The Effects of Gender and Ethnicity on the Overcontrolled-Hostility Scale of the MMPI-2

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The effects of gender, ethnicity, and acculturation on the Overcontrolled-Hostility Scale (O-H) of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) among college students were investigated. Initial analyses failed to find significant results, suggesting that the O-H scale may not be sensitive enough to discriminate among individuals in normal populations. Post hoc correlation coefficients between O-H and the basic scales of the MMPI-2 yielded significant positive correlations between O-H and the Lie and Correction scales. Significant negative correlations were found between O-H and the Frequency, Depression, Psychasthenia, Hypomania,Schizophrenia, and Social Introversion scales. These findings are consistent with the theory that high scores on O-H are related with the tendency to deny distress or pathology. The implications of these findings are discussed.

Megargee, Cook, and Mendelsohn (1967) developed the Overcontrolled-Hostility (O-H) scale from the Minnesota Multiphasic Personality Inventory (MMPI). According to Levitt (1990), only 3 items were removed from the O-H scale when the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) was developed in 1987, which was not seen to have a significant impact on the integrity of the scale. The O-H scale originally was developed to differentiate between criminals who were characteristically violent versus those who were generally mild mannered, but had rare, sudden, and intense outbursts of violence. The authors provided evidence demonstrating that the O-H scale discriminated successfully between overcontrolled and undercontrolled individuals in both forensic and nonforensic settings. Individuals who produced low scores on O-H possessed scant ability to control hostile impulses, thus exhibiting frequent angry, and possibly violent, behavior. Conversely, people with high O-H scores exerted excessive control on their hostile feelings. Therefore, they generally presented as passive, only to have sudden eruptions of angry or violent behavior. Megargee et al. proposed that such eruptions were likely to be far more intense in overcontrolled individuals due to the longer time span in which hostile feelings accumulate without opportunity for release.

Although a considerable body of research has produced interesting findings using the O-H scale in a variety of settings, only a small subset of this research focuses on gender and ethnic differences related to O-H. Some of this literature suggests that the variables of gender and ethnicity may account for some of the variance in O-H scores. Although gender and ethnicity are rarely studied concurrently, a review of this literature leads to hypotheses about their combined role in influencing O-H scores.

Gender and Performance on the Overcontrolled-Hostility Scale

The majority of the research on the O-H scale involved samples consisting only of male participants. This is suggestive of a considerable lack of research investigating how women perform on the O-H scale, as well as how men and women compare to one another. Sutker, Allain, and Geyer (1978) attempted to address some of this gap in the literature when they studied a sample that consisted entirely of female inmates. They did not find significant differences on O-H when they compared violent offenders and nonviolent offenders. Rathvon and Holmstrom (1996); Walters, Greene, and Solomon (1982); and Walters, Solomon, and Greene (1982) included both men and women in their research samples. Although they found significant differences in O-H when they examined other variables, none of these studies investigated the effect of gender on O-H scores.

A few studies specifically addressing the impact of gender on O-H scores have been conducted, but they have yielded mixed findings. Bigaggio, Godwin, and Baldwin (1984) compared level of compliance among individuals who obtained high scores on O-H, individuals who had been identified as dependent by high scores on the Dependency (Dy) scale of the MMPI, and a control group who were randomly selected from the original sample. The authors found no significant differences in regard to these groups on O-H. They also did not find significant gender differences. Bigaggio and Godwin (1987) investigated the relationship between scores on O-H and Scale 2 on the MMPI. Participants consisted of male and female college students. Analyses revealed no significant relationship between O-H and Scale 2, and no gender differences on O-H scores were found. Paulson, Schwemer, and Bendel (1976) investigated how abusive and nonabusive parents score on the Psychopathic Deviate (Pd), Hypomania (Ma) and O-H scales on the MMPI. Results indicated that neither gender nor whether theparent was abusive had a significant effect on O-H. This group of findings seem to suggest simply that men and women do not differ significantly on this scale.

