Culture and Conformity: A Meta-Analysis of Studies Using Asch's (1952b, 1956) Line Judgment Task

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A meta-analysis of conformity studies using an Asch-type line judgment task (1952b, 1956) was conducted to investigate whether the level of conformity has changed over time and whether it is related cross-culturally to individualism–collectivism. The literature search produced 133 studies drawn from 17 countries. An analysis of U.S. studies found that conformity has declined since the 1950s. Results from 3 surveys were used to assess a country's individualism–collectivism, and for each survey the measures were found to be significantly related to conformity. Collectivist countries tended to show higher levels of conformity than individualist countries. Conformity research must attend more to cultural variables and to their role in the processes involved in social influence.

The view has long been held that conformity is to some extent a product of cultural conditions, and it is a stable feature of popular stereotypes that some national groups are conforming and submissive, whereas others are independent and self-assertive (e.g., Peabody, 1985). Likewise, the extent to which dissidence is tolerated in a society will vary at different points in its history, and several commentators have suggested that the relatively high levels of conformity found in experiments conducted in the early 1950s (notably Asch, 1952b, 1956) was in part a product of the McCarthy era (e.g., Larsen, 1974; Mann, 1980; Perrin & Spencer, 1981).

Although Asch's (1952b, 1956) seminal research is often interpreted as demonstrating that conformity is fundamental to group processes (Friend, Rafferty, & Bramel, 1990), Asch was as much concerned with those factors that enabled individuals to resist group pressure, factors which he saw as rooted in a society's values and socialization practices.

> That we have found the tendency to conformity in our society so strong that reasonably intelligent and well-meaning young people are willing to call White Black is a matter of concern. It raises questions about our ways of education and about the values that guide our conduct. (Asch, 1955, p. 34)

He felt that conformity can "pollute" the social process and that it is important for a society to foster values of independence in its citizens.

The cultural conditions underpinning conformity have, then, been a long-standing concern and are important for theories of social influence. Yet, as Moscovici (1985) noted, cultural aspects of conformity have been relatively neglected, and only two previous reviews (Furnham, 1984; Mann, 1988) have been specifically devoted to them. These issues have been addressed from two perspectives: cross-cultural and historical. Cross-cultural studies are typically cross-national comparisons, although studies that have compared different cultural groups within a society can also be included in this category. The historical perspective is represented by the literature concerned with whether conformity has changed over time in the West, particularly in the United States. This article shows that consistent findings have not emerged from these two bodies of literature but that the methodological basis of most studies is seriously flawed and that little attention has been paid to the cultural variables that mediate conformity. We see the construct of *individualism–collectivism* (Triandis, 1990) as potentially of value in this regard, and we see meta-analysis as a way of overcoming many of the methodological problems. The body of this article is devoted to a meta-analysis of Asch-type conformity studies where the relationship between conformity and measures of individualism–collectivism is explored. We conclude by discussing the degree to which studies using the Asch (1952b, 1956) paradigm can encompass the meaning of *conformity* within different cultures.

Review of Studies on Culture and Conformity

Comparisons Across Cultures

Cross-cultural studies of conformity can be divided into three types: (a) comparisons of subsistence economies, (b) comparisons of developed economies, and (c) comparisons of cultural groups within a society. Comparisons of subsistence economies are almost entirely due to Berry (1967, 1974, 1979; Berry & Annis, 1974), who has proposed a link between the mode of subsistence and a society's values and social behavior. He builds on work by Barry, Child, and Bacon (1959), who found that the socialization practices of high food-accumulating societies (pastoral or agricultural peoples) emphasized obedience and responsibility, whereas those of low food-accumulating societies

(hunting and fishing peoples) emphasized independence, self-reliance, and individual achievement. They argued that this difference resulted from the different needs of these two types of economy: High food-accumulating societies need individuals who are conscientious and compliant, whereas low food-accumulating societies need individuals who are individualistic and assertive. Berry (1967) argued that these differences should also be reflected in conformity behavior and, consistent with this hypothesis, he found higher rates of conformity among the Temne of Sierra Leone, a high food-accumulating society with strict disciplinarian socialization practices, compared with the Eskimo of Baffin Island, a low food-accumulating society whose socialization practices are lenient and encourage individualism. His subsequent research in Australia and New Guinea (Berry, 1974) and among North American Indians (Berry & Annis, 1974) obtained weaker support for the theory (see also Berry, 1979), although additional support comes from Munroe, Munroe, and Daniels (1973) who compared three Kenyan samples.

Whereas Berry's (1967, 1974, 1979) theory suggests a link between cultural values and conformity, its scope is limited to subsistence economies whose culture is relatively free from outside influence. When he compared "traditional" samples with samples having greater exposure to Western society (i.e., with experience of European education, urbanization, and wage employment), there were indications that exposure to Western values leads to a weakening of traditional norms and to less cross-cultural variation in conformity (Berry, 1979).

Among developed economies, several studies report cross-cultural differences that had been anticipated from the relative value attached to conformity in the societies concerned. Milgram (1961) found that Norwegian students conformed more than French students; replications of the Asch (1952b, 1956) experiment in Zimbabwe (Whittaker & Meade, 1967), in Ghana (McKissack, 1971), and in Fiji (Chandra, 1973) found higher levels of conformity compared with Asch; a replication in Germany (Timaeus, 1968) found a lower level of conformity. There is evidence for greater conformity among the Chinese (Huang & Harris, 1973; Meade & Barnard, 1973) and among Brazilians (Sistrunk & Clement, 1970; Sistrunk, Clement, & Guenther, 1971) when compared with Americans.

Anticipated differences, however, have not always emerged. Whittaker and Meade (1967) found that the level of conformity among samples from Brazil, Lebanon, and Hong Kong Chinese were all comparable with Asch (1952b). Claeys (1967) found that conformity among a sample of students in Zaire was no higher than a comparable U.S. study, despite the high value placed on conformity to group norms in that society. Some authors have remarked on the replicability and cross-cultural stability of the Asch (1952b, 1956) experiment: For example, replications in Kuwait (Amir, 1984), Brazil (Rodrigues, 1982), France (Askevis-Leherpeux & Zaleska, 1975; Avramov-Kiwetz & Gaffié, 1974), and Portugal (Neto, 1995) have all produced results similar to Asch.

Studies conducted in Japan have been inconclusive. Frager (1970) replicated Deutsch and Gerard's (1955) study with Japanese students and found a lower level of conformity compared with the U.S. results and some evidence for anticonformity.

This may have been because the majority were strangers—Williams and Sogon (1984) found a much higher level of conformity when the majority were friends than when they were strangers. Matsuda (1985), however, did not find expected differences in conformity when three types of relation between the individual and majority were compared.

Few studies have compared cultural groups within a society. There is a small and inconsistent literature concerning differences between Blacks and Whites in the United States. Iscoe, Williams, and Harvey (1964) found less conformity among Black women compared with White women, there being little difference among men, and yet both Sistrunk (1971) and Long (1970) found that Blacks conformed more than Whites. Schneider (1970) found no overall difference, although Whites were more influenced by a White majority than a Black majority, whereas the ethnic composition of the majority had little effect for Blacks.

There remain a few isolated findings. Boldt (1976) compared two North American Anabaptist groups: one group practices communal living and the other does not. He had expected the former to show higher conformity, but no significant difference was found. An earlier American study (Becker & Carroll, 1962) found that Puerto Rican boys conformed more than Whites. In Britain, Perrin and Spencer (1981) found much higher conformity among unemployed West Indians compared with White students. Chandra (1973) found Fijian Indians conformed more than native Fijians.

Comparisons Within a Culture at Different Periods in Its History

A second line of evidence for the cultural roots of conformity comes from the observation that replications of conformity experiments within a society produce different results at different points in time. Larsen has conducted three replications of the Asch (1956) experiment (Larsen, 1974, 1990; Larsen, Triplett, Brant, & Langenberg, 1979) and has interpreted the fluctuating levels of conformity as reflecting sociopolitical changes in American society. Thus, the lower level found in 1974 (among men) compared with Asch was attributed to the more questioning attitude of students of the Vietnam era, whereas the higher level found in 1979 reflected the decline in student activism and a stronger career orientation (see also Larsen, 1982). In 1988, conformity had declined again somewhat, and this was seen as possibly reflecting the increase in protest activities.

