

It's All About Power

Validation of Trait and State Versions of the German Personal Sense of Power Scale

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Abstract: The present research was aimed at providing a German version of the Personal Sense of Power Scale (GPSPS; Anderson et al., 2012) and testing its psychometric properties. A personal sense of power describes the perception of one's ability to influence others. Probably every human relationship can be characterized by differences in power, which means that the measurement of experienced power is highly relevant. The availability of appropriate measures in different languages will help improve research and cross-cultural comparisons. Five studies were conducted. Internal consistency was high across all studies. Stability across 6 and 12 weeks was also high. A good fit was observed for a 6-item unidimensional version. Correlations with a variety of psychological and sociodemographic variables were in the expected directions, supporting nomological and criterion validity (Study 1). Measurement invariance across gender was demonstrated. In support of construct validity, a clinical sample scored significantly lower than others. Finally, two studies showed the sensitivity of a state version of the scale. We encourage researchers to use this scale as a reliable and valid instrument for assessing trait and state power.

Keywords: power, personal sense of power, state power, influence, status



“The fundamental concept in social science is Power, in the same sense in which Energy is the fundamental concept in physics” (Russell, 1938, p. 10). Russell's statement can be found in various articles on power and status and illustrates the importance of power in psychological research and everyday life. In recent decades, several intriguing theories have emerged (e.g., Keltner et al., 2003; Magee & Smith, 2013), and various findings have been published. Power has overcome the stigma of being connected to only negative outcomes (e.g., corruption, self-serving behavior, and egocentric biases). Instead, power can be seen as an intensifier of goal-related approach motivation (Guinote, 2017). Accordingly, Guinote's (2017) review shows that power energizes thought, speech, and action, increases prioritization and authenticity, but also leads to stereotyping and objectification. Thus, on the basis of predispositions and situational circumstances, power apparently intensifies people's behavioral tendencies in either antisocial or prosocial ways.

In social psychology, power is often described as a type of resource control that can modify others' states

(Keltner et al., 2003). Yet, power can be independent of sociostructural factors: Anderson et al. (2012) thus defined a subjective sense of power as a “psychological state – a perception of one's capacity to influence others” (p. 314). For example, an employee might make decisions in a negotiation despite lacking a formal position and responsibility. Thus, the employee might experience a high personal sense of power even without the formal position. But how can the experience of power be measured? We aimed to provide and validate a German version of the only established measure of generalized power: The Personal Sense of Power Scale (PSPS; Anderson et al., 2012).

The 8-item unidimensional PSPS captures individuals' beliefs about their influence over others and their decision-making ability within social relationships. Using nine different samples, Anderson et al. (2012) reported high internal consistency for the scale and showed a distinct but moderately related personal sense of power between different relationship types (e.g., friend relationship, parent relationship). Further, they demonstrated the existence of a personal sense of power for different abstraction levels: short-term and long-term dyadic relationships, groups, and a generalized form.

The PSPS has become very popular in a very short amount of time. The scale has been in use since the early 2000s (e.g., Anderson & Galinsky, 2006), and its theory

and development were presented in 2012 (Anderson et al., 2012). Anderson et al. (2012) presented instructions for the PSPS for different relationship types (e.g., date-, supervisor-, friend-relationships). As of October 2020, the original publication has been cited more than 600 times (Google Scholar). The scale has been translated into several languages such as Chinese (e.g., Wang, 2015), Dutch (e.g., Van Kleef et al., 2015), Hebrew (Uziel & Hefetz, 2014), and Polish (e.g., Kocur & Mandal, 2018), and acceptable internal consistencies have been reported for these translations. Researchers have also used the measure in Germany (e.g., Weineck et al., 2019).¹ Yet, to the best of our knowledge, the PSPS has not been validated in any language other than English. In the present study, we aimed to identify the psychometric properties of the German version of the Personal Sense of Power Scale (GPSPS), test the scale in distinct samples, extend predictions regarding its validity, and for the first time, test the unidimensionality of the scale by applying confirmatory factor analyses and examine the measurement invariance of the scale across sex.

Another important aspect of a personal sense of power is that it has been used for manipulation checks and as a predictor and an outcome variable. As the PSPS is usually conceptualized as a trait measure, researchers have sometimes found no effect of an experimental power manipulation on this scale (e.g., Deuter et al., 2016). Therefore, in the current study, we also aimed to test and establish instructions for a state version of the GPSPS to measure situational fluctuations in personal power.

Overview of Studies

We conducted five studies to provide an in-depth examination of the GPSPS's psychometric properties. Studies 1–3 were designed to test the unidimensionality of the trait version of the GPSPS with confirmatory factor analysis (CFA). In Study 1, we tested the scale's internal consistency and stability and assessed a variety of psychological and sociodemographic constructs for nomological and criterion validity. Further, we tested for measurement invariance across gender. In Study 2, we used a community sample and measured personal sense of power in the context of romantic relationships to further test for internal consistency and unidimensionality. A clinical sample was used in Study 3 to make a comparison between groups (i.e., clinical and nonclinical groups). Finally, in Studies 4 and 5, we tested a state version of the GPSPS.

Study 1

The first study was aimed at examining the reliability and unidimensionality of the GPSPS and at providing detailed information about nomological and criterion validity. The GPSPS was based on a translation/back-translation procedure. The scale was used as a trait measure reflecting a generalized sense of power: "In my relationships with others. . ."

