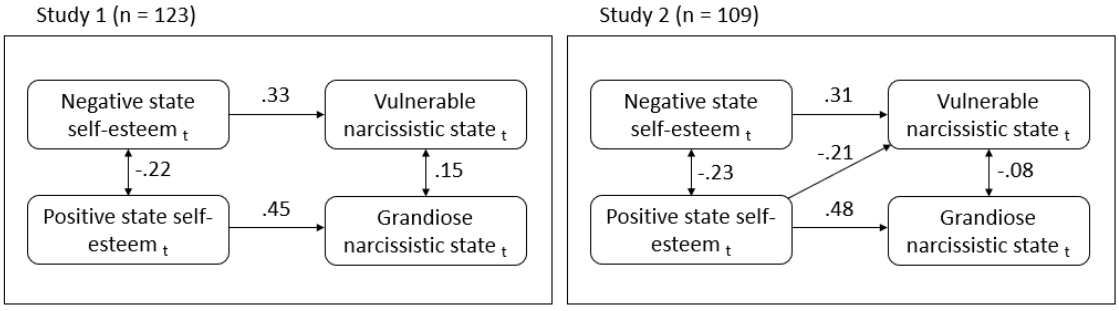
Table 11. Descriptive statistics of variables in Sample 1 and Sample 2. Repeated measures correlations are presented above the diagonal (upper right) in Study 1 and below the diagonal (bottom left) in Study 2. Negative state self-esteem is not reversed-scored. Significant correlations are boldfaced (p<.001).

Within-subject variables	M		SD		Total variance of variable		Variance on the between-subject level		Repeated measures correlation matrix (r; within-subject level) of the momentary variables				
	S1	S2	S1	S2	S1	S2	S1	S2	1.	2.	3.	4.	5.
1. Vulnerable narcissistic state	14.84	59.32	1.29	4.31	350.57	5312.31	182.20	1590.68	-	.03 p=.24	**-.40 p<.001**	**-.30 p<.001**	**.33 p<.001**
2. Grandiose narcissistic state	33.97	130.41	1.64	6.53	569.22	9391.70	282.97	4087.66	**-.26 p<.001**	-	**.36 p<.001**	**.44 p<.001**	**-.13 p<.001**
3. State self-esteem	66.48	67.93	1.69	1.70	1572.04	1472.35	666.45	542.13	**-.43 p<.001**	**.47 p<.001**	-	**-.77 p<.001**	**.81 p<.001**
4. Positive state self-esteem	56.93	56.93	1.69	1.86	767.77	782.27	335.75	314.04	**-.35 p<.001**	**.58 p<.001**	**.79 p<.001**	-	**-.25 p<.001**
5. Negative state self-esteem	23.97	21.08	1.70	1.54	804.27	690.08	300.70	228.09	**.34 p<.001**	**-.19 p<.001**	**-.82 p<.001**	**-.30 p<.001**	-
6. Positive events	10.15	9.57	0.46	0.43	43.47	38.14	22.44	17.82					
7. Negative events	3.61	4.97	0.25	0.33	13.61	22.10	6.98	10.37					

Multilevel associations

Results from the contemporaneous within-person model (Model 1) are presented in Figure 3. Negative state self-esteem is in a positive association with state-level vulnerable, while positive state self-esteem with state-level grandiose narcissism. Furthermore, in Study 2 positive state self-esteem is also negatively associated with state vulnerable narcissism. Negative state self-esteem is not related to state grandiosity in neither Study 1 nor Study 2. Associations between vulnerable and grandiose narcissistic states differ in the two studies, as they are in a weak positive association in Study 1 and a weak negative in Study 2.

Figure 3: Contemporaneous within-person associations between negative and positive state self-esteem and vulnerable and grandiose narcissistic states with lagged effects controlled for in a RDSEM model (**Model 1**).



Temporal associations of the variables are presented in Figure 4a and 4b. Besides the autoregressive effects only negative state self-esteem (SSE) in time *t-1* is significantly affecting vulnerable narcissistic states (VNS) in time *t*. Similar strong positive associations were found between negative SSE and VNS and positive SSE and GNS in both studies, furthermore the moderating effect of daily events are also meaningful. The positive association between negative SSE and VNS is even stronger for participants, who experience more negative daily performance-related and social events. A similar effect of positive daily events on the association between positive SSE and GNS can only be observed in Study 1. Although the effects of positive daily events on the relationship between negative SSE and VNS are non-significant in both studies, their tendencies are suggesting, that participants who experience more positive daily events can be partly protected against the negative SSE-VNS association.

Figure 4a: Temporal associations between negative and positive state self-esteem and vulnerable and grandiose narcissistic states with a moderating effect of negative and positive life events in a DSEM framework (Model 2). Arrows represent significant standardized regression coefficients. Arrows with dashed lines indicate important non-significant tendencies.

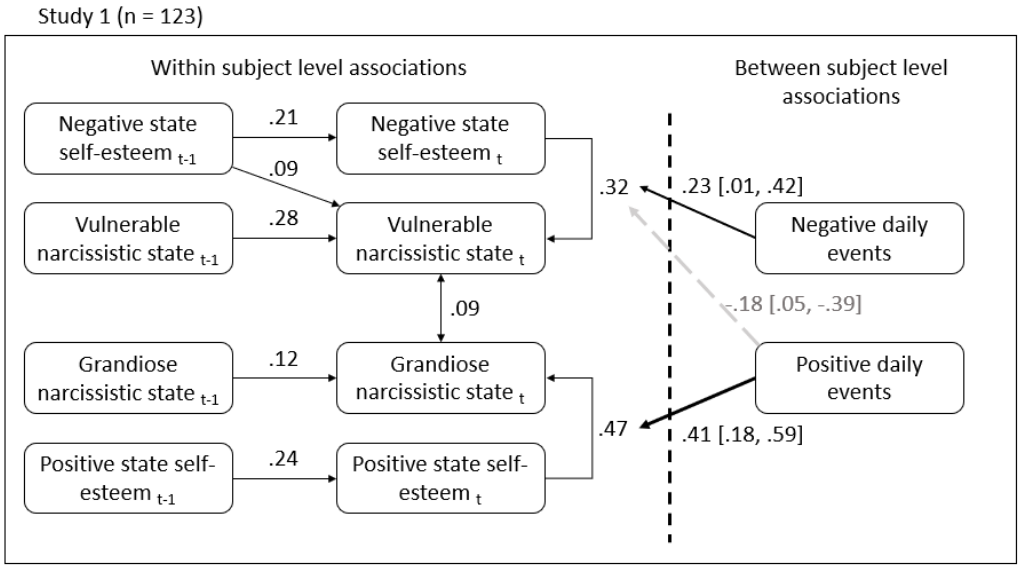
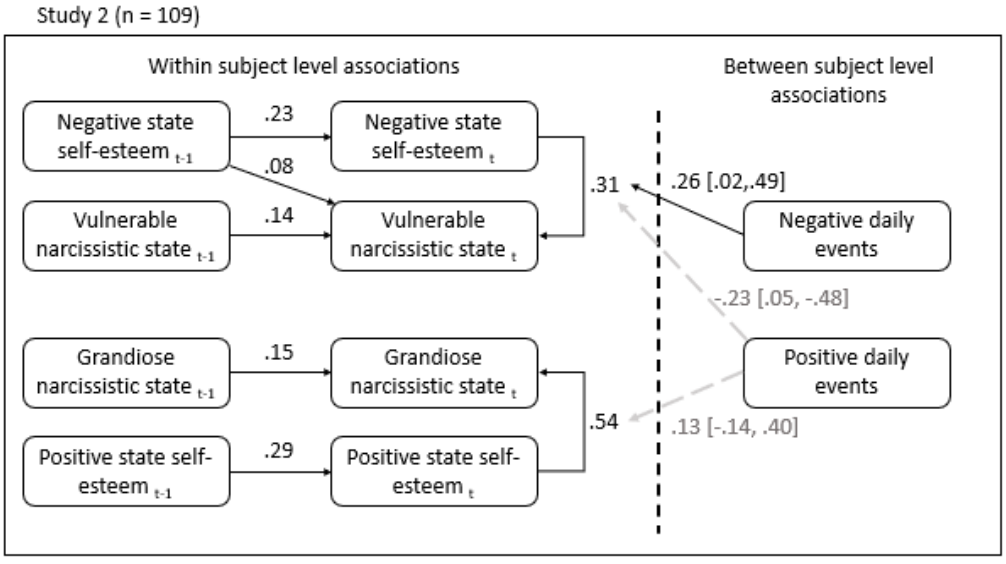


Figure 4b: Temporal associations between negative and positive state self-esteem and vulnerable and grandiose narcissistic states with a moderating effect of negative and positive life events in a DSEM framework (Model 2). Arrows represent significant standardized regression coefficients. Arrows with dashed lines indicate important non-significant tendencies.