In a similar vein, Perrin and Spencer (1981) argued that there was a greater emphasis on individuality and questioning the status quo in universities in the 1980s compared with when Asch conducted his research in the 1950s, and this change explained why they were not able to replicate the Asch (1956) experiment using British students. They felt that Asch's study was a "child of its time" (Perrin & Spencer, 1980, p. 405) and not a "rock-bottom" (p. 406) replicable phenomenon. Nicholson, Cole, and Rocklin (1985) also replicated Asch's experiment with British students and found some evidence for conformity, albeit at a low level, and explained the difference between their results and those of Perrin and Spencer as possibly because of increased cohesiveness in Britain arising from the Falklands war. They

found a somewhat higher level of conformity in a U.S. sample, although the difference was not statistically significant. More recently, Lalancette and Standing (1990) did not obtain any conformity in a variant of the Asch paradigm with Canadian students.

In contrast to these studies, other recent studies of university students conducted in Britain (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Vine, 1981), in Belgium (Doms & van Avermaet, 1981, 1985), in Holland (Vlaander & van Rooijen, 1985), and in Portugal (Neto, 1995) have all found reasonably high levels of conformity, comparable to Asch (1952b, 1956).

Finally, Lamb and Alsifaki (1980) argued that levels of conformity have been steadily on the increase, drawing on Riesman, Glazer, and Denney's (1950) hypothesis that modern industrial societies are characterized by increasing numbers of "other-directed" types more easily influenced by peer pressure. They found a higher level of conformity than Asch (1952b, 1956) and Larsen (1974).

Summary and Implications

On the face of it, then, the research literature does not provide clear evidence of a systematic relationship between cultural conditions and conformity. Authors have variously reported relationships across cultures in the expected direction, in the opposite direction to what has been expected, or have remarked on the consistency of the effect across cultures. Likewise, some have found that the level of conformity varies across time, whereas others have been impressed by its stability.

There are several likely reasons for this inconsistency. Some investigators have researched cross-cultural differences by conducting studies themselves in different cultures and have thereby exercised control over the procedure and sampling to eliminate as far as possible potential sources of confounding (Berry, 1979; Whittaker & Meade, 1967). Typically, however, investigators have compared their results with one of the classic studies to draw conclusions concerning cross-cultural differences. Such comparisons are always hazardous, and in some cases investigators have overlooked potentially important differences: for example, the use of a Crutchfield (1955) apparatus rather than confederates in a face-to-face situation (Frager, 1970), differences in the size of the majority (Larsen et al., 1979; Williams & Sogon, 1984), differences in the stimuli (Claeys, 1967; Matsuda, 1985), differences in the response made by the majority (Claeys, 1967; Matsuda, 1985), differences in the gender of the participant (Larsen et al., 1979; Matsuda, 1985), and differences in the relationship of the majority to the participant (Chandra, 1973).

There is frequently little appreciation of sampling variability, and statistical tests are often not performed or are inappropriate (e.g., Chandra, 1973; Whittaker & Meade, 1967), despite the fact that most investigators, including Asch (1952b, 1956), have remarked on significant individual differences. For example, the width of the 95% confidence interval (CI) for the error in Asch (1952b) is ±10%, so it would not be surprising to find that degree of variability in the results of an exact replication.

The focus on classic studies for comparison ignores other relevant evidence. Asch's (1952b, 1956) experiments have been frequently replicated in the United States (as the reported literature search reveals), and these findings should be taken into consideration.

Perhaps the most important criticism of much of this research is that explanations for cross-cultural differences are frequently post hoc, and there is no direct assessment of any intervening variables that are presumed to mediate the level of conformity. So, for example, it is largely a matter of speculation whether differences in conformity are due to an increase in the number of other-directed types (Lamb & Alsifaki, 1980), social values giving priority to group preferences (Chandra, 1973), reaction against conformity pressures of society (Frager, 1970), an ethos encouraging questioning of the status quo and reasoned individuality (Perrin & Spencer, 1981), or increased cohesiveness (Nicholson, Cole, & Rocklin, 1985). There is in general within this literature a lack of theoretical analysis of the process underlying conformity behavior and the relevance of cultural conditions to that process.

A meta-analysis of conformity studies can address many of these problems. First, the level of conformity within a culture can be estimated from all relevant studies. Second, the impact of various potential moderator variables (e.g., size of the majority and nature of the stimuli) can be assessed and controlled. Third, the use of appropriate statistical methods (Hedges & Olkin, 1985) permits estimation of the relevant population parameters. Fourth, an important goal of this study has been to relate levels of conformity to measures of cultural values which theory suggests might also mediate responses to group pressure.

Individualism–Collectivism

Moscovici (1980) has argued that when majorities exert social influence, they produce compliance. That is, individuals will publicly accept the majority view while privately retaining their initial view, motivated by a desire not to appear deviant or to risk possible negative sanctions from the majority, such as ostracism or ridicule (cf. the process of normative influence described by Deutsch & Gerard, 1955). There is a good deal of support for this view (e.g., Turner, 1991), at least as an account of the process in Asch-type studies, where group pressure is exerted on judgments of otherwise relatively unambiguous stimuli. If we look for cross-cultural variations in conformity behavior in this type of situation, then we should look to the value placed in different societies on the group as compared with the individual. This seems to be best reflected in the concept of individualism–collectivism, which numerous authors have found useful in describing cultural differences (Kagitcibasi & Berry, 1989; Kim, Triandis, Kagitcibasi, Choi, & Yoon, 1994; Triandis, 1990). Triandis has summarized what he sees as the essence of the concept of individualism–collectivism:

> In individualist cultures, most people's social behavior is largely determined by personal goals that overlap only slightly with the goals of collectives such as the family, the work group, the tribe, political allies, co-religionists, fellow countrymen and the state. When a conflict arises between personal and group goals, it is considered acceptable for the individual to place personal goals ahead of collective goals. By contrast, in collectivist cultures social behavior is determined largely by goals shared with some collective, and

if there is a conflict between personal and collective goals, it is considered socially desirable to place collective goals ahead of personal goals (Triandis, 1990, p. 42).

Individuals from collectivist cultures, then, should be more likely to yield to the majority, given the higher value placed on harmony in person-to-group relations.

In recent years, three multinational surveys have sought to elucidate the significant value dimensions on which cultures vary (Hofstede, 1980, 1983, 1991; Schwartz, 1992, 1994; Trompenaars, 1993); each has identified a dimension closely related to individualism–collectivism, and these provide quantitative indices that can be related to conformity behavior.

Hofstede (1980) analyzed data from attitude surveys conducted in the subsidiaries of a large multinational U.S. corporation. Employees were surveyed twice, first in 1967–1969 and again in 1971–1973, resulting in a data bank of 117,000 questionnaires from 88,000 respondents in 67 countries. In more recent analyses of the dimensions of culture, Hofstede (1991) used data from 50 countries and three regions within which there were a sufficient number of respondents from a range of occupational categories.

Hofstede (1980) identified four dimensions of national culture of which Individualism–Collectivism is the one relevant to our concern with conformity. Hofstede concluded that in individualistic cultures, the self is conceived as separate from society and identity is determined by individual achievement; whereas in collectivist cultures, self and identity are conceived in terms of group membership and the position of the group in society. In collectivist cultures, there is a belief in group decisions rather than individual decisions and an emotional dependence on organizations and institutions.

Schwartz (1992, 1994) surveyed values in 86 samples drawn from 41 cultural groups in 38 countries. In most countries, two occupational groups were sampled: teachers and students. Respondents were asked to indicate the importance of 56 values selected to represent 11 potentially universal types. Schwartz conducted both individual-level analyses, in which the data from each country are analyzed separately (Schwartz, 1992) and, in the same way as Hofstede (1980), culture-level analyses on country means (Schwartz, 1994).