However, other research suggests that significant differences between men and women do in fact exist when examining the construct of the overcontrol of hostility. For example, when Megargee et al. (1967) attempted to cross-validate the O-H scalein a nonforensic population, they found that women had significantly higher scores on O-H than did men, which confirmed the authors' prediction. Heyman (1977) investigated the relationship between O-H scores and instruments measuring dogmatism and aggressiveness. He did not find a significant difference between men and women on O-H specifically. However, the author noted that only men had a significant negative relationship between O-H and dogmatism. The author argued that this finding indicated that men seemed to be better able to integrate aggressiveness into their personality and behaviors, which is consistent with the construct of the overcontrol of hostility.

Conversely, Leonard (1977) compared MMPI scores among male and female patients who had committed suicide, highly suicidal patients, and nonsuicidal patients. The participants were matched according to age and sex. The author found that nonsuicidal male patients had significantly higher scores on O-H than any other group. It is difficult to determine what these findings mean. Perhaps the nonsuicidal male patients had not experienced strong enough provocation to express their hostility yet. Another possibility is that the O-H scale was tapping something other than control of hostility in this population. Whatever the case, this study did find significant genderdifferences on O-H.

The previously discussed literature demonstrates that, although some investigation into gender differences on the O-H scale has been conducted, there are no clear conclusions that can be drawn. Further, the body of literature examining gender differences on O-H is very limited. Consequently, further research in this area is needed.

Ethnicity and Performance on the Overcontrolled-Hostility Scale

Most of the research on the O-H scale has studied only Caucasian individuals. Two studies (Posey & Hess, 1984; Sutker et al., 1978) included other ethnic groups and attempted to represent individuals of various ethnic backgrounds equally in the various experimental groups. However, the primary focus of these studies was not the effect of ethnicity on O-H scores.

Other studies (Fisher, 1970; Hutton, Miner, Blades, & Langfeldt, 1992; McCreary & Padilla, 1977) specifically have investigated the difference between various ethnic groups on the O-H scale. Fisher (1970) divided a sample of male inmates into the following groups according to history: (a) frequent, undercontrolled aggression, (b) typically nonviolent with occasional violent behavior, and (c) nonviolent. His sample included both Caucasian and African-American individuals, but he did not use matching procedures to ensure equal racial representation among experimental groups. The author reported that African-Americans tended to fall into the *undercontrolled-aggression* group whereas Caucasians generally fell into the *occasionally violent* group. Results indicated that the African-American individuals consistently yielded significantly higher O-H scores than Caucasians, regardless of the experimental group into which they fell. This is suggestive of ethnic differences on the O-H scale. However, it is also important to emphasize that most of the African-American participants fell into the *undercontrolled violence* group. This would contradict the argument of Megargee et al. (1967) that only people who exert excessive control over their aggressive impulses would yield high scores on O-H. The authors hypothesized that the O-H scale may have detected social alienation, as well as the presence and control of hostility, and they proposed that this was a race-related variable. It is also possible that socioeconomic status influenced the findings, as people in low socioeconomic environments are likely to experience alienation from society as well as increased levels of hostility. It is difficult to determine, however, if the O-H scale is tapping one or a combination of these possible issues.

McCreary and Padilla (1977) investigated ethnic differences on O-H between Caucasians, Hispanics, and African-Americans. They found that Hispanic participants had significantly higher O-H scores than Caucasians. However, there was no significant difference on O-H scores between African-American and Caucasian participants. Behavioral traits related to overt expression of hostility were not provided by these authors. Consequently, interpretation of the ethnic differences and similarities relative to the conceptual model underlying the O-H scale is tenuous.

Hutton et al. (1992) found that African-American male forensic patients had significantly higher O-H scores than their Caucasian counterparts. The authors used a regression analysis to investigate the contributions of several variables on the variance among O-H scores. Race was found to be the only significant predictor of O-H scores, with African-Americans scoring at least 5 T score points higher than Caucasians. Additionally, 43% of the African-American patients earned T scores on O-H of 69 or higher. Thus, not only was there a difference between Caucasian and African-American participants on O-H, but a higher percentage of African-Americans scored above the clinical cutoff of a T score of 70.