7.5. Discussion

Dynamic processes of self-esteem and narcissistic states were investigated in two separate studies using intensive longitudinal data in an experience sampling framework. Our aim was extending our current knowledge – which is mainly based on trait level measurement – with a focus on internal dynamic personality processes.

Previous studies suggested the important role of self-esteem (trait, state, variability) processes in narcissism dynamics (Edershile & Wright, 2021a; Geukes et al., 2016), although previous studies either examined them separately from each other or mainly identified the variability of these measures, they did not address the interplay of internal processes (Edershile & Wright, 2021a). Our results confirmed that meaningful variance can be observed in momentary self-esteem and narcissistic states on the within subject level, which is in line with previous research (Giacomin & Jordan, 2016a; 2016b; Edershile & Wright., 2021a, 2021b). Negative and positive state self-esteem processes differed considerably both in their levels (e.g. mean) both in their associations with each other, and other momentary variables (see Table 11). Negative SSE mean was generally higher suggesting, that self-deprication processes might not be equally represented in every participant. This is line with the work of Kernis (2003), suggesting that low self-esteem is rather associated with anxiety, depression, or other psychopathologies, while positive self-esteem (i.e. high or optimal self-esteem) is related to more adaptive personality functioning. The repeated measures' correlations also underpin the need for differentiating the two processes, as both negative and positive SSE was in a similar negative association with vulnerable narcissistic states (VNS) although positive SSE was strongly and positively related to grandiose narcissistic states (GNS), while negative SSE had only a weak positive relationship with it. Moreover, the negative association between positive and negative SSE was also limited. Although, this distinction was suggested previously on the trait level (Owens, 1994; Rosenberg & Owens, 2001), most studies using either trait level measurement, or intensive longitudinal data view self-esteem as a one-dimensional construct, and also measure state self-esteem with only positive items (e.g. Edershile & Wright., 2021b).

Models capturing contemporaneous associations

To capture the within-level dynamics of self-esteem and narcissistic processes we applied two separate models, one for capturing the contemporaneous effects controlling for the lagged effects of variables (residual DSEM model, Figure 3) and one for capturing the temporal effects affected by specific daily events as moderators (regular DSEM model, Figure 4). The contemporaneous effect can reflect on the dynamics inside a specific attractor state while the temporal associations help in capturing the temporal extent of an attractor state.

Our results suggest, that within a specific time window negative SSE is positively associated with VNS, while positive SSE is rather associated with GNS, although on Study 2 positive SSE was also in a negative association with VNS. From the perspective of the self-organizing self-esteem model (SOSE; de Ruiter, van Geert & Kunnen, 2017) we argue, that two different attractor states can be identified in self-esteem processes. The activation of the negative self-esteem attractor limits positive SSE and predicts a vulnerable narcissistic state, in which negative self-experiences are going to dominate (e.g. feeling not worthy enough, being incapable of achieving certain goals, etc.). On the other hand, the activation of the positive self-esteem attractor can predict a grandiose state with positive self-experiences (e.g. feeling special, getting validation or support for the grandiose self-image, etc.). This concept is largely in line with previous research suggesting the self-regulatory function of narcissistic tendencies (e.g. Morf & Rhodewalt, 2001) in maintaining a positive view of the self (i.e. closely associated processes). Moreover, differentiating grandiosity and vulnerability on a state-level as distinct attractors also reflects earlier clinical observations of possible flips between experiences of self-aggrandizement and self-loathing (Miller et al., 2007; Ronningstam, 2010).

The associations between self-esteem processes and narcissistic states show similar patterns in both studies, although some meaningful differences exist. Vulnerable and grandiose narcissistic states are in a positive association in Study 1, but they are negatively associated in Study 2. Moreover, positive SSE effects the vulnerable state negatively, while this association is not replicated in Study 1. We conclude that these differences might be the result of different measurement tools used in the studies. In Study 1, we used the state version of the Pathological Narcissism Inventory (PNI; Engyel, de Ruiter & Urbán, 2022; Pincus et al., 2009). The focus of the PNI is closer to

vulnerable or maladaptive aspects of narcissism in both the vulnerability, both the grandiosity factors (Crowe et al., 2019; Edershile et al., 2019) and the entitlement core of narcissism is captured in both factors (Wright & Edershile, 2018). On the other hand, the focus of the Narcissistic Grandiosity Scale (NGS; Rosenthal et al., 2007) used in Study 2 is closer to exhibitionism while the Narcissistic Vulnerability Scale (NVS; Crowe et al., 2016) is rather measuring vulnerability without the entitlement core. Therefore we argue, that if grandiosity and vulnerability are measured separately (partialing the entitlement core out), than the two attractor states are less likely to exist at the same time in an individual. Furthermore, positive state SSE (i.e. momentarily active positive self-esteem processes) can serve as a protective factor against the activation of the vulnerable narcissistic state and the negative self-esteem process.

Models capturing temporal associations

In Model 2 temporal associations of negative and positive SSE and narcissistic states were measured in a regular DSEM model. Lagged and cross-lagged associations (i.e. the effect of $time_{t-1}$ variables on $time_t$ variables) suggest, that some stability can be observed in every variable (lagged associations), and negative SSE in the preceding measurement also predicted current vulnerable narcissistic state. This result indicate that a negative SSE attractor state might affect the activation of the vulnerable narcissistic state. A similar pattern between positive SSE and grandiosity cannot be observed in either of the studies.

The moderating effect of daily positive and negative experiences was also considered in our studies. Daily negative experiences were significant moderators of the association between negative SSE and state vulnerability in both studies. This result indicates that for those, who experienced more negative daily events the negative SSE-vulnerability association was stronger. Positive events on the other hand had a more limited, not significant negative association with the negative SSE-vulnerability association and a positive association with the positive SSE-grandiosity association in *Study 1*, not replicated in *Study 2*. Daily events, measured in the current form produced considerably wider confidence intervals at least partly because they were measured only once a day, compared to momentary measurements of 15 occasions. Therefore, future research should apply a more nuanced view of momentary contextual differences.

Based on these results we argue that negative daily events (e.g. social rejection, failure in an achievement related task) might have a more robust effect on pushing the person to a negative SSE attractor state characterized by a mainly maladaptive vulnerable narcissistic coping, while positive daily events can partly compensate for those by affecting both negative and positive SSE processes. Although context is an important aspect of narcissism dynamics (Edershile & Wright., 2022) in the current study we could not differentiate communion and agency related events (in the form of social and performance related experiences). While using the current method, distribution of specific events was skewed, participants could not register several occasions daily on each event types. Therefore, further research is needed related to event specifics in natural settings to account for the differences agentic or communal experiences play in narcissistic dynamics.

7.6. Limitations and future directions

Despite its strengths, the present study has several limitations. First, similarly to the majority of current narcissism research we entirely relied on self-report measures, while momentary data collection only allows a limited number of items used for specific variables. Negative and positive self-esteem were measured with single items, which is in line with ESM designs, although more research is needed on the validity and reliability of such measures.

Second, momentary data collection offers insights into narcissism and self-esteem dynamics, on the other hand time elapsed between measurements were hours in these studies. Edershile & Wright (2022) argued, that internal dynamic processes might change from minute-to-minute, therefore a more intensive tracking, or other methods beside self-report measures could be used, which allow more intensive data collection. It could be the case, that these processes are associated on a contemporaneous level in our analysis, although from a moment-to-moment dynamic approach the interplay of specific processes could be identified (i.e. what happens inside a specific attractor state).

Third, the measurement of external events (the context) could also be assessed on a more or less momentary measure, that could enable data collection exactly when a specific attractor state is active. Therefore, we suggest, that future research could also

benefit from the closer inspection of attractor states through experimental methods which trigger those in ego-threat situations (e.g. Weiss & Huppert, 2022).

Fourth, similar to current traditions in narcissism research we relied entirely on student samples which do not represent the general population of the country.

