

Machiavellianism and Psychopathy

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An integration of the Machiavellianism (MACH) and psychopathy constructs based on a dimensional view of personality and personality disorders and a recognition of B. Karpman's (1941, 1948) conceptual distinction between primary and secondary psychopathy is presented. Positive associations between MACH and both primary and secondary psychopathy were found. It is concluded that the Mach-IV is a global measure of psychopathy in noninstitutionalized populations (i.e., one that assesses but confounds both primary and secondary psychopathy) and that the primary differences between MACH and psychopathy are not traceable to substantive theoretical issues but to the different professional affiliations they are associated with: personality and social psychology and clinical psychology, respectively.

Although the fourth edition of the American Psychiatric Association's (1994) *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* identifies personality disorders as taxonomies, numerous authors have argued for a dimensional approach to the classification of personality disorders and psychopathology in general (e.g., Blackburn, 1988; Eysenck, 1952, 1994; Smith, 1978; Stone, 1993; Widiger, 1992, 1993; Widiger & Costa, 1994; see Strack & Lorr, 1994). This article is concerned partly with dimensional approaches to conceptualizing psychopathy (Cleckley, 1941/1988; Hare, 1991) and specifically with the assessment of psychopathic attributes in the general population. The assessment of psychopathic attributes in noninstitutionalized populations is not a novel idea, although one might conclude otherwise on the basis of Levenson, Kiehl, and Fitzpatrick's (1995) work. The authors simply failed to cite a sizable literature concerned with this issue (most notably Smith, 1985; Strack, 1991a; Widom, 1977; however, also see Belmore & Quinsey, 1994; Ray & Ray, 1982; Sutker & Allain, 1983; Widom & Newman, 1985; Wiggins & Pincus, 1989). However, Levenson et al. (1995) did present separate scales for the assessment of primary and secondary psychopathy (i.e., Karpman, 1941, 1948) in the general population, whereas previous measures do not address this distinction (i.e., Smith, 1985;

Strack, 1991a; Widom, 1977). Thus, pending additional validity and reliability evidence, their scales may improve on previous measures by distinguishing these aspects of psychopathy and thereby providing greater precision (Carver, 1989).

Our primary concern here is with the relationship between Machiavellianism (MACH; i.e., Christie & Geis, 1970) and psychopathy. The central thesis of this article is that MACH and psychopathy are essentially the same personality construct (i.e., dimension), although they have different histories, especially in relation to the subdisciplines of psychology that have focused on them (personality and social psychology and clinical psychology, respectively). That is, we argue that personality and social psychologists and clinical psychologists have been studying essentially the same topic but under different names. We also argue that the Mach-IV scale is a global measure of psychopathy in nonselect populations that measures but confounds both primary and secondary psychopathy. This thesis has implications for revisiting more than 25 years of research on MACH (for reviews, see Christie & Geis, 1970; Fehr, Samsom, & Paulhus, 1992; Geis, 1978; Mealey, 1995; Wilson, Near, & Miller, 1996), future applications of the MACH measures, and the integration of the personality and social psychology and clinical psychology literature on antisocial dispositions and behavior.

Previous authors have noted the conceptual similarity between MACH and psychopathy (see especially Smith, 1978, 1985; Smith & Griffith, 1978; see also Fehr et al., 1992), and both constructs are related in a similar manner to more general personality theories. For example, with respect to the interpersonal circumplex, MACH and psychopathy share similar locations and are both located at various points in the upper-left quadrant (i.e., high dominance and low warmth; for MACH, see Gurtman, 1991, 1992, and Wiggins & Broughton, 1985; for psychopathy, see Harpur, Hare, & Hakstian, 1989). Moreover, the conceptual similarity between MACH and psychopathy is borne out empirically in studies examining them simultaneously because measures of the two constructs are positively correlated (Hare, 1991; Pederson & Magaro, 1982; Ray & Ray, 1982; Smith & Griffith, 1978; Widiger et al., 1996).

However, although there is a dim realization among personality and social psychologists and clinical psychologists that

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MACH and psychopathy are related, their respective literature remains unintegrated. To illustrate this point, we conducted a literature search using the computerized reference service PsychLIT. We searched all journals from 1974 to 1996 as well as all chapters and books from 1987 to 1996 (these were the only databases available). For the term *Machiavellianism* and all related terms (e.g., *Machiavel*, *Machiavellian*), we found 360 citations. We then searched for the terms *psychopathy*, *sociopathy*, and *antisocial personality disorder* (and all related terms) and combined all relevant citations for these three terms into a single set of 1,621 citations. The intersection of the MACH and psychopathy-sociopathy-antisocial personality disorder sets revealed an overlap of only five publications (Ray, 1985; Ray & Ray, 1982; Skinner, 1988; Smith & Griffith, 1978; Widom, 1977). Although this search was not exhaustive because it omitted any chapters and books that addressed both topics before 1987 (e.g., Smith, 1978), there was certainly little convergence between the two topics for the periods searched.

The lack of integration between the two types of literature probably reflects both the different professional associations of those conducting research on the two topics and findings within the MACH literature that have precluded an integration with psychopathy. For example, measures of MACH have demonstrated consistent positive correlations with anxiety, which is antithetical to psychopathy. As Fehr et al. (1992) noted, "How can high Machs be both psychopathic and anxious? After all, aren't psychopaths free of anxiety?" (p. 88). We believe our analysis can resolve this and other ambiguities and successfully provide a framework for integrating MACH and psychopathy. The primary goal of this article, then, is to make the similarities and differences between the two constructs explicit and to foster the integration of their respective literature. We begin with a brief review of both constructs, which is summarized in Table 1.

Machiavellianism and Psychopathy: A Tale of Two Types of Literature

Machiavellianism: Origins, Conceptualization, and Measurement

Origins

MACH is, of course, originally traceable to the writings of Niccolò Machiavelli (1513/1981; *The Prince* and *The Discourses*), a 16th-century Italian political strategist. However, MACH as an individual-differences construct originated during the 1950s while Richard Christie was a fellow at the Center for Advanced Studies in the Behavioral Sciences (Christie, 1970). Christie became involved in interdisciplinary scholarship on interpersonal power strategies, and, after reviewing various historical texts on this topic, he settled on Machiavelli's writings as a source for continued study. Christie wondered whether the precepts outlined by Machiavelli for establishing and maintaining political power could be framed as an individual-differences construct and quantified.

Conceptualization

There was no particular theory of power strategies guiding the original MACH research, just the belief that people differed

Table 1
Machiavellianism and Psychopathy: A Comparative Summary

	Machiavellianism	Psychopathy
Origins		
Origin	Richard Christie's year at the Center for Advanced Studies in the Behavioral Sciences (1954-1955)	Historical attempts to control, describe, and explain antisocial people with intact reasoning abilities (early 1800s)
Original participants	Fellows at the Center for Advanced Studies and college students, generally successful and adjusted	Institutionalized patients and criminals, generally unsuccessful and maladjusted
Conceptualization		
Theoretical orientation	Personality and social psychology, the study of interpersonal power strategies	Clinical psychology and psychiatry, the study of abnormal psychology and behavior
Prototype	Lack of interpersonal affect, lack of concern with conventional morality, lack of gross psychopathology, low ideological commitment	Cleckley's criteria: superficial charm, rational, unnervous, unreliable, untruthful, insincere, guiltless, antisocial behavior, poor judgment, and so on
Measurement		
Technique	Self-report	Clinical interview, self-report
Focus	Dispositions and behavior	Dispositions and behavior, emphasis varies across historical epochs
Measures	Mach-IV and Mach-V Scales, Kiddie Mach scale, other measures	Gough's Socialization Scale, MMPI Psychopathic Deviate subscale, Hare's PCL-R, other measures

Note. MMPI = Minnesota Multiphasic Personality Inventory; PCL-R = Psychopathy Checklist-Revised.

in their willingness and ability to gain and maintain interpersonal power and an attendant belief that these differences could be quantified meaningfully. However, Christie (1970) did outline the following characteristics that the hypothetical successful manipulator was purported to have: (a) a lack of interpersonal affect in interpersonal relationships, (b) a lack of concern with conventional morality, (c) a lack of gross psychopathology, and (d) low ideological commitment. The successful manipulator was conceptualized as someone devoid of affective attachments to others, with normal reality contact, who would be both willing and able to manipulate others. Thus, Christie's original conceptualization of the high MACH individual includes characteristics that are central to defining the psychopathic personality (Cleckley, 1941/1988): affective detachment, intact reality contact, and manipulativeness.

Measurement

Excerpts were taken from *The Prince and The Discourses* and subjected to scaling procedures. The original respondents were the other fellows at the Center for Advanced Studies in the Behavioral Sciences, and the focus then shifted to college students from a variety of locales. Thus, the original participants studied in MACH research were all relatively intelligent and well-adjusted individuals from predominantly middle-class or better backgrounds. The scaling procedures resulted in a pair of tests designed to measure one's agreement with the application of Machiavelli's political power strategies to interpersonal life. The Mach-IV, which contains 20 statements rated on a Likert-type scale, is the most widely used measure of MACH. The subsequently developed Mach-V was intended to control for social desirability, a key concern for personality researchers during the time these scales were developed, but it has been used less frequently than the Mach-IV. A Kiddie MACH scale for use with younger respondents was also developed (Nachamie, 1969; cited in Christie & Geis, 1970, p. 327), and Allsopp, Eysenck and Eysenck (1991) presented a new scale for measuring MACH.

Psychopathy: Origins, Conceptualization, and Measurement

Origins

The psychopathy construct has a much longer and storied past than MACH, and a summary would be well beyond the scope of this article (for reviews, see Millon & Davis, 1996; Smith, 1978). Research on psychopathy was motivated by a need to control, diagnose, and treat maladjusted and socially dangerous individuals and, in particular, people who appeared to be rationally intact but yet failed to follow the dictates of conventional decorum. The construct itself has undergone numerous revisions and is presently officially represented by the antisocial personality disorder (APD) diagnosis in the nosological framework of the *DSM-IV* (American Psychiatric Association, 1994).