The three studies that specifically addressed the effects of ethnicity on O-H scores yielded significant differences among various ethnic groups on their O-H scores. Ethnic minority individuals have yielded higher O-H scores than Caucasians. Interestingly, these findings included only African-American and Hispanic participants. There have been no studies that investigated how Asian individuals perform on O-H. This is most likely due to the relatively low incidence of Asian individuals in the prison system. The Federal Bureau of Census (1997) reported that Asians and Pacific Islanders combined only comprised 1.1% of total arrests in the United States. The United States Department of Justice (1997), when summarizing the ethnicity of prison inmates, did not even mention Asians specifically in their summary. Rather, they included Asians with Pacific Islanders, Alaska Natives, and American Indians under the category of "Other," which comprised 1.7% of the prison population in 1995. Greene (1987), in his review of the effects of ethnicity on MMPI performance, recognized this lack of research, and asserted that investigation on how Asians perform on MMPI special scales is needed.

It is important to investigate gender and ethnic differences on O-H, as well as other constructs, because these variables can affect how one formulates a clinical treatment plan and interprets assessment data. Gender and ethnicity could affect the efficacy of various approaches in treatment. Therefore, it would behoove clinicians tobe aware of these issues as they formulate treatment interventions. Additionally, it would be erroneous for clinicians to assume automatically that a certain score on a given scale was indicative of psychopathology when possession of such a trait may be acceptable, or even desirable for a certain gender or culture.

The Current Study

Review of the literature on the O-H scale has revealed that only a small number of studies have investigated the effects of gender. Moreover, the few studies that addressed this issue have yielded inconsistent results, which indicates the need for further research in this area.

Also, very few studies have addressed the issue of ethnic differences on O-H scores. Of those that have been conducted, only Hispanic and African-American performance on the O-H scale has been investigated. More research needs to be conducted on these ethnic groups, and no research has been done on how Asian individuals perform on the O-H scale. Such research needs to be conducted in order to address this gap in the literature.

Additionally, Dana (1993) has noted the need to account for acculturation, the degree to which an individual identifies with his or her parent culture as opposed to American culture, when investigating ethnic differences in performance on assessment instruments. Bullock (1995) and Tsai (1996) have noted the significant impact that degree of acculturation has had on the Basic Scales of the MMPI-2. Montgomery and Orozco (1985) found that, before statistically controlling for acculturation, Caucasians differed significantly from Mexican-Americans on 10 of the 13 MMPI Basic Scales. However, when the investigators controlled for acculturation, significant differences were only found on L and Scale 5 (Mf). Investigating the additional impact ofacculturation would provide further understanding to the effect of ethnicity on O-H.

The purpose of this study was to address some of the previously described gaps in the research. It was first hypothesized that women would score higher on O-H thanmen. Women are generally strongly encouraged to behave in a submissive manner, which would require suppression of hostile impulses. This hypothesis was consistent with the research conducted by Megargee et al. (1967), Heyman (1977), and Leonard (1977).

Additionally, it was hypothesized that Asians with low American acculturation would produce higher O-H scores than Asians with high American acculturation or Caucasians. Although there is no research on Asian O-H performance on which to base this prediction, Asian culture has been described as emphasizing the importance of the group over that of the individual, a stance that would require suppression of hostile feelings (Abe & Zane, 1990; Dana, 1993). Furthermore, findings from studies on other ethnic groups (e.g., Fisher, 1970; Hutton et al., 1992; McCreary & Padilla, 1977) have suggested that other ethnic minority individuals generally yield higher scores on O-H than Caucasian individuals. Additionally, Bullock's (1995) and Tsai's (1996) work has demonstrated some impact of acculturation on the MMPI-2 Basic Scales.

Finally, it was predicted that an interactive effect between gender and ethnicity would occur. Asian women were expected to have the highest score on O-H as women inthis culture are reported to be strongly encouraged to be submissive.

Method

Participants

The investigators recruited 275 college students over a period of approximately 17 months from a community college and a private religious university in Southern California. All students were given course credit for their participation. Thirty-four participants were eliminated because they endorsed an ethnic background other than Asian or Caucasian. Participants were then eliminated from the study if they produced incomplete Suinn-Lew Asian Self-Identity Acculturation Scale (SL-Asia Scale) or invalid MMPI-2 profiles. One male Asian participant and 29 Caucasian participants (13 men and 16 women) produced incomplete SL Asia Scales, and one male Asian participant produced an invalid MMPI-2 protocol. To keep relatively equal groups of Asians and Caucasians, 86 Caucasians were randomly eliminated from the sample.