8. General discussion

In this Phd dissertation a deeper understanding of the relevant processes of narcissistic functioning was in focus. Following the currently dominant research traditions (e.g. Miller et al., 2022), the first sections were focusing on narcissism from the trait perspective. We first reviewed current hierarchical models (e.g. Krizan & Herlache, 2018; Miller et al., 2018) which aimed to identify the central and peripherical traits of the construct. Second, we studied important correlates of narcissism including self-esteem, different forms of psychopathology and other personality variables, with a deeper focus on psychological well-being. Throughout the three research topics we found support to the distinction of grandiose and vulnerable narcissism both on the trait and state levels. Narcissistic grandiosity was positively associated with well-being measures and explicit self-esteem, while vulnerability tended to relate negatively to those. On the other hand, the two forms of narcissism – despite the shared underlying mechanisms and depending on the measures used – correlated weakly at most. These results are mostly consistent with previous research and underscore the importance of studying personality processes on a deeper, dynamic setting.

In the vast majority of narcissism research, measurement related questions remained central, as several self-report methods were developed, capturing different important aspects of narcissistic functioning (Wright & Edershile, 2018). Therefore, a separate section was dedicated to evaluating current, important measurement tools, and their closer scope, based on the hierarchical models. We concluded that measures differed notably, highlighting possible explanations of diverging results in correlates. With a similar aim of clarification our first research question (Research Topic 1) was related to the highly debated measurement model of the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988; Ackermann et al., 2011), which is one of the mostly used measures of narcissistic grandiosity. We hypothesized, that diverging results related to the factor structure could imply the need for a more complex, bifactor measurement model – similarly to other areas of psychopathology (Caspi et al., 2015). We also argued that this approach can outperform other proposed measurement models on the one hand in better fit to the data, and on the other hand in a more nuanced analyses of correlates.

Our results, based on three studies and a combination of five samples (total N = 1348) in two languages suggested that the proposed bifactor model built up of one general grandiosity factor and three specific subfactors (originally proposed by Ackermann et al., 2011). Items loaded markedly on mainly the general grandiosity factor (Explained Common Variance average was 58.4%), but variance explained by the specific factors was not negligible. With the thorough testing of this measurement model we recommended the usage of the shorter, 25 item long version of the NPI with the bifactor measurement model to capture the general grandiose narcissism factor more clearly, while we concluded that specific factors should be interpreted with caution and more specific measurement tools might be more appropriate to capture other aspects of narcissism (for more recommendations on the proper measurement of narcissism see Krizan & Herlache 2018 and Wright & Edershile, 2018). Moreover, we also contributed to the growing literature on the applicability of the single-stimulus response format.

Although fine-tuning trait level measurement and applying better measurement models is an important step in narcissism research, several controversies and competing hypotheses are present related to the dynamics of narcissistic functioning, which cannot be explained from the trait perspective (Miller et al., 2021; Edershile et al., 2022). For example, the mask model of narcissism – suggested by clinical observations – argues, that observable grandiosity aims to compensate for deep-seated negative feelings of the self (for a review see Kuchynka & Bosson, 2018). Although this view is popular among scholars and clinicians, proper empirical validation is still lacking.

Inspired by these controversies, our second aim in this dissertation was finding a more proper conceptualization of narcissistic functioning, besides traits. As our focus shifted to the narcissistic process itself, we aimed to capture temporal associations of grandiosity, vulnerability, and entitlement, as the core narcissistic tendencies. We argued, that this approach might enable the observation of not only grandiose and vulnerable narcissistic processes separately, but also their temporal associations and relation to other relevant personality processes (for a similar approach see Edershile et al., 2021a). To put it differently, we aimed to study whether negative and positive experiences of the self (and related narcissistic tendencies) might operate in the same individual proposed by the mask model, but not simultaneously, rather in different times. Therefore, we suggested, that momentary occurrence of grandiosity and positive self-esteem is part of a different personality process, than the momentary occurrence of

vulnerability and negative self-esteem (or self-deprication), and these processes are initiated distinctly or even inversely (i.e. Owens, 1994).

Narcissistic dynamics

For studying our proposed hypotheses, first, a more proper conceptualization of fluctuation measurement was needed. Previous studies emphasized the importance of fluctuations in narcissism, and introduced narcissistic states as the momentary occurrence of the narcissistic process (e.g. Giacomin 2016, Edershile & Wright, 2022; 2022, Engyel, de Ruiter & Urbán, 2022). As we planned to capture the interplay of multiple processes which form a dynamic system, we applied the framework of the complex dynamic systems approach (van Geert, 2011). In this view, although processes are changing continuously and dynamically, a level of predictability and stability can also be observed (de Ruiter et al., 2017). This stability can be described with attractor states, which are higher-order patterns of affects, cognitions and behaviors formed through previous experiences. These attractor states are directing current self-experiences to already established and stable states more easily resulting in a level of coherence, similar to habits in a person's life or schemas in the cognitive approach. The more an attractor state is activated, the stronger it becomes, limiting the chance of experiencing other possible states (for more details on a similar approach in psychotherapy can be observed in the model of schema therapy: Roediger et al., 2018, Young et al., 2003). All possible attractor states in a system form the attractor landscape, containing all possible states, that the system can produce.

For example, state self-esteem, according to de Ruiter, van Geert and Kunnen (2018) does not fluctuate in a random manner, it rather arrives to specific previously formed attractor states more easily. Moreover, a complex dynamic system (or attractor landscape) might have more attractor states (i.e. multistability), for example one related to negative and one related to positive state self-esteem. Hence, when the person is experiencing an attractor-relevant stimuli (e.g. a form of criticism) state self-esteem is likely to arrive at an attractor state specific to the current trigger (e.g. negative state self-esteem attractor). This dynamic approach also highlights the main differences with the trait view of self-esteem: if we ask participants to rate their "general" self-esteem, an evaluation will take place, experiences will be summarized or averaged based on currently approachable information, which is affected by the active attractor state (for

more details see Hektner et al., 2007). For example, if we get negative feedback on our performance in an important domain, the activated negative state self-esteem attractor might affect our overall self-evaluation, and positive self-experiences could be harder to retrieve. For that reason, our approach focused on capturing actual momentary experiences of positive and negative state self-esteem and narcissistic states, so we could capture currently activated self-experiences limiting possible biases related to memory recollection or the averaging of experiences.

With our aim moving to momentary measurement, our research question formed around contemporaneous and temporal associations between state self-esteem and narcissistic states. On a more technical level, for capturing intra-individual processes, between-subject and within-subject level variance needs to be separated. Variance on the within-subject level informs us on internal processes, as data is collected from the same individual in consecutive timepoints. With this view the interplay between and the changes in internal processes are becoming measurable.

Therefore, in the second part of this dissertation two Research Topics were identified. We needed a validated measurement method of state level narcissism (Research Topic 2), which could be used in an experience sampling method setting (Hektner et al., 2007) to collect data on everyday fluctuations of state self-esteem and narcissistic states of participants (Research Topic 3).

Measuring narcissistic states (Research Topic 2)

Variance in narcissistic manifestations was previously measured using existing trait measures. In order not to compromise the internal structure of these validated measures, researchers could choose to use these measures multiple times or slightly change the questionnaire instructions to help participants reflect on momentary experiences (e.g. Giacomin & Jordan, 2016b). Although, these methods were not ideal due to the length of the measures and due to their scope being trait level measurement, a considerable within-person variation could still be observed over consecutive days (Giacomin & Jordan, 2016b). These results underpinned the importance of studying narcissism on a state level, with appropriate validated measures. Hence, our aim in Research Topic 2 was the development and validation of a new, momentary experience focused measurement tool. As both grandiose and vulnerable narcissistic states were in focus of our efforts, and we aimed to base on an existing, well-documented and widely used

measure, we chose the Pathological Narcissism Inventory (PNI; Pincus et al., 2009). Through three samples in differing designs (cross-sectional and longitudinal) and multiple languages (English and Hungarian) we tested the factor structure and the convergent and discriminant validity of the measure with other contemporary narcissism measures and external correlates (Pathological Narcissism Inventory – State Version; PNI-S; Engyel, de Ruiter, Urbán, 2022).

According to our results based on correlation matrices and intraclass correlation coefficients (ICC) both the PNI-S grandiosity and vulnerability factors showed similar nomological networks to other contemporary narcissism measures. To validate the internal measurement model and to examine the associations of the factors with external correlates, a confirmatory factor analysis with covariates was performed. The model showed good fit of the two factor model, with acceptable factor loadings on both factors, moreover associations were in line with previous research.