Conceptualization

Currently, the most influential conceptualization of psychopathy is that of Hare and his colleagues (Hare, 1991; Harpur et al., 1989; Harpur, Hart, & Hare, 1994; however, also see Blackburn & Maybury, 1985; Thomas-Peter, 1992), which is based on Cleckley's (1941/1988) seminal account of the characteristics associated with psychopathy. Hare and colleagues developed Cleckley's criteria into a rating scale for the measurement of psychopathy (the Psychopathy Checklist-Revised [PCL-R]; Hare, 1991), and factor-analytic work indicates that the PCL-R assesses two related but distinct psychopathy factors. The first encompasses the personality characteristics central to psychopathy, and the second encompasses self-defeating and antisocial behaviors. Hare and colleagues' two-factor model of psychopathy is summarized in Table 2 with factor labels that we explain later.

Measurement

A variety of measurement techniques have been used to assess psychopathy, and research in this area has focused almost exclu-

Table 2
The Two-Factor Sorting of Cleckley's (1941/1988) Criteria for Psychopathy as Represented in Hare's (1991) Psychopathy Checklist-Revised

Factor 1: Primary psychopathy	
Glibness and superficial charm	
Grandiosity	
Pathological lying	
Conning and manipulative	
Lack of remorse or guilt	
Shallow affect	
Callous and lack of empathy	
Failure to accept responsibility	
Factor 2: Secondary psychopathy and antisocial behavior	
Impulsivity	
Irresponsibility	
Proneness to boredom	
Lack of realistic, long-term goals	
Parasitic lifestyle	
Poor behavioral controls	
Early behavioral problems	
Juvenile delinquency	
Revocation of conditional release	
Extra items loading on both factors	
Sex life impersonal and poorly integrated	
Many short-term marital relationships	
Criminal versatility	

sively on institutionalized felons. Gough's (1960) Socialization Scale and the Psychopathic Deviate subscale of the Minnesota Multiphasic Personality Inventory (McKinley & Hathaway, 1944) have frequently been used in the past, but the use of Hare's (1991) PCL-R has now become standard practice for researchers working with incarcerated samples. As mentioned, the PCL-R is based on Cleckley's (1941/1988) criteria and provides an overall score as well as scores on two separate factors: Factor 1 measures the core personality features associated with psychopathy, and Factor 2 measures a self-defeating and antisocial lifestyle. Additional measurement techniques also exist that are specifically designed for assessing psychopathy in noninstitutionalized samples (Hare, 1991; Levenson et al., 1995; Lilienfeld & Andrews, 1996; Smith, 1985; Strack, 1991a; Widom, 1977; for a review, see Forth, Brown, Hart, & Hare, 1996).

Critique and Integration

Psychopathic Dispositions and Antisocial Behavior

Lilienfeld (1994) identified two approaches to conceptualizing and measuring psychopathy: the trait-based, or open, approach and the behavior-based, or closed, approach. The trait-based approach conceptualizes psychopathy in terms of traits and dispositions (e.g., grandiosity, callousness) and is "open" because it allows for an essentially limitless set of referents. In contrast, the behavior-based approach conceptualizes psychopathy in terms of specific antisocial actions (e.g., delinquency, truancy) and is "closed" because it allows for a more defined set of referents (e.g., the APD criteria; American Psychiatric

Association, 1994). Emphasis on the two approaches has fluctuated across historical periods, with various versions of the *DSM* emphasizing one or the other of the two approaches.

For those who favor a trait-based approach, the issue of contention is aptly summarized in Karpman's (1941, 1948) distinction between primary and secondary psychopathy. Karpman argued that clinical definitions of psychopathy should focus on dispositions rather than behavior because the same behavior can be generated by distinctly different dispositional causes and focusing on behavior will therefore not allow for a precise identification of different personality types. Karpman defined *primary psychopaths* as those whose antisocial behaviors are motivated by the core of dispositions associated with psychopathy (i.e., shallow affect, callousness, glibness). In contrast, *secondary psychopaths* are similar to primary psychopaths at a behavioral level, but their antisocial actions are motivated by different dispositions (e.g., neurotic conflict, bipolar affective disorder). The primary versus secondary psychopathy distinction has been endorsed by numerous authors and is now supported by extensive empirical evidence (for reviews, see Lykken, 1995; Mealey, 1995).

Distinguishing primary from secondary psychopathy is crucial to understanding the causes of antisocial behavior. Both are associated with antisocial action, but to plan appropriate interventions and treatments it is necessary to understand the different personality processes that underlie these acts (Lynam, 1996; Mealey, 1995). Moreover, because the two psychopathy dimensions overlap (i.e., they share common features and are therefore positively correlated), it is necessary to statistically control for one psychopathy dimension to fully understand the other because of statistical suppression, a point that we return to later.

Antisocial Dispositions, Antisocial Behaviors, and Their Relation to Machiavellianism and Psychopathy

The MACH and psychopathy literature have both consistently failed to maintain a proper distinction between dispositions and behavior. The problem is well documented in relation to psychopathy (see Lilienfeld, 1994, for a review), and different versions of the *DSM* have emphasized either dispositional or behavioral criteria. Several authors have argued that the current *APD* criteria do not coincide with psychopathy as a personality construct because they focus primarily on behavioral rather than personality-based indicators (Lilienfeld, 1994; Millon & Davis, 1996). The result is that the *APD* criteria are overly inclusive and include people with distinctly different dispositions within the same diagnostic category because of their similar behavior (underinclusiveness also may result; see Lilienfeld, 1994). Thus, in relation to Karpman's (1941) distinction, although those with primary and secondary psychopathic characteristics are different from a dispositional standpoint, they would be grouped together under the current *DSM-IV* framework as *APD* on the basis of their similar behavior. Even Hare's (1991) *PCL-R*, although admittedly representing a leap forward for the measurement of psychopathy, still fails to disentangle trait- from behavior-based indicators of psychopathy.

We believe that an analogous problem is inherent in the MACH literature and that recognizing this problem can clarify

seemingly inconsistent findings pertaining to MACH (e.g., MACH's positive association with anxiety). The original conceptualization of MACH focused on dispositional features central to the primary psychopathic personality: intact reality contact combined with affective detachment and manipulateness. However, much like the criteria for *APD* and Hare's (1991) *PCL-R*, the measures used to assess MACH include dispositional ("views" and "morality") and behavioral ("tactics") indicators. Indeed, in their exhaustive review of the literature on MACH measures, Fehr et al. (1992) concluded that "the structure simplifies to the two robust factors—tactics and views" (p. 107) (i.e., behaviors and dispositions). Thus, because of the behavioral focus inherent in the MACH measures, people who are distinctly different from a dispositional standpoint are grouped together as "high MACHs" on the basis of their similar behavior (e.g., proclivity for lying). Moreover, we believe that two distinct groups of high MACH scorers can be identified and that the similarities and differences between them are analogous to the primary versus secondary distinction in the psychopathy literature (cf. Wilson et al., 1996).

Partitioning Psychopathy Variance

To understand primary psychopathy, it is necessary to statistically control for secondary psychopathy and vice versa, and we would extend this point to Factors 1 and 2 of the *PCL-R*. The two-factor solution for the *PCL-R* (summarized in Table 2) is strikingly consistent with Karpman's (1941, 1948) conceptualization of primary and secondary psychopathy. Factor 1 contains predominantly the trait-based indicators for primary psychopathy, whereas Factor 2 is marked by antisocial behaviors (e.g., juvenile delinquency, revocation of conditional release) and traits consistent with secondary psychopathy (e.g., impulsivity, irresponsibility). Patrick, Bradley, and Lang (cited in Patrick, 1994) suggested the labels *Emotional Detachment* and *Antisocial Behavior* for Factors 1 and 2, respectively. However, we have labeled the factors *Primary Psychopathy* and *Secondary Psychopathy and Antisocial Behavior* because these labels accentuate differences between the trait- and behavioral-based approaches to defining psychopathy. Moreover, "emotional detachment" is an overly specific label that does not completely account for the other Factor 1 criteria, and these other criteria are not necessarily derivatives of emotional detachment (e.g., grandiosity, glibness).

Based on theory, we would make different predictions concerning the correlates and consequences of primary and secondary psychopathic characteristics. However, because measures of the two psychopathy types are positively correlated, these different relationships will tend to be masked because of statistical suppression. Thus, to understand the unique nature of the two types of psychopathy, it is necessary to use partial correlations controlling for the opposing psychopathy measure to isolate their unique sources of variance.

This point was aptly demonstrated by Patrick (1994) in relation to the *PCL-R*. Patrick administered the Emotionality–Activity–Sociability Temperament Survey (EAS; Buss & Plomin, 1984, cited in Patrick, 1994) and the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988, cited in Patrick, 1994) to a group of institutionalized offenders

who had been assessed with Hare's (1991) PCL-R. Patrick presented results based on the PCL-R Total score, Factor 1 (Primary Psychopathy), and Factor 2 (Secondary Psychopathy and Antisocial Behavior). The two factors were represented jointly in the PCL-R total score, which we would characterize as a global measure of psychopathy because it assesses the unique variance associated with both types of psychopathy and their shared variance. Patrick found that the PCL-R Total score was positively associated with anger and impulsivity as measured by the EAS but that there were no other significant associations.

By contrast, when partial correlations were computed to examine the results for the two factors separately, a distinctly different pattern of associations emerged. Factor 1 (Primary Psychopathy) was inversely associated with emotional distress and fear, whereas Factor 2 (Secondary Psychopathy and Antisocial Behavior) was positively associated with both (and anger and impulsivity). Moreover, whereas the total PCL-R score was not associated with positive or negative affect, the partialing of the two factors revealed that Factor 1 was associated with both positive affect and a lack of negative affect, whereas the opposing pattern was observed for Factor 2. These partial correlation findings are consistent with the primary versus secondary psychopathy distinction and our resultant labeling of the PCL-R factors. More important, they reveal the importance of partialing procedures for understanding relations between primary and secondary psychopathy and other measures because of primary and secondary psychopathy's mutual suppressing influence. Thus, using a total score such as the PCL-R, which confounds primary and secondary psychopathy, will tend to obscure relations between psychopathy and other measures (Carver, 1989).