To test the nomological and criterion validity of the PSPS, we relied on the variables and measures used by Anderson et al. (2012) but also added several new measures (e.g., facets of narcissism, construal style). On the basis of the literature, we expected positive associations between a personal sense of power and extraversion, conscientiousness, openness (Anderson & Cowan, 2014), internal locus of control (Anderson et al., 2012), dominance (Anderson & Cowan, 2014; Dunbar & Burgoon, 2005), narcissism (Brunell et al., 2008), self-esteem (Körner et al., 2019; Wojciszke & Struzynska-Kujalowicz, 2007), and behavioral activation (Keltner et al., 2003). A personal sense of power was not expected to be associated with agreeableness, and negative associations were expected with neuroticism (Anderson & Cowan, 2014) and behavioral inhibition (Keltner et al., 2003).

Further, to extend Anderson et al.'s (2012) nomological network of personal power on the basis of two major theories in the field of power, we made the following predictions: Positive emotions will be positively correlated, and negative emotions will be negatively correlated with a personal sense of power (approach-inhibition theory of power; Keltner et al., 2003). With respect to the social distance theory of power (Magee & Smith, 2013), positive associations were expected for abstract construal style and social distance. Finally, as pride is the emotion most closely linked to social rank (Cheng et al., 2010), we also expected a positive association between power and pride. Yet, authentic pride should show a stronger association with a personal sense of power than hubristic pride because associations between personality variables and authentic pride are similar to a personal sense of power.

Moreover, we made some predictions regarding criterion validity. The original publication did not test for associations between objective criteria and personal sense of power. As the experience of power may be independent of sociostructural aspects but usually does show a moderate relation, we expected a positive but small correlation

¹ Weineck et al. (2019) used only six items (Items 1–6) from the original scale but these were different from the items that we had identified as being psychometrically adequate (Items 1, 2, 4, 5, 6, and 7). They reported a Cronbach's α of .82, which is slightly below the mean Cronbach's α reported in the present studies ($M_{\alpha} = .85$).

between subjective power and socioeconomic status (Anderson et al., 2012), managerial responsibility (Boeker, 1992), and number of employees. Given that status is associated with increased body height (Stulp et al., 2012), and powerful people overestimate their body height (Duguid & Goncalo, 2012), we also expected a positive association between body height and sense of power.

Method

Participants and Procedure

Participants were recruited online at a distance-learning university to collect data from a more heterogeneous sample with respect to age and professional background. Participants were offered course credit for completing the questionnaires. They lived all over Germany. We examined the stability of the GPSPS across three points of measurement. The questionnaire used at the first time point (t1) consisted of the GPSPS and several measures that were included to establish validity. Participants generated an individual code so that retest results could be matched. After data preparation (see Results section), the sample comprised 573 participants (80% women, 19% men, 1% diverse; $M_{\text{age}} = 32.12$, $SD_{\text{age}} = 10.16$, range: 18–75 years). After 6 weeks (t2), 266 individuals completed the GPSPS for a second time (80% women, 18% men, 1% diverse; $M_{\text{age}} = 33.46$, $SD_{\text{age}} = 10.83$, range: 18–75 years). Finally, 185 participants completed the scale for a third time after 12 weeks (t3; 79% women, 18% men, 1% diverse, $M_{\text{age}} = 33.75$, $SD_{\text{age}} = 11.02$, range: 18–75 years). We also tested for whether there was a pattern in the missing data across measurement points. Little's missing completely at random (MCAR) tests were not significant for the comparisons of the GPSPS scores, $\chi^2(2) = 2.627$, $p = .269$ (t1 with t2), $\chi^2(2) = 1.676$, $p = .432$ (t1 with t3), and $\chi^2(1) = 0.376$, $p = .540$ (t2 with t3). This supported the null hypothesis that the data were missing completely at random.

Study 1 was preregistered (<http://aspredicted.org/blind.php?x=429eg5>). Codes and data for all studies are available at <https://osf.io/jf9dz>. Correlational analyses and group comparisons were done with SPSS 25. Factor analyses were computed with Mplus 7 (Muthén & Muthén, 1998–2012). In the CFAs for all studies, all error terms were uncorrelated. RStudio 1.2.5019 was used to calculate McDonald's ω . For all studies, we report how we determined our sample size, all data exclusions, all data inclusion/exclusion criteria, whether inclusion/exclusion criteria were established prior to data analysis, all measures in the study, and all analyses including all tested models. If we use inferential tests, we report exact p values, effect sizes, and 95% confidence or credible intervals.

Measures

The PSPS (Anderson et al., 2012) comprises eight items (e.g., “My ideas and opinions are often ignored”) rated on a 7-point scale ranging from 1 (= *strongly disagree*) to 7 (= *strongly agree*). We used a translation/back-translation procedure to create the German version according to the Guidelines for Translating and Adapting Tests by the International Test Commission (2017). First, two experts in psychological power research translated the items into German. A bilingual native English speaker back-translated the items. There was high congruence in wording. Minor discrepancies occurred and were resolved in a discussion. The items and response format can be found in Table 1. Cronbach's α coefficients are presented in Table 2 for all scales.

Various trait measures were used to assess nomological validity. The habitual experience of positive and negative emotions was measured with the Positive and Negative Affect Schedule (PANAS; German version: Krohne et al., 1996). Participants were asked to use a 5-point rating scale ranging from 1 (= *not at all*) to 5 (= *extremely*) to rate the extent to which they generally experienced 20 emotions. Half of the items addressed positive affect (e.g., excited) and the other half negative affect (e.g., ashamed).