In Sample 3 we conducted a five-day long experience sampling method (ESM) study. Participants were asked to fill out three questionnaires a day for five consecutive days on their momentary experiences. With a negligible drop-out rate (participants filling out less than 80% of the questionnaires) 1741 observations (n = 123) were used in our analysis. Multilevel confirmatory factor analysis showed acceptable fit, and factor loadings were appropriate for each factor in both the within-subject, both the between-subject level. Furthermore, within-subject level analysis using dynamic SEM suggested, that considerable autoregressive effect can be observed in grandiose and vulnerable states, and they were not related on the within-subject level. All these results led to the conclusion that the PNI-S has become a functional, proper tool to measure narcissistic states in Research Topic 3.

Contemporaneous and temporal associations of narcissistic states and positive and negative state self-esteem (Research Topic 3)

To capture contemporaneous and temporal associations between narcissistic states and positive and negative state self-esteem (positive and negative SSE), two separate ESM studies were conducted. First, the previously mentioned dataset was designed for this research question (Sample 3 in Research Topic 2), second a new, similar ESM study was also performed. To enhance the validity of our findings we changed the measurement of narcissistic states, as different tools capture different aspects of

narcissistic grandiosity and vulnerability effectively (Wright & Edershile, 2018). To analyze this type of intensive longitudinal data we used dynamic SEM models in Research Topic 3. First, contemporaneous associations were captured with a Residual DSEM model (Asparouhov & Muthén, 2019), second the temporal associations were captured by a regular DSEM model (McNeish & Hamaker, 2019). Both models were applied in Study 1 and Study 2 separately.

According to our results, the distinction between negative and positive self-esteem processes seemed meaningful on the within-subject level. Repeated measures correlations showed a week negative association between them (ranging from -.3 to -.25 in the two studies), positive SSE was in strong positive association with grandiose narcissistic states, whereas negative SSE was in strong positive correlation with vulnerable narcissistic states.

Based on the results of our multilevel analyses the contemporaneous associations suggest that negative SSE and vulnerable narcissistic states co-occur, whereas positive SSE is more positively related to a grandiose state. Interestingly, measurement methods of narcissistic states also affected results considerably: vulnerable states were unrelated to positive SSE as measured by the PNI-S (Engyel, de Ruiter & Urbán, 2022), but showed a negative relationship using the NVS (Crowe et al., 2018). We argue that this difference might reflect on the underlying entitlement core of narcissism which is captured more immensely by the PNI-S than the NVS, which could also be observed in a positive versus negative association between narcissistic states using the two measurement tools (see Table 11). Vulnerability itself (when entitlement is partialed out) might show a rather negative relationship with positive SSE. On the other hand, the positive SSE attractor activation is strongly and positively related to the experience of the grandiose state, moreover, this grandiose state is unrelated to the negative SSE attractor. Although more research is needed to thoroughly investigate the meaning of these differences, some conclusions may be drawn.

We argued that the initiation of the positive self-esteem processes makes a grandiose state more likely and vulnerability less likely. In this state a person might experience positive self-experiences and their sense of self-worth supported. Warmer social exchanges are also associated with momentary grandiosity (Edershile & Wright, 2021b). On the other hand, the negative self-esteem process only affects vulnerable

narcissistic state positively. In this state, an individual might experience negative self-experiences, self-deprication with feelings of self-worth challenged. Edershile and Wirght (2021b) associated this state with increased negative affect (see also Wright et al., 2017) and colder social exchanges with others. We contextualized these results applying the complex dynamic systems approach (van Geert, 2008) as it is less likely to experience a vulnerable narcissistic state, when the positive SSE attractor is active, but more likely when the negative SSE attractor is active. Identifying intense positive and negative self-experiences within an individual is consistent with previous research, although they were interpreted in terms of self-esteem fragility (e.g. Kernis & Paradise, 2002; Kernis, 2003). Moreover, previous cognitive personality models also suggested, that multiple self-concepts exist parallelly (e.g. Markus & Nurius, 1987; Nowak et al., 2005), and their activation might result in different current self-experiences.

Temporal associations suggest that meaningful autoregressive effects (i.e. when the previous timepoint's state affects the state in the following measurement) can be observed, which highlight the importance of stability in state level self-esteem and narcissism. The only significant cross-lagged association (i.e. when the previous state of a variable affects another variable's following state) could be found between negative SSE and vulnerable narcissistic states. In our view these results may imply, that the activation of the negative SSE attractor has longer effects and leaving this attractor state might be more challenging when activated (or harder to compensate for). For example, from the clinical viewpoint of schema therapy, similarities can be found with the concept of maladaptive schema activation, which affects multiple personality processes with activating a cascade of old coping mechanisms (e.g. Roediger, Stevens & Brockman., 2018, Young, Weishaar & Klosko, 2003) resulting in negative intra- and interpersonal consequences.

Negative and positive daily experiences also seem to play a role in the dynamic processes of state self-esteem and narcissistic states. Negative daily experiences significantly affected the contemporaneous association between negative SSE and state level vulnerable narcissism. Therefore, for those, who experience more negative daily events (i.e. between-subject level association), the negative SSE attractor is more strongly associated to a vulnerable narcissistic state, than for those, who tend to experience less negative daily events. From the viewpoint of the self-organizing self-esteem model (de Ruiter, van Geert & Kunnen, 2018) we might argue, that negative

daily events are pushing a person to the negative self-esteem attractor state, which is often characterized by thoughts, emotions, and behaviors of self-deprication, vulnerability, shame, or guilt.

Our results with positive events are more controversial, as their positive moderating role on the relationship between positive SSE and grandiose narcissistic states was significant and meaningful in Study 1, although these results could not be replicated in Study 2. In our view, based on Wright & Edershile, (2018) measurement differences of narcissistic facets might affect results considerably. In Study 1 we administered narcissistic states using the PNI-S (Engyel, de Ruiter & Urbán, 2022), which captures the entitlement and self-importance core of narcissism in both the vulnerability, both the grandiosity factor (see Figure 3). In contrast, the NGS and the NVS (Crowe et al., 2016; Crowe et al., 2018) – which were used in Study 2 – rather measure "pure" grandiosity and vulnerability themselves. Based on the NSM (Krizan & Herlache, 2018) we conclude, that the approach-oriented, extraverted, and exhibitionistic facets of narcissism as personality-level moderators of narcissistic manifestations might be less affected (i.e. non-significant, but positive association) by daily positive events, than the narcissistic core of entitlement and sense of self-importance. This may also be consistent with considering narcissism as a dynamic self-regulatory process (Morf & Rhodewalt, 2001) that specifically responds to threats and the validation of a grandiose view of the self. However, this question certainly requires more specific empirical confirmation in subsequent narcissism research.

Lastly, the negative moderating effect of positive daily events on the negative SSE attractor was consistent in both Study 1 and Study 2, although associations were non-significant (see Figure 4b for confidence intervals). These results imply, that people who experience more positive daily events can be partly protected from the activation of the negative SSE attractor – even though these results also need further investigation.

All in all, we found support to the relevance of differentiating positive and negative self-esteem processes in measurement as they are associated distinctly to vulnerable and grandiose narcissistic states. Furthermore, the effect of daily positive and negative experiences might lead to different dynamic processes of self-esteem and narcissism, resulting in different momentary self-experiences.

9. Limitations and future directions

Although we believe that our approach in identifying dynamic processes of narcissism is an important step, we also believe that these studies have several limitations.

First – similar to other studies in the field – we relied entirely on self-report data both in narcissism and self-esteem measurement. Self-reports are subject to several biasing factors especially if the mechanisms we wish to study are related to self-presentation and the protection of the grandiose view of the self (for more details see Chapter 2.5). We assessed momentary data on narcissism for this exact reason, as we believe that some of the biasing factors causing inconsistencies in previous measurement can be addressed if we take the effect of the currently active positive or negative self-esteem attractor states into consideration. These activated states (i.e. fluctuations observed in clinical work) can be affecting a wide range of mechanisms related to intra- and inter-personal consequences (Edershile & Wright, 2022). Other sources of problems of self-report data could be reduced by observer/expert reports, but even these have limits when internal personality processes are in the focus.