The Convergence Between Machiavellianism and Psychopathy

Christie's (1970) original conceptualization of MACH was underdeveloped. The focus was the scaling of excerpts from Machiavelli's writings and examining the different interpersonal strategies associated with an acceptance or rejection of these excerpts rather than establishing the nomological net of MACH. Thus, in contrast to structured and deductive personality measurement approaches, in which a construct is exhaustively defined and then measured, Christie's conceptualization and measurement of MACH was exploratory.

Exploratory analyses of personality are inherently iterative and involve refinements of the construct based on empirical data (Tellegen & Waller, 1994; the Mach-IV was itself distilled from a larger item pool taken from Machiavelli's writings). Since the publication of Christie and Geis's (1970) monograph, the Mach scales have been used in hundreds of studies involving thousands of participants, and researchers now have a solid understanding of what these scales measure from a dispositional and behavioral standpoint (see Fehr et al., 1992). Specifically, we contend that the Mach-IV in particular,¹ because it includes both dispositional and behavioral indicators, is a global measure of psychopathy that assesses but confounds both primary and secondary psychopathy (i.e., it assesses both their shared and unique variance). We present a summary of the relevant evidence organized roughly in accordance with Hare and col-

league's two-factor solution for the PCL-R (Hare, 1991; see Harpur et al., 1994).

Machiavellianism and Primary Psychopathy

Glibness and Superficial Charm

One aspect of MACH is surgency and social dominance, and MACH scores are inversely associated with measures of social shyness but positively associated with measures of sociability (Gurtman, 1992). Although these characteristics may cause interpersonal difficulties for high MACHs (Gurtman, 1992), they also can be impressive and charming in short-term encounters. This conclusion is consistent with studies demonstrating that high MACH scorers are more persuasive and more liked than their low-scoring counterparts (see Fehr et al., 1992).

Grandiose Sense of Self-Worth

MACH is positively associated with narcissism (McHoskey, 1997) and measures of narcissistic grandiosity (Watson, Biderman, & Sawrie, 1994). Thus, the cynical and manipulative qualities characteristic of MACH reflect feelings of entitlement, superiority, and arrogance.²

Pathological Lying

MACH is associated with the advocacy and use of duplicity (Christie & Geis, 1970; Kashy & DePaulo, 1996), and high MACH scorers are more convincing liars than low scorers (DePaulo & Rosenthal, 1979; Geis & Moon, 1981).

Conning and Manipulation

Evidence from multiple studies indicates that when environmental constraint is low (i.e., latitude for social improvisation is high), high MACH scorers are more likely to manipulate and more successful at doing so than low MACH scorers (see Christie & Geis, 1970; Geis, 1978; Shultz, 1993).

Lack of Remorse and Guilt

McHoskey (1997) reported that MACH scores are inversely associated with guilt proneness as measured by Tangney and colleagues' Test of Self-Conscious Affect (TOSCA; Tangney, Wagner, & Gramzow, 1989; see Tangney & Fischer, 1995). However, it is interesting that high MACH scorers are more likely than low scorers to use guilt induction as an interpersonal manipulation technique (Vangelisti, Daly, & Rudnick, 1991).

¹ Machiavellianism researchers have relied primarily on the Mach-IV rather than the Mach-V, so most of the research we review and address is based on the Mach-IV.

² McHoskey (1995) used Raskin and Hall's (1979) Narcissistic Personality Inventory (NPI) as a measure of narcissism and reported associations based on Raskin and Terry's (1988) seven-factor solution for the NPI. A reanalysis of these data based on Emmon's (1987) four-factor solution for the NPI revealed that Machiavellianism was positively associated with the Superiority/Arrogance and Entitlement/Exploitativeness factors in both samples. Details are available from John W. McHoskey on request.

Shallow Affect

MACH is associated with an emotionally detached affective style, and numerous studies document high MACH scorers' ability to maintain a cool and aloof posture toward others (Christie & Geis, 1970; Geis, 1978; Fehr et al., 1992). McHoskey (1997) reported that MACH scores are inversely associated with emotional expressivity (as measured by Kring, Smith, & Neale's, 1994, Emotional Expressivity Scale), and Simon, Francis, and Lombardo (1990) reported that MACH scores are inversely associated with the ability to decode others' emotional states. Thus, MACH involves an affective detachment that includes both a lack of emotional expression and a relative inability to recognize and understand the emotional expressions of others.

Callousness and Lack of Empathy

Watson et al. (1994) reported inverse associations between MACH and empathic concern, a capacity for perspective taking, and a communal orientation (see also Abramson, 1973). Their results are consistent with numerous studies documenting the cynical and generally callous outlook associated with MACH. For example, Wrightsman (1992) reported that MACH scores are positively associated with negative attitudes toward human nature and also manifest hostility. Gurtman (1992) and Wiggins and Broughton (1985) reported inverse associations between MACH and interpersonal warmth in the context of the interpersonal circumplex.

Failure to Accept Responsibility for Actions

MACH scores are positively associated with an external locus of control in general (Mudrack, 1990) and a tendency to externalize blame specifically (McHoskey, 1997; externalization measured using the TOSCA; Tangney et al., 1989).

Machiavellianism and Secondary Psychopathy

Although Christie's (1970) original conceptualization of MACH is more consistent with primary psychopathy, the empirical evidence pertaining to the Mach measures also reveals convergence between MACH and secondary psychopathy. This is the basis for our conceptualization of MACH and the corresponding measures as being consistent with both primary and secondary psychopathy.

Anxiety

An important characteristic that has served to distinguish primary and secondary psychopathy is anxiety. Whereas primary psychopaths tend to be relatively anxiety free, secondary psychopathy is associated with anxiety and emotional disturbance (Blackburn & Lee-Evans, 1985; Harpur et al., 1994; Levenson, 1993; Lykken, 1995, pp. 156–161). In our view, anxiety is the most important characteristic providing a link between MACH and secondary psychopathy. Several researchers have documented a positive association between MACH and anxiety (see Fehr et al., 1992, for a review), and Ramanaiah, Byravan, and

Detwiler (1994) reported a positive association between MACH and the more general neuroticism dimension.³

Need for Stimulation and Proneness to Boredom

MACH is positively associated with boredom proneness (Marusic, Bratko, & Zarevski, 1995; McHoskey, 1997).

Lack of Realistic Long-Term Goals

MACH is associated with an identification of financial success as the primary goal in life (i.e., rather than family, community, or self-actualization; McHoskey, 1997). Although this goal orientation may not be unrealistic in an absolute sense, materialism is a goal orientation associated with maladjustment in general (Kasser & Ryan, 1993) and psychopathy specifically (Lilienfeld & Andrews, 1996).

Other Psychopathy Criteria

Sex Life Impersonal, Trivial, and Poorly Integrated

MACH is positively associated with self-reported promiscuity and a variety of deceptive and self-serving tactics in the context of romantic relationships (e.g., feigning love and attempting to intoxicate a potential partner to secure sex, divulging intimate sexual secrets to third parties; Gainey, Anderson, & McHoskey, 1996). This finding is consistent with sociobiologically based accounts of the reproductive strategies associated with psychopathy (Mealey, 1995).

Overview of the Current Studies

In the current studies we examined the hypothesis that MACH would be associated with both primary and secondary psychopathy. Our ability to investigate this hypothesis depended on measures that are specifically designed to assess primary and secondary psychopathy separately and that are appropriate for use with noninstitutionalized populations; Levenson et al. (1995) recently presented such measures. However, we could find only one published report documenting the reliability and validity of their measures, so before relying on their vitality in our main studies, we further assessed their psychometric properties. Thus, in Study 1 we further evaluated the psychometric properties of the Levenson et al. primary and secondary psychopathy scales. In the remaining studies, we addressed our central concerns regarding MACH and psychopathy. Study 2 participants completed the Mach-IV, the Levenson et al. primary and secondary psychopathy scales, and self-report measures of prosocial and antisocial behavioral tendencies. The third study replicated and extended Study 2, and Study 4 ruled out alternative explanations

³ These findings obtained with the Mach-IV in part instigated Christie's (1970) decision to construct a social-desirability-free measure of Machiavellianism (MACH): the Mach-V. We argue that the Mach-IV is superior to the Mach-V precisely because it is associated (inversely) with social desirability. We also note that in a recent sample, we found a positive association between Mach-IV scores and self-reported sexual anxiety. This finding also links MACH to secondary rather than primary psychopathy.

of the MACH-psychopathy relationship on the basis of narcissism and social desirability.

Study 1

Because of the novelty of the Levenson et al. (1995) primary and secondary psychopathy scales, we felt it was important to further assess their psychometric properties before using them in our main studies. To accomplish this, we assessed these measures in the context of biologically oriented theories relevant to psychopathy. Fowles's (1987) elaboration of Gray's (1975, 1981) theory identifies appetitive and aversive motivational systems labeled the *behavioral activation system* (BAS) and the *behavioral inhibition system* (BIS), respectively (for reviews, see Carver & White, 1994; Lykken, 1995). The BAS mediates approach behavior and active avoidance and is related to the personality dimension of impulsivity. The BIS mediates passive avoidance and extinction and is related to the personality dimension of anxiety.⁴ We predicted that primary psychopathy would be inversely associated with the BIS but essentially unrelated to the BAS. By contrast, we predicted that the BIS and BAS would have an interactive influence on secondary psychopathy scores. Specifically, recent conceptualizations identify both impulsivity (strong BAS) and anxiety (strong BIS) as defining features of secondary psychopathy (see Blackburn & Lee-Evans, 1985; Lykken, 1995). Thus, we predicted that secondary psychopathy scores would be highest among those with both a strong BAS and a strong BIS.

We also examined the primary and secondary psychopathy scales relative to Zuckerman, Kuhlman, Joireman, Teta, and Kraft's (1993) "alternative" five-factor model of personality. Two dimensions of their model—neuroticism–anxiety and sociability—correspond to Eysenck and Eysenck's (1985) Neuroticism and Extraversion factors, respectively. We predicted that primary scores would be inversely associated with neuroticism–anxiety but that secondary scores would be positively associated with neuroticism–anxiety. In addition, the model incorporates individual differences in impulsive sensation seeking, aggression–hostility, and activity. We predicted that secondary scores would be positively associated, and primary unassociated, with impulsive sensation seeking. We also predicted that both primary and secondary scores would be positively associated with aggression–hostility. We made no strong predictions about the activity or sociability scales.