The 7-item Authentic and Hubristic Pride Scale (Tracy & Robins, 2007) covers two facets of pride: Authentic pride refers to confidence and success (e.g., “I feel I am achieving”), whereas hubristic pride refers to arrogance and conceitedness (e.g., “I am smug”). The scale was administered with a 5-point rating scale ranging from 1 (= *not at all*) to 5 (= *extremely strong*).

The Rosenberg Self-Esteem Scale (German version: von Collani & Herzberg, 2003) measures trait self-esteem with 10 items (e.g., “I certainly feel useless at times”). Answers were given on a rating scale ranging from 1 (= *strongly disagree*) to 5 (= *strongly agree*).

Narcissism was measured with the short-form of the Narcissistic Personality Inventory (NPI-15; German version: Schütz et al., 2004). The 15-item scale addresses subclinical grandiose narcissism as a personality trait. The items have a dichotomous forced-choice format. One statement from each pair represents narcissism (e.g., “Everyone likes to listen to me”). Further, we used the short form of the Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013). People who want to be admired by others for the purpose of self-exaltation score high on Admiration (e.g., “I deserve to be considered a great person”). Rivalry addresses asserting oneself against others to protect oneself (e.g., “I want my competitors to fail”). Each facet consists of three items. Answers were given

Table 1. Descriptive statistics, corrected item-total correlations (r_{it}), and loadings of the GPSPS items in Study 1

Item	<i>M</i>	<i>SD</i>	r_{it}	Loading
1. Ich bekomme Menschen dazu, mir zuzuhören.* [I can get him/her/them to listen to what I say.]	5.55	1.09	.59	.68
2. Meine Wünsche haben nicht viel Gewicht. ^{R*} [My wishes do not carry much weight.]	5.06	1.39	.60	.69
3. Ich kann Menschen dazu bringen, zu tun, was ich will. [I can get him/her/them to do what I want.]	4.78	1.26	–	–
4. Auch wenn ich meine Ansichten ausspreche, haben diese wenig Einfluss. ^{R*} [Even if I voice them, my views have little sway.]	5.24	1.22	.73	.84
5. Ich habe viel Macht.* [I think I have a great deal of power.]	3.57	1.37	.53	.59
6. Meine Ideen und Meinungen werden oft ignoriert. ^{R*} [My ideas and opinions are often ignored.]	5.27	1.29	.71	.83
7. Selbst wenn ich es versuche, kann ich mich nicht durchsetzen. ^{R*} [Even when I try, I am not able to get my way.]	5.54	1.26	.69	.81
8. Wenn ich will, dann treffe ich die Entscheidungen. [If I want to, I get to make the decisions.]	5.25	1.27	–	–

Note. *Final items; ^RInverse items. Response format: 1 = *strongly disagree* (stimme gar nicht zu), 2 = *largely disagree* (stimme kaum zu), 3 = *somewhat disagree* (stimme eher nicht zu), 4 = *neither* (weder noch), 5 = *somewhat agree* (stimme eher zu), 6 = *largely agree* (stimme weitgehend zu), 7 = *strongly agree* (stimme völlig zu). The original English items are shown in brackets below each German item and are reprinted here from Anderson et al. (2012) with the permission of the authors.

Table 2. Nomological validity of the GPSPS: Descriptive statistics for the dependent measures and zero-order correlations with personal sense of power

Dependent measure	Cronbach's α	<i>N</i>	<i>M</i>	<i>SD</i>	Range	Expected correlation	Observed correlation
Positive emotions	.85	569	3.44	0.63	1–5	+	.44***
Negative emotions	.87	569	1.98	0.67	1–5	–	–.38***
Authentic pride	.89	569	3.47	0.75	1–5	+	.52***
Hubristic pride	.85	569	1.81	0.66	1–5	+	.12**
Self-esteem	.90	565	3.15	0.59	1–4	+	.52***
Narcissism (NPI)	.78 ^a	567	4.90	3.21	0–15	+	.49***
Narcissism (NARQ)	.79	569	2.62	0.93	1–6	+	.23***
Admiration	.80	569	2.93	1.17	1–6	No pre	.34***
Rivalry	.66	569	2.31	0.98	1–6	No pre	.04
Dominance	.67	568	5.11	1.06	1–8	+	.60***
Openness	.78	565	3.80	0.77	1–5	+	.07*
Conscientiousness	.75	565	3.97	0.61	1–5	+	.25***
Extraversion	.76	565	3.24	0.71	1–5	+	.39***
Agreeableness	.73	565	3.91	0.67	1–5	0	–.02
Neuroticism	.84	565	2.57	0.85	1–5	–	–.54***
Internal locus of control	.76 ^a	566	11.58	4.27	0–23	+	.25***
Behavioral activation	.75	586	3.08	0.36	1–4	+	.30***
BAS Drive	.69	586	3.07	0.49	1–4	+	.28***
BAS Fun Seeking	.59	569	2.91	0.50	1–4	+	.11**
BAS Reward Responsiveness	.60	569	3.23	0.44	1–4	+	.28***
Behavioral inhibition	.83	569	2.97	0.56	1–4	–	–.36***
Abstract construal style	.87 ^a	565	15.75	5.54	0–25	+	.17***
Social distance	–	565	3.93	1.55	1–7	+	.14**

Note. ^aValues were calculated with the Kuder-Richardson Formula 20. BAS = behavioral activation system; no pre = no prediction was made for this variable in the preregistration. * $p < .05$; ** $p < .01$; *** $p < .001$ (all one-tailed).

on a 6-point scale ranging from 1 (= *strongly disagree*) to 6 (= *strongly agree*).