Second, the use of naturalistic settings enables us to identify contemporaneous and temporal associations between processes of self-esteem and narcissism in the everyday life of individuals, however these studies also have limitations. Experience Sampling Method (ESM) designs either use randomly initiated questionnaires or require participants to report their current state after certain events occurred. As internal processes or shifts between specific attractor states (e.g. vulnerability, negative state self-esteem) might happen in the timeframe of minutes or seconds a closer and more specified temporal observation should be applied. This way we limit the chances of missing important aspects and capturing only the end results of dynamic shifts (Edershile & Wright, 2022). In our view the reinvention of experimental methods could also hold promising results as we could limit the timeframe of naturalistic studies to specific relevant triggering events, therefore we could take a closer look at state-level changes (e.g. the effect of social rejection in state-level variables measured multiple times). Previous studies on ego-threatening situations (see vanDellen, Campbell, Hoyle

& Bradfield, 2010) might offer a good starting point for conceptualizing triggering events (e.g. Mota et al., 2023; Rhodewalt et al., 1998; Weiss & Huppert, 2022).

Third, most of our studies relied entirely on university student samples, who are reported to differ considerably from the general population in terms of stability in personality traits, interpersonal relationship or socioeconomical status (Henrich, Heine, & Norenzayan, 2010; Peterson & Merunka, 2014). However, conducting ESM studies outside university courses can be challenging as either a higher monetary compensation (e.g. Edershile & Wright, 2021b) or other forms of motivation should be offered to participants for filling out a demanding amount of questionnaires in multiple day studies.

Fourth, the examination of relevant central and peripherical personality processes of narcissism (e.g. positive and negative affect, state-level entitlement, antagonism, emotional regulation) are still expanding with considerable improvements in intensive longitudinal data analysis (Hamaker et al., 2018). Future research can go beyond the investigation of one or two simultaneous processes, rather the interrelations of multiple processes are becoming observable. Therefore, our results on positive and negative self-esteem processes can be integrated to more complex process models.

Lastly, the alignment (and therefore the empirical validation) of clinical models and observations with personality research is also gaining more attention, as the current, mainly dispositional direction of narcissism studies are insufficient to understand personality functioning on a deeper level (Edershile & Wright, 2022). The structure of the dissertation also reflected the need for possible new methods of investigation.

10. Conclusions

This dissertation has defined two objectives. In the first part, we intended to summarize how personality psychology views narcissism – from the currently dominant trait perspective. In the recent fruitful years, a vast amount of new empirical findings widened our knowledge, new models emerged, either focusing on the hierarchical structure of narcissism or the relationship of the construct with other relevant areas of personality functioning. Although it is still common to identify narcissism only by its grandiose manifestations, other aspects such as vulnerability, entitlement or antagonism are also deeply involved in current studies. Besides several other controversies, measurement of narcissism is still under development: various tools were introduced throughout the last fifty years however results seem to diverge. Building on current hierarchical models, this dissertation aimed to introduce a new measurement model to one of the most widely used measures of narcissistic grandiosity – which currently lacks a universally accepted factor structure. With the offered bifactor model we not only proposed a new way to differentiate between central and peripherical aspects of grandiosity, but also contributed to the growing body of research applying the Likert scale format in contrast to the originally proposed forced-choice format.

Although hierarchical trait models offered more insight into the structure of the construct, we also highlighted the main shortcomings of this current dominant view. Therefore, in the second part of this work our focus shifted to identifying the dynamic personality processes in narcissistic functioning, viewing the cascade of behaviors, affects and cognitions as part of a dynamic self-regulatory process. This approach, however introduced several new research questions. First of all, a suitable conceptualization of the dynamic processes was necessary, and secondly, their measurement had to be supplemented with properly tested measuring tools.

Our contribution was related to both questions. We developed and validated a brief new instrument to assess state level grandiose and vulnerable narcissism in designs using intensive longitudinal data based on an existing scale. With this measurement tool in addition to grandiose and vulnerable manifestations the entitlement core of narcissism is also reflected in both subscales, as this is considered a central aspect of narcissistic functioning in recent hierarchical models. As we believe that the proper measurement of

narcissism is important, we included all of the measures used, translated or validated in the studies to the Appendix of this dissertation.

After validating the new instrument, we focused our attention on one of the most controversial topics in narcissism research, its relationship with self-esteem. Although many studies have pointed out the similarities and differences between the constructs, the results so far have mostly come from the trait perspective, while a more thorough understanding of the personality processes behind them was lacking.

Our main contribution with our approach was, on the one hand, to differentiate between positive and negative self-esteem processes, and on the other hand to examine their relationships with state level vulnerable and grandiose narcissism. We conducted two five-day long experience sampling method studies with multiple daily data collections to capture the interplay of these processes. Our results suggested that not only the more nuanced differentiation of positive and negative self-esteem processes, but also the consideration of contextual factors might offer more insights into the understanding of narcissism dynamics. By applying the framework of the complex dynamic systems, we distinguished two specific attractor states of self-esteem, a positive one characterized by state grandiosity, and a negative one characterized by state vulnerability also influenced by the number of negative events that the individual experienced during the study.

Although we believe that these results are important in understanding state-level processes of narcissism and self-esteem, they can also serve as a starting point for future research, on the one hand, related to methodological choices, and on the other hand, by applying the theoretical framework of complex dynamic systems. As the study of narcissism dynamics is still an emerging field, many questions remain open regarding its associations with other relevant personality processes or the identification of contextual factors that influence them.

Besides general research purposes we also believe, that studying dynamic processes of distinct narcissistic states might be useful in clinical or counselling practice. As we concluded in Research Topic 3, grandiose and vulnerable states can be viewed as part of a self-regulatory system which reacts to momentary environmental circumstances: it leads to different outcomes (e.g. self-aggrandizement, derogating others, feeling entitlement rage) when a positive self-image is supported or threatened. Similarly to the view of schema therapy (e.g. Young et al., 2003) on distinct modes of momentary self-

experiences we believe that these attractor states and related maladaptive strategies of securing the feelings of self-worth and fulfilling basic emotional needs of the person are becoming the problem themselves. Therefore, a deeper understanding of a person's internal states on an idiographic level paired with a secure and safe therapeutic relationship might help building more adaptive ways of fulfilling needs of relatedness, autonomy, and competence. In other words, if the person becomes increasingly aware of their various narcissistic states and their underlying unmet emotional needs, old coping strategies, mostly stemming from childhood experiences could be improving in a new relationship setting.