Several of the dimensions emerging from Schwartz's (1994) analysis are conceptually close to the concepts of *individualism* and *collectivism*. *Conservatism* includes values primarily concerned with conformity, security, and tradition. Those who strongly endorse this dimension emphasize the maintenance of the status quo, propriety, and the avoidance of actions that might disturb the traditional order. Opposed to conservatism were individualistic value types, which were found to cluster into two subtypes: Affective Autonomy, which emphasizes hedonism and stimulation (e.g., exciting life and pleasure), and Intellectual Autonomy, which emphasizes self-direction (e.g., creativity and curiosity).

Schwartz (1994) was able to compare his dimensions with those obtained by Hofstede (1980) through an analysis of the 23 countries common to both samples. As expected, Hofstede's dimension of individualism was correlated positively with

Affective Autonomy and with Intellectual Autonomy, and it was correlated negatively with conservatism.

A third questionnaire survey had been conducted by Trompenaars (1993) whose interest, like that of Hofstede (1980), is in business organizations and whose sample was obtained from employees of 30 multinational corporations spanning 50 countries. His sample size numbers some 15,000, of whom 75% were managers and 25% general administrative staff (such as typists and secretaries). Scales measuring five dimensions of national culture were constructed and one of these, consisting of six items, was Individualism–Collectivism, which contrasted individual freedom and individual development with caring for others. Another six-item scale, also used in the present analysis, was Achievement–Ascription, which assessed whether the individual believed that status should be accorded on the basis of individual achievement or ascribed on the basis of existing hierarchies.

Moderator Variables

Our initial review of the literature indicated that the overwhelming proportion of relevant studies conducted outside the United States, and especially in non-Western countries, were based on Asch's (1952b, 1956) classic studies. For this reason, we decided to restrict the meta-analysis to "Asch-type" studies, thereby limiting the number of potential moderator variables to a much greater extent than is usually possible in meta-analytic reviews. We included only studies which used Asch's line judgment task, in which participants are asked to name which of three comparison lines is the same length as a standard. We also restricted the sample to group pressure experiments in which the participant responds as a member of a group who are all physically present and receives feedback supposedly of the responses of the other group members. We excluded "fictitious group norm" studies (e.g., Berry, 1967; Mugny, 1984, 1985), in which participants are given information supposedly of other group members who had previously completed the task but are not now present. Given these restrictions (additional criteria for the inclusion of a study are described in Method), the following potential moderator variables were examined, in addition to the measures of individualism–collectivism and the date of publication.

Type of Group Pressure Paradigm

Of group pressure experiments, we included both those using an Asch (1952b, 1956) paradigm, where participants are in face-to-face interaction with a majority who are confederates of the experimenter, and those using a Crutchfield (1955) paradigm, where groups of participants are placed in individual booths and are given false feedback of the responses of the other group members. There is evidence that the level of conformity is higher in face-to-face than in simulated groups (Deutsch & Gerard, 1955; Levy, 1960).

Size of Majority

Asch (1951) found that there was very little conformity when the majority consisted of one or two individuals, but there was

a dramatic increase when the majority numbered three. Further increases in majority size above three did not result in increasing amounts of conformity. Asch believed that it was the perception of group consensus that results in conformity and that a majority of three is sufficient for this perception to arise; any increase in majority size above three would not be expected to have an impact. This conclusion, however, has been challenged by Latané and Wolf (1981) and Tanford and Penrod (1984). Latané and Wolf found that the data from Gerard, Wilhelmy, and Conolley (1968) conformed to a negatively accelerating power function based on Latané's (1981) social impact theory. Tanford and Penrod, in a meta-analysis of a sample of conformity studies, analyzed the relationship between majority size and conformity by comparing a simple linear model, Latané and Wolf's social impact function, and an S-shaped growth function derived from their social influence model (SIM). They found that the SIM function provided the best fit to the data and was also preferred to the social impact model on theoretical grounds. For these reasons, we have used the SIM function to model the effect of majority size in our meta-analysis.[1]

Relation of the Participant to the Majority

Allen (1965) argued that the greater the similarity between the individual and the majority, the more likely the majority will be perceived as an appropriate reference group and hence, the greater the level of conformity. Similarly, Turner (1991) has argued that conformity will be higher when the majority is categorized as an in-group rather than an out-group, and several studies support these predictions (e.g., Abrams et al., 1990; Gerard, 1953; Linde & Patterson, 1964). The vast majority of group pressure studies use students as both participants and majority group members, and therefore a high degree of similarity is typically present (Allen & Wilder, 1977). However, in some studies the majority are strangers, in others they are acquaintances and friends, and in a few they are explicitly identified as either in-group or out-group members; these variations may be expected to have an effect on the level of conformity.

Anonymity of Response

In some of the studies that we included (Abrams et al., 1990; Gerard et al., 1968; Schulman, 1967) participants believed their responses would be known only to the experimenter. Because conformity in Asch-type experiments is mainly compliance (Turner, 1991), we would expect the level of conformity to be higher when the participant believes that his or her response will be available to the majority (Allen, 1965).

Stimulus Materials

There were two phases to Asch's research on conformity. The first phase was reported in his *Social Psychology* (Asch, 1952b) textbook and, for all the studies reported there, the line judgment task involved 12 trials, each having a different length of standard line (ranging from 1 in. [2.54 cm] to 9 in. [22.86 cm]) and a different set of comparison lines. On 5 of the 12 trials, the majority gave the correct response; the remaining 7 were the

critical trials on which the majority gave the incorrect answer. The magnitude of the error made by the majority ranged from 0.25 in. (0.64 cm) to 1.75 in. (4.45 cm).

In the second phase of his research, initial results of which were published in Asch (1951) and the full program in his monograph (Asch, 1956), Asch changed the stimulus materials. The new set consisted of nine stimuli shown twice, to enable comparison between the first and second half of the series, and systematic variation of extreme and moderate errors. The resulting materials consisted of 18 trials, of which 12 were critical. The length of the standard ranged from 2 in. (5.08 cm) to 10 in. (25.40 cm), the magnitude of error from 0.75 in. (1.91 cm) to 1.75 in. (4.45 cm).

Whereas most replications of Asch have used the 1956 materials, a significant number have used the 1952b materials. Moreover, we have included some studies that have made minor modifications to Asch's stimuli and some that have used their own stimulus materials.

Two characteristics of these stimulus materials have been coded as potential moderator variables. The first is the ratio of the number of critical trials to the total number of trials, reflecting the consistency of the majority response. Tanford and Penrod (1984), following Moscovici (1976, 1980), found some evidence that the higher the proportion of deviant responses by the majority, the higher the level of conformity, and they included this variable in their meta-analysis. The second variable is the magnitude of the error made on average by the majority, reflecting the ambiguity of the stimulus. Asch (1956) found that the greater the magnitude of the error, the less conformity.

Gender of Participants

The question of gender differences in influenceability has been extensively researched and subjected to a number of reviews (Cooper, 1979; Eagly, 1978; Eagly & Carli, 1981). As far as conformity in group pressure experiments is concerned, the conclusion from these reviews has been that women show somewhat higher levels of conformity than men. Consequently, we have included the proportion of women as a moderator variable.

The purpose of the present investigation, then, is to conduct a meta-analysis of conformity studies to determine whether levels of conformity are related to these dimensions of cultural values that are related to individualism–collectivism, after controlling for relevant moderator variables.