To measure dominance, we used adjectives from the Revised Interpersonal Adjective Scales (IAS-R; Wiggins et al., 1988). We relied on the findings by Lorr and Strack (1990), who identified seven adjectives (e.g., “assertive”) that were the best markers for the dominance-submission dimension. Answers were given on an 8-point rating scale ranging from 1 (= *extremely inaccurate*) to 8 (= *extremely accurate*) regarding how the person feels in general.

The NEO-FFI-30 (Körner et al., 2008) is a German short form of the NEO Five-Factor Inventory and measures the Big Five with six items each. Answers were given on a 5-point rating scale ranging from 1 (= *strongly disagree*) to 5 (= *strongly agree*).

Locus of control was measured with the Internal-External Control scale (German version: Rost-Schaude et al., 2014). The 28 items (five filler items) have a dichotomous forced-choice format. One statement represents internal and the other external locus of control (e.g., “Unfortunately, a person’s values often go unrecognized, no matter how hard he tries”).

The BIS/BAS Scale (German version: Strobel et al., 2001) consists of 24 items with two superior factors: behavioral activation (BAS) and behavioral inhibition (BIS; e.g., “Criticism or scolding hurts me quite a bit”). The BAS factor can be divided into three components: Fun Seeking (e.g., “I am always willing to try something new if I think it will be fun”), Drive (e.g., “I go out of my way to get things I want”), and Reward Responsiveness (e.g., “It would excite me to win a contest”). Answers were given on a 5-point rating scale ranging from 1 (= *strongly disagree*) to 4 (= *strongly agree*).

The Behavior Identification Form (Vallacher & Wegner, 1989) measures construal style with 25 items. Participants were informed that behaviors can be identified in different ways. Then they had to choose one of two alternatives for certain behavior (e.g., “making a list: (a) getting organized versus (b) writing things down” representing (a) a high-level identity or (b) a low-level identity).

Social distance was measured with the single-item measure Inclusion of Other in the Self Scale (Aron et al., 1992). Participants were instructed to circle the diagram that best described their interpersonal relationships. Each diagram consisted of two circles labeled “self” and “other.” Answers were given on a pictorial 7-point rating scale ranging from 1 (= *circles for self and other do not overlap*) to 7 (= *circles for self and other almost completely overlap*).

Several sociodemographic characteristics were measured: age, gender, body height (in cm), managerial responsibility, and a number of employees. Further, profession, net income, and educational and vocational qualifications

were measured to assess sociodemographic status (for the procedure, see Lampert et al., 2013).

Results

Data Preparation

At t1, the questionnaire was completed by 607 participants. To ensure the quality of the data and the validity of the protocol (see Johnson, 2005), we conducted different data-cleaning steps in accordance with our preregistration. First, we excluded 11 participants with an average answer time below 2 s per item. Next, the individual reliability coefficient (IRC; Jackson, 1976) of the remaining 596 cases was computed using scales with more than one item, whereby the scales were adjusted according to the different rules for computing the scales (e.g., mean vs. sum; item coding zero to one vs. one to five). Five participants were excluded because they had an IRC below zero. The remaining 591 cases were examined to identify patterns of vertical answering, that is, they almost always provided the same score across items (e.g., agreeing strongly even when the items were inverted or referred to different matters). The percentage of consecutive identical answers (PCIA; Heydasch, 2014) was calculated (the number of consecutive identical answers on a rating scale divided by the number of items using that rating scale multiplied by 100). To obtain an overview, we averaged the PCIA of all rating scales and excluded three participants who had nearly always chosen the same option (PCIA > 90%). Finally, as planned in the preregistration, 15 cases in which individuals participated repeatedly with an identical code were deleted. In total, 573 valid cases remained in the sample and were used in the statistical analyses.

Factorial Validity and Item Characteristics

As assessed with the Kolmogorov-Smirnov test ($ps < .001$) and the Shapiro-Wilk test ($ps < .001$), the items and the sum score for the GPSPS were not normally distributed. Thus, we used the weighted least squares estimator (WLSMV) for the CFA (DiStefano & Hess, 2005). The expected unidimensional factor solution showed fit indices that were not satisfactory, $\chi^2(20) = 240.982$, $p < .001$; RMSEA = .139, 90% CI [.123, .155], $p < .001$; CFI = .955; TLI = .937. We then examined the modification indices and identified two items that were responsible for the poor fit (Items 3 and 8). The items were both about “wanting something” and thus differed from the rest of the items. The resulting 6-item factor solution showed good fit, $\chi^2(9) = 22.454$, $p < .001$; RMSEA = .051, 90% CI [.025, .078], $p = .430$; CFI = .997; TLI = .995. All loadings were significant ($ps < .001$). In the following, we used the 6-item version. Table 1 presents the means, standard deviations, and corrected item-total correlations for the items.

Reliability

The split-half reliability was acceptable at .74 (Items 1, 2, and 4 correlated with Items 5, 6, and 7). Cronbach's α for the GPSPS was good at .85 (.86 at t2 and t3). McDonald's ω was computed by using the robust maximum-likelihood estimator (MBESS package in R; Kelley, 2018), and there was also good internal consistency at .85 (.87 at t2 and t3).

Stability

We found high test-retest correlations for the 6-week, $r_{t1t2}(264) = .74, p < .001$, and 12-week intervals, $r_{t1t3}(183) = .72, p < .001$.