The resulting sample (N = 124) included 62 Caucasian and 62 Asian college students. There were 27 men and 35 women in the Caucasian group, and 25 men and 37 women in the Asian group. Seventeen (22.6%) of the Asian sample were Vietnamese, 14 (27.4%) were Korean, 14 (27.4%) were Chinese, 5 (8.1%) were Filipino, 4 (6.4%) were Japanese, 1 (1.6%) was Cambodian, 1 (1.6%) was Thai, and 6 (9.6%) simply referred to themselves as Asian. The mean age for the Caucasian group was 22.10 years (SD = 5.20), and the mean age for the Asian group was 22.35 years (SD = 5.42).

Instruments

Personal Data Sheet. A brief, 12-item questionnaire was administered to each participant for the purpose of obtaining demographic information such as gender, ethnicity, age, family income, educational level of parents, and whether the participant had a history of psychological treatment.

Minnesota Multiphasic Personality Inventory-2 (MMPI-2). The MMPI-2 (Butcher, Dalstrom, Graham, Tellegen, & Kaemmer, 1989) is a revision of the original MMPI. This revision was quite extensive in that the authors eliminated items that were offensive or outdated. Additionally, some items were edited for the purpose of clarification or to remove sexist language. According to Levitt (1990), 394 of the MMPI-2 items were unchanged, 66 were changed in one of the manners previously discussed, and 107 items were new. The only change the O-H scale sustained was the deletion of 3 items, which was not believed to have had a significant effect on the utility of the scale.

The MMPI-2 manual (Butcher et al., 1989) indicated that the test-retest reliability forthe Basic Scales ranges from .58 to .91 for females and .72 to .92 for males. Additionally, estimates of internal consistency range from .34 to .87. No estimates of reliability or internal consistency for the O-H scale were available.

Suinn-Lew Asian Self-Identity Acculturation Scale (SL-Asia Scale). The SL-Asia Scale (Suinn, Ahuna, & Khoo, 1992) is a 21-item, multiple choice questionnaire that is based on the format of the Acculturation Rating Scale for Mexican Americans (Cuellar, Harris, & Jasso, 1980). The items address content such as generation and geographic history, choice of friendships, language, behaviors, identity, and attitudes. Scores on each item range from 1.0, which indicates high Asian identity, to 5.0, which is indicative of high American identification. The authors reported an acceptable level of internal consistency with a Cronbach's alpha of .91. Furthermore, correlation coefficients between SL-Asia scores and demographic data were between .41 and .62. These all reached significance, indicating the SL-Asia Scale has concurrent validity.

A special type of self-fulfilling prophecy that has engendered particular interest among social psychologists is behavioral confirmation, in which the expectations of others induce people to act in ways that are consistent with these expectations (Snyder, Tanke, & Bersheid, 1977). Snyder and his colleagues (e.g., Skrypnek & Snyder, 1982; Snyder, 1981; Snyder, 1992; Snyder & Swann, 1978; Snyder, Tanke, & Bersheid, 1977), who conducted some of the earliest and most-cited studies on behavioral confirmation, offer some excellent examples of how a target's behavior provides behavioral confirmation to a perceiver's initial (and often erroneous) belief. An excellent example comes from their study of the physical attractiveness stereotype. In this study, Snyder, Tanke, and Berscheid (1977) induced a number of college men to believe that they were conversing via tape recorder with an attractive potential female date, and other college men to believe that they were conversing with an unattractive potential female date. By coding and analyzing portions of the interaction, Snyder and his colleagues (1977) concluded that "those (female targets) who were thought to be physically attractive by their perceivers appeared to the observer judges to manifest greater confidence, greater animation, greater enjoyment of the conversation, and greater liking of their partners" (p. 662) than those women believed by their perceivers to be unattractive. Clearly, the women acted in ways that were consistent with the attractiveness stereotype activated in their dyadic partner. These findings suggest that we as human beings, who are the targets of many perceivers in everyday life, may routinely act in ways which are consistent not with our own attitudes, beliefs, or feelings, but rather with the perceptions and stereotypes which others hold of us and our attributes. These results, and others similar to them (e.g., Andersen & Bem, 1981), seem to suggest that the power of others' beliefs over our behaviors—even when those behaviors appear freely chosen—is extremely strong.