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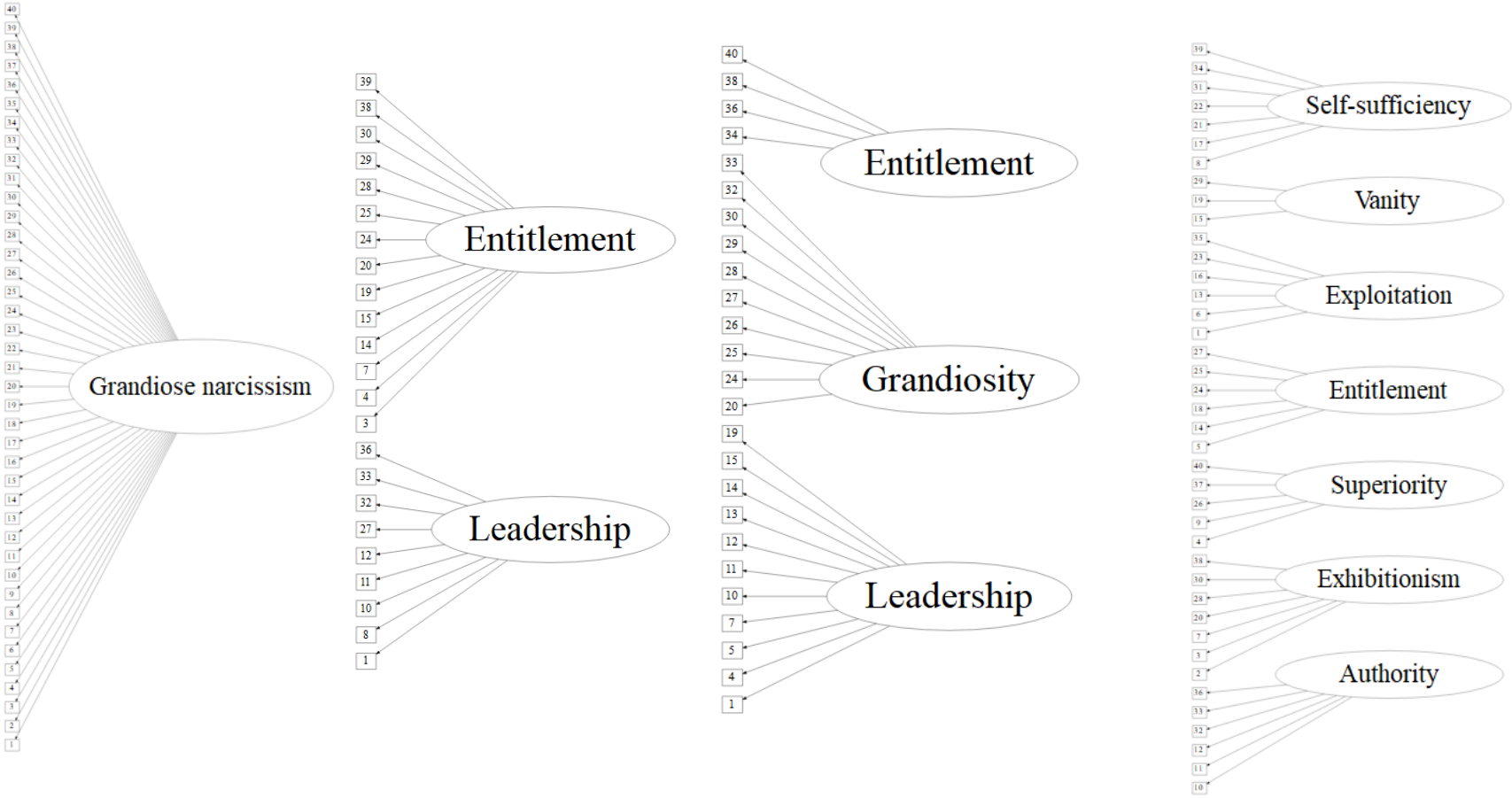
Appendix 1. Factor loadings, explained common variance, omega and omega hierarchical scores of the bifactor model of grandiose narcissism: one general and two specific factors (Model 7) in Study 1 and Study 2.

Item (number)	Leadership / Authority			Exhibitionism / Entitlement			General		
	Study 1	Study 2	Study 3	Study 1	Study 2	Study 3	Study 1	Study 2	Study 3
I have a natural talent for influencing people (1)	**0.164**	**0.250**	**0.123**				**0.610**	**0.541**	**0.642**
I will be a success (8)	0.122	0.070	**0.226**				**0.454**	**0.486**	**0.355**
I see myself as a good leader (10)	**0.707**	**0.682**	**0.688**				**0.555**	**0.539**	**0.510**
I am assertive (11)	0.099	**0.212**	-0.061				**0.644**	**0.484**	**0.604**
I like having authority over people (12)	**0.233**	**0.311**	**0.240**				**0.655**	**0.688**	**0.670**
I have a strong will to power (27)	**0.240**	**0.210**	**0.178**				**0.636**	**0.552**	**0.732**
People always seem to recognise my authority (32)	0.073	**0.448**	0.083				**0.492**	**0.624**	**0.653**
I would prefer to be a leader (33)	**0.723**	**0.584**	**0.626**				**0.558**	**0.611**	**0.553**
I am a born leader (36)	**0.672**	**0.660**	**0.659**				**0.597**	**0.591**	**0.615**
I would do almost anything on a dare (3)				-0.116	0.112	-0.018	**0.403**	**0.356**	**0.397**
I know that I am a good person because everybody keeps telling me so (4)				**0.163**	**0.296**	**0.157**	**0.484**	**0.279**	**0.508**
I like to be the centre of attention (7)				**0.197**	**0.154**	**0.270**	**0.647**	**0.668**	**0.529**
I insist upon getting the respect that is due to me (14)				**0.256**	**0.250**	0.126	**0.256**	**0.395**	**0.308**
I like to display my body (15)				**0.714**	**0.655**	**0.601**	**0.327**	**0.350**	**0.374**
I like to look at my body (19)				**0.375**	**0.297**	**0.470**	**0.303**	**0.312**	**0.238**
I am apt to show off if I get the chance (20)				**0.326**	**0.324**	0.156	**0.333**	**0.560**	**0.371**
I expect a great deal from other people (24)				**0.332**	**0.179**	0.106	**0.199**	**0.362**	**0.310**
I will never be satisfied until I get all that I deserve (25)				**0.361**	**0.203**	0.131	**0.272**	**0.348**	**0.587**
I like to start new fads and fashions (28)				**0.202**	**0.274**	-0.011	**0.334**	**0.465**	**0.395**
I like to look at myself in the mirror (29)				**0.665**	**0.572**	**0.693**	**0.318**	**0.371**	**0.290**
I really like to be the centre of attention (30)				**0.244**	**0.194**	**0.293**	**0.659**	**0.692**	**0.566**

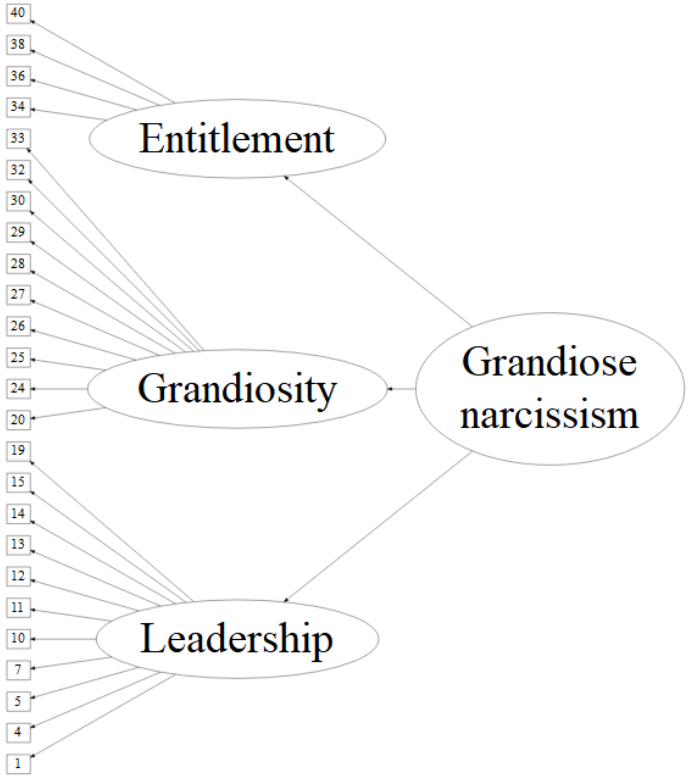
I get upset when people don't notice how I look when I go out in public (38)				**0.583**	**0.545**	**0.512**	**0.275**	**0.307**	**0.300**
I am more capable than other people (39)				0.124	0.032	0.042	**0.443**	**0.581**	**0.619**
Average factor loadings Mean (SD)	0.34 (0.28)	0.38 (0.22)	0.31 (0.28)	0.32 (0.22)	0.29 (0.18)	0.25 (0.23)	0.45 (0.15)	0.49 (0.13)	0.48 (0.14)
Explained common variance	18.4%	18.6%	16.4%	22.7%	17.8%	17.7%	58.9%	63.6%	65.8%
Omega	0.89	0.90	0.90	0.83	0.85	0.83	0.91	0.92	0.91
Omega hierarchical	0.23	0.28	0.20	0.36	0.27	0.23	0.71	0.75	0.78