Nomological Validity

All associations between the GPSPS and the psychological scales were in the expected directions (see Table 2). Interestingly, the correlation with authentic pride was much higher than with hubristic pride ($z = 8.00, p < .001$). High positive correlations were found for the GPSPS with self-esteem, $r(563) = .52, p < .001$, and dominance, $r(566) = .60, p < .001$. With respect to narcissism, there was a positive association with admiration, $r(567) = .34, p < .001$, but no association with rivalry, $r(567) = .04, ns$. The strongest correlation with the Big Five was for neuroticism, $r(563) = -.54, p < .001$. The association with openness was positive as expected but almost zero, $r(563) = .07, p < .05$. For the facets of behavioral activation, the GPSPS showed higher correlations with drive ($z = 3.31, p < .001$) and reward responsiveness ($z = 3.67, p < .001$) than with fun seeking. There were also small but significant positive relations with abstract construal style, $r(563) = .17, p < .001$, and social distance, $r(563) = .14, p < .01$.

Criterion Validity

The GPSPS's associations with socioeconomic status and managerial responsibility were in the expected directions (see Table 3). The GPSPS's correlation with number of employees was unexpectedly close to zero, $r(566) = -.03, p = .235$. However, an inspection of the z -transformed data for the employee variable showed an outlier ($z = 10.06$ with 600 employees). This person was excluded, and the GPSPS's association with the number of employees became slightly larger, $r(565) = .08, p = .036$. When excluding participants who supervised more than 50 employees (cut-off for small companies) or more than 10 employees (cut-off for microenterprises), the association increased, $r(560) = .11, p = .004, r(533) = .16, p < .001$, respectively. Unexpectedly, there was no clear relation between the GPSPS and body height (see Table 3). The correlation between body height and sense of power was for men, $r(107) = .08$, and for women, $r(454) = .01$.

Table 3. Zero-order correlations between the GPSPS and sociodemographic characteristics

Dependent measure	Expected correlation	Observed correlation
Age	No pre	.10*
Gender ^a	No pre	-.07
Body height	+	.04
Socioeconomic status	+	.18***
Managerial responsibility	+	.20***
Number of employees	+	-.03

Note. No pre = no prediction was made for this variable in the preregistration. ^aMale = 1, Female = 2. * $p < .05$; *** $p < .001$ (all one-tailed).

Measurement Invariance

We tested for measurement invariance across gender (only male and female). Using multigroup CFA, we found strict invariance for the GPSPS (see Table 4) with respect to the invariance criterion by Cheung and Rensvold (2002; $\Delta CFI \leq .01$).

Discussion

The results largely supported the preregistered expectations. The GPSPS showed a unidimensional structure and good fit with six items. Two items were excluded. The modification indices suggested that adding covariances between Items 3, 8, and the other six items would improve the fit of the model. As correlated error terms violated the assumption of local model fit in a unidimensional model, the best approach was to remove these two items from the final scale. Further, Item 8 also showed the lowest corrected item-total correlation as well as the lowest loading in the CFA (see the Online Supplementary Material at <https://osf.io/2tqwc/>). Cronbach's α barely changed when Items 3 and 8 were excluded. With respect to the content, the two items seemed to have something in common (they are about "wanting something") – an aspect that is not present in the other items. This suggests that these items may represent a different latent variable. The final GPSPS items showed high corrected item-total correlations. Internal consistency was satisfactory and similar to the values found for the original scale. The trait version showed high stability.

The construct was correlated with other variables in the expected directions. The strongest association was with dominance, which is a closely related construct with respect to social hierarchy. Also, its association with authentic pride, which is also closely related to power (Cheng et al., 2010), was expected. Self-esteem and narcissism also showed strong positive correlations with the personal sense of power, which suggests that this sense is linked to overall positive self-evaluations. Neuroticism showed the strongest negative association with a personal sense of power, which suggests that emotional stability could lead to or might be a

Table 4. Test of measurement invariance for gender (Male/Female) in Study 1 (t1)

Fit indices	Configural	Metric	Scalar	Strict (factor variances)	Strict (residual error variances)
χ^2	35.448	43.902	55.813	56.729	74.733
RMSEA	.059	.057	.057	.056	.062
90% CI	[.029, .087]	[.030, .082]	[.034, .080]	[.033, .078]	[.042, .081]
CFI	.987	.984	.980	.980	.971
TLI	.978	.980	.979	.980	.976
AIC	9,911.725	9,910.178	9,910.089	9,909.005	9,915.009
BIC	10,067.850	10,044.210	10,018.510	10,013.089	9,993.072

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; AIC = Akaike Information Criterion; BIC = Bayes Information Criterion.

consequence of personal power. Of course, third variables such as depression or anxiety may be the basis for this association. This finding dovetails with the associations found with positive and negative emotions. Further, the expected correlations (emotions, behavioral activation, and inhibition) with respect to the approach/inhibition theory of power (Keltner et al., 2003) were high. Interestingly, however, the correlations with construal style and social distance were only small to medium in size. Overall, this may suggest that the GPSPS has a better match with the nomological net as proposed by the approach/inhibition theory than with the associations suggested by the social distance theory of power (Magee & Smith, 2013). Moreover, the present patterns and sizes of the correlation coefficients were largely comparable to the findings from the original scale (Anderson et al., 2012). Only the association with neuroticism was much stronger in the present study than it was in the original study, and the association with openness was much weaker. When potential cross-cultural differences are taken into account, this may suggest that emotional stability is more decisive for decision-making ability in Germany than in the US. But another way to explain these differences might be that the Big Five items have slightly different meanings in English and German (Hofstee et al., 1997).