Method

Literature Search

We conducted computer searches using the keywords *conformity* and *group influence* of the PsycLIT database to cover the period January 1974–March 1994, of the PsycINFO database to cover the period 1967–1973, and of Dissertation Abstracts Online to cover January 1952–March 1994 (but restricted to either psychology or sociology dissertations). We consulted *Psychological Abstracts* using the same

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[1] The function used was $I = \exp(-4\exp[-N^{1.75}])$, where I is the level of conformity and N is the majority size (Tanford & Penrod, 1984, p. 198).

keywords to cover the period 1952–1966. In addition, we consulted the reference lists of major reviews of the conformity literature (Allen, 1965, 1975; Furnham, 1984; Mann, 1980; Moscovici, 1985; Weisenthal et al., 1978), of previous meta-analyses (Cooper, 1979; Eagly & Carli, 1981; Tanford & Penrod, 1984), and of all studies located.

We sought replications of the Asch (1952b, 1956) experiment but included experiments that had used a Crutchfield (1955) apparatus. Accordingly, the criteria for inclusion were that (a) the task involved judging which of three comparison lines was the same length as a standard, (b) the experiment used a group pressure paradigm in which the participant is confronted with the erroneous responses of a majority who are also present, (c) the participant is alone against a unanimous majority, (d) the majority consists of at least two individuals, (e) the participants are adults (i.e., at least 17 years of age), and (f) the participants are not suffering any form of psychopathology or severe learning disability. We included studies, and different experimental conditions of studies, that varied in terms of the moderator variables of interest: that is, majority size, relation of the participant to the majority group, whether a participant's response would be known to the majority, the gender of the participant, and stimulus materials that varied in terms of the consistency of the deviant response by the majority and in terms of the average magnitude of error. We, however, excluded studies (or experimental conditions of studies) that introduced other potential moderator variables: for example, asking the participant to first write down his or her answer (Deutsch & Gerard, 1955), offering a reward to the group that is most accurate (Deutsch & Gerard, 1955; Frager, 1970; Gorfein, Kindrick, Leland, McAvoy, & Barrows, 1960; Hornik, 1974), removing the stimuli before eliciting the responses (Deutsch & Gerard, 1955), showing either a violent or peaceful film before the judgment task (Hatcher, 1982), or varying the instructions and using a different task first (Wagner & Shaw, 1973). We included two of Asch's (1956) experiments that introduced minor changes to the standard procedure which he found had no significant effect: changing the thickness of the stimulus lines (Asch, 1956, Experiment 3) and adding a warning that the correct lines would be identified at the end of the series (Asch, 1956, Experiment 9). In some studies, overall results were taken across conditions where there were negligible differences (Cohen & Lee, 1975; Conger, 1973; Critchlow, Herrup, & Dabbs, 1968; Frager, 1970; Gerard & Rotter, 1961; Long, 1967; Schuman, 1970; Toder & Marcia, 1973).[2] We included the studies by Berkhouse (1965) and Long (1967, 1970, 1972) where control data was obtained by first getting participants to complete the line judgment task in the absence of group pressure. Where participants were divided on the basis of an individual difference variable, the combined result across groups was used (Avramov-Kiwetz & Gaffié, 1974; Brassard, 1986; Costanzo, 1970; Moeller & Applezweig, 1957; Nikols, 1965; Ryan, 1983; Stamps & Teevan, 1974; Toder & Marcia, 1973). Details of two studies by Sako (as cited in Matsuda, 1985, and Williams & Sogon, 1984, respectively) were obtained from secondary sources because the primary sources could not be obtained. Nine studies that met the criteria for inclusion could not be used because necessary details of the results were not reported (Green, 1967; Gruen, 1961; Hunt, Goldberg, Meadow, & Cohen, 1958; R. W. Johnson & Mac-Donnell, 1974; Maloff & Lott, 1962; Mertesdorf, Lueck, & Timaeus, 1969; Phelps & Meyer, 1966; Shames, 1981; Whitman, 1961).

Where a study had manipulated a variable that is used here as a moderator variable, the different experimental conditions were entered separately, so its effects could be estimated and controlled for. This occurred for manipulations of (a) majority size (three studies, e.g., Gerard et al., 1968), (b) group pressure paradigm (Deutsch & Gerard, 1955), (c) relation of the participant to the majority (six studies, e.g., Linde & Patterson, 1964), and (d) availability of response to the majority (two studies, e.g., Schulman, 1967). Likewise, results for men were represented separately than results for women where possible: If the

study used both men and women but the report did not allow the results to be disaggregated, the percentage of women was recorded to be used as a moderator variable. Several authors reported replications for different samples, either from the same country (Asch, 1952b, 1956; Chandra, 1973; Doms & van Avermaet, 1985; Perrin & Spencer, 1981; Rodrigues, 1982) or from different countries (Nicholson et al., 1985; Whittaker & Meade, 1967). For these studies, each sample was entered separately in our analyses.

The inclusion of several results for a single study, either reflecting different experimental conditions or different samples, would have created nonindependence in the data to varying degrees. Whereas independence is assumed in the analysis (Hedges & Olkin, 1985), the use of several observations from the same study could not be avoided if the effect of moderator variables was to be estimated and systematic cross-cultural variation was to be assessed. Hedges (1986) has argued that multiple effect sizes do not markedly affect the precision of the analysis, and Dindia and Allen (1992) argued that nonindependence need not necessarily be avoided.

In total, 68 reports concerning 133 separate experiments and a total of 4,627 participants were used in this analysis. For ease of exposition, we refer to these as *studies* in the remainder of this article. Although 97 of these were conducted in the United States, altogether studies drawn from 17 different countries were found.

Coding of Variables

For each experiment, the following information was coded: (a) the country in which the experiment was conducted; (b) the year in which the study was conducted (where this was not given, it was taken as 2 years before the publication date in the case of articles and 1 year before the date of submission in the case of doctoral dissertations); (c) the type of experimental paradigm (Asch-type, i.e., face-to-face using confederates; or Crutchfield-type, i.e., individual booths with false feedback of other group members' responses); (d) majority size;[3] (e) the relation

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[2] Gerard and Rotter (1961) used a 2 × 2 design manipulating whether the participant believed that he or she would complete a further task with the group in the future and whether that task would be of the same or different type. Long (1967) varied whether the confederates were of superior or subordinate rank with one group of participants and whether they were peers or of superior rank with another group. Schuman (1970) represented the confederates as either patients, technicians, or physicians to participants who were either patients or technicians. Critchlow, Herrup, and Dabbs (1968) varied the style of dress of the experimenter. Conger (1973) compared three conformity paradigms in a within-subjects design in a counterbalanced order. Frager (1970) varied the distance between the standard and comparison lines. Toder and Marcia (1973) varied whether the confederates were dressed as "hippy" or "straight." Cohen and Lee (1975) gave false feedback on a prior task, so the participant either succeeded or failed and the confederates either succeeded or failed.

[3] In some of Asch's experiments, it is apparent that the size of the majority varied from trial to trial, and his reporting is at times inconsistent. For example, Asch (1951) described the group as consisting of 8 individuals, one of whom is the unknowing participant, yet later in the article he tabulates the results under a majority size of 8. Asch (1952b, 1955) described the groups as consisting of between 7 and 9 individuals, including the unknowing participant. Asch (1956) described the majority as consisting of between 7 and 9 individuals, although "in a few instances the majority had only five or six members" (p. 5). We have taken the majority size in his basic experiments to be 8. Asch (1951) reported results for varying sizes of majority, the largest being 16. However, when this article was reprinted in a book of readings (Asch, 1952a), Asch changed the relevant table and made appropriate changes in the text, so the largest majority size was 10–15 rather than 16.

of the majority to the participant (acquaintances, strangers, out-group members, and both in-group and out-group members); (f) whether the participant's response was available to the majority; (g) the stimulus materials (Asch, 1952b, with or without minor modification; Asch, 1956, with or without minor modification; or unique ones); (h) the total number of trials; (i) consistency, the ratio of critical trials to the total; (j) stimulus ambiguity, the average error in inches (centimeters); (k) the percentage of female respondents; and (l) the participant population.

Studies were coded by the two authors independently. Because the task involved only correctly recording details of the studies, rather than judgment, the few disagreements were errors resolved by checking the original source.