Although few, if any, social psychologists doubt that behavioral confirmation occurs, many doubt that it occurs with the frequency that might be assumed given the large literature on the topic. Even when evidence for self-fulfilling prophecies and behavioral confirmation are found, the effects of perceiver expectancies on target behavior tend to be relatively small in magnitude, with average effect sizes ranging from .1 to .3 (Jussim, 1991; Jussim & Eccles, 1995; Madon, Jussim, & Eccles, 1997). Further, the changes in target behavior as a result of perceiver expectancies are not particularly robust, according to Smith, Jussim, and Eccles (1999). These researchers reported, after a longitudinal study of the effects of early teacher expectancy effects on the academic achievement of children and adolescents, that although evidence for initial self-fulfilling prophecies were present, target behavioral confirmation of early teacher expectancies generally dissipated over time. Results such as these cast doubt over the robustness and generality of self-fulfilling prophecies and behavioral confirmation, which Smith and her colleagues (1999) characterize as being "neither powerful nor pervasive" (p. 548).

Procedures

The investigators explained the nature of the study, and provided information as to how the participants' anonymity and confidentiality would be maintained. Once the students gave consent, they completed the Personal Data Sheet, MMPI-2, and SL-Asia Scale according to standardized instructions. Participants were directed to refrain from writing their names on any test material, which was identified by code number only.

The standard validity, clinical, and O-H scales of the MMPI-2 were hand scored according to instructions provided by the manual. Profiles with raw scores greater than 22 on F or more than 29 on Cannot Say (?) were considered invalid and therefore eliminated from the study (n = 1).

Participants were distributed according to their ethnic background, with an approximately equal distribution of men and women in each group. The participants were not matched according to age, SES, history of psychological treatment, and school attended because the tests conducted on each variable failed to yield significant differences on the O-H scale.

Results

TABLE 1
O-H Score by Gender and Ethnicity/Acculturation

	Male			Female		
Ethnicity/Acculturation	*M*	*SD*	*n*	*M*	*SD*	*n*
Asian/Low Acculturation	51.58	10.46	12	52.47	10.46	17
Asian/High Acculturation	49.15	10.40	13	53.90	10.40	20
Caucasian	55.70	16.99	27	52.43	16.99	35

Table 1 provides a summary of the mean O-H scores by gender and ethnicity/acculturation. A high score on O-H was indicative of a strong tendency to exert excessive control on one's hostile impulses, and a low score was suggestive of the tendency to exert scant control. In order to determine whether gender and ethnicity/level of acculturation affect O-H scores, the data were subjected to a 2 x 3 (Gender x Ethnicity/Acculturation Level) factorial analysis of variance (ANOVA).

It was hypothesized that female participants would yield higher scores on O-H than male participants. The result, F (1, 123) = .113, was not significant (p = .575. This indicates that gender did not have a significant effect on O-H scores.

It was further hypothesized that Asian participants who identified strongly with Asian culture would produce significantly higher scores on O-H. This finding was not confirmed by analysis, F (2, 123) = .555. This non-significant finding (p = .575) indicates that O-H scores were not affected by participants' ethnicity or degree of acculturation.

Finally, it was hypothesized that female, Asian identifying, Asian participants would have significantly higher O-H scores than any other group. This hypothesis was also not confirmed by analysis, F (2, 123) = 1.171, ns. No interactive effect between gender or ethnicity/acculturation on O-H was found (p = .314). Scheffe post hoc tests also failed to find any significant differences among the experimental groups, with p values ranging between .784 and 1.000.

A power analysis was conducted to determine whether a lack of participants contributed to the failure to find significant gender and ethnicity/acculturation differences. The power analysis indicated that a sample size of 144 would have been optimal, rather than the 124 present for this study. However, since the *p* values were nowhere close to approaching significance, it is doubtful that the small sample size was to blame.