Method

Participants and Procedure

The participants were 99 Clemson University students (28 men and 71 women) who received extra course credit for their optional participation. Questionnaires were completed anonymously in small groups, and all participants received an oral debriefing at the conclusion of the study. Responses were recorded on scanner forms and entered directly into a data set using an optical scanner.

Measures

Primary and secondary psychopathy. The primary and secondary psychopathy scales of Levenson et al. (1995) were used. The primary psychopathy scale (primary; 16 items) consists of statements espousing

cynical and callous attitudes and the advocacy of interpersonal manipulation (e.g., "Success is based on survival of the fittest; I am not concerned about the losers"). Levenson et al. used a forced-choice format (agree or disagree either somewhat or strongly), but we used a five-option Likert format which allowed for a neutral response (1 = *strongly disagree*, 3 = *neither agree or disagree*, 5 = *strongly agree*). Levenson et al. reported solid internal consistency (Cronbach's $\alpha = .82$) but no other forms of reliability. In addition, they reported the following validity evidence for the primary scale: positive associations with self-reported antisocial behavior (e.g., cheating on examinations, stealing), disinhibition, and boredom susceptibility and an inverse association with harm avoidance.

The secondary psychopathy scale (secondary; 10 items) consists of statements reflecting an impulsive, self-defeating, and explosive interpersonal style (e.g., "I find myself in the same kinds of trouble, time after time"; "When I get frustrated, I often 'let off steam' by blowing my top"), and we used the same response format used for the primary scale. Levenson et al. reported adequate internal consistency for the secondary scale (Cronbach's $\alpha = .63$) but no other forms of reliability. In addition, they reported the following validity evidence for the secondary scale: a positive association with self-reported antisocial behavior, disinhibition, boredom susceptibility, and stress reaction, but an inverse association with grade point average.

The BIS and BAS. Participants completed Carver and White's (1994) self-report scales for assessing individual differences in behavioral inhibition and activation. The BIS scale includes items reflecting an aversion to punishment and social disapproval (e.g., "I worry about making mistakes," "Criticism or scolding hurts me quite a bit"). The BAS scale includes items reflecting heightened responsiveness to rewards (e.g., "It would excite me to win a contest"), strong determination and drive (e.g., "When I want something, I usually go all-out to get it"), and fun-seeking (e.g., "I will often do things for no other reason than that they might be fun"). We used a 5-point Likert scale for all items (1 = *strongly disagree*, 5 = *strongly agree*).

Although Carver and White (1994) identified three BAS subscales, their results also indicate that the BAS scale measures a unified construct, and we used only the total scale score for the sake of brevity. In addition, the last three BAS items were inadvertently omitted from the questionnaire, leaving us with only 10 BAS items for analysis (see Carver & White, 1994, pp. 323). The three omitted items correspond to the fun-seeking aspect of the BAS scale, so our measure focuses on reward responsiveness and drive more than fun-seeking.

Alternative five-factor model. Participants completed the Zuckerman–Kuhlman Personality Questionnaire Form III (ZKPQ-III; Zuckerman et al., 1993). The ZKPQ-III presents respondents with statements and a true–false response format, and Zuckerman et al. presented solid reliability and validity evidence. The ZKPQ-III provides separate scores for impulsive sensation seeking, neuroticism–anxiety, aggression–hostility, activity, and sociability. The questionnaire also provides an "infrequency" scale for assessing inattentiveness and social desirability, and Zuckerman et al. (1993) recommended dropping respondents with high scores. However, in our sample, omitting participants with infrequency scores higher than 4 did not alter the results, so we retained their responses for analysis.

Results and Discussion

Descriptive statistics and zero-order correlations are presented in Tables 3 and 4, respectively. Participant sex was

⁴ A weak behavioral inhibition system also may be implicated in impulsivity (see Lykken, 1995, pp. 160–161). The third system in Gray's theory—the fight–flight system—is not addressed in this article (cf. Carver & White, 1994).

Table 3
Study 1 Descriptive Statistics and Reliabilities

Measure	No. of items	<i>M</i>	<i>SD</i>	Cronbach's α
Primary psychopathy	16	36.7	11.1	.88
Secondary psychopathy	10	25.3	5.8	.64
BIS	7	26.3	4.9	.80
BAS	10	38.2	6.2	.83
ImpSS	19	9.1	4.0	.80
N-Anx	19	9.5	5.1	.89
Agg-Host	17	7.5	3.5	.74
Act	17	8.1	3.5	.73
Sy	17	9.4	3.9	.79

Note. *N* = 99. BIS = behavioral inhibition system; BAS = behavioral activation system; ImpSS = impulsive sensation seeking; N-Anx = neuroticism-anxiety; Agg-Host = aggression-hostility; Act = activity; Sy = sociability.

dummy coded to examine sex differences (0 = female, 1 = male). Men scored lower on the BIS and neuroticism/anxiety measures ($r_s = -.24$ and $-.29$, respectively, $p_s < .05$), but no other sex differences were observed. As predicted, primary scores are inversely associated with BIS scores ($r = -.31$, $p < .01$). However, primary scores were not associated with any of the ZKPQ-III subscales. By contrast, secondary scores were positively associated, as predicted, with impulsive sensation seeking ($r = .32$, $p < .001$), neuroticism-anxiety ($r = .23$, $p < .05$), and aggression-hostility ($r = .21$, $p < .05$). The correlations observed between the BIS and BAS scales and the ZKPQ-III are consistent with the theoretical foundations of these measures (see Table 4).

We expected that suppression would obscure the predicted relations between primary, secondary, and the other measures because we made different predictions for the two psychopathy measures, but they were positively correlated ($r = .59$, $p < .001$). Thus, we computed partial correlations between primary, secondary, and the other measures while controlling for the opposing psychopathy measure. These results are presented in Table 5.³ The predicted inverse association between primary and the BIS remained (partial $r = -.33$, $p < .001$), and the predicted inverse association between the primary scale and neuroticism/anxiety emerged after controlling for the secondary scale (partial $r = -.23$, $p < .05$). The primary scale was not associated with any of the other measures. For secondary psychopathy, the positive associations with both impulsive sensation seeking and neuroticism-anxiety remained (partial $r_s = .29$ and $.32$, respectively, $p_s < .01$), whereas the secondary scale's relations with aggression/hostility and activity were reduced to nonsignificance. Thus, contrary to predictions, neither psychopathy measure was associated with aggression/hostility.

To test our prediction concerning the interactive influence of the BIS and BAS on secondary psychopathy scores, we regressed secondary scores on the BIS, BAS, and their interaction while controlling for primary scores (including participant sex did not alter the results, so it was omitted from the results reported here). Consistent with predictions, the addition of the BIS \times BAS interaction significantly improved R^2 (increment = .035), $F_{\text{increment}}(1, 94) = 5.6$, $p < .05$. Predicted values were

generated for secondary psychopathy on the basis of the resulting regression equation by substituting high and low values for the BIS and BAS ($M \pm 1 SD$) while holding primary scores constant at their mean (36.7). These results are presented in Figure 1 and provide strong support for our hypothesis. Participants scoring high on both the BAS and BIS had the highest secondary scores.

The combination of BIS, BAS, BIS \times BAS, and primary scores accounted for 40% of the variability in secondary scores ($R^2 = .40$), $F(4, 94) = 15.9$, $p < .0001$ (B weights: primary = 0.30, BIS = -1.1, BAS = -0.82, and BIS \times BAS = 0.032; intercept = 42.1, $p_s < .05$). When the same regression was run for primary scores, the BIS \times BAS term did not improve R^2 (increment = 0). The combination of the BIS, BAS, and secondary accounted for 43% of the variability in primary scores, although only the BIS and secondary made a significant contribution ($R^2 = .432$), $F(3, 95) = 24.1$, $p < .0001$ (B weights: secondary = 1.0, $p < .001$; BIS = -0.56, $p < .005$; BAS = -0.18, $p = .19$; intercept = 32).

The results provide additional validity evidence for the primary and secondary psychopathy scales of Levenson et al. (1995). Most notably, the results provide the divergent validity evidence that is critical to establishing the scales' ability to improve on previous measures (i.e., Smith, 1985; Strack, 1991a; Widom, 1977) by accounting for the primary versus secondary psychopathy distinction. Thus, in accordance with Fowles's (1987) elaboration of Gray's (1975, 1981) theory, the primary psychopathy scale was inversely associated with behavioral inhibition and anxiety. In contrast, the secondary psychopathy scale was associated with simultaneously high levels of both behavioral inhibition/anxiety and behavioral activation/impulsivity.

The results also highlight the importance of distinguishing primary from secondary psychopathy when examining their relations with other measures because of their mutual suppressing influence. For example, Levenson et al. (1995) reported that "secondary psychopathy was a highly significant correlate of stress reaction (trait anxiety), but primary psychopathy was only slightly (but positively) correlated with it" (p. 154), a result that would seem to contradict our findings. However, on the basis of the Levenson et al. results, we computed the partial

³ A question arises as to what the proper partialing procedure is. The answer depends on the question being asked. A partial correlation indicates the proportion of variance in Y (the criterion) accounted for by X (the predictor) relative to the remaining unexplained variance (i.e., variance not previously accounted for by other predictors, including their redundancy with X). By contrast, a part or semipartial correlation expresses this value relative to the total variance. Patrick (1994) used partial correlations (as opposed to part-semipartial correlations), which is the procedure we use as well. Thus, the partial correlation results presented indicate the proportion of variance uniquely accounted for by primary or secondary that has not already been accounted for by the other psychopathy measure and the shared psychopathy variance. Note that resolving this issue depends on how one wishes to frame the variance based on the problem under investigation but that it does not influence the statistical significance of the results. Part and partial correlations are either simultaneously significant or nonsignificant, as are the associated regression weights (Cohen & Cohen, 1983). We thank an anonymous reviewer for prompting these and other clarifications pertaining to partialing.