Appendix 2.1: Alternative measurement models of the NPI

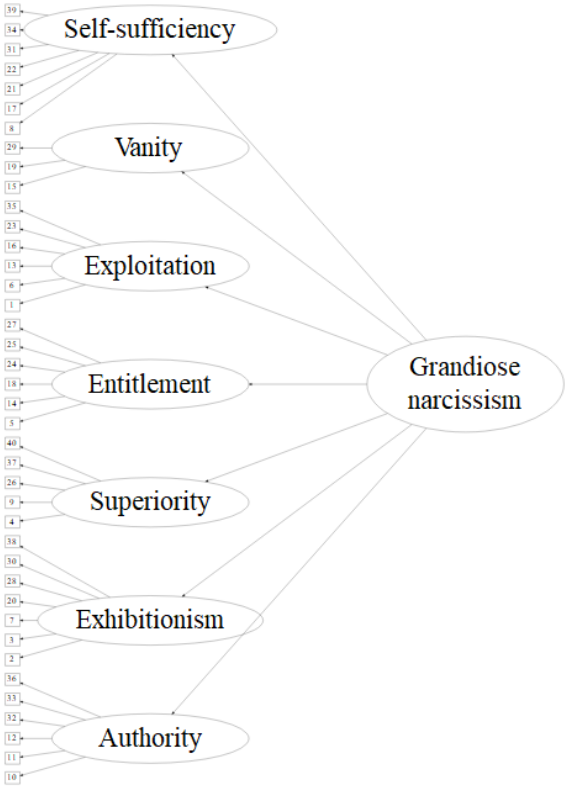


Model 1 Model 2 Model 3 Model 4

Appendix 2.2: Alternative measurement models of the NPI

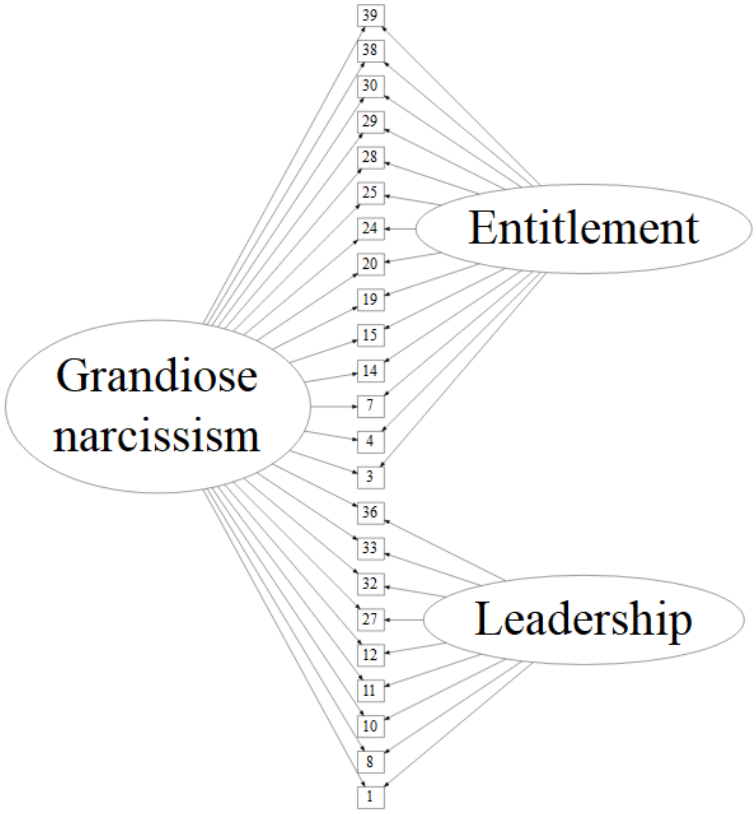


Model 5

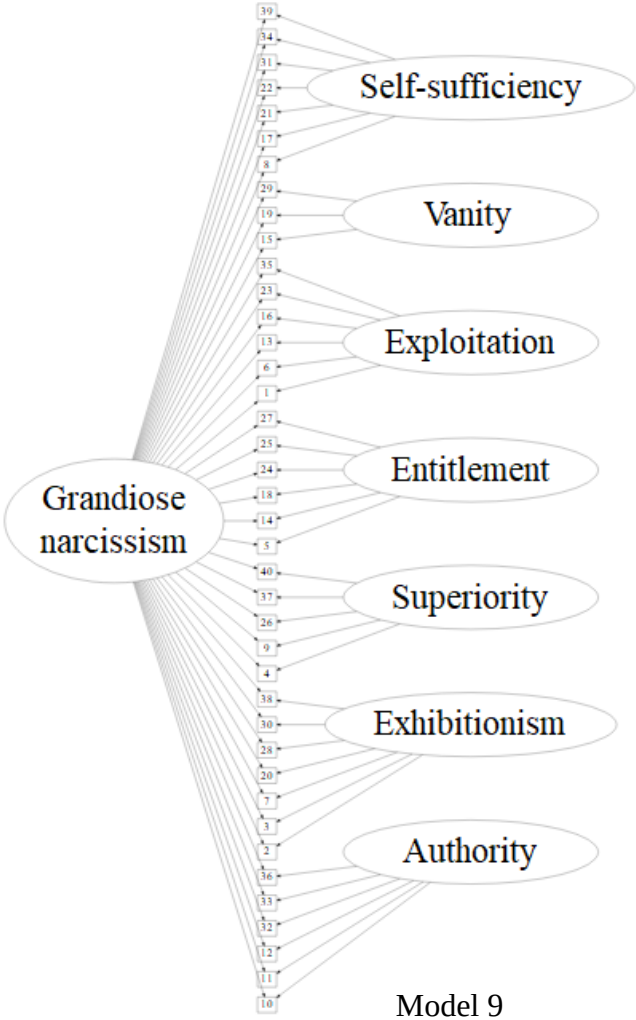


Model 6

Appendix 2.3: Alternative measurement models of the NPI



Model 7



Model 9

Appendix 3.1 – Hungarian Version of the Narcissistic Personality Inventory (Raskin & Terry, 1988; Bandi, 2014)

Ebben a kérdőívben olyan állításokat talál, amelyeket az emberek gyakran használnak saját véleményük vagy viselkedésük jellemzésére. **Mindegyik állításhoz ötféle válaszlehetőség közül választhat (1 – egyáltalán nem értek egyet, 2 – inkább nem értek egyet, 3 – egyet is értek meg nem is, 4 – inkább egyetértek, 5 – teljesen egyetértek)**. Kérjük, olvassa el figyelmesen valamennyi kijelentést, azután jelölje be azt a választ, amelyik meggyőződése szerint jobban illik Önre. Ne töprengjen túlságosan sokáig az egyes válaszokon.

1. Született tehetségem van arra, hogy befolyásoljak másokat.	1	2	3	4	5
2. A szerénység nem áll jól nekem.	1	2	3	4	5
3. Majdnem mindent meg mernék tenni.	1	2	3	4	5
4. Tudom, hogy jó vagyok, mert mások folyamatosan ezt mondják nekem.	1	2	3	4	5
5. Sokkal jobb lenne a világ, ha én irányítanám.	1	2	3	4	5
6. Bármilyen helyzetből kivágom magam.	1	2	3	4	5
7. Szeretek a figyelem középpontjában lenni.	1	2	3	4	5
8. Sikeres leszek.	1	2	3	4	5
9. Különlegesnek gondolom magam.	1	2	3	4	5
10. Jó vezetőnek tartom magam.	1	2	3	4	5
11. Rámenős vagyok.	1	2	3	4	5
12. Szeretem, ha van tekintélyem, hatalmam más emberek felett.	1	2	3	4	5
13. Könnyen manipulálok másokat.	1	2	3	4	5
14. Ragaszkodom ahhoz, hogy megkapjam a nekem járó tiszteletet.	1	2	3	4	5
15. Szeretek büszkélkedni a testemmel.	1	2	3	4	5
16. Az emberek számomra nyitott könyvek.	1	2	3	4	5
17. Szeretek felelősséget vállalni a döntésekért.	1	2	3	4	5
18. Meg akarom mutatni a világnak, hogy viszem valamire.	1	2	3	4	5

19. Szívesen nézegetem a testem.	1	2	3	4	5
20. Hajlamos vagyok a kérkedésre, ha lehetőségem van rá.	1	2	3	4	5
21. Mindig tudom, hogy mit teszek.	1	2	3	4	5
22. Céljaim elérése ritkán függ másoktól.	1	2	3	4	5
23. Mindenki szereti hallgatni az én történeteimet.	1	2	3	4	5
24. Sokat várok más emberektől.	1	2	3	4	5
25. Csak akkor leszek elégedett, ha mindent megkapok, amit megérdemlek.	1	2	3	4	5
26. Szeretem, ha bókolnak nekem.	1	2	3	4	5
27. Erősen vágyom a hatalomra.	1	2	3	4	5
28. Szeretek új hóbortokat kezdeni, és divatot teremteni.	1	2	3	4	5
29. Szeretem nézegetni magam a tükörben.	1	2	3	4	5
30. Imádok a figyelem középpontjában lenni.	1	2	3	4	5
31. Úgy élhetem az életem, ahogy csak akarom.	1	2	3	4	5
32. Úgy tűnik, hogy az emberek mindig elismerik a tekintélyemet.	1	2	3	4	5
33. Vezető lennék inkább.	1	2	3	4	5
34. Nagyszerű ember leszek.	1	2	3	4	5
35. Bárkivel bármit el tudok hitetni, amit csak akarok.	1	2	3	4	5
36. Született vezető vagyok.	1	2	3	4	5
37. Bárcsak egyszer valaki megírná az önéletrajzomat.	1	2	3	4	5
38. Zavar, ha az emberek nem figyelnek fel a külsőmre, amikor társaságba megyek.	1	2	3	4	5
39. Másoknál tehetségesebb vagyok.	1	2	3	4	5
40. Rendkívüli ember vagyok.	1	2	3	4	5