Since no significant gender or ethnicity/acculturation differences were found, the investigators wanted to ensure that participants' O-H scores, relative to their scores on the Basic Scales, made sense. Consequently, correlation coefficients were conducted between the O-H scale and the Basic Scales of the MMPI-2. Table 2 provides a summary of these findings. Significant positive correlations were found between the O-H scale and scales L and K. Significant negative correlations were found between O-H and F, Scale 2 (D), Scale 7 (Pt), Scale 8 (Sc), and Scale 0 (Si). No significant relationships between O-H and Scale 1 (Hs), Scale 3 (Hy), Scale 4 (Pd), Scale 5 (Mf), Scale 6 (Pa), and Scale 9 (Ma) were found. This pattern of correlations appeared consistent with the theory behind the O-H scale.

TABLE 2
Correlations Between O-H and the Basic Scales of the MMPI-2

	r
L	.31*
F	-.37**
K	.58**
1 (Hs)	-.14
2 (D)	-.38**
3 (Hy)	.03
4 (Pd)	-.04
5 (Mf)	.02
6 (Pa)	-.14
7 (Pt)	-.29*
8 (Sc)	-.26*
9 (Ma)	-.18
0 (Si)	-.48**

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

Discussion

Women were expected to yield significantly higher scores on O-H than men. This was not confirmed by analysis in that there was no significant difference on O-H between genders. Although the model underlying the O-H scale led to the hypothesized difference, the current results confirm research by Bigaggio et al. (1984), Bigaggio and Godwin (1987), and Paulson et al. (1976). This adds to the evidence that in the normal population of college students, men and women do not differ on this measure.

Asians with low acculturation to American culture were predicted to obtain higher scores on O-H than Asians with high American identification or Caucasians. This was not confirmed by analysis, in that no significant differences between these groups were found. Although there was no previous research addressing how Asian individuals would perform on O-H, this finding contradicts the studies that found ethnic differences on O-H (Fisher, 1970; Hutton et al., 1992; McCreary & Padilla, 1977).

Finally, it was predicted that Asian women with low Western identification would yieldhigher scores on O-H than any other group. This hypothesis also was not confirmed. No significant differences across the experimental groups were found.

Several factors may have contributed to the lack of significant findings in the initial analyses. First, the sample may have been too small. As stated earlier, a power analysis suggested a sample size of 144 would have been ideal. However, since the p values indicated that the differences were highly non-significant, it is doubtful that a larger sample size would have yielded significant results.

Another possibility is that the O-H scale may not be a strong measure. This would be consistent with some of the criticisms of O-H (Werner, Becker, & Yesavage, 1983). The authors found that the relationships between the O-H scale and various measures of hostility were very small and did not even begin to approach significance.

Also, the O-H scale may be a more sensitive measure when used on forensic and clinical populations than on the sample used for this study. The O-H scale was originally designed to predict hostile behavior among inmates. Therefore, if a forensic or clinical population were sampled, O-H may be better able to detect differences in gender and ethnicity or both. This would be consistent with the research where significant results were found, especially when ethnicity was studied (Fisher,1970; Hutton et al., 1992; McCreary & Padilla, 1977).

In order to determine whether the O-H scale was conceptually valid for the participants of this group, correlation coefficients were implemented comparing O-H with the Basic Scales of the MMPI-2. These analyses yielded several significant findings. Significant positive relationships were found between O-H and scales L and K. This is not surprising, as these validity scales generally measure one's desire to be perceived as well-adjusted. Several negative correlational relationships were found between O-H and scales F, 2 (D), 7 (Pt), 8 (Sc), and 0 (Si). This indicates an inverse relationship between O-H and these scales. These particular Basic Scales are indicative of admissions of distress in the areas these scales address. Since O-H has often been associated with the desire to appear normal and well-adjusted, it is not surprising that significant inverse relationships were found between these scales and the O-H scale. Therefore, the post-hoc analysis confirmed validity of the scale for this group and strengthened the interpretation that the lack of significant differences was a result of real similarity between groups on the variables studied.

Despite the lack of significant findings in this study, it is still important to continue investigating how Asian individuals perform on the O-H scale. This notion is supported by Greene's (1987) opinion that Asian performance on the MMPI, especially the special scores, needs to be investigated. Nonetheless, it may be that researching the effects of gender and ethnicity on O-H is ineffective. However, before such a conclusion is made, further research involving different approaches to the questions asked in this study is recommended. One such approach would be to conduct a similar study with a clinical or forensic population where the O-H scale may be more sensitive to differences. This is likely to become more realistic as the incidence of Asians in the prison system increases.

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