Table 4
Study 1 Correlations for All Measures

Measure	1	2	3	4	5	6	7	8	9
1. Primary psychopathy	—								
2. Secondary psychopathy	.59***	—							
3. BIS	-.31**	-.08	—						
4. BAS	-.27**	-.21*	.19	—					
5. ImpSS	.15	.32***	-.08	.31**	—				
6. N-Anx	-.04	.23*	.55***	.00	-.04	—			
7. Agg-Host	.11	.21*	.12	.20*	.25*	.07	—		
8. Act	-.16	-.24*	.12	.22*	.04	.09	-.14	—	
9. Sy	-.09	-.05	.21*	.34***	.14	-.07	.06	.09	—

Note. $N = 99$. BIS = behavioral inhibition system; BAS = behavioral activation system; ImpSS = impulsive sensation seeking; N-Anx = neuroticism-anxiety; Agg-Host = aggression-hostility; Act = activity; Sy = sociability.

* $p < .05$. ** $p < .01$. *** $p < .001$.

correlation between primary psychopathy and stress reaction while controlling for secondary psychopathy (based on zero-order correlations; see Cohen & Cohen, 1983, p. 91), and this revealed the expected inverse association between primary psychopathy and stress reaction (partial $r = -.08$). Although the magnitude of this inverse partial correlation is negligible, it is substantively different in a theoretically meaningful manner from the significant (zero-order) positive association reported by Levenson et al.

Study 2

This study focused on MACH, primary and secondary psychopathy, and self-reported prosocial and antisocial behavior. In addition to the scales of Levenson et al., we administered the Forceful scale of Strack's (1991a, 1991b) Personality Adjective Checklist (PACL). The PACL was designed to measure Millon's (1981) eight personality styles in normal adults, and the Forceful scale corresponds to Millon's antisocial style. The Forceful scale shares a location in interpersonal circumplex space similar

to that occupied by MACH and psychopathy measures (Pincus & Wiggins, 1990). In addition, although we are unaware of any studies that specifically sought to characterize the Forceful scale in terms of the primary versus secondary psychopathy distinction, it is inversely associated with anxiety (Wiggins & Pincus, 1989), which suggests that it is essentially a measure of primary psychopathy.

We predicted that MACH would be positively associated with primary psychopathy, secondary psychopathy, the Forceful scale, and self-reported antisocial behavior but that it would be inversely associated with prosocial behavior. On the basis of our characterization of the Mach-IV as a global psychopathy measure, we predicted that MACH would remain positively associated with both primary and secondary psychopathy after controlling for their shared variance (i.e., it assesses both sources of

Table 5
Study 1 Zero-Order Correlations and Partial Correlations Controlling for Either Primary or Secondary Psychopathy

Measure	Zero-order		Partial	
	Primary	Secondary	Primary	Secondary
BIS	-.31**	-.08	-.33***	.13
BAS	-.27**	-.21*	-.18	-.06
ImpSS	.15	.32***	-.05	.29**
N-Anx	-.04	.23*	-.23*	.32**
Agg-Host	.11	.21*	-.01	.17
Act	-.16	-.24*	-.03	-.18
Sy	-.09	-.05	-.07	.00

Note. $N = 99$. Adding participant sex as an additional control variable did not alter any of the results. BIS = behavioral inhibition system; BAS = behavioral activation system; ImpSS = impulsive sensation seeking; N-Anx = neuroticism-anxiety; Agg-Host = aggression-hostility; Act = activity; Sy = sociability.

* $p < .05$. ** $p < .01$. *** $p < .001$.

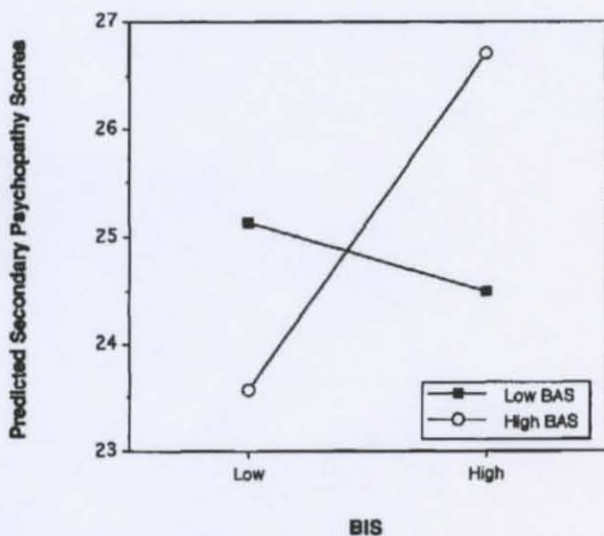


Figure 1. Predicted values for secondary psychopathy based on behavioral activation system (BAS) and behavioral inhibition system (BIS) scores while holding primary psychopathy scores constant.

unique variance). In contrast, the Forceful scale's inverse association with anxiety (Wiggins & Pincus, 1989) suggests that it is essentially a measure of primary psychopathy. Thus, we expected the Forceful scale to be associated with only the primary scale after partialing (i.e., it assesses primary's unique variance and the variance that primary and secondary share but not the unique secondary variance).

Method

Participants and Procedure

The participants were 125 Clemson University students (34 men and 91 women) primarily from upper-level psychology courses who received additional course credit for their optional participation. Participants completed questionnaires in small groups under conditions of anonymity and received an oral debriefing at the conclusion of the study. All responses were recorded on scanner forms and entered directly into a data set using an optical scanner.

Measures

Participants completed the primary and secondary psychopathy scales as well as the following measures.

Machiavellianism. The Mach-IV of Christie and Geis (1970) was used as a measure of MACH. The Mach-IV consists of 20 statements advocating the manipulative use of deceit and flattery and cynical and traditionally immoral viewpoints (1 = *strongly disagree*, 5 = *strongly agree*). The reliability and validity of this popular scale are well documented (see Wrightsman, 1991, for a review). A particular strength of the Mach-IV is its well-documented criterion validity: The scale is predictive of behavior in settings of low constraint (Christie & Geis, 1970; Geis, 1978; Shultz, 1993). In addition, the Mach-IV is an extremely interpersonal scale with clear implications for interpersonal attitudes and behavior (i.e., the interpersonal circumplex; Gurtman, 1991, 1992; Wiggins & Broughton, 1985).

Forceful scale of the PACL. Strack's PACL is a self-report measure designed to assess Millon's (1981) personality types in normal populations, and Strack (1991a, 1991b) reported extensive reliability and validity evidence. In the current study, we used the Forceful subscale (21 items; we used only the primary scale items), which corresponds to Millon's active-independent and aggressive personality type (i.e., antisocial personality), and the Cooperative subscale (18 items), which corresponds to Millon's passive-dependent and submissive personality type. The PACL presents respondents with a list of trait adjectives, and in the format used here they were asked to indicate the extent to which they had each of the traits (1 = *I have none of this trait*, 5 = *I have a lot of this trait*). Although the Cooperative scale was used to allow for a mixture of socially desirable (cooperative) and undesirable (forceful) traits within the questionnaire, the results are presented as a point of reference.

Prosocial and antisocial action. Based on Levenson et al. (1995), to assess self-reported prosocial and antisocial behavior we asked respondents to indicate how frequently they engaged in a variety of prosocial and antisocial acts that are common on college campuses (1 = *I have never done this*, 2 = *I have done this once*, 3 = *I have done this twice*, 4 = *I have done this a few times*, and 5 = *I have frequently done this*). We computed separate scores for prosocial and antisocial items (Levenson et al. reverse scored the prosocial items and combined them with the antisocial items to create one total score indicative of antisocial action). The six prosocial items included lending money to someone else, letting someone copy one's class notes, tutoring someone, doing volunteer work, being careful to return borrowed items, and driving carefully around bicyclists and pedestrians. The seven antisocial items

Table 6
Study 2 Descriptive Statistics and Reliabilities

Measure	No. of items	M	SD	Cronbach's α
Machiavellianism	20	54.7	8.9	.76
Primary psychopathy	16	33.9	9.1	.85
Secondary psychopathy	10	24.4	5.2	.64
PACL Forceful	21	60.9	10.4	.85
PACL Cooperative	18	65.6	8.7	.86
Prosocial action	6	24.6	3.4	.66
Antisocial action	7	13.5	4.3	.59

Note. $N = 125$. PACL = Personality Adjective Checklist.

included cheating on an examination, plagiarism, stealing, vandalism, getting drunk several nights a week, promiscuity, and being arrested for driving while intoxicated.

Results and Discussion

Descriptive statistics and reliabilities are presented in Table 6, and zero-order correlations are presented in Table 7. Participant sex was dummy coded to examine sex differences (0 = female, 1 = male). Men scored higher on the primary ($r = .21$, $p < .05$) and Forceful ($r = .42$, $p < .01$) scales but lower on the Cooperative scale ($r = -.24$, $p < .01$). There were no sex differences observed for the other scales.

Machiavellianism and Psychopathy

As predicted, MACH was positively associated with primary ($r = .64$, $p < .001$), secondary ($r = .46$, $p < .001$), and Forceful ($r = .29$, $p < .001$) scores but inversely associated with Cooperative scores ($r = -.31$, $p < .001$). To further examine the relations between MACH and the primary, secondary, and Forceful scales, we subjected all four to a principal-components analysis. If all of these scales measure the same construct, then they should load on the same component. This analysis did indeed yield only one eigenvalue greater than unity (2.2), which accounted for 56% of the total variance. All four of the scales loaded .58 (Forceful score) or higher on this component.