Appendix 3.2 – Hungarian Version of the Maladaptive Covert Narcissism Scale (Hendin & Cheek, 1997; Bandi, 2014)

Az alábbi állítások önmagával illetve másokkal való kapcsolataira vonatkozó gondolataira és érzéseire irányulnak. Kérem valamennyi állítást olvassa el figyelmesen, és döntse el, hogy az adott állításokat általánosságban véve mennyire tartja igaznak önmagára nézve. (1 - egyáltalán nem igaz, 5 - teljes mértékben igaz)

1 – egyáltalán nem igaz

2 – inkább nem igaz

3 – semleges

4 – inkább igaz

5 – teljes mértékben igaz

1. Teljesen bele tudok merülni a személyes kapcsolataimat, egészségemet, gondjaimat, másokkal való kapcsolataimat érintő gondolataimba.

1 2 3 4 5

2. Könnyen megsérülnek az érzéseim, ha mások sértő megjegyzést tesznek rám vagy nevetség tárgyává válok.

1 2 3 4 5

3. Ha belépek valahová, gyakran érzem feszélyezettnek magam és hogy a többiek figyelme rám irányul.

1 2 3 4 5

4. Nem szeretem egy eredmény érdemét másokkal megosztani.

1 2 3 4 5

5. Nem szeretek csoportban lenni, ha csak nem tudom, hogy a jelenlévők közül legalább egy ember igazán becsül engem.

1 2 3 4 5

6. Úgy érzem, temperamentumomban a legtöbb embertől különbözöm.

1 2 3 4 5

7. Gyakran sajátos módon értelmezem mások véleményét.

1 2 3 4 5

8. Gyakran annyira belemerülök abba, ami érdekel, hogy megfeledkezem mások létezéséről is.

1 2 3 4 5

9. Úgy érzem, anélkül is épp elég teher van a vállamon, hogy mások problémái miatt aggódnék.

1 2 3 4 5

10. Titokban idegesít, mikor mások hozzám fordulnak a problémáikkal és az időmet, szimpátiámat igénylik.

1 2 3 4 5

11. Irigy vagyok a csinos vagy jóképű emberekre.

1 2 3 4 5

12. Hajlamos vagyok megalázottságot érezni, ha kritizálnak.

1 2 3 4 5

13. Csodálkozok rajta, hogy más emberek miért nem ismerik el jobban a jó tulajdonságaimat.

1 2 3 4 5

14. Általában hajlamos vagyok az embereket vagy nagyszerűnek, vagy szörnyűnek tartani.

1 2 3 4 5

15. Néha anélkül, hogy tudnám miért, arról fantáziálok, hogy erőszakosan viselkedek.

1 2 3 4 5

16. Különösen érzékeny vagyok a sikerre és a kudarcra.

1 2 3 4 5

17. Olyan problémáim vannak, amiket úgy tűnik senki más nem ért meg.

1 2 3 4 5

18. Minden áron próbálom elkerülni az elutasítást.

1 2 3 4 5

19. A titkos gondolataim, érzéseim és tetteim elborzasztanák néhány barátomat.

1 2 3 4 5

20. Hajlamos vagyok olyan kapcsolatokba bonyolódni, ahol felváltva imádom és nézem le a másik személyt.

1 2 3 4 5

21. Még ha a barátaim társaságában is vagyok, akkor is gyakran érzem magam kellemetlenül és nagyon magányosnak.

1 2 3 4 5

22. Neheztelek azokra, akiknek megvan az, ami nekem hiányzik.

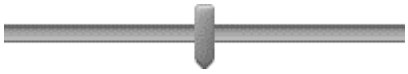
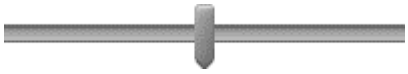
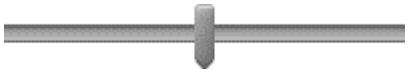
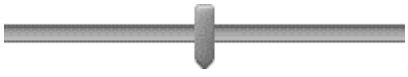
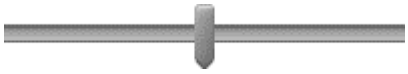
1 2 3 4 5

23. A vereség vagy csalódás rendszerint megszégyenít és feldühít, de megpróbálom nem kimutatni.

1 2 3 4 5

Appendix 3.3 – Hungarian and English Versions of the Pathological Narcissism Inventory – State Version (Engyel, de Ruiter & Urbán, 2022)

Éppen most mennyire ért egyet az alábbi állításokkal?

	Egyáltalán nem értek egyet 0 10 20 30 40 50 60 70 80 90 100 Egyet is értek, meg nem is Teljesen egyetértek
Éppen most rossz érzéseim vannak magammal kapcsolatban, mert mások nem vesznek észre.	
Éppen most inkább eltitkolom mire van szükségem, nehogy önállótlannak, vagy másoktól függőnek lássanak.	
Éppen most ideges vagyok, mert másokat nem érdekel, mit mondok vagy teszek.	
Éppen most kerülöm az embereket, mert attól tartok, hogy csalódást okozhatnak.	
Éppen most úgy érzem, hogy bárkivel el tudok hitetni bármit, amit csak akarok.	
Éppen most fontosnak érzem magam, mert mások számíthatnak rám.	
Éppen most arról álmodozom, hogy nagy hatással leszek a körülöttem levő világra.	

To what degree do you currently agree with the statements listed below:

	Strongly disagree	Neither agree nor disagree	Strongly agree
	0 10 20 30 40 50 60 70 80 90 100		
Right now, I am feeling bad about myself because other people do not notice me.			
Right now, I am feeling annoyed because others are not interested in what I am saying or doing.			
Right now, I am avoiding people, because I am concerned, that they will disappoint me.			
Right now, I am hiding my needs for fear that others will see me as needy and dependent.			
Right now, I feel that I can make anyone believe anything I want them to.			
Right now, I feel that I am important because others can rely on me.			
Right now, I am having fantasies of having a huge impact on the world around me.			

Appendix 3.4 – Hungarian Version of the Narcissistic Vulnerability Scale (Crowe et al., 2018)

Éppen most mennyire érzi magát a következőképpen:

Megszégyenült	1	2	3	4	5	6	7
Figyelmen kívül hagyott	1	2	3	4	5	6	7
Saját magammal elfoglalt	1	2	3	4	5	6	7
Törékeny	1	2	3	4	5	6	7
Alulértékelt	1	2	3	4	5	6	7
Irigy	1	2	3	4	5	6	7
Bosszús	1	2	3	4	5	6	7
Bizonytalan	1	2	3	4	5	6	7
Ingerlékeny	1	2	3	4	5	6	7
Félreértett	1	2	3	4	5	6	7
Bosszúszomjas	1	2	3	4	5	6	7

Appendix 3.5 – Hungarian Version of the Narcissistic Grandiosity Scale (Crowe, Carter, Campbell & Miller, 2016)

Éppen most mennyire érzi magát a következőképpen:

Tökéletes	1	2	3	4	5	6	7
Rendkívüli	1	2	3	4	5	6	7
Másoknál kiválóbb	1	2	3	4	5	6	7
Hősies	1	2	3	4	5	6	7
Mindenható	1	2	3	4	5	6	7
Páratlan	1	2	3	4	5	6	7
Hatalommal bíró	1	2	3	4	5	6	7
Tündöklő	1	2	3	4	5	6	7
Tekintélyes	1	2	3	4	5	6	7
Elismert	1	2	3	4	5	6	7
Kiemelkedő	1	2	3	4	5	6	7
Magas státuszú	1	2	3	4	5	6	7
Ragyogó	1	2	3	4	5	6	7
Domináns	1	2	3	4	5	6	7
Irigylésre méltó	1	2	3	4	5	6	7
Erőteljes	1	2	3	4	5	6	7