Computation and Analysis of Effect Sizes

Hedges and Olkin (1985) have advocated the use of g, the difference between the means of the experimental and control groups divided by the pooled within-group standard deviation (SD), as a measure of effect size. Such a measure assumes homogeneity of error variance (i.e., the population variance for the experimental group equals that of the control group), and this justifies the use of a pooled within-group SD. In Asch-type conformity experiments, the assumption of homogeneity of error variance is not justified. It is a characteristic of the paradigm that the line judgment task is unambiguous, and this is demonstrated by controls making virtually no errors. Hence the results for control groups typically have near zero means and variances. However, there are typically significant individual differences in response in the experimental group, resulting in nonzero variance. For this reason, our measure of effect size used the SD of the experimental group as the divisor.[4] The numerator was the difference between the experimental and control group means. Even though the control group mean was typically near zero, it was appreciably higher in two studies (Claeys, 1967; Seaborne, 1962), and therefore it was desirable to take it into account.[5] For one study (Timaeus, 1968), the estimate of effect size was derived from the p value associated with a nonparametric test (Holmes, 1984).

Because our measure of effect size used only the SD from the experimental group, rather than a pooled estimate, some modifications were needed to the formulas recommended by Hedges and Olkin (1985) for fitting general linear models to effect sizes. Effect sizes are treated as noncentral t variates based on f degrees of freedom (df), and for our measure the df is $n_e - 1$ rather than $n_e + n_c - 2$ assumed in Hedges and Olkin's treatment (where n_e equals the number in the experimental group and n_c equals the number in the control group). This required modification to two of the formulas recommended by Hedges and Olkin; the modifications were readily derived from the general properties of the noncentral t distribution (N. L. Johnson & Welch, 1940; Owen, 1968). First, the expected value of an effect size is a biased estimate of the relevant population parameter, and this bias can be significant especially when df are small. We have followed Hedges and Olkin in converting the effect size (g) into an unbiased estimate (d), but we have ensured that the formula used for correcting the bias is based on the appropriate df.[6] Second, the evaluation of the effect of moderator variables on effect sizes was accomplished by deriving weighted least squares estimates of regression coefficients, where each effect size is weighted by

the reciprocal of its variance (Hedges & Olkin, 1985, pp. 173–174). We ensured that the formula for the variance of the effect size was based on the appropriate number of df.[7]

The sum of squares error statistic from the weighted least squares regression, Q_e, has an approximate chi-square distribution with $k - p - 1$ df, where k is the number of effect sizes and p is the number of predictor variables, and provides a test of model specification. If the hypothesis of correct model specification is rejected (i.e., Q_e exceeds its critical value), then the results must be treated with caution.

Where homogeneity was not obtained, we identified outliers from standardized residuals and then sequentially eliminated outliers until homogeneity was obtained. The proportion of studies that need to be removed to attain homogeneity is an indication of the extent to which heterogeneity is a result of the presence of a few aberrant values (Eagly, Makhijani, & Klonsky, 1992; Hedges, 1987). Also, studies thus identified as outliers can be inspected for any peculiar characteristics.

Results

Study Characteristics

A table of the studies, their effect sizes, and principal features is given in Appendix A; the characteristics of this sample are summarized in Table 1. The main features were (a) the large majority of studies used students as participants, only 15 having nonstudent samples; (b) the studies were drawn from 17 countries, although more than two thirds were conducted in the United States; (c) more than two thirds used an Asch-type paradigm using confederates in face-to-face interaction, and the remainder used a Crutchfield-type paradigm; (d) the distribution of majority size was bimodal: Just over one third used a majority of three, reflecting Asch's (1955) belief that this number was sufficient, and one sixth used a majority of eight, this being the number used in Asch's main studies; (e) the majority consisted of strangers (but probably student peers), for the large majority of studies where information was available; (f) a minority of studies ($n = 14$) used a procedure

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[4] Asch (1956) chose to summarize his results by expressing the total number of errors made by all participants as a proportion of the total number of trials. Although this statistic is often misinterpreted (Harris, 1985), nevertheless it has often been used in replications, and authors frequently do not report SD. In 33 studies, it was not possible to determine the SD. However, from the 41 studies where the SD was available, we found that the SD was highly correlated with the number of critical trials ($r = 0.86$), and therefore for studies where the SD was not available, we used the regression equation to provide an estimate.

[5] Of the 75 studies, data were available from a total of 24 separate control groups. In several studies, a single control group was deemed sufficient for several experiments (e.g., Asch, 1956), and in these cases the control group mean was used to adjust the relevant experimental group means. Thirty-seven studies did not use a control group, but they all used either the Asch (1952b) or the Asch (1956) stimulus materials. We decided to use the data from the relevant Asch control group to adjust the experimental group means for these studies ($m = .074$ for Asch, 1952b; $m = .005$ for Asch, 1956).

[6] The correction factor is $c(m) = 1 - [3/(4n_e - 5)]$, where n_e equals the number in the experimental group (Owen, 1968).

[7] The reciprocal of the variance was given by $w_i = [2n_i^e(n_i^e - 1)]/[2(n_i^e - 1) + n_i^e d_i^2]$, where n_i^e equals the number in the experimental group for the ith study and d_i equals the corrected effect size for the ith study.

Presumably, it had proved impossible to assemble 16 confederates, although that was the number originally intended, and the number that could be assembled varied from trial to trial. We took the number as 13. Some subsequent reports and secondary analyses of Asch's data have not noticed this change (e.g., Latané & Wolf, 1981; Tanford & Penrod, 1984).

Table 1
Summary of Study Characteristics

Variable and class	Value	Variable and class	Value
Country		Modified Asch (1956)	18
United States	97	Unique	40
Great Britain	10	Consistency	
Japan	5	Less than 50%	4
Belgium	4	50%–59%	33
Brazil	3	60%–69%	66
France	2	70%–79%	3
Fiji	2	80% and higher	26
Canada	1	Majority size	
Holland	1	2	5
Germany	1	3	49
Hong Kong	1	5	8
Portugal	1	4	23
Zimbabwe	1	6	9
Zaire	1	7	8
Ghana	1	8	21
Kuwait	1	9	1
Lebanon	1	13	1
Mean average error (in.)	1.18	Not available	8
Not codable	20	Percentage of women participants	
Relation of majority to participant		All men	65
Acquaintances/friends	10	26%–50%	10
Strangers	78	51%–75%	7
Out-group members	12	All women	29
Mix of in-group and out-group	3	Not codable	22
Not codable	30	Participant population	
Participant's response known to		Students	105
majority		Other	15
Known	119	Not codable	13
Not known	14		
Stimulus materials		Experimental paradigm	
Asch (1952b)	18	Asch-type	94
Modified Asch (1952b)	6	Crutchfield-type	39
Asch (1956)	51		

Note. For categorical variables, the numbers in the table represent the frequency of studies in each class. Median publication year was 1968.

where the majority were not given feedback on the participant's response; (g) half the studies used Asch's (1956) stimulus materials, some with minor modifications, although a significant minority of replications (n = 24) used Asch's (1952b) pilot materials rather than those developed for the main program of his research; and (h) information on the gender of the participants was not available in one sixth of the studies, and for those where there was information, more than one half used all men and a quarter used all women.

Effect Sizes

Table 2 gives a stem-and-leaf display of the 133 effect sizes (d). The distribution is somewhat positively skewed, four studies providing particularly large effect sizes (Chandra, 1973, Indian sample, d = 3.20; Costanzo & Shaw, 1966, female sample, d = 2.56; Whittaker & Meade, 1967, Zimbabwe sample, d = 2.72; Williams & Sogon, 1984, peer condition, d = 3.11). The unweighted mean effect size was d = 1.06, and the median was d = 0.96; the weighted

mean effect size was d = 0.92 (95% CI = .89 to .96). The typical conformity study using Asch's (1952b, 1956) line judgment task, then, has an effect size just under 1 SD.