If the Mach-IV represents a global measure of psychopathy, as we suggest, then Mach-IV scores should be correlated with primary scores after controlling for the secondary score and vice versa. That is, the Mach-IV should be associated with the variance that primary and secondary psychopathy share as well as their unique variance. To test this prediction, we regressed MACH simultaneously on participant sex (dummy coded: 0 = female, 1 = male), primary, and secondary. As predicted, both the primary and secondary scales remained positively associated with MACH and combined accounted for 45% of the variability in MACH scores (β s primary = 0.55, $p < .001$; secondary = 0.22, $p < .01$; sex = -.04, *ns*). These results support our argument that the Mach-IV is a global measure of psychopathy and indicate, as expected, that the Mach-IV is more closely associated with primary than secondary psychopathy.⁶

⁶This also reflects in part the deficient reliability of the secondary scale. To illustrate this point, we applied a correction for attenuation to the correlations between Machiavellianism (MACH) and primary and secondary psychopathy with the alphas for all measures set at .90 (see

Table 7
Study 2 Correlations for All Measures

Measure	1	2	3	4	5	6	7
1. Mach-IV	—						
2. Primary psychopathy	.64***	—					
3. Secondary psychopathy	.46***	.44***	—				
4. Forceful	.29***	.38***	.22**	—			
5. Cooperative	-.31***	-.37***	-.24**	-.33***	—		
6. Antisocial	.46***	.47***	.40***	.27**	-.31***	—	
7. Prosocial	-.26**	-.43***	-.36***	-.20*	.17	-.30***	—

Note. $N = 125$. Forceful = Personality Adjective Checklist Forceful; Cooperative = Personality Adjective Checklist Cooperative; Antisocial = antisocial action; Prosocial = prosocial action.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Partial correlations controlling for primary, secondary, and participant sex also were computed for the Forceful and Cooperative scales. As expected, the Forceful scale remained associated with only the primary scale (primary partial $r = .26$, $p < .01$; secondary partial $r = .09$). Similar results were obtained for the Cooperative scale (primary partial $r = -.26$, $p < .01$; secondary partial $r = -.11$, $p > .20$). Thus, both of these measures were associated with variance unique to primary psychopathy, the variance that primary and secondary shared, but not the unique secondary variance.

Predicting Self-Reported Prosocial and Antisocial Behavior

As predicted, MACH was positively associated with antisocial action ($r = .46$, $p < .001$) but inversely associated with prosocial action ($r = -.26$, $p < .005$). Similar associations of varying magnitude also were obtained for the primary, secondary, Forceful, and Cooperative scales (with the pattern reversed for the cooperative scale; see Table 7). Partial correlations controlling for participant sex did not substantively alter the magnitude of these associations.

Levenson et al. (1995) found that primary and secondary psychopathy made unique contributions to predicting their antisocial action measure. This finding is consistent with the primary versus secondary psychopathy distinction and the prediction that their antisocial and (lack of) prosocial actions are driven by different personality processes. To replicate and extend their findings, we regressed both the prosocial and antisocial action measures separately (Levenson et al., 1995, used a combined measure) on primary, secondary, and participant sex. For both prosocial and antisocial action, primary and secondary made unique contributions to the prediction: prosocial action, $R^2 = .224$, $F(3, 121) = 11.7$, $p < .0001$, primary $\beta = -0.32$, $p < .001$, secondary $\beta = -0.22$, $p < .02$, sex $\beta = -0.04$, $p > .55$, ns ; antisocial action, $R^2 = .268$, $F(3, 121) = 14.8$, $p < .0001$,

primary $\beta = 0.37$, $p < .001$, secondary $\beta = 0.24$, $p < .01$, sex $\beta = 0.00$, ns .

If the Mach-IV measures aspects of both primary and secondary psychopathy, then Mach-IV scores should improve the prediction for antisocial action over and above either primary or secondary scores alone. That is, the Mach-IV should assess the unique variance associated with primary and secondary psychopathy in relation to antisocial action as well as their shared variance. We conducted a pair of multiple regressions to examine this possibility. We regressed antisocial action scores on participant sex and secondary psychopathy, and adding MACH significantly improved R^2 (R^2 increment = .096), $F_{\text{increment}}(1, 121) = 15.8$, $p < .001$. Similar but weaker results were obtained when adding MACH to participant sex and primary psychopathy in a regression for antisocial action (R^2 increment = .04), $F_{\text{increment}}(1, 121) = 7.4$, $p < .01$. This finding is consistent with our characterization of the Mach-IV as a global measure of psychopathy. However, these findings were restricted to antisocial action because we were unable to replicate them with the prosocial action measure.

A strength of the Mach-IV has been its ability to predict actual behavior in both experimental and naturalistic settings (see Geis, 1978; Shultz, 1993). Future validation efforts pertaining to the primary and secondary scales should focus on determining whether they also can predict actual behavior and, in particular, on determining whether they can predict the different behaviors that should be associated with primary and secondary psychopathy. For example, we would expect primary psychopathy to be more strongly associated with instrumental (i.e., means-to-an-end) violence than secondary, whereas secondary psychopathy should be more closely associated with emotional and reactive violent acts (cf. Cornell et al., 1996).

Study 3

Study 3 was conducted to incorporate Smith's (1985) Social Psychopathy Scale (SPS) into our investigation and to replicate the main findings from Study 2. Smith was the first to develop a self-report measure of psychopathy specifically for use with nonsevere populations (cf. Widom, 1977). We predicted positive associations among the MACH, SPS, and primary psychopathy and secondary psychopathy scales. We also administered a measure of disinhibition and predicted positive associations for

Nunnally & Bernstein, 1994, p. 257). The results indicate that MACH's association with secondary psychopathy (corrected $r = .66$) was nearly as strong as its association with primary psychopathy (corrected $r = .72$).

MACH, the SPS, and primary psychopathy but an inverse or nonsignificant association for secondary psychopathy.

Method

Participants and Procedure

The participants were 48 Clemson University students (17 men and 31 women). All responses were gathered simultaneously in class, and the results were presented at a subsequent meeting as part of a class demonstration on antisocial dispositions. All responses were recorded on scanner forms and entered directly into a data set using an optical scanner.

Measures

Participants completed the Mach-IV, the primary and secondary psychopathy scales, and the additional measures described next. All responses were recorded on 5-point scales (1 = *strongly disagree*, 5 = *strongly agree*).

SPS. Smith's (1985) SPS was constructed to assess psychopathy as a dimensional trait on the basis of the following criteria: beguiling, guiltless, manipulating, cynical, primitively egocentric, unempathic, unperturbed, restless, and oriented in the present. The SPS consists of 18 statements with a Likert response format (e.g., "I cry easily over tragic stories," "The future will take care of itself") and is inversely associated with Gough's (1960) Socialization Scale but positively associated with psychoticism and extraversion (Edelmann & Vivian, 1988).

Smith (1985) reported adequate reliability for the SPS in two initial studies (Study 1 = .59 [Cronbach's alpha]; Study 2 = .47 for men and .64 for women [split-half reliability]; Cronbach's alpha was not reported). Unfortunately, in a subsequent study, Edelmann and Vivian (1988) did not report any reliability information for the SPS, and we obtained a deficient reliability in our sample (Cronbach's $\alpha = .27$). We created an abbreviated version of the SPS (the SPS2) by dropping the six items that demonstrated a negative correlation with the total score (Items 4, 6, 9, 11, 15, 17), and this substantively improved the scale's reliability (Cronbach's $\alpha = .59$). The two versions were highly intercorrelated ($r = .93$). We present results for both scales as a point of reference, although we obtained a similar pattern of results for both.

Disinhibition. We used the Disinhibition subscale from Zuckerman's (1994) "experimental true-false form" of the Sensation Seeking Scale Form VI (pp. 43-45), although we used a 5-point response format in our study (1 = *strongly disagree*, 5 = *strongly agree*). The scale consists of seven items that focus on the enjoyment of drugs and sexual freedom (e.g., "I have tried marijuana or would like to," "A person should have considerable sexual experience before marriage").

Results and Discussion

Descriptive statistics and reliabilities are presented in Table 8, and correlations for all measures and participant sex are

Table 8
Study 3 Descriptive Statistics and Reliabilities

Measure	No. of items	<i>M</i>	<i>SD</i>	Cronbach's α
Social Psychopathy Scale	18	51.8	5.7	.27
Social Psychopathy Scale-2	12	32.9	5.9	.59
Machiavellianism	20	55.0	9.0	.74
Primary psychopathy	16	32.4	9.2	.84
Secondary psychopathy	10	24.2	6.3	.74
Disinhibition	7	17.2	6.0	.84

Note. $N = 47$.

presented in Table 9. No sex differences were observed for any of the scales, although this may reflect the small sample size and disproportionate number of female participants. As predicted, positive associations were obtained among the MACH, SPS, SPS2, and primary psychopathy and secondary psychopathy scales (see Table 9). In addition, all of these measures were positively associated with disinhibition (see Table 9). Note that we observed numerous correlations for the original version of the SPS, which actually exceeded its own reliability. Although such findings are mathematically possible, they cast doubt on the measure from a psychometric standpoint (see Nunnally & Bernstein, 1994, p. 241). The low reliability for the SPS probably reflects the diverse item content of the scale, and factor analyses of the SPS indicate that it is multifactorial (Edelmann & Vivian, 1988; Smith, 1985).

We again computed partial correlations controlling for either primary or secondary psychopathy to examine the relations between their unique sources of variance and the other measures. As predicted, MACH remained positively associated with both primary and secondary psychopathy, although the results for secondary were marginal (partial r s: primary psychopathy, .52, $p < .001$; secondary psychopathy, .23, $p < .06$ [one-tailed]). However, the SPS and SPS2 remained positively associated with only the primary psychopathy scale (primary psychopathy partial r s: SPS, .54, $p < .001$; SPS2, .54, $p < .001$; secondary psychopathy partial r s: SPS, -.04; SPS2, -.01). This indicates that the SPS, like Strack's (1991a) Forceful scale, is essentially a measure of primary psychopathy. That is, it assesses the variance that primary and secondary psychopathy share and the unique primary variance, but not the unique secondary variance.

Finally, primary and secondary psychopathy were both positively associated with disinhibition (r s = .52 and .34, p s < .001 and .05, respectively). However, the significant association between secondary psychopathy and disinhibition reflected the variance that secondary shared with primary psychopathy, and controlling for primary reduced the relation between secondary psychopathy and disinhibition to nonsignificance as predicted (partial $r = .09$, $p > .50$, *ns*). This result again illustrates the importance of isolating the unique sources of psychopathy variance to ascertain their relations with other measures. Note that the positive association between secondary psychopathy and disinhibition reported by Levenson et al. (1995; $r = .16$, $p < .01$) also was reduced to nonsignificance when primary was controlled (partial $r = .03$, computed by us).