Criterion validity was supported as the GPSPS showed small but positive associations with aspects of sociostructural power. However, the association between GPSPS and body height was not as expected. Apparently, physical features do not necessarily correspond to a personal sense of power. Despite a great deal of literature suggesting that body height is positively associated with power and status (e.g., Stulp et al., 2012), there are studies that have shown no association (e.g., between body height and earnings in Germany; Heineck, 2005). Moreover, the overrepresentation of women in the sample may have prevented an association between sense of power and body height from being found. In fact, the association between sense of power and height is somewhat stronger for men than for women. Finally, because strict measurement invariance

was established, the personal sense of power was measured in the same way for both men and women.

Study 2

In Study 2, we cross-validated the unidimensional factor structure with six items in a second sample and assessed internal consistency. We used the GPSPS in the context of romantic relationships because the sense of power is considered to pertain to various types of contexts and relationships (Anderson et al., 2012). We thus aimed to increase the applicability of the scale across contexts. The instruction read: “In the relationship with my partner. . .”

Method

Undergraduates of a university course recruited participants via the snowball principle. Participants mostly were from southern Germany. Participants could participate online or offline. There was no incentive for participation. Overall, 435 participants took part (54% women, 46% men; $M_{\text{age}} = 30.39$, $SD_{\text{age}} = 12.84$, 14 to 73). All participants were in a romantic relationship (23.9% married, 3.4% engaged, 72.6% dating). The average relationship duration was 8 years ($SD = 10.39$, range: 1 month to 52 years).

Results and Discussion

As in Study 1, the 6-item GPSPS showed an acceptable fit, $\chi^2(9) = 55.988$, $p < .001$; RMSEA = .110, 90% CI [.083, .138], $p < .001$; CFI = .976; TLI = .961. Reliability was acceptable when computed as Cronbach's α ($\alpha = .78$) or McDonald's ω ($\omega = .80$). Further, the model fit the data much better than the 8-item version, $\chi^2(20) = 463.656$, $p < .001$; RMSEA = .226, 90% CI [.208, .244], $p < .001$; CFI = .806; TLI = .728. Overall, the CFA supported the one-factor solution in a second independent community

sample with better gender representation. Yet, the RMSEA was slightly above the traditional cut-off values for acceptable fit. This may have occurred because the violation of multivariate normality was largest in this sample (particularly with a kurtosis value > 3 for Item 1) and the degrees of freedom were low (Hammervold, 1998; Kenny et al., 2015). Because the CFI and TLI showed acceptable values and the RMSEA was acceptable in Studies 1 and 3, we concluded that the 6-item solution was preferable.

Study 3

In this study, we examined the factorial validity of the GPSPS in a clinical sample. Moreover, we tested for construct validity: As individuals with mental disorders show impairments in their decision-making ability and their volitional control (Goschke, 2014), it seems plausible that they would experience a lower personal sense of power in their general relationships than others. Many patients experience stigma or discrimination due to their mental illness and consequently report lower personal power (Lysaker et al., 2008; Mashiach-Eizenberg et al., 2013). In addition, other proxies of personal power, or the lack of it, such as behavioral inhibition, a prevention focus (Keltner et al., 2003), or neuroticism as found in Study 1, are associated with an increased likelihood of developing a mental disorder (Clauss & Blackford, 2012; Eddington et al., 2009; Lahey, 2009). To the best of our knowledge, such a test of extreme group validity has not been previously reported for the scale, but as elaborated above, it makes conceptual sense for impairment to be associated with a lack of experienced power. The GPSPS was used as a trait measure to measure a generalized sense of power: “In my relationships with others. . .”

Method

Participants were recruited online via 10 communities and fora concerning mental disorders, depression, and self-help. As an incentive, participants could be entered into a drawing for Amazon vouchers. The questionnaire contained items on demography and psychotherapeutic indications and the trait GPSPS. A total of 187 individuals participated; two were excluded due to vertical answer patterns; two responded too quickly (see Leiner, 2013). The final sample comprised 183 participants (77.6% women, 16.4% men, 1.6% diverse; $M_{\text{age}} = 37.31$, $SD_{\text{age}} = 13.66$, range: 16–83 years). Eighty-nine participants (48.6%) were currently in psychotherapeutic treatment; 157 (85.8%) reported at least one diagnosed mental disorder; 87 (47.5%) reported more than one diagnosed mental disorder. The following mental

disorders were named: major depression (77.7%), anxiety disorders (33.8%), trauma- and stress-related disorders (24.2%), and borderline personality disorder (19.8%). This study was not preregistered as we were not able to estimate a priori how many participants would end up participating in this study.

Results and Discussion

First, missing values were replaced with the expectation-maximization method. Little’s MCAR test was not significant, $\chi^2(28) = 24.393$, $p = .661$, which suggested that the data were missing completely at random. A total of six missing values were replaced. Internal consistency was high ($\alpha = .88$, $\omega = .88$). Then, a CFA was computed. The expected unidimensional factor solution fit the data well, $\chi^2(9) = 21.909$, $p < .01$; RMSEA = .089, 90% CI [.042, .136], $p = .081$; CFI = .994; TLI = .990. Finally, we compared the mean of the GPSPS in this sample with the mean of the GPSPS in the sample from Study 1 (t1). An ANCOVA controlling for age and gender showed the expected main effect, $F(1, 736) = 155.207$, $p < .001$, $\eta_p^2 = .17$. The participants in the Study 1 sample reported a significantly higher personal sense of power ($M = 5.04$, $SD = 0.97$) than the clinical sample participants ($M = 3.91$, $SD = 1.28$). When we excluded participants from Sample 3 who had not indicated a diagnosed mental disorder, the effect size increased, $F(1, 711) = 154.886$, $p < .001$, $\eta_p^2 = .18$ (Sample 3: $M = 3.86$, $SD = 1.26$).

To sum up, high reliability was found in a third and clinical sample, and the unidimensional structure and fit of the GPSPS were supported. Moreover, participants who reported diagnosed mental disorders had a lower personal sense of power than others, which provides initial support for the measure’s construct validity. Yet, we had not asked for mental disorders in Study 1, which allows for the possibility that some of the Sample 1 participants might also suffer from a disorder. Furthermore, hospitalized patients with major mental health issues were not included in our clinical sample. Consequently, the differences between the clinical and non-clinical populations may in fact be even larger.

Study 4

The aim of Study 4 was to test a state version of the GPSPS. So far, the instructions for the PSPS have been trait-oriented. By contrast, in experimental designs concerning power, researchers have typically used individual items to measure experienced power. Yet, a validated scale

to measure the state experience of power is helpful as it provides the opportunity for parallel measurement of state and trait power and increasing measurement accuracy. We used a simple method to transform the GPSPS into a state version: We used instructions that are often used for state measures. To test the validity of the instructions and the state GPSPS, we used an often-employed intervention in power research: autobiographical recall (e.g., Galinsky et al., 2003). Participants were assigned to a high- or a low-power group only because we were interested in the sensitivity of the scale. The instructions for state sense of power read: “Please tick the option that applies most to you at the moment.”

Method

As stated in the preregistration (<https://aspredicted.org/blind.php?x=8n4hp5>), 200 participants were recruited from a distance-learning university. They were offered course credit for completing the experiment. Participants were instructed to remember an incident in which they had power over another person (high-power condition) or when someone else had power over them (low-power condition). The dependent variable was the GPSPS ($\alpha = .89$, $\omega = .89$). Twenty-five individuals did not complete the power scale and/or the memory task. The final sample comprised 175 participants (22% men, 78% women; $M_{\text{age}} = 32.88$, $SD_{\text{age}} = 10.15$, 19 to 60) with 89 people in the high-power and 86 in the low-power group. Participants' memories in the recall task were rated on three categories (strong memory, weak memory, missing the point): Two independent raters assessed a subset (10%) of the memories. After establishing good interrater agreement using a quadratic weighted kappa ($\kappa_w = .71$), the remaining memories were assessed by one rater.

Results and Discussion

An independent-sample *t*-test with all participants showed a significant difference between the high-power ($M = 5.04$, $SD = 0.99$) and low-power groups ($M = 4.67$, $SD = 1.19$), $t(173) = 2.23$, $p = .014$, $d = 0.34$. When we removed participants whose narratives had been rated as “missing the point,” the effect became larger (high power: $M = 5.09$, $SD = 0.95$; low power: $M = 4.63$, $SD = 1.18$), $t(155) = 2.67$, $p = .004$, $d = 0.43$. Thus, the GPSPS can be used as a state measure to assess fluctuations in people's sense of power. Such an assessment may be relevant in experimental settings or in evaluations of training, coaching, or therapy. Further, interactions of trait power with state power may be investigated in future research.

Study 5

In a final study, we wanted to further establish the validity of the state version of the GPSPS by using a different sample, a different setting (laboratory instead of online), and different power manipulation. We used the same instructions as in Study 4.

Method

The sample comprised 120 participants who were recruited at a university in southern Germany (81% women, 19% men; $M_{\text{age}} = 22.56$, $SD_{\text{age}} = 5.86$, range: 17–62 years). The students were offered course credit for completing the experiment. The power manipulation was developed in our laboratory and adapted for university students: Participants in the high-power condition were asked to imagine they lived in a large apartment and were receiving applications from potential flatmates. They had the option of choosing from among eight different applicants and were asked to figure out what they would say to applicants when interviewing them. In the low-power group, participants imagined that they had applied for a room in an apartment. They were told that they had only received a single invitation and had had a brief interview conducted in a cold manner for an unattractive room. The dependent variable was the GPSPS ($\alpha = .86$, $\omega = .87$). There were three control items about identifying with one's role in the scenario, one's motivation to work on the task, and empathizing with one's role in the scenario. Answers were given on a 7-point scale. In accordance with the preregistration, participants with a mean below 4 on the control items were excluded (<https://aspredicted.org/blind.php?x=88gj7j>).

Results and Discussion

First, missing values were replaced. Little's MCAR test was not significant, $\chi^2(7) = 1.529$, $p = .981$, which suggested that the data were missing completely at random. One missing value was replaced with the expectation-maximization method.

Then, one-tailed independent-sample *t*-tests were calculated. Results showed a significant difference between the high-power ($M = 5.35$, $SD = 0.78$) and low-power groups ($M = 5.00$, $SD = 1.02$), $t(118) = 2.14$, $p = .017$, $d = 0.39$. When we excluded participants who had a mean below 4 on the control items, the effect increased (high power: $M = 5.37$, $SD = 0.70$; low power: $M = 4.97$, $SD = 1.04$), $t(102) = 2.33$, $p = .011$, $d = 0.45$. The results suggest that the state version of the GPSPS was sensitive to an experimental power manipulation.

General Discussion

In the present studies, we analyzed the psychometric properties of the trait and state versions of the GPSPS (Anderson et al., 2012) by using five independent samples and three different instructions for the scale. With respect to the factor structure, CFAs supported a unidimensional model with six items across three studies. The two excluded items may have had different connotations for Germans compared with English-speaking participants. Corrected item-total correlations and factor loadings were high. Reliability coefficients were satisfactory in all samples, and high stability was found for the trait version of the GPSPS across three measurement occasions. The GPSPS showed strict measurement invariance across gender. With respect to nomological validity, the GPSPS was correlated with a variety of other psychological constructs in the expected direction and was thus comparable to the original scale. A personal sense of power had the strongest associations with dominance, neuroticism (negative), self-esteem, and authentic pride in the present research.

Criterion validity was established: Personal power was positively but not strongly associated with socioeconomic status. Supporting construct validity, as expected, a clinical sample scored lower on a personal sense of power than the broad sample from Study 1. Furthermore, we tested a state version to assess fluctuations in a personal sense of power. In two final studies, the state version of the GPSPS was sensitive to experimental power manipulations, but the effect sizes were rather small. Additional research will be needed to further establish the GPSPS as an adequate measure of state power. Future studies should also assess individuals' trait power and use that measure as a covariate in a subsequent experiment to better distinguish between trait and state variance.

There were no gender differences in the generalized sense of power (see Study 1), which is surprising as power is still not distributed equally between men and women in Germany (Lang & Gross, 2020). However, the assimilation of gender roles as well as increased agentic traits in women have recently been observed (Athenstaedt & Alfermann, 2011; Schwartz & Gonalons-Pons, 2016). Moreover, the generalized sense of power is an overall assessment. There is still a need to check for whether domains in which people feel powerful differ between the sexes. For example, men may report higher personal power in job-related contexts, but women might still feel more powerful in family matters (Beach & Tesser, 1993). Assessing the sense of power in different domains and testing the moderating role of sex could be a topic of future studies.

What are the theoretical implications? As the correlations in the nomological network were in the hypothesized directions for positive and negative emotions, behavioral acti-

vation, behavioral inhibition, construal style, and social distance, this provided correlational evidence in support of the approach inhibition theory of power (Keltner et al., 2003) as well as the social distance theory of power (Magee & Smith, 2013). Yet, the correlation coefficients were stronger for predictions that were based on the former theory. No associations were found between a personal sense of power and agreeableness or rivalry. The latter finding corresponds to the small positive correlation with hubristic pride and supports the notion that the experience of personal power might not be associated with antisocial attitudes but rather with high self-regard – reasoning that is in line with the high positive correlations with self-esteem, authentic pride, and narcissism. Overall, these associations are in line with theoretical assumptions and empirical findings from past power literature (Anderson & Cowan, 2014, Anderson et al., 2012).

Is a personal sense of power a cause or a consequence? Concerning the association between the GPSPS and socioeconomic status, both directions seem possible. Sociostructural power characteristics may have an impact on a personal sense of power, but a personal sense of power may also lead to high socioeconomic status. Future research should address this question in experimental and longitudinal studies. Other avenues for future research may include testing associations between a personal sense of power and gender-role self-concepts or agency versus communion and addressing the question of how experienced power varies in certain situations.

The findings in the clinical sample support the notion that personal sense of power varies with individuals' personal backgrounds. Patients with mental disorders may also benefit from interventions to increase their personal sense of power because a higher self-perceived ability to influence others and decision-making ability in interpersonal relationships are associated with desirable traits (e.g., consider the strong association between personal sense of power and emotional stability).

The project provided evidence for the unidimensionality of the scale in three independent samples. Moreover, the statistical analyses (corrected item-total correlations, reliability with different internal consistency coefficients, multi-group CFA) go beyond the analyses by Anderson et al. (2012). We used clinical, student, and community samples. Moreover, we provided evidence for the suitability of the state version of the scale. Researchers could use this scale as a manipulation check in experimental studies on power. This would be particularly promising for increasing objectivity over various power studies as researchers can directly compare their effect sizes with those of others. Such an approach would also increase the significance of statistical models with a personal sense of power as a mediator or outcome as the scale has demonstrated high reliability, and analyses would have a stronger basis.

Limitations pertain to the data sources because we used only self-reported data across the studies. Indeed, personal sense of power is a subjective assessment, but nevertheless, it would be interesting to assess self-other agreement for experienced and perceived power by using peer-report data. Another limitation is the unequal gender distribution in Studies 1, 3, 4, and 5. Women were overrepresented, which may have influenced the results of certain analyses (e.g., measurement invariance). Future research should thus aim to test the scale in samples in which men and women are represented equally. Further, it would be promising to test the scale in other interpersonal relationships (e.g., supervisor-employee) with adapted instructions. Finally, cross-cultural comparisons would be exceedingly valuable for testing whether a personal sense of power is lower or higher in certain cultures than in others and whether measurement invariance holds across cultures. Dovetailing with this issue, it is possible that a high personal sense of power in individuals from collectivistic cultures violates norms of modesty and humility and that a different pattern of correlations will thereby emerge (Morling et al., 2002). For example, there might not be a negative association between personal sense of power and negative emotions, and instead, there may be no clear correlation as the relationship may be ambiguous.

All in all, the results of the present studies provide converging evidence for the good psychometric properties of the GPSPS. We encourage researchers to use this scale as a reliable and valid instrument for assessing trait power and state power.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publication Ethics

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional

and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed consent was obtained from all individual participants who were included in the study.

Open Data

Studies 1, 4, and 5 were preregistered with an analysis plan. Studies 2 and 3 were not preregistered. We confirm that there is sufficient information for an independent researcher to reproduce all of the reported results (Körner, Heydasch, & Schütz, 2021). We also confirm that there is sufficient information for an independent researcher to reproduce all of the reported methodology (Körner, Heydasch, & Schütz, 2021). All preregistrations, data, and syntaxes for Mplus, R, and Weighted Kappa are available at <https://osf.io/jf9dz/>, doi: 10.17605/OSF.IO/JF9DZ.

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