Many writers follow Asch (1952b, 1956) in summarizing results in terms of percentage error—the proportion of critical trials on which participants conformed—and on this measure the mean was 29%, ranging from 0% to 60%. Studies that strictly replicated Asch (1956) in using precisely Asch's stimuli and using confederates had an average error of 25%, somewhat less than Asch's (1956) finding of 37%.

The test for homogeneity, however, was rejected (Q = 450.80, df = 132, $p < .001$), indicating significant heterogeneity among the effect sizes.[8] This was expected because the studies varied in

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[8] It was necessary to delete 38 (29%) outliers to achieve nonsignificant heterogeneity, a proportion higher than usual (Hedges, 1987), and thereby underscore the heterogeneity of this set of studies. The weighted mean effect size for the set of studies excluding these outliers was d = 0.90.

Table 2
Stem-and-Leaf Display of 133 Effect Sizes (d)

Stem	Leaf
3.	2
3.	1
2.	
2.	67
2.	
2.	2
2.	001
1.	99999
1.	667
1.	444444555
1.	22222222233333333
1.	00000000000001111111
0.	88888888888888888899999999999
0.	66666666666777777777
0.	4444444445555
0.	2222333
0.	00

Note. The first three entries are read as 3.2, 3.1, and 2.6.

terms of moderator variables expected to be significantly related to conformity, and our concern is with the explanation of this heterogeneity.

Impact of Moderator Variables on Conformity: U.S. Studies

Because more than two thirds of the studies were conducted in the United States, we carried out analyses using just these studies to assess the impact of moderator variables (aside from those reflecting cultural values), free from any potential interactions with culture. This may be particularly important for assessing historical trends because, for example, the changes described by Larsen (1982) are unlikely to generalize beyond Western societies and may be limited specifically to the United States.

The mean effect size for the U.S. studies is comparable with that for the full sample (weighted mean $d = 0.92$, 95% CI = 0.87 to 0.96), although the test for homogeneity was rejected ($Q = 228.97$, $df = 96$, $p < .001$), as with the full sample. This paves the way for the regression analysis. The results in Table 3 give simple regressions as well as the multiple regression to aid interpretation, although we focus on the results of the multiple regression in our discussion because we are interested in the independent effects of each moderator variable. Intercorrelations among the predictor variables were modest: for the U.S. studies, they ranged from .28 to −.34, with more than two thirds within the range ±.10. A table of intercorrelations among the moderator variables for the full sample and for the sample of U.S. studies is given in Appendix B.

Model specification. The model was only moderately successful in accounting for variability in effect sizes, as indicated by the multiple $R = 0.43$, and the test for model specification was rejected ($Q_e = 186.91$, $df = 88$, $p < .01$). The fit was substantially improved when the analysis was restricted to studies using Asch's (1956) stimulus materials. When only those using

Asch's (1956) stimuli were included, multiple $R = 0.66$ and the test for model specification was satisfactory ($Q_e = 45.25$, $df = 32$, ns). This suggests that the two variables designed to capture the significant features of the stimulus set—stimulus ambiguity and consistency—may not have done so adequately. It may also be that those studies which departed from closely replicating Asch introduced other subtle variations to procedure not captured by this set of moderator variables.[9]

Impact of moderator variables. The relationship of the moderator variables to effect size was the same across these subsamples except for the comparison between the Asch (1952b, 1956) and Crutchfield (1955) paradigms. Previous research suggests greater conformity in the Asch paradigm (Deutsch & Gerard, 1955; Levy, 1960), and we found this among studies using Asch's (1956) stimulus materials (or a minor modification of them). Among studies using either the researcher's own materials or Asch's (1952b) materials, however, effect sizes were significantly greater when the Crutchfield paradigm was used. It is not clear what the reason for this interaction might be, although we suspect that studies which departed from being close replications of Asch may have introduced other factors which confound the differences in paradigm. Note in this respect that the large majority of studies conducted with Asch's (1956) materials (or a minor modification of them) used the Asch paradigm (44 out of 50), whereas the majority of those conducted with other materials used the Crutchfield paradigm (28 out of 47).

Although the interaction between stimulus materials and paradigm is significant and improves the fit of the model, we have chosen not to present this in the analyses reported here. It is not central to our concern with culture, and its omission simplifies presentation; moreover, it is an interaction which has emerged post hoc and must be treated with caution. All analyses have been run with this interaction included, and we have found that our conclusions regarding the impact of other variables are not affected.[10]

Apart from the type of paradigm, the effect of the other moderator variables conformed in the main to what had been expected. Majority size represented by Tanford and Penrod's (1984) SIM was significantly related to conformity, although separate analyses using Latané and Wolf's (1981) social impact model[11] and a simple linear term revealed no significant differences between the three models.[12] We have preferred the SIM

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[9] There were no overall differences between studies using different stimuli, and including this factor as a set of dummy variables did not significantly improve the fit of the model.

[10] We also investigated model specification by eliminating outliers to achieve satisfactory fit. It was necessary to eliminate 16 studies (16%) so that the test for model specification was not rejected ($Q_e = 89.85$, $df = 72$, ns), a proportion in line with that commonly found in meta-analyses (Hedges, 1987). Most of the outliers (12) had above-average effect sizes, indicating that it was those studies with large effects for which the model was least able to account.

[11] A power function of majority size with an exponent of 0.46 was used (Latané & Wolf, 1981, p. 443).

[12] In fact, the SIM provided marginally the worst fit. Model specification statistics were SIM, $Q_e = 186.57$, multiple $R = .43$; social impact, $Q_e = 185.32$, multiple $R = .44$; and linear term, $Q_e = 185.12$, multiple $R = .44$.

Table 3
Continuous Model on Conformity Effect Sizes for U.S. Studies Only

	Simple regressions		Multiple regression	
Variable	β	b	β	b
Type of paradigm[a]	0.20	0.134**	0.14	0.094
Majority size (SIM)[b]	0.13	2.370	0.17	3.160*
Response known to majority[c]	0.01	0.012	−0.01	−0.009
Stimulus ambiguity[d]	−0.10	−0.099	−0.17	−0.168*
Consistency of majority[e]	−0.06	−0.126	0.07	0.167
Majority out-group or not[f]	−0.20	−0.247**	−0.17	−0.210*
Percentage of female respondents	0.24	0.002***	0.29	0.002***
Date of study	−0.11	−0.004	−0.19	−0.008**
Constant				13.143
Multiple R				0.430
Q_e[g], df = 88				186.570**

Note. Models are weighted least-squares estimators of regression coefficients obtained by weighting each effect size by the reciprocal of its estimated variance (Hedges & Olkin, 1985, p. 174). In the multiple regression model, the predictors were entered simultaneously. b = unstandardized regression coefficient; β = standardized regression coefficient; df = degrees of freedom; Q_e = test of model specification.
[a] Coded: 1 = Asch (1956) paradigm, 2 = Crutchfield (1955) paradigm.
[b] Tanford and Penrod's (1984) social influence model (SIM). [c] Coded: 1 = participant's response available to majority, 2 = not available.
[d] Discrepancy between correct line and line chosen by majority in inches. [e] Ratio of number of critical trials to total number of trials.
[f] Coded 0 = majority not an out-group, 1 = majority an out-group.
[g] When Q_e is significant, the hypothesis of adequate model specification is rejected.
*p < .05. **p < .01. ***p < .001.

in subsequent analyses in view of Tanford and Penrod's more comprehensive evaluation and their arguments for preferring SIM on theoretical grounds.

Of the variables reflecting the type of stimulus materials, significantly greater conformity was found when the stimulus was ambiguous (i.e., when the average error was smaller), consistent with the findings of Asch (1956) and Cohen (1958).[13] Consistency (i.e., the proportion of critical trials), however, had no significant effect, although the trend was in the expected direction of greater conformity associated with greater consistency.

A set of dummy variables was used to represent the relation of the majority to the participant (acquaintances, strangers, or out-group members), one of which was significantly related to conformity: Consistent with previous research (Abrams et al., 1990; Turner, 1991), conformity was significantly lower when the majority consisted of out-group members. The inclusion of the remaining dummy variables resulted in little improvement to the fit of the model,[14] to simplify presentation, analyses using only the variable reflecting an out-group majority are presented in this article.