Study 4

Study 4 was conducted to provide a replication of Studies 2 and 3 and to rule out alternative interpretations based on social desirability and narcissism. Each of these issues are addressed in turn.

Social Desirability

The possibility that social desirability may provide an account of our findings is complicated by analyses identifying two distinct aspects of social desirability: impression management (IM) and self-deception (SD; Paulhus, 1984). The IM aspect of social desirability involves attempting a positive self-presen-

Table 9
Study 3 Correlations for All Measures and Participant Sex

Measure	1	2	3	4	5	6	7
1. SPS	—						
2. SPS-2	.93***	—					
3. Mach-IV	.40**	.45***	—				
4. Primary psychopathy	.59***	.60***	.65***	—			
5. Secondary psychopathy	.28	.31*	.49***	.53***	—		
6. Disinhibition	.46***	.52***	.53***	.52***	.34*	—	
7. Sex	.16	.20	.08	.09	.06	.13	—

Note. $N = 47$. SPS = Social Psychopathy Scale; SPS-2 = Revised Social Psychopathy Scale.
* $p < .05$. ** $p < .01$. *** $p < .001$.

tation, whereas SD involves response distortion attributable to a lack of personal insight. In relation to the IM aspect of social desirability, to obtain a high score on the Mach-IV and the Levenson et al. (1995) psychopathy scales requires repeatedly admitting socially undesirable characteristics, and the implication is that the scales may therefore not measure MACH and psychopathy, but a willingness to report negative self-relevant information.

The IM issue has plagued MACH and its corresponding measures since their inception (see Fehr et al., 1992, for a review), and Christie and Geis (1970) actually constructed the Mach-V specifically to "correct" the Mach-IV's association with the IM aspect of social desirability. However, we would argue that the Mach-IV is rightfully the most widely used measure of MACH rather than the Mach-V, ironically for the very reason that led to the Mach-V's construction: The Mach-IV is correlated with social desirability. Theoretically, most of the characteristics associated with MACH are socially undesirable, and therefore MACH (and psychopathy) should be inversely correlated with social desirability, and this aspect of their variance should not be partialled out when examining their relations with other measures (cf. Wrightsman, 1992, pp. 157–158). As Rorer (1990, p. 702) noted in relation to psychoticism, one of the dimensions of personality that encompasses MACH in Eysenck's model (see Allsopp, Eysenck, & Eysenck, 1991),

some behaviors and characteristics are more desirable than others. We cannot measure behaviors and characteristics independently of their social desirability. Any form of psychopathology provides an example. One of the reasons why we are interested in measuring anxiety, depression, psychoticism, or any other form of psychological maladjustment is precisely because such adjustment is not desirable. If we were to partial social desirability out of psychoticism, what we would presumably have left would be psychoticism that is not socially undesirable. What, pray tell, would that be? (p. 702)

Rorer (1990) reached the same conclusion concerning the SD aspect of social desirability. However, given the long history of concerns with social desirability in personality research (Paulhus, 1991), we assumed that some readers would not be persuaded by this argument and therefore examined the capacity of social desirability to provide an alternative account of our findings from Study 2. We used the Balanced Inventory of Desirable Responding (Paulhus, 1991) because it provides separate scores for the IM and SD aspects of social desirability. We

predicted an inverse association between IM and MACH, primary psychopathy, and secondary psychopathy. We also predicted that MACH, primary psychopathy, and secondary would be positively associated with SD on the basis of Cleckley's (1941/1988) identification of "specific loss of insight" as a defining feature of psychopathy. Most importantly, we predicted that controlling for social desirability would perhaps attenuate but not eliminate associations observed between MACH and the psychopathy measures.

Machiavellianism, Psychopathy, and Narcissism

Another alternative interpretation of our results is that MACH is more closely aligned with narcissism than psychopathy and that relations observed between MACH and psychopathy reflect this redundancy (or *comorbidity* in the clinical nomenclature). This possibility is consistent with the considerable overlap that exists among all three of these constructs (for MACH and narcissism, see McHoskey, 1995, and Watson et al., 1994; for MACH and psychopathy, see Smith, 1978, and Smith & Griffith, 1978; for psychopathy and narcissism, see Harpur et al., 1994). To examine this possibility, we assessed psychopathy, MACH, and narcissism simultaneously in Study 4. We predicted that psychopathy, rather than narcissism, would be most closely associated with MACH.

Method

Participants and Procedure

The participants were 107 Clemson University students (43 men and 64 women) primarily from upper-level psychology courses who received additional course credit for their optional participation. Participants completed questionnaires in small groups under conditions of anonymity and received an oral debriefing at the conclusion of the study. All responses were recorded on scanner forms and entered directly into a data set using an optical scanner.

Measures

Participants completed the Mach-IV and the primary and secondary psychopathy scales. Respondents also completed measures of narcissism and social desirability, which we now describe.

The Narcissistic Personality Inventory (NPI). The NPI (Raskin & Hull, 1979; see Raskin & Terry, 1988) is a 40-item questionnaire with a forced-choice format that measures narcissism as a dimensional per-

sonality trait. Raskin and Terry (1988) reported strong reliability and validity evidence for the scale. Although it is possible to decompose the NPI into subscales (four-factor model, see Emmons, 1987; seven-factor model, see Raskin & Terry, 1988), we focused on the NPI Total score because we needed only a global measure of narcissism.

The Balanced Inventory of Desirable Responding (BIDR). The BIDR is a self-report inventory that provides separate scores for the IM and SD aspects of social desirability, and Paulhus (1991) reported solid reliability and validity evidence. Respondents are asked to indicate the extent to which they agree with 40 statements, 20 for each subscale (1 = *strongly disagree*, 5 = *strongly agree*). In accordance with Paulhus's suggestion, we scored only extreme responses (1 or 5) to ensure that only respondents exaggerating their desirability would achieve a high score.

Results and Discussion

Descriptive statistics and reliabilities are presented in Table 10. All of the measures demonstrated sufficient reliability for research purposes, although the secondary scale's reliability was low (.53). Zero-order correlations between the measures are presented in Table 11. Participant sex was dummy coded to examine sex differences (0 = female, 1 = male). Men scored higher on the primary, secondary, and MACH scales but lower on IM (see Table 11).

The correlations between MACH and psychopathy replicated our previous results (primary $r = .62, p < .001$; secondary $r = .59, p < .001$). MACH also was positively associated with narcissism ($r = .39, p < .001$), as were the primary and secondary psychopathy measures ($r_s = .51$ and $.25$, respectively, $p_s < .01$). However, note that when the redundancy between primary and secondary psychopathy ($r = .51$) was controlled, only primary psychopathy remained associated with narcissism (primary partial $r = .46, p < .001$; secondary partial $r = -.01$; cf. Harpur et al., 1994, p. 153).

Consistent with predictions, MACH and both psychopathy measures were inversely correlated with the IM aspect of social desirability ($p_s < .001$; see Table 11). The predicted positive associations among SD and MACH, primary psychopathy, and secondary psychopathy did not emerge. However, these nonsignificant zero-order correlations reflected the suppressing influence of IM, and controlling for IM revealed the predicted positive associations between SD and MACH (partial $r = .22, p < .05$), primary (partial $r = .24, p < .01$), and secondary (partial $r = .21, p < .05$).

Table 10
Study 4 Descriptive Statistics and Reliabilities

Measure	No. of items	<i>M</i>	<i>SD</i>	Cronbach's α
Machiavellianism	20	55.7	10.2	.78
Primary psychopathy	16	33.6	10.5	.88
Secondary psychopathy	10	24.2	5.2	.53
NPI	40	16.8	7.5	.87
BIDR-IM	20	2.4	2.3	.67
BIDR-SD	20	3.0	3.1	.79

Note. $N = 107$. NPI = Narcissistic Personality Inventory; BIDR-IM = Balanced Inventory of Desirable Responding Impression Management; BIDR-SD = Balanced Inventory of Desirable Responding Self-Deception.

Considerable redundancy was observed among the measures of MACH, psychopathy, and narcissism. A principal-components analysis of these four measures yielded only one eigenvalue greater than unity (2.4) which accounted for 61% of the total variance, and all four measures loaded .66 or higher on this component. To test the outlined alternative accounts of our findings, we conducted a hierarchical multiple regression analysis predicting MACH with the following steps: (a) participant sex, (b) IM and SD social desirability measures, (c) NPI, and (d) primary and secondary psychopathy. These results are presented in Table 12.

These results strongly support our predictions and reveal that the positive associations observed among MACH, primary psychopathy, and secondary psychopathy could not be accounted for by social desirability or narcissism. At the final step of the regression, all of the scales combined accounted for 50% of the MACH variance, but only primary and secondary psychopathy remained as significant predictors. Consistent with our argument that the Mach-IV represents a global measure of psychopathy, MACH was associated as strongly with secondary psychopathy ($\beta = 0.35$) as it was with primary psychopathy ($\beta = 0.33, p < .002$).⁷

General Discussion

The results provide strong support for our hypothesis and indicate that MACH is associated with psychopathy in general and with both primary and secondary psychopathy specifically. Thus, the Mach-IV is a global measure of psychopathy that assesses but confounds both the unique and common sources of variance associated with primary and secondary psychopathy. This finding provides a framework for integrating the MACH and psychopathy literature by extending the recognition that MACH and psychopathy are similar to a more refined explanation of precisely how they are similar. Moreover, this finding also provides a framework for understanding seemingly inconsistent findings in the MACH literature that have precluded an integration with psychopathy. For example, the consistent positive association between MACH and anxiety has precluded an easy integration with the psychopathy literature because anxiety is a characteristic antithetical to psychopathy. However, recognizing the primary versus secondary psychopathy distinction's implications pertaining to anxiety, and the nature of MACH relative to the primary versus secondary psychopathy distinction, erodes the mystery surrounding this association.

