Development and preliminary validation of a Five Factor Model measure of Machiavellianism

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Abstract

Machiavellianism is characterized by planfulness, the ability to delay gratification, and interpersonal antagonism (i.e., manipulativeness and callousness). Although its theoretically positive relations with facets of conscientiousness should help distinguish Machiavellianism from psychopathy, current measurements of Machiavellianism are indistinguishable from those of psychopathy due mostly to their assessment of low conscientiousness. The goal of the present study was to create a measure of Machiavellianism that is more in line with theory using an expert-derived profile based on the thirty facets of the Five Factor Model (FFM) and then test the validity of that measure by comparing it to relevant constructs. Previously collected expert ratings of the prototypical Machiavellian individual on FFM facets yielded a profile of 13 facets including low agreeableness and high conscientiousness. Items were written to represent each facet, resulting in a 201-item Five Factor Machiavellianism Inventory (FFMI). Across two studies, with a total of 710 participants recruited via MTurk, the FFMI was reduced to its final 52-item form and was shown to relate as expected to measures of Big Five personality traits, current Machiavellianism measures, psychopathy, narcissism, ambition, and impulsivity. The FFMI is a promising alternative Machiavellianism measure.

Keywords: Machiavellianism; Dark Triad; five-factor model; measure development; personality assessment

Public Significance Statement: Previous research has shown that existing measures of Machiavellianism depart from theoretical conceptualizations of the construct and overlap too highly with measures of psychopathy. The new Five Factor Machiavellianism Inventory, reported on here, is more in line with expert conceptualizations, more differentiated from psychopathy, and should facilitate research on Machiavellianism and the Dark Triad.

Introduction

The Dark Triad (DT) refers to a cluster of overlapping constructs – narcissism (NAR), psychopathy (PSY), and Machiavellianism (MACH). NAR individuals are described as grandiose, self-aggrandizing, and domineering. PSY is composed of selfishness, grandiosity, callousness, and impulsivity, and has robust links with antisocial behavior. MACH individuals are described as ambitious, able to delay gratification, amoral, and exploitative. Paulhus and Williams (2002) first introduced this cluster of constructs and proposed that although they share a callous and antagonistic core, they are distinct. Although concern has been raised about the distinctness of these constructs (e.g., Glenn & Sellbom, 2015), most DT research conceives of these as separable and focuses on identifying commonalities among and differences across them (e.g., Veselka & Vernon, 2014). The DT has been studied in social-personality, clinical, developmental, and I/O psychology contexts, in relation to a variety of outcomes (see Furnham, Richards & Paulhus, 2013 for a review).

Recent work (e.g., O'Boyle et al., 2015; Vize et al., 2018) suggests that current MACH and PSY measures both assess PSY, although expert ratings and descriptions suggest that the personality profiles of these two constructs are distinct (Miller et al., 2017). The redundancy is seen in the high correlations between scores on these constructs and the extremely similar relations they bear to external correlates. Although both constructs should be characterized by high levels of antagonism, they should differ in their relations to disinhibition, with MACH individuals possessing high levels of constraint and PSY individuals possessing low levels. However, existing measures of MACH (i.e., MACH-IV, scales from the Dirty Dozen and Short Dark Triad) are positively correlated with measures of impulsivity and disinhibition and appear interchangeable with current measures of PSY (Vize et al., 2018). In order for personality

researchers to more accurately assess MACH and better distinguish it from PSY a new measure is needed; one that includes adequate constraint and maps more closely onto theoretical expectations. Such a measure might also prove useful in applied settings in the context of workplace behaviors (e.g., Greenbaum et al., 2017; Pilch & Turska, 2015).

One way to assess the underlying traits of NAR, PSY, and MACH is with traits from the five-factor model (FFM). The FFM has been shown to have robust relations to these constructs, with the same facets emerging as important across studies and methods. Previous research has used these trait maps to develop measures of complex personality constructs using expert ratings (e.g., PSY: Lynam et al., 2011). Scales that have been developed based on FFM traits have demonstrated strong validity compared to other measures of the same construct (Wilson et al., 2011), as well as external criteria theoretically related to the construct (Miller et al., 2013).

The goal of the present project was to create and begin validation of a new measure of Machiavellianism. We used expert ratings to identify relevant facets, wrote items to capture more extreme and more MACH-specific manifestations of these traits, and selected items using item-response theory (IRT) analyses. Finally, we began the scale validation process by comparing it to existing MACH measures, as well as other theoretically relevant measures (aggression, antisocial behavior, impulsivity, and ambition).

Method

Expert Ratings and Scale Development

Expert ratings were taken from Miller et al. (2017) who asked DT researchers to rate the prototypical MACH on the 30 facets of the FFM. There was good agreement among the 36 experts who provided ratings; thus, scores were averaged for each of the 30 facets. A facet was included in the final profile if it had an average rating greater than 4 or less than 2, or if the z-

score[1] was one SD above or below the overall mean. Thirteen facets met these criteria (Table 1).

For each trait, we generated items that were more extreme or more MACH-specific than the

original FFM items. This process resulted in a final initial item pool of 201 items.

Participants

Participants for both the derivation and validation study were recruited from Amazon

Mechanical Turk (MTurk). Although MTurk workers are generally better educated, younger, and

overrepresentative of European-Americans and Asian-Americans compared to the U.S.

population (Chandler & Shapiro, 2016), research has shown that MTurk provides high-quality

data that is more demographically diverse than traditional college samples (Buhrmester, Kwang,

& Gosling, 2011). For both the derivation and validation studies, participants had to be from the

United States, speak English, and be 18 years of age or older. In the derivation sample, there

were initially 509 respondents. After eliminating participants missing three or more attention

checks, endorsing four or more Infrequency or Virtue items from the Elemental Psychopathy

Assessment (EPA; Lynam et al., 2013), and extreme use of single response categories, the final

sample was 430 participants (54% Female, 82% White). There were 318 initial participants in

the validation sample. After removing invalid responses using the same procedures, the final

sample included 280 participants (65% Female, 78% White), above the participant number at

which correlations stabilize (Schönbrodt & Perugini, 2013).

Procedure

All study procedures were approved by the relevant Institutional Review Board. MTurk

Workers who clicked on the HIT (MTurk task) for each study were invited to "complete a series

of questionnaires that ask about yourself, your personality, and specific behaviors." If the

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[1] Z-scores were calculated by subtracting the mean of the average facet ratings from each facet mean and dividing by the standard deviation of the average facet ratings.

Worker chose to accept the HIT, they were provided with an informed consent form that

explained the purpose of the study, outlined what participating in the study entailed, and

explained confidentiality procedures to ensure that their participation was anonymous.

Participants in the derivation study were told the study would take about 30 minutes and

that they would be compensated $1.00 for their time. After reading the consent form, participants

completed a demographics questionnaire, the 201-item FFMI, and 24 validity items. Participants

in the validation study were exposed to similar procedures. They were told they would be

compensated $2.00 for completing the task and that the HIT would take approximately 1.5 hours.

Measures

Derivation study participants completed a basic demographics form, the developmental

version of the FFMI, and validity items. Participants in the validation study completed the same

demographics form, the final form of the FFMI, and the measures described below.

Five Factor Machiavellianism Inventory (FFMI). The developmental form of the

FFMI consisted of 201 items answered on a 5-point Likert scale ranging from *Disagree strongly*

to *Agree strongly*. There were 13 subscales, each representing a facet of the FFM identified as

prototypically Machiavellian; sample items for each scale are presented in Table 1.

Attention Check. Eight attention check items (e.g., "Please select Strongly Disagree")

were also included and were used to identify invalid responders.

MACH-IV. The MACH-IV (Christie & Geis, 1970) consists of 20 items assessing

attitudes towards human nature, lack of concern with morality, and the use of manipulative

interpersonal strategies. In the present study, the MACH-IV had an alpha coefficient of .76.

Short Dark Triad-3 (D3-Short). The D3-Short (Jones & Paulhus, 2014) consists of 27

items, 9 items for each DT trait. Items are rated on a 5-point Likert scale. MACH items assess

manipulative behavior, beliefs in human nature, and planful deceit. Reliability coefficients for

the MACH, PSY, and NAR scales were .85, .78, and .82.

Dirty Dozen. The Dirty Dozen (Jonason & Webster, 2010) is a 12-item measure of the

DT and consists of four items per scale. Reliability coefficients for the MACH, PSY, and NAR

scales were .88, .81, and .87, respectively.

Self-Report Psychopathy Scale Version III (SRP-III). The SRP-III (Paulhus et al., in

press) is a 64-item measure of PSY with four subscales: Interpersonal Manipulation ($\alpha = .81$),

Callous Affect ($\alpha = .83$), Erratic Lifestyle ($\alpha = .81$), and Antisocial Behavior ($\alpha = .77$). The total

scale had an alpha coefficient of .92.

Narcissistic Personality Inventory (NPI). The NPI (Raskin & Hall, 1979) is a 40-item

forced-choice response measure based on the DSM-III criteria for narcissistic personality

disorder (NPD). In the present study, the NPI had an alpha coefficient of .89.

International Personality Item Pool Representation of the NEO PI-R Short Form

(IPIP-NEO SF). The short form of the IPIP-NEO (Maples et al., 2014) is comprised of 120

items that measure the thirty facets of the five domains of the Five Factor Model. Cronbach's

alpha coefficients for the domains ranged from .85 to .93.

UPPS Impulsive Behavior Scale (UPPS). The UPPS (Whiteside & Lynam, 2001) uses

59 items to assess five impulsigenic traits: Negative Urgency ($\alpha = .91$), (low) Premeditation ($\alpha =$

.89), (low) Perseverance ($\alpha = .89$), Sensation Seeking ($\alpha = .88$), and. Positive Urgency ($\alpha = .95$).

Crime and Analogous Behavior Scale (CAB). The CAB (Miller & Lynam, 2003) is a

55-item self-report measure of externalizing behaviors yields five composites: alcohol/drug use,

property crime, violent crime, total crime, and risky sexual behavior.

Reactive and Proactive Aggression Questionnaire (RPQ). The RPQ (Raine et al.,

2006) is a 23-item self-report measure of two aggression scales: Proactive (11 items, $\alpha = .82$) and

Reactive (12 items, $\alpha = .83$).

Revised Self-Report of Aggression and Social Behavior (SRASBM). The SRASBM

(Morales & Crick, 1999) uses 56 items to assess proactive peer aggression ($\alpha = .85$), reactive

peer aggression ($\alpha = .88$), and romantic aggression ($\alpha = .78$).

Aspiration Index. The Aspiration Index (Kasser & Ryan, 1993) assesses extrinsic

aspirations (i.e., wealth, fame, and image; $\alpha = .92$) and intrinsic aspirations (i.e., meaningful

relationships, personal growth, and community contributions; $\alpha = .89$).

BIS/BAS Drive Scale. The BIS/BAS scale (Carver & White, 1994) assesses two general

motivational systems using 24 items. Three subscales comprised the BAS scale: drive ($\alpha = .77$),

fun-seeking ($\alpha = .65$), and reward responsiveness ($\alpha = .77$); there is one BIS scale ($\alpha = .83$).

Results and Discussion

First, items were excluded based on low variability, redundancy (i.e., correlated at .70 or

higher), or low commonality (i.e., corrected ITC less than .30). Next, IRT analyses were applied

to the remaining items in each subscale. Final items were selected based on three considerations:

which items provided the most information; which items together provided the most coverage

across the latent trait; and which items yielded fairly even numbers of reversed and non-reversed

items. Cronbach's alphas were generally good and are provided in Table 1, along with

information on inter-item correlations, and unidimensionality (i.e., CFI and TLI fit indices from

single factor models). The final version of the FFMI (available in Supplemental Materials)

consisted of 52 items, with 13 subscales comprised of four items each.

An exploratory factor analysis (EFA) using PAF with an oblimin rotation was conducted

on the 13 FFMI subscales in the derivation sample. The scree plot suggested a three-factor

solution, whereas Horn's (1965) parallel analysis and Velicer's (1976) Minimum Average Partial (MAP) test suggested two-factor solutions. After extracting two, three, and four factors, the three-factor solution yielded the most homogeneous (and therefore interpretable) factors and accounted for 66.48% of the variance. Factor loadings are presented in Supplemental Materials (Table 1). The first factor, Agency, comprised Achievement (.46), Activity (.73), Assertiveness (.78), Competence (.81), Invulnerability (.70), and Self-confidence (.88). The second factor, Antagonism, comprised Selfishness (low Altruism; .73), Immodesty (.62), Manipulativeness (low Straightforwardness; .69), Callousness (low Tendermindedness; .81), and Cynicism (low Trust; .44). The third factor, Planfulness, had two scales loading on it (Deliberation, .77 and Order, .78). Subscales loaded primarily on single factors with the exception of Achievement which had a secondary loading on Antagonism (.32).

This analysis was repeated in the validation sample. Analysis of the scree plot suggested up to a four-factor solution, whereas the results from a parallel analysis and MAP test suggested a two-factor solution. After extracting two, three, and four factors from the subscales, the three-factor solution appeared to be the best fit and corresponded to the factors extracted in the derivation study. Structure matrix loadings for the FFMI subscales in both samples are presented in Supplemental Materials (Table 1). Tucker's congruence coefficients, indexing the similarity of loadings across samples (Lorenzo-Seva & Berge, 2006), were 0.98 and greater across factors.

Single-construct measures of DT constructs (the SRP-III, NPI, and MACH-IV) and DT measures assessing all three constructs simultaneously (Dirty Dozen and SDT) were significantly correlated with the FFMI and with each other (see Table 2 in Supplemental Materials). Specifically, intercorrelations among current MACH scales ranged from .55 to .67, rs among NAR scales ranged from .52 to .79, and rs among PSY scales ranged from .55 to .75. Current

MACH and NAR scale intercorrelations ranged from .25 to .52. PSY measures were correlated

with NAR measures from .37 to .56. Notably, current MACH measures were correlated nearly as

strongly with PSY measures as they were with each other, with rs ranging from .47 to .70. The

FFMI Total score showed modest relations to current MACH measures (r = .15 - .27) and PSY

measures (r = .14 - .16), and stronger relations with NAR measures (r = .28 - .53). Results

indicate that we were successful in developing a MACH measure less strongly correlated with

PSY than current MACH measures. It is clear that the FFMI differs from existing measures of

MACH given its relatively small (yet significant) correlations with these measures.

Next, we examined correlations between the 30 facets of the FFM and the FFMI as well

as DT composite measures created from existing inventories (see Table 3 in Supplemental

Materials for individual scale results). In general, the FFMI Total score was negatively correlated

with facets of neuroticism and agreeableness and positively related to facets of extraversion and

conscientiousness (see Table 2). The FFMI's relations with openness were less consistent, but its

total score was significantly negatively correlated with Emotionality and Liberalness. In contrast,

current MACH measures showed mixed relations with extraversion facets, positive relations with

neuroticism facets, and negative relations with agreeableness and conscientiousness facets.

The similarity coefficients presented at the bottom of Table 2 index the degree of

similarity between the FFM correlational profiles of given constructs. Although the correlational

profile of the FFMI Total score was similar to the expert FFM profile of NAR (r = .48) and PSY

(r = .50), it was more similar to the expert profile of MACH (r = .65). This was not true of

existing MACH measures, all of which were more similar to expert ratings of PSY and NAR.

The FFM correlational profiles of the composite scores of PSY and MACH were essentially

identical (r = .97), while the expert profiles of MACH and PSY were far less similar (r = .54).

These results suggest we were successful in developing a MACH scale that was more consistent

with the expert FFM profile of MACH than current MACH measures, as well as less similar to

the expert FFM profile for PSY than current MACH measures.

       The three factors of the FFMI differed in their relations to FFM facets (Table 2). As

expected, FFMI Antagonism was most strongly negatively correlated with agreeableness and

conscientiousness facets; however, Agency and Planfulness were positively related to these

facets. One exception was the modesty facet of agreeableness, with which Agency had a

significantly negative correlation. In general, the FFM profile of Antagonism was quite distinct

from the profile for Planfulness and somewhat distinct from the profile for Agency, whereas the

profiles for Agency and Planfulness were similar. This illustrates the difficulty noted by Miller et

al. (2017) in writing individual items that assess low agreeableness and high conscientiousness—

agreeableness and conscientiousness are moderately positively correlated. It also helps explain

why the FFMI total score is not as saturated with low agreeableness as might be expected—its

components bear opposite relations to agreeableness.

       We also examined the FFMI's relations to relevant criteria (Table 3). The FFMI was

unrelated to any of the aggression outcomes; in contrast, the composite MACH score was

strongly positively related to all types of aggression. This was also the case for NAR and PSY. In

addition, the FFMI was more weakly correlated with antisocial behavior, gambling, and

substance use than current measures of both MACH and PSY, although it was significantly

correlated with violent behavior as measured by the CAB. The Antagonism factor of the FFMI

reproduced the relations to aggression exhibited by existing measures of MACH which, in

conjunction with the high similarity between FFM profiles for FFMI Antagonism and MACH

measures, suggests that current measures are primarily measures of antagonism. If the MACH

individual was solely antagonistic and, by the natural correlation between agreeableness and conscientiousness, lacked impulse control, one might expect to find high levels of aggression. However, while the MACH individual is antagonistic, he/she possesses good impulse control, which should allow him/her to act aggressively only when circumstances require it. From this latter perspective, one would not expect to find general relations to aggression.

The FFMI bore significant negative relations with impulsivity-related traits, in contrast to the MACH composite which was significantly positively correlated with all of the UPPS scales. The FFMI showed higher positive correlations with the BAS Drive and BAS Reward Responsiveness scales than current measures of MACH and PSY. The FFMI was also more negatively correlated with items on the BIS scale. The FFMI was positively related to both extrinsic (wealth, fame, image) and intrinsic (meaningful relationships, personal growth, community contributions) aspirations. In contrast, the composite MACH score was positively related to extrinsic, but negatively related to intrinsic, aspirations.

These findings suggest that MACH individuals, assessed via the FFMI, are not impulsive. It is important to note that these findings distinguished the FFMI from both current MACH measures and current PSY measures. Findings from the BIS and BAS scales suggest that FFMI MACH is characterized not only by planfulness and deliberation, but also by goal-oriented behavior, high responsiveness to reward, and emotional stability. These findings were weaker and/or ran in the opposite direction for current measures of MACH. It may seem surprising that the FFMI was related to intrinsic aspirations, since one of the subscales was related to having meaningful relations with people. This relation, however, was due to the positive relations for Agency and Planfulness outweighing the negative relation for Antagonism in the total score.

In sum, the FFMI appears to be a promising new measure of MACH that obviates many

of the problems with existing measures. There is, however, more work to be done given

limitations of the current studies. The first is that the data were gathered via self-report measures.

Future studies involving lab tasks and behavioral observations may be interesting extensions of

how these personality characteristics play out in "real world" (or simulated real world)

interactions. A second limitation was our use of an unselected sample, which may have led to

low base rates in MACH traits. Future work could oversample for MACH individuals by

identifying individuals in corporate management positions or other high-powered jobs, or those

who score highly on measures of ambition. Finally, it should be noted that our approach to

building the FFMI via the use of expert ratings on FFM traits is but one among many to

constructing a MACH scale. We like the expert approach because we feel the FFM provides a

relatively comprehensive lexicon of traits and the construction of the average expert profile

serves to blunt the idiosyncrasies of any single expert while highlighting points of agreement.

These limitations notwithstanding, the present study adds a finer-grained understanding of

MACH to the literature and provides a measure that is more closely related to the theoretical trait

profile of MACH.

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Table 1
FFMI scales and sample items.

Scale (Derivation/Validation)	Sample Item	Range of Inter-Item Correlations (Mean)		CFI/TLI Fit Indices
		Derivation Sample	Validation Sample	
Achievement (α = .75/.74)	I am not an ambitious person. (r)	.28-.56 (.43)	.25-.68 (.42)	0.96/0.92
Activity (α = .68/.67)	My friends would call me lazy. (r)	.28-.41 (.35)	.18-.46 (.34)	0.99/0.97
Selfishness (low Altruism) (α = .79/.77)	I view others as tools to be used and manipulated.	.31-.65 (.48)	.23-.66 (.44)	0.98/0.97
Assertiveness (α = .76/.76)	In meetings, I typically let others do the talking. (r)	.36-.55 (.44)	.32-.64 (.44)	1.00/1.00
Competence (α = .76/.69)	People look to me to "get the job done."	.37-.62 (.45)	.28-.57 (.38)	0.96/0.93
Deliberation (α = .78/.79)	I like to carefully consider the consequences before I make a decision.	.40-.57 (.48)	.41-.67 (.49)	1.00/0.99
Invulnerability (α = .81/.81)	I am not easily flustered.	.47-.55 (.52)	.40-.62 (.51)	1.00/0.99
Immodesty (low modesty) (α = .72/.60)	I am better than others.	.23-.60 (.38)	.08-.52 (.27)	0.93/0.87
Order (α = .68/.75)	I like having everything in its own, proper place.	.26-.44 (.35)	.36-.57 (.43)	0.98/0.97
Self-confidence (low self-consciousness) (α = .81/.75)	I am not easily embarrassed.	.44-.65 (.54)	.38-.52 (.43)	0.99/0.97
Manipulativeness (low straightforwardness) (α = .71/.68)	Being honest all of the time won't lead to success.	.22-.50 (.38)	.20-.55 (.35)	0.95/0.89
Callousness (low tendermindedness) (α = .78/.77)	I don't worry about other people's needs if they conflict with my own.	.43-.51 (.47)	.36-.54 (.46)	1.00/1.00
Cynicism (low trust) (α = .82/.77)	I have a great deal of faith in human nature. (r)	.42-.69 (.53)	.35-.60 (.46)	1.00/0.99

Table 2
Relations of Big Five facets with DT measures.

Five Factor Model Facet	Mean Expert Ratings						FFMI Total and Factor Scores			
	Expert MACH	Expert PSYCH	Expert NARC	Comp. MACH	Comp. PSYCH	Comp. NARC	FFMI Total	Antag	Agency	Planful
Anxiety (N1)	2.39	1.47	2.33	**0.19**	0.13	-0.07	**-0.42**	**0.17**	**-0.62**	**-0.16**
Angry (N2)	3.28	3.87	4.08	**0.34**	**0.37**	**0.16**	**-0.20**	**0.33**	**-0.40**	**-0.28**
Depression (N3)	2.94	1.40	2.42	**0.23**	**0.26**	-0.06	**-0.53**	**0.17**	**-0.69**	**-0.33**
Self-conscious (N4)	1.92	1.07	1.50	0.12	0.07	**-0.26**	**-0.64**	0.07	**-0.79**	**-0.25**
Impulsiveness (N5)	2.08	4.53	3.17	**0.27**	**0.34**	0.11	**-0.29**	**0.20**	**-0.38**	**-0.41**
Vulnerability (N6)	1.92	1.47	2.92	**0.14**	0.11	-0.07	**-0.48**	**0.16**	**-0.63**	**-0.27**
Warmth (E1)	2.06	1.73	1.42	**-0.21**	**-0.21**	**0.24**	**0.37**	**-0.24**	**0.62**	**0.12**
Gregariousness (E2)	3.39	3.67	3.83	-0.02	0.07	**0.42**	**0.26**	-0.08	**0.42**	-0.08
Assertiveness (E3)	4.14	4.47	4.67	0.08	0.11	**0.56**	**0.65**	0.11	**0.72**	**0.15**
Activity (E4)	3.78	3.67	3.67	-0.08	-0.12	**0.24**	**0.42**	-0.05	**0.49**	**0.25**
Excitement (E5)	2.81	4.73	4.17	**0.19**	**0.34**	**0.50**	**0.18**	**0.15**	**0.26**	**-0.35**
Positive (E6)	2.72	2.53	3.33	**-0.28**	**-0.29**	**0.15**	**0.35**	**-0.27**	**0.58**	**0.19**
Fantasy (O1)	2.28	3.07	3.75	**0.20**	**0.27**	**0.24**	0.00	**0.15**	-0.03	**-0.22**
Aesthetics (O2)	2.77	2.33	3.25	**-0.12**	-0.07	0.09	0.03	**-0.22**	0.11	0.02
Feelings (O3)	3.31	1.80	1.92	-0.11	0.00	0.02	**-0.34**	**-0.14**	**-0.31**	**-0.12**
Actions (O4)	2.94	4.27	4.08	-0.06	0.10	**0.16**	0.02	-0.01	**0.15**	**-0.30**
Ideas (O5)	2.78	3.53	2.92	**-0.13**	-0.03	**0.15**	0.11	**-0.16**	**0.25**	0.01
Values (O6)	3.03	2.87	2.67	0.05	**0.14**	-0.03	**-0.13**	0.04	**-0.12**	**-0.18**
Trust (A1)	1.42	1.73	1.42	**-0.44**	**-0.35**	-0.07	-0.09	**-0.51**	**0.24**	0.01
Straightforward (A2)	1.28	1.13	1.83	**-0.75**	**-0.70**	**-0.53**	**-0.25**	**-0.68**	0.01	**0.38**
Altruism (A3)	1.28	1.33	1.00	**-0.53**	**-0.58**	**-0.13**	-0.05	**-0.67**	**0.31**	**0.29**
Compliance (A4)	2.08	1.33	1.58	**-0.62**	**-0.69**	**-0.55**	**-0.21**	**-0.62**	0.03	**0.36**
Modesty (A5)	1.89	1.00	1.08	**-0.29**	**-0.28**	**-0.64**	**-0.57**	**-0.39**	**-0.49**	0.02
Tenderminded (A6)	1.36	1.27	1.50	**-0.49**	**-0.46**	**-0.19**	**-0.32**	**-0.70**	0.05	0.09
Competence (C1)	3.69	4.20	3.25	**-0.23**	**-0.27**	0.07	**0.56**	**-0.17**	**0.65**	**0.55**
Order (C2)	3.97	2.60	2.92	**-0.15**	**-0.27**	-0.05	**0.42**	-0.09	**0.36**	**0.68**
Dutifulness (C3)	2.53	1.20	2.42	**-0.52**	**-0.56**	**-0.29**	**0.17**	**-0.48**	**0.35**	**0.55**
Achievement (C4)	3.86	3.07	3.92	**-0.22**	**-0.24**	**0.17**	**0.50**	**-0.16**	**0.61**	**0.42**
Self-discipline (C5)	3.42	1.87	2.08	**-0.24**	**-0.25**	0.01	**0.49**	**-0.22**	**0.59**	**0.52**
Deliberation (C6)	3.78	1.60	2.25	**-0.39**	**-0.58**	**-0.29**	**0.27**	**-0.34**	**0.31**	**0.77**
Similarities										
Expert M										
Expert P	0.54									
Expert N	0.65	0.85								
Comp M	0.33	0.51	0.56							
Comp P	0.26	0.57	0.58	0.97						
Comp N	0.51	0.78	0.77	0.58	0.63					
FFMI T	0.65	0.50	0.48	-0.16	-0.18	0.55				
Antag	0.45	0.56	0.64	0.97	0.93	0.59	-0.05			
Agency	0.41	0.35	0.28	-0.42	-0.40	0.41	0.94	-0.34		
Planful	0.28	-0.25	-0.21	-0.71	-0.81	-0.31	0.59	-0.60	0.64	

Note. Bolded values indicate statistical significance, $p < .05$. Comp = Composite Score, FFMI T = FFMI Total.

Table 3
Relations to criterion measures.

	Composite MACH	Composite PSYCH	Composite NARC	FFMI Total	Antag	Agency	Planful
Age	**-0.14a**	-0.12a	**-0.23b**	-0.08a	**-0.20a**	0.01b	0.08b
Gender	-0.12a	**-0.21b**	-0.09a	**-0.18ab**	-0.17a	**-0.14a**	0.04b
Education	0.03a	0.02a	**0.18b**	0.12a	0.03a	**0.13a**	0.01a
RPQ Proactive	**0.47a**	**0.56b**	**0.41a**	0.09c	**0.37a**	-0.02b	**-0.33c**
RPQ Reactive	**0.46a**	**0.43a**	**0.20b**	-0.02c	**0.34a**	**-0.19b**	**-0.21b**
RPQ Total	**0.53a**	**0.56a**	**0.32b**	0.03c	**0.41a**	**-0.14b**	**-0.30c**
SRASBM Proactive	**0.52a**	**0.59b**	**0.43c**	0.03d	**0.41a**	**-0.12b**	**-0.33c**
SRASBM Reactive	**0.56a**	**0.56a**	**0.33b**	0.05c	**0.45a**	**-0.16b**	**-0.26b**
SRASBM Romant	**0.43a**	**0.43a**	**0.33b**	-0.04c	**0.27a**	**-0.15b**	**-0.26b**
SRASBM Total	**0.57a**	**0.59a**	**0.39b**	0.02c	**0.42a**	**-0.16b**	**-0.30c**
Extrinsic Aspiration	**0.44a**	**0.38a**	**0.68b**	**0.37a**	**0.37a**	**0.26a**	-0.11b
Intrinsic Aspiration	**-0.33a**	**-0.34a**	0.10b	**0.21c**	**-0.41a**	**0.47b**	**0.25c**
UPPS Neg. Urgen	**0.39a**	**0.51b**	**0.18c**	**-0.37d**	**0.25a**	**-0.47b**	**-0.50b**
UPPS (lack) Prem.	**0.29a**	**0.39b**	**0.21a**	**-0.31c**	**0.20a**	**-0.29b**	**-0.71c**
UPPS (lack) Persist	**0.27a**	**0.30a**	-0.02b	**-0.56c**	**0.13a**	**-0.61b**	**-0.57b**
UPPS SS	**0.17a**	**0.41b**	**0.43b**	0.11a	**0.16a**	**0.16a**	**-0.36b**
UPPS Pos. Urgency	**0.45a**	**0.58b**	**0.38a**	-0.07c	**0.36a**	**-0.18b**	**-0.46c**
BAS Drive	**0.22a**	**0.25a**	**0.38b**	**0.48c**	**0.23a**	**0.42b**	0.12a
BAS Fun-seek	**0.16a**	**0.31b**	**0.35b**	-0.01c	0.07a	0.08a	**-0.37b**
BAS RR	-0.11a	-0.12a	-0.05a	**0.13b**	-0.11a	**0.17b**	**0.21b**
BIS Total	-0.08a	**-0.13ab**	**-0.21b**	**-0.47c**	-0.10a	**-0.53b**	-0.01a
Substance Use	0.09a	**0.23b**	0.04a	-0.11c	0.00	-0.06	**-0.23**
ASB	**0.27a**	**0.42b**	**0.19a**	0.05c	**0.15a**	0.01a	**-0.16b**
Violent Behav.	**0.23a**	**0.34b**	**0.24a**	**0.18a**	**0.17a**	**0.14a**	-0.07b
Nonviol. Delinq.	**0.30a**	**0.33a**	**0.16b**	0.03c	**0.20a**	**-0.05b**	**-0.14b**
Gambling	0.08a	0.11a	0.07a	-0.06b	-0.02	-0.03	**-0.12**
Composite MACH							
Composite PSYCH	0.96						
Composite NARC	0.73	0.74					
FFMI Total	0.03	0.01	0.52				
Antagonism							
Agency					-0.26		
Planfulness					-0.61	0.62	

Note. Bolded values indicate statistical significance, $p < .05$. Romant = Romantic Aggression, Urgen = Urgency, Prem = Lack of premeditation, Persist = Lack of persistence, Fun-seek = Fun-seeking, RR = Reward Responsiveness, Nonviol. Delinq. = Nonviolent delinquency.

Supplemental Materials for "Development and preliminary validation of a Five Factor Model measure of Machiavellianism."

Table 1
Factor Loadings for Derivation and Validation Samples

	Agency		Antagonism		Planfulness	
	Deriv	Valid	Deriv	Valid	Deriv	Valid
Achievement	**0.457**	**0.444**	0.322	0.234	-0.073	-0.059
Activity	**0.734**	**0.698**	-0.139	-0.166	0.245	0.336
Assertiveness	**0.777**	**0.708**	0.149	0.022	-0.027	-0.039
Competence	**0.813**	**0.789**	-0.108	-0.228	0.365	0.391
Invulnerability	**0.702**	**0.612**	-0.167	-0.175	0.149	0.259
Self-confidence	**0.879**	**0.837**	-0.041	-0.098	0.001	0.164
Altruism (low)	-0.048	-0.165	**0.733**	**0.713**	-0.209	-0.239
Immodesty	0.318	0.333	**0.615**	**0.500**	-0.226	-0.145
Manipulativeness	0.026	0.129	**0.692**	**0.697**	-0.265	-0.334
Callousness	-0.034	-0.047	**0.810**	**0.815**	-0.189	-0.242
Cynicism	-0.276	-0.220	**0.439**	**0.408**	0.150	0.080
Deliberation	0.105	0.213	-0.272	-0.343	**0.773**	**0.735**
Order	0.265	0.275	-0.150	-0.113	**0.782**	**0.867**
	Tucker's Congruence Coefficients					
		0.99		0.99		0.98

Table 2
Intercorrelations Among Measures of Psychopathy, Machiavellianism, and Narcissism

	FFMI	DD Mach	MACH IV	SD3 Mach	DD Psych	SRP	SD3 Psych	DD Narc	NPI	SD3 Narc
FFMI	--									
DD Mach	**.23**	--								
MACH IV	**.15**	**.55**	--							
SD3 Mach	**.27**	**.57**	**.67**	--						
DD Psych	**.14**	**.70**	**.59**	**.55**	--					
SRP	**.16**	**.58**	**.63**	**.61**	**.66**	--				
SD3 Psych	**.16**	**.52**	**.47**	**.62**	**.55**	**.75**	--			
DD Narc	**.28**	**.52**	**.35**	**.43**	**.41**	**.40**	**.44**	--		
NPI	**.52**	**.40**	**.34**	**.37**	**.37**	**.56**	**.50**	**.52**	--	
SD3 Narc	**.53**	**.36**	**.25**	**.42**	**.32**	**.46**	**.52**	**.56**	**.79**	--

Note. Bolded values indicate statistical significance, $p < .05$. "DD" = Dirty Dozen; "SD3" = Short Dark Triad.

Table 3
Relations of Machiavellianism, Psychopathy, and Narcissism to IPIP NEO facets.

| Facet | Expert Rating | | | Machiavellianism | | | | Psychopathy | | | | Narcissism | | | | FFMI |
	Mach	Psych	Narc	M IV	SD3	DD	Comp	SRP	SD	DD	Comp	NPI	SD	DD	Comp	
Anxiety (N1)	2.39	1.47	2.33	**0.28**	**0.18**	0.03	**0.19**	0.11	0.09	0.11	0.13	-0.12	**-0.19**	0.10	-0.07	**-0.42**
Angry (N2)	3.28	3.87	4.08	**0.34**	**0.27**	**0.26**	**0.34**	**0.35**	**0.29**	**0.37**	**0.37**	**0.14**	0.00	**0.26**	**0.16**	**-0.20**
Depression (N3)	2.94	1.40	2.42	**0.30**	**0.21**	0.10	**0.23**	**0.25**	0.17	**0.27**	**0.26**	-0.05	**-0.15**	0.04	-0.06	**-0.53**
Self-conscious (N4)	1.92	1.07	1.50	**0.21**	0.11	0.01	0.12	0.04	0.03	0.11	0.07	**-0.28**	**-0.38**	-0.01	**-0.26**	**-0.64**
Impulsiveness (N5)	2.08	4.53	3.17	**0.24**	**0.17**	**0.29**	**0.27**	**0.33**	**0.30**	**0.29**	**0.34**	0.04	0.04	**0.20**	0.11	**-0.29**
Vulnerability (N6)	1.92	1.47	2.92	**0.22**	0.09	0.09	**0.14**	0.10	**0.13**	**0.18**	0.11	-0.08	**-0.13**	0.09	-0.07	**-0.48**
Warmth (E1)	2.06	1.73	1.42	**-0.28**	**-0.20**	-0.09	**-0.21**	**-0.15**	**-0.13**	**-0.24**	**-0.21**	**0.19**	**0.37**	0.09	**0.24**	**0.37**
Gregariousness (E2)	3.39	3.67	3.83	-0.11	-0.02	0.06	-0.02	0.10	**0.17**	-0.02	0.07	**0.41**	**0.48**	**0.20**	**0.42**	**0.26**
Assertiveness (E3)	4.14	4.47	4.67	-0.02	0.06	**0.13**	0.08	0.11	0.11	0.05	0.11	**0.52**	**0.58**	**0.32**	**0.56**	**0.65**
Activity (E4)	3.78	3.67	3.67	-0.08	-0.02	**-0.13**	-0.08	-0.05	-0.10	**-0.17**	-0.12	**0.26**	**0.24**	0.07	**0.24**	**0.42**
Excitement (E5)	2.81	4.73	4.17	0.10	**0.19**	**0.17**	**0.19**	**0.39**	**0.39**	**0.16**	**0.34**	**0.43**	**0.49**	**0.39**	**0.50**	**0.18**
Positive (E6)	2.72	2.53	3.33	**-0.33**	**-0.24**	**-0.17**	**-0.28**	**-0.25**	**-0.18**	**-0.31**	**-0.29**	0.09	**0.23**	0.10	**0.15**	**0.35**
Fantasy (O1)	2.28	3.07	3.75	**0.22**	**0.15**	0.10	**0.20**	**0.28**	**0.26**	**0.19**	**0.27**	**0.20**	**0.20**	**0.22**	**0.24**	0.00
Aesthetics (O2)	2.77	2.33	3.25	**-0.12**	-0.08	**-0.13**	**-0.12**	-0.07	-0.04	-0.10	-0.07	0.10	0.11	-0.02	0.09	0.03
Feelings (O3)	3.31	1.80	1.92	-0.06	**-0.13**	-0.08	-0.11	-0.02	0.01	-0.06	0.00	0.01	-0.04	0.10	0.02	**-0.34**
Actions (O4)	2.94	4.27	4.08	-0.05	-0.10	0.03	-0.06	0.12	**0.15**	0.05	0.10	**0.19**	**0.18**	0.04	**0.16**	0.02
Ideas (O5)	2.78	3.53	2.92	**-0.13**	-0.10	-0.09	**-0.13**	0.00	-0.01	-0.07	-0.03	**0.16**	0.10	0.03	**0.15**	0.11
Values (O6)	3.03	2.87	2.67	0.10	-0.01	0.03	0.05	0.08	0.11	0.09	**0.14**	-0.03	-0.05	-0.01	-0.03	**-0.13**
Trust (A1)	1.42	1.73	1.42	**-0.53**	**-0.42**	**-0.20**	**-0.44**	**-0.33**	**-0.24**	**-0.32**	**-0.35**	**-0.15**	0.02	-0.05	-0.07	-0.09
Straightforward (A2)	1.28	1.13	1.83	**-0.60**	**-0.60**	**-0.74**	**-0.75**	**-0.66**	**-0.61**	**-0.63**	**-0.70**	**-0.46**	**-0.46**	**-0.49**	**-0.53**	**-0.25**
Altruism (A3)	1.28	1.33	1.00	**-0.52**	**-0.39**	**-0.46**	**-0.53**	**-0.51**	**-0.39**	**-0.62**	**-0.58**	**-0.15**	-0.04	**-0.14**	**-0.13**	-0.05
Compliance (A4)	2.08	1.33	1.58	**-0.49**	**-0.56**	**-0.53**	**-0.62**	**-0.65**	**-0.62**	**-0.61**	**-0.69**	**-0.52**	**-0.45**	**-0.44**	**-0.55**	**-0.21**
Modesty (A5)	1.89	1.00	1.08	**-0.16**	**-0.28**	**-0.30**	**-0.29**	**-0.22**	**-0.32**	**-0.25**	**-0.28**	**-0.54**	**-0.64**	**-0.52**	**-0.64**	**-0.57**
Tenderminded (A6)	1.36	1.27	1.50	**-0.49**	**-0.38**	**-0.41**	**-0.49**	**-0.43**	**-0.25**	**-0.51**	**-0.46**	**-0.24**	**-0.12**	**-0.14**	**-0.19**	**-0.32**
Competence (C1)	3.69	4.20	3.25	**-0.28**	**-0.13**	**-0.21**	**-0.23**	**-0.25**	**-0.26**	**-0.27**	**-0.27**	0.08	**0.12**	-0.02	0.07	**0.56**
Order (C2)	3.97	2.60	2.92	**-0.16**	-0.07	**-0.16**	**-0.15**	**-0.26**	**-0.24**	**-0.24**	**-0.27**	0.01	-0.03	-0.09	-0.05	**0.42**
Dutifulness (C3)	2.53	1.20	2.42	**-0.47**	**-0.38**	**-0.51**	**-0.52**	**-0.56**	**-0.47**	**-0.49**	**-0.56**	**-0.24**	**-0.23**	**-0.28**	**-0.29**	0.17
Achievement (C4)	3.86	3.07	3.92	**-0.28**	**-0.14**	**-0.19**	**-0.22**	**-0.16**	**-0.20**	**-0.27**	**-0.24**	**0.20**	**0.16**	0.09	**0.17**	**0.50**
Self-discipline (C5)	3.42	1.87	2.08	**-0.30**	**-0.18**	**-0.14**	**-0.24**	**-0.24**	**-0.20**	**-0.26**	**-0.25**	0.04	0.05	-0.11	0.01	**0.49**
Deliberation (C6)	3.78	1.60	2.25	**-0.37**	**-0.28**	**-0.34**	**-0.39**	**-0.57**	**-0.52**	**-0.45**	**-0.58**	**-0.24**	**-0.23**	**-0.27**	**-0.29**	**0.27**

Similarities (zero-order correlations)

Psych	0.54		
Narc	0.65	0.85	
M IV	0.23	0.37	0.45

MSD3	0.38	0.52	0.59	0.95											
M DD	0.34	0.60	0.59	0.88	0.93										
M Comp	0.33	0.51	0.56	0.97	0.99	0.96									
SRP III	0.26	0.60	0.60	0.91	0.94	0.96	0.96								
P SD3	0.21	0.60	0.60	0.87	0.91	0.95	0.94	0.98							
P DD	0.25	0.50	0.54	0.96	0.95	0.95	0.98	0.97	0.94						
P Comp	0.26	0.57	0.58	0.93	0.94	0.96	0.97	1.00	0.98	0.98					
NPI	0.59	0.80	0.80	0.38	0.59	0.66	0.56	0.64	0.67	0.51	0.61				
N SD3	0.47	0.74	0.69	0.17	0.40	0.53	0.38	0.48	0.54	0.33	0.44	0.96			
N DD	0.38	0.69	0.70	0.64	0.79	0.86	0.79	0.83	0.87	0.75	0.81	0.87	0.81		
N Comp	0.51	0.78	0.77	0.39	0.60	0.69	0.58	0.66	0.70	0.53	0.63	0.99	0.97	0.92	
FFMI	0.65	0.50	0.48	-0.34	-0.09	-0.04	-0.16	-0.14	-0.13	-0.24	-0.18	0.61	0.68	0.24	0.55

Note. Bolded values indicate statistical significance, $p < .05$. "Psych" = expert ratings of psychopathy; "Narc" = expert ratings of narcissism; "M IV" = MACH IV; "M" = Machiavellianism; "P" = Psychopathy; "N" = Narcissism; "SD3" = Short Dark Triad; "DD" = Dirty Dozen; "Comp" = composite score.

Appendix A. FFMI.

Five Factor Machiavellianism Inventory (FFMI): The following statements deal with how you think, feel, and act. Please read each item carefully and circle the number that best corresponds to your agreement or disagreement. If you **disagree strongly circle 1**, if you **disagree a little circle 2**, if you **neither agree nor disagree circle 3**, if you **agree a little circle 4**, and if you **strongly agree circle 5**. There are no right or wrong answers, and you need not be an expert to complete this questionnaire.

	Disagree strongly 1	Disagree a little 2	Neither agree nor disagree 3	Agree a little 4	Agree strongly 5
1. I am not an ambitious person.	1	2	3	4	5
2. My friends would call me lazy.	1	2	3	4	5
3. I will go out of my way to help other people.	1	2	3	4	5
4. In meetings, I typically let others do the talking.	1	2	3	4	5
5. I don't seem to be completely successful at anything.	1	2	3	4	5
6. I like to carefully consider the consequences before I make a decision.	1	2	3	4	5
7. People would describe me as emotionally stable.	1	2	3	4	5
8. Humility is overrated.	1	2	3	4	5
9. I like to map out my projects before I begin.	1	2	3	4	5
10. I am confident interacting with others.	1	2	3	4	5
11. Sometimes you have to lie to get things done.	1	2	3	4	5
12. I would rather be known as "practical" than "kind."	1	2	3	4	5
13. It is important to be wary of others' motives.	1	2	3	4	5
14. I have a strong drive for power.	1	2	3	4	5
15. I work hard to pursue my goals.	1	2	3	4	5
16. I try to help those who are less fortunate.	1	2	3	4	5
17. I am a very persuasive person.	1	2	3	4	5
18. People look to me to "get the job done."	1	2	3	4	5
19. "Act first, think later," describes me well.	1	2	3	4	5
20. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.	1	2	3	4	5
21. I am more intelligent than most people my age.	1	2	3	4	5

22. I like having everything in its own, proper place.	1	2	3	4	5
23. I feel inferior to others.	1	2	3	4	5
24. I'm not crafty or sly.	1	2	3	4	5
25. I'm not a particularly sympathetic person.	1	2	3	4	5
26. I think that most people try to be honest.	1	2	3	4	5
27. I aspire for greatness.	1	2	3	4	5
28. I have lots of energy most days.	1	2	3	4	5
29. I think it is important to be charitable to others.	1	2	3	4	5
30. I do not have a problem with speaking my mind.	1	2	3	4	5
31. I am efficient and effective at my work.	1	2	3	4	5
32. I tend to jump right into things without thinking very far ahead.	1	2	3	4	5
33. I get so emotional that I can't think straight.	1	2	3	4	5
34. It's easy for me to outsmart my peers.	1	2	3	4	5
35. I never seem to be able to get organized.	1	2	3	4	5
36. I am very sure of myself.	1	2	3	4	5
37. I use flattery to get what I want.	1	2	3	4	5
38. I don't worry about other people's needs if they conflict with my own.	1	2	3	4	5
39. I have a great deal of faith in human nature.	1	2	3	4	5
40. I want to be an important person.	1	2	3	4	5
41. A lot of other people are more active than I am.	1	2	3	4	5
42. I view others as tools to be used and manipulated.	1	2	3	4	5
43. People would say that I have trouble standing up for myself.	1	2	3	4	5
44. I am often unsure of how to proceed in my life.	1	2	3	4	5
45. I don't make many spur of the moment decisions.	1	2	3	4	5
46. I am not easily flustered.	1	2	3	4	5
47. I am better than others.	1	2	3	4	5
48. I prefer to be spontaneous rather than planning everything out.	1	2	3	4	5
49. I am not easily embarrassed.	1	2	3	4	5
50. Being honest all of the time won't lead to success.	1	2	3	4	5
51. Other people describe me as cold-hearted.	1	2	3	4	5
52. I tend to assume the best about people.	1	2	3	4	5

Scoring Key:

An "r" next to an item indicates that it should reverse-scored (i.e., 5 = 1, 2 =4, 3 = 3, 4 = 2, and 5 = 1) before being summed or averaged with the rest of the items.

Subscales

Achievement: 1r, 14, 27, 40

Activity: 2r, 15, 28, 41r

Selfishness (low Altruism): 3r, 16r, 29r, 42

Assertiveness: 4r, 17, 30, 43r

Competence: 5r, 18, 31, 44r

Deliberation: 6, 19r, 32r, 45

Invulnerable: 7, 20r, 33r, 46

Immodesty: 8, 21, 34, 47

Order: 9, 22, 35r, 48r

Self-confidence: 10, 23r, 36, 49

Manipulative: 11, 24r, 37, 50

Callousness: 12, 25, 38, 51

Cynical: 13, 26r, 39r, 52r

The Total Score is computed by averaging or summing the 13 scales above.

Three factor scores can also be computed:

     Antagonism: Selfishness (low Altruism), Immodesty, Manipulative, Callousness, Cynical

     Agency: Achievement, Activity, Assertiveness, Competence, Self-confidence, Invulnerable

     Planfulness: Deliberation, Order