The finding that the greater the percentage of female respondents, the higher the level of conformity was also consistent with the conclusion from earlier reviews (e.g., Eagly & Carli, 1981),

although it is striking that it had the largest impact of all the moderator variables included in this analysis. We investigated this further, first by comparing just those studies where the participants were all men with those where participants were all women. Most of the U.S. studies comprise single gender groups, 59 men and 26 women, and in only 5 studies could the results for men and women not be disaggregated. For the remaining 7 U.S. studies, the gender composition of the participants was not specified. For studies using men, the weighted mean effect size was d = 0.85 (95% CI = 0.79 to 0.90); whereas for studies using women, it was d = 1.04 (95% CI = 0.96 to 1.13). We fit a categorical model to these data and the between-classes goodness-of-fit statistic indicated significant heterogeneity between the two groups (Q_B = 13.99, p < .001). Among these studies were results from 17 experiments that had used both men and women, and we performed a further analysis on these because they afforded a "within-experiment" analysis of gender differences which would not be confounded by possible differences between experiments (cf. Eagly & Wood, 1994; Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994). The results were comparable with those obtained on the larger set of studies; the weighted mean effect size for men was d = 0.89 (95% CI = 0.77 to 1.00) and for women it was d = 1.11 (95% CI = 1.10 to 1.11), and the difference between the two groups was significant (Q_B = 6.57, p < .05). These additional analyses indicate that the gender difference found overall is robust and does not appear to be spuriously inflated through confounding with other factors.

We also investigated whether there were interactions between gender and the other moderator variables. For example, we may have expected that gender differences may have narrowed over time, and therefore that there would be an interaction between gender and date of publication, that women would be more sensitive to the presence of others, and that there would be a greater difference for women between the Asch (1952b, 1956) and Crutchfield (1955) paradigms, or between whether their response was available to the other group members. There was no evidence, however, for these interactions: Inclusion of the interaction between percentage of female respondents and date of study led to virtually no improvement in model specification (for the model with the interaction term, Q_e = 186.14 compared with Q_e = 186.57 for the model without the interaction term). Likewise, there was no improvement in fit when the interaction between type of paradigm and percentage of female

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[13] We also measured stimulus ambiguity by coding proportionate error, that is, the difference in length between the chosen line and the standard, divided by the length of the standard. However, this proved not as good a predictor as absolute error (β = −0.12).
[14] The model specification statistic when only the variable reflecting an out-group majority was included was Q_e = 186.57, df = 88 (multiple R = 0.43); when all dummy variables were included Q_e = 184.96, df = 86 (multiple R = 0.44). There was, then, little difference between studies where the majority were friends or acquaintances and studies where the majority were strangers. Asch (1956) had also found little difference, and it is likely that in the typical study the majority are perceived to be fellow students, hence in-group members, even though they are strangers.

Table 4

Continuous Model on Conformity Effect Sizes Including Hofstede's (1983) Measure of Cultural Values

Variable	Simple regressions		Multiple regression	
	β	b	β	b
Moderator				
Type of paradigm[a]	0.11	0.086*	0.20	0.162***
Majority size (SIM)[b]	0.12	1.459*	0.17	2.093**
Response known to majority[c]	0.01	0.018	0.01	0.016
Stimulus ambiguity[d]	−0.04	−0.046	−0.07	−0.090
Consistency of majority[e]	−0.09	−0.262	0.04	0.126
Majority out-group or not[f]	−0.16	−0.244**	−0.08	−0.122
Percentage of female respondents	0.17	0.002***	0.16	0.002**
Date of study	−0.09	−0.004	−0.24	−0.009***
Hofstede (1983)				
Individualism	−0.20	−0.004***	−0.35	−0.007***
Constant				17.785
Multiple R				0.420
Q_e[g], $df = 120$				354.450**

Note. Models are weighted least-squares estimators of regression coefficients obtained by weighting each effect size by the reciprocal of its estimated variance (Hedges & Olkin, 1985, p. 174). In the multiple regression model, the predictors were entered simultaneously. b = unstandardized regression coefficient; β = standardized regression coefficient; df = degrees of freedom; Q_e = test of model specification.
[a] Coded: 1 = Asch (1956) paradigm, 2 = Crutchfield (1955) paradigm. [b] Tanford and Penrod's (1984) social influence model (SIM). [c] Coded: 1 = participant's response available to majority, 2 = not available. [d] Discrepancy between correct line and line chosen by majority in inches. [e] Ratio of number of critical trials to total number of trials. [f] Coded 0 = majority not an out-group, 1 = majority an out-group. [g] When Q_e is significant, the hypothesis of adequate model specification is rejected.
* $p < .05$. ** $p < .01$. *** $p < .001$.

respondents was included ($Q_e = 186.29$). Similarly, either little or no improvement in fit was found when we included the interaction with stimulus ambiguity ($Q_e = 185.29$), with whether the out-group was a majority ($Q_e = 186.43$), with whether the response was available to the majority ($Q_e = 181.03$), or with consistency ($Q_e = 181.28$).

Whether the participant's response was made known to the majority was not significant, however, although we had expected conformity to be lower when the response was not known because this should minimize normative influence (Allen, 1965). We also found no difference for type of population (coded as comparing student populations with the remainder), and this variable has not been included in the subsequent analyses reported here.

We shall see in Tables 4, 5, and 6 that the effect of these moderator variables was substantially the same for the analyses using all studies and including cultural variables as additional predictors. The exceptions were that neither the measure of stimulus ambiguity nor the variable reflecting whether the majority was an out-group were significant.

Changes over time. One aspect of our focus on the impact of culture concerns changes over time, and we can see from Table 3 that the date of study was significantly negatively related to effect size, indicating that there has been a decline in the level of conformity. (This effect was found also in the analyses using all the studies reported in Table 4.) Larsen (1974, 1982; Larsen et al., 1979) hypothesized a curvilinear trend, whereby conformity declined in the late 1960s and early 1970s and then rose in

the latter part of the 1970s. Accordingly, we performed a regression analysis including a quadratic term for the date of publication, but this proved to be nonsignificant.[15] The trend appears best described as linear, and we have only included the linear term in our subsequent analyses. The fact that this trend is negative is opposite to the prediction of Lamb and Alsifaki (1980), who argued that conformity would increase because of an increasing number of other-directed types of individual.

Cultural Values and Conformity

Three sets of analyses were performed on the full set of studies to evaluate the effect of cultural values on conformity: (a) using measures of cultural values derived from Hofstede (1980, 1983), (b) using measures from Schwartz (1994), and (c) using measures from Trompenaars (1993). The principal advantage of conducting separate analyses is that it establishes convergent validity because it enables us to check that relationships are not specific to a particular investigator's samples and methods.

Values on Hofstede's (1980) dimension of Individualism–Collectivism for each country (and the values for his other three dimensions) were obtained from Hofstede (1980, 1983).

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[15] There was no improvement in the overall fit of the model when the quadratic term was included ($Q_e = 186.49$, $df = 87$). The coefficient for the quadratic term was $\beta = 0.07$ and was not significant.

Table 5
Continuous Model on Conformity Effect Sizes Including Schwartz's (1994) Measures of Cultural Values

Variable	Simple regressions		Multiple regression	
	β	b	β	b
Moderator				
Type of paradigm[a]	0.12	0.094*	0.12	0.094*
Majority size (SIM)[b]	0.12	1.409*	0.20	2.384**
Response known to majority[c]	0.02	0.023	0.02	0.033
Stimulus ambiguity[d]	−0.04	−0.047	−0.09	−0.118
Consistency of majority[e]	−0.09	−0.253	−0.01	−0.019
Majority out-group or not[f]	−0.13	−0.240***	−0.0♣	−0.117
Percentage of female respondents	0.17	0.002***	0.14	0.001**
Date of study	−0.10	−0.004*	−0.14	−0.006*
Schwartz (1994)				
Intellectual autonomy	−0.14	−0.147**	−0.28	−0.290*
Affective autonomy	−0.38	−0.988***	−0.44	−1.164***
Conservatism	0.16	0.311***	−0.32	−0.607**
Constant				17.970
Multiple R				0.490
Q_e[g], $df = 117$				326.030**

Note. Models are weighted least-squares estimators of regression coefficients obtained by weighting each effect size by the reciprocal of its estimated variance (Hedges & Olkin, 1985, p. 174). In the multiple regression model, the predictors were entered simultaneously. b = unstandardized regression coefficient; β = standardized regression coefficient; df = degrees of freedom; Q_e = test of model specification.
[a] Coded: 1 = Asch (1956) paradigm, 2 = Crutchfield (1955) paradigm. [b] Tanford and Penrod's (1984) social influence model (SIM). [c] Coded: 1 = participant's response available to majority, 2 = not available.
[d] Discrepancy between correct line and line chosen by majority in inches [e] Ratio of number of critical trials to total number of trials. [f] Coded 0 = majority not an out-group, 1 = majority an out-group.
[g] When Q_e is significant, the hypothesis of adequate model specification is rejected.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Schwartz (1994) took samples of both teachers and students in most countries that he investigated, and we used scores obtained from the student samples, given that our studies had almost invariably used students as participants. Trompenaars supplied the values that he obtained for each country for each of his dimensions (F. Trompenaars, personal communication, April 16, 1993).[16,17]

The results of the regression analyses including Hofstede's (1980, 1983) measure are given in Table 4. The dimension of Individualism–Collectivism was significantly related to conformity, as expected. Individualistic cultures showed lower levels of conformity than collectivist cultures.[18]

For Schwartz's (1994) value types, all three concerning individualism–collectivism proved significant,[19] as Table 5 shows. As expected, conformity was significantly lower the higher the value placed on both Affective Autonomy and Intellectual Autonomy. For Conservatism, the negative coefficient indicates that the higher the value placed on this dimension, the lower the level of conformity, which at first sight appears to be opposite to what was expected. However, this is due to its negative correlation with both individualism measures, especially Intellectual Autonomy. When Conservatism is entered without these other two variables, its coefficient is positive (and significantly so), as would be expected and, as Table 5 shows, the simple regression of Conservatism on effect size is significantly positive. It is its residual variance, controlling for both autonomy measures, that is negatively associated with level of conformity. We return

to this point when we discuss the relationships between the cultural variables.[20]

For the Trompenaars (1993) dimensions, Individualism–Collectivism proved to be significant, as well as Achievement–

[17] Data were not available for all of the countries included in our sample from each of these studies. Hofstede (1980) did not include samples from Zaire or Zimbabwe. Chandra's (1973) study used a sample of Indian Fijians and a sample of native Fijians. Scores from India were used for the former, but data was not available for native Fijians. Hofstede's (1983) scores for Arab countries were used for Kuwait and Lebanon. Schwartz (1994) did not have data from Lebanon, Kuwait, Zaire, or Ghana, hence studies from these cultures were coded as missing. Trompenaars (1993) did not have data for Canada, Zaire, or Zimbabwe. He also did not have data for Lebanon, but these were approximated by taking the mean of the neighboring Kuwait, Oman, and United Arab Emirates samples. In the analyses reported here, we omitted studies from countries where information on cultural values was not available. We have also performed two further sets of analyses where all studies were included: In one, the mean was substituted for missing values on cultural dimensions; in the other, missing values on cultural dimensions were estimated from the values obtained for neighboring countries with a comparable culture. These analyses yielded very similar results to those reported here.

[18] None of Hofstede's (1980) other three dimensions—Masculinity, Uncertainty Avoidance, and Power Distance—was significantly related

Ascription. The results are given in Table 6. As expected, a higher level of conformity was associated with collectivist cultures and those that saw status as ascribed rather than achieved.[21]

For all three multiple regression analyses, the model specification statistic, Q_e, was significant, and therefore in each case the hypothesis of adequate model specification was rejected. The best fit was obtained with the Schwartz (1994) cultural variables and the worst with Trompenaars's (1993) variables. As we found with the analysis of just the U.S. studies, a much better fit was found when only studies using Asch's (1956) stimulus materials were included. For example, the model using the Schwartz cultural variables gave a multiple $R = 0.67$ ($Q_e = 82.91$, $df = 40$, $p < .05$) when only studies using Asch's (1956) materials were included; although the test for model specification was still rejected, the elimination of just four outliers gave an acceptable fit.[22] Note, however, that the relationships between effect size and the predictor variables were not significantly altered for these analyses.

We should also note that in each case the measures of cultural values had larger standardized regression coefficients than any of the other moderator variables that are more usually identified as the significant sources of variance in conformity in the Asch (1952b, 1956) paradigm.

Relations Between Measures of Cultural Values

Although we have conducted separate analyses for the different measures of cultural values, the dimensions that we have focused on, and that have proved significant in our analyses, are all conceptually related to individualism–collectivism; if their effects are to be similarly interpreted, we should find that for this sample of countries they are reasonably highly correlated. Table 7 presents the correlations between the measures of cultural values.[23]

The correlations are very much as we had expected. For the Schwartz (1994) dimensions, Affective Autonomy and Intellec-

tual Autonomy are positively correlated and are both strongly negatively correlated with Conservatism, similar to the correlations reported by Schwartz (1994). The Trompenaars (1993) measures—Individualism–Collectivism and Achievement–Ascription—are moderately positively intercorrelated. Hofstede's (1980) Individualism–Collectivism correlates positively with Schwartz's Affective Autonomy and Intellectual Autonomy (albeit more strongly with the former) and negatively with Conservatism. It also correlates positively with Trompenaars's measures of Individualism–Collectivism and Achievement–Ascription. Likewise, the Schwartz measures of Affective Autonomy and Intellectual Autonomy are positively correlated with, and Conservatism is negatively correlated with, Trompenaars's measures of Individualism–Collectivism and Achievement–Ascription. On the whole, then, the pattern of intercorrelations is consistent with the view that all three investigations are tapping some common dimension of cultural values, but the correlations are not so large as to indicate that they are merely duplicating each other. Of course, we would expect the correlations to be lower because of the different questionnaire measures, samples, and times at which the surveys were carried out.

However, it may also be that they tap conceptually somewhat distinct dimensions. We therefore performed a regression analysis where all three sets of cultural variables were included to see whether this would provide a better fit. However, it did not.

[20] Combining these three measures into a single dimension, either by taking scores on the first principal component or by constructing a summed score, did not produce as good a fit as entering each value separately.

[21] The remaining Trompenaars's (1993) dimensions—Specific–Diffuse, Neutral–Emotional, and Universalism–Particularism—were not significant. Smith, Dugan, and Trompenaars (in press) have recently reanalyzed Trompenaars's data and have developed a measure of individualism which is preferred over Trompenaars's original individualism–collectivism measure. Substituting the new measure gave multiple $R = 0.36$ ($Q_e = 379.95$, $df = 119$, $p < .01$) and individualism was significantly related to effect size ($\beta = -0.25$, $p < .01$), indicating lower effect sizes for countries high in individualism. The correlations between each measure of cultural values and the remaining predictor variables were modest, ranging from $-.09$ to $.45$; the median absolute value was $r = .10$. For both Individualism–Collectivism and Achievement–Ascription, the largest correlations were with the date of study ($r = .25$ and $r = .45$, respectively).

[22] For this model where the four outliers were excluded, multiple $R = 0.81$ ($Q_e = 49.06$, $df = 36$, ns). All predictors were significant at $p < .01$ with the following standardized coefficients: paradigm, $\beta = -0.25$; majority size (SIM), $\beta = 0.19$; response known, $\beta = -0.17$; majority out-group or not, $\beta = -0.25$; percentage women, $\beta = 0.21$; date of study, $\beta = -0.44$; Conservatism, $\beta = -0.