⁷ Using the four separate aspects of narcissism identified by Emmons (1987) rather than the Narcissistic Personality Inventory (NPI) Total score at Step 3 does not alter the results (i.e., primary and secondary psychopathy remain as the only significant predictors). Details concerning results for the specific subscales of the NPI are available from John W. McHoskey on request. In addition, Robert Smith (personal communication, March 26, 1996) suggested that the scoring procedure used for the Balanced Inventory of Desirable Responding (BIDR) might attenuate associations between social desirability and other measures and thereby underestimate the relative importance of social desirability. To examine this possibility, we reconducted the hierarchical multiple regression predicting Machiavellianism (MACH) with dimensional BIDR scores, and this did not alter the primary findings presented in Table 12. However, it did reduce the association between MACH and self-deception to nonsignificance at Step 2.

Table 11
Study 4 Correlations for All Measures and Participant Sex

Measure	1	2	3	4	5	6	7
1. Mach-IV	—						
2. Primary psychopathy	.62***	—					
3. Secondary psychopathy	.59***	.51***	—				
4. NPI	.39***	.51***	.25**	—			
5. BIDR-IM	-.45***	-.52***	-.44***	-.20*	—		
6. BIDR-SD	.08	.06	.06	.49***	.26**	—	
7. Sex	.23*	.35***	.26**	.13	-.25**	.06	—

Note. $N = 107$. BIDR-IM = Balanced Inventory of Desirable Responding Impression Management; BIDR-SD = Balanced Inventory of Desirable Responding Self-Deception; Sex = Dummy-coded participant sex (0 = female, 1 = male).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Integrating the Machiavellianism and Psychopathy Literature

Why has it taken so long to achieve convergence between the psychopathy and MACH constructs? We propose that the primary obstacle has been social, and specifically the different professional associations and research traditions of those conducting research on the two topics. MACH has historically been the province of personality and social psychology, whereas psychopathy has been addressed by clinicians. The different goals and approaches of the two psychology subdisciplines have no doubt contributed to the separation of the two literatures.

For example, clinical psychologists typically focus on disease and taxonomic approaches to understanding personality and personality disorders, whereas personality and social psychologists focus on healthy people and continuous approaches. However, the argument that personality disorders represent maladaptive variants of dispositions found in the population at large has become increasingly popular in the clinically oriented literature (cf. Eysenck, 1952), thanks in part to theories that provide a

framework for understanding both personality and personality disorders simultaneously (e.g., the three-factor model, see Eysenck & Eysenck, 1985; the five-factor model, see Costa & Widiger, 1994; the "alternative" five-factor model, see Zuckerman et al., 1993; the interpersonal circumplex, see Wiggins & Broughton, 1985; sociobiology, see Mealey, 1995). Thus, it appears that the time is right for integrating the MACH and psychopathy constructs (cf. Smith, 1978, pp. 87–95).

Unfortunately, citation counts indicate that interest in MACH is waning, with the peak being reached in 1982 (Wilson et al., 1996). In contrast, interest in psychopathy continues unabated, with more articles appearing annually on psychopathy than all other personality disorders except perhaps borderline (Stone, 1993). This is unfortunate because recent advances in theory pertaining to psychopathy are equally relevant to the study of MACH. Perhaps aligning the MACH construct explicitly with the psychopathy literature can foster a renewed interest among personality and social psychologists in antisocial traits and behaviors. For example, evolutionary-based approaches provide a framework for understanding both MACH and psychopathy and for generating numerous hypotheses concerning manipulative interpersonal strategies and their underlying dispositions, which are amenable to investigation by personality and social psychologists (see Mealey, 1995; Wilson et al., 1996).

A key issue for future research on MACH and psychopathy is the interactive influence of antisocial dispositions and environmental variables on antisocial behavior. Christie and Geis (1970) advocated an interactionist view of MACH well before interactionism was recognized as a necessary compromise following the "person-situation debate" in personality and social psychology (Kenrick & Funder, 1988). Unfortunately, researchers have rarely followed Christie and Geis's lead by examining MACH's interactive effects with environmental variables (see Wilson et al., 1996), although the results of those who have substantiate the importance of an interactionist view of MACH (e.g., Shepperd & Socherman, 1997; Shultz, 1993).

Successful Psychopaths

If MACH and psychopathy are the same personality dimension, and the Mach-IV is a global measure of psychopathic attributes, what implications does this present for the literature

Table 12
Hierarchical Multiple Regression Predicting Machiavellianism in Study 4

Step and predictors	Machiavellianism			
	Cumulative R^2	Change in R^2	Initial β	Final β
1. Participant sex	.052*	.052*	.23*	-.02
2. Impression management and self-deception	.252***	.200***	-.47*** .19*	-.11 .01
3. Narcissism	.308***	.056**	.29**	.11
4. Primary and secondary psychopathy	.500***	.192***	.33** .35***	.33** .35***

Note. $N = 107$. Participant sex was dummy coded (0 = female, 1 = male).

* $p < .05$. ** $p < .01$. *** $p < .001$.

on MACH and psychopathy? In most of the research conducted on MACH, the respondents have been drawn from university populations, whereas most of the research conducted on psychopathy has been done with institutionalized felons. Thus, research in both areas has examined antisocial tendencies but typically on opposite ends of the participant spectrum. MACH research has focused on intelligent and successful antisocial individuals, whereas psychopathy research has focused on less intelligent and successful antisocial individuals. We would argue that high MACH scorers in noninstitutionalized (e.g., university) samples occupy an intermediate position on the psychopathy continuum and that many of these individuals represent the "successful psychopath" to which various authors have alluded (e.g., Cleckley, 1941/1988; Smith, 1978, 1984, 1985; Sutker, 1994). Thus, the vast literature on MACH can be interpreted as an explication of the dispositions and interpersonal tendencies of relatively successful yet antisocial people. Studies documenting the relative success of high MACH scorers at lying (DePaulo & Rosenthal, 1979; Geis & Moon, 1981), manipulating (Christie & Geis, 1970; Geis, 1978), and achieving professional success (Shultz, 1993) are consistent with this argument.

Limitations of the Current Studies

The samples that we used were predominantly female, and this certainly limits the generalizability of our results, especially because institutionalized psychopaths are overwhelmingly male (Lykken, 1995). However, in accordance with a dimensional view of personality and the personality disorders, our studies demonstrate that it is possible to test theoretically derived predictions concerning psychopathy even within samples in whom psychopathic traits are perhaps least evident. Although research on psychopathic attributes with the general population may not have direct implications for actual clinical cases of psychopathy, it may have indirect implications via hypothesis testing and theory building (Mook, 1983). Moreover, although psychology has often been self-critical in relation to an overreliance on student samples (e.g., Sears, 1986), research on psychopathic attributes is one area in which this criticism does not apply. The vast majority of research on psychopathy has been conducted with male (primarily white) felons, and there is a need for increased research on psychopathy with noninstitutionalized populations (see Sutker, 1994, pp. 88-89).

Measuring Psychopathic Traits and Behaviors

Our partial correlation results highlight the importance of simultaneously measuring primary and secondary psychopathy and controlling for their mutual suppressing influence. Unfortunately, most of the research on psychopathy has failed to do so primarily because most psychopathy measures do not allow for the separate assessment of primary and secondary psychopathy. Some researchers have circumvented this problem by assessing psychopathy and anxiety simultaneously and then separating those scoring high on psychopathy into primary (low-anxiety) and secondary (high-anxiety) groups. This procedure, although defensible, is nonoptimal because categorizing the participants ignores the dimensionality of psychopathy (and anxiety). Moreover, even when partitioning variance is possible, few research-

ers have done so. For example, few researchers using Hare's (1991) PCL-R have presented partial correlations to clarify relations between the two factors and other measures. We would argue that this should be a standard practice for researchers working with the PCL-R specifically and in general for anyone simultaneously measuring primary and secondary psychopathy.

Our findings indicate that the Mach-IV is deficient precisely because it cannot provide a precise assessment of psychopathy that distinguishes primary from secondary. However, the preliminary evidence suggests that the Levenson et al. (1995) primary and secondary psychopathy scales can provide useful self-report measures of psychopathic attributes for use with noninstitutionalized samples, although the deficient reliability of the secondary scale needs to be addressed. Our results provide additional reliability and validity evidence for the Levenson et al. (1995) primary and secondary psychopathy scales. With respect to divergent validity, which is the most pressing issue concerning the construct validity of these scales, the primary and secondary scales demonstrated different associations in the predicted manner with behavioral inhibition, behavioral activation, anxiety, narcissism, the Forceful subscale of the PACL (Strack, 1991a), Smith's (1985) SPS, and disinhibition. With respect to convergent validity, both scales were associated in the same manner with self-reported antisocial behavior and social desirability. Thus, the Levenson et al. (1995) scales improve on previous measures of psychopathy (Smith, 1985; Strack, 1991a; Widom, 1977) by distinguishing primary from secondary psychopathy.

Death to the Mach-IV, Long Live the Mach-IV

The Mach-IV (and Mach-V) has now outlived its usefulness for many applications. Although factor analyses of the Mach-IV collectively suggest a two-factor structure (i.e., views and tactics), the two factors are not consistently marked by the same items across studies (see Fehr et al., 1992). Thus, it is not possible to decompose the Mach-IV into reliable subscales that would allow for a more precise examination of its facets (Carver, 1989). Moreover, the Mach-IV Total score is not useful for providing precise measurement of antisocial dispositions partly because it includes behavioral indicators and therefore groups together as "high MACHs" people with different dispositions. However, the scale was never designed for the precise measurement of dispositions and instead represents the culmination of a unique interdisciplinary project. The Mach-IV does still possess value as a global measure of psychopathy that can be used in the evaluation of new measures and for use in contexts in which brevity is essential (e.g., survey work). Moreover, Christie and Geis's (1970) *Studies in Machiavellianism*, and the research activity that it generated, represents a lasting testimony to the heuristic value of interdisciplinary ideas and research that is exceeded perhaps by only the literature on authoritarianism within personality and social psychology (i.e., Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950).

In closing, we note that personality and social psychologists have been conducting research on psychopathic attributes in noninstitutionalized populations for more than 25 years and that this research is organized under the rubric of Machiavellianism (Christie & Geis, 1970). Although our results indicate that the Mach-IV is an imperfect measure of psychopathic attributes

because of its confounding of primary and secondary psychopathy, the enormous literature on MACH certainly can and should serve as a foundation for continuing research on psychopathic attributes in noninstitutionalized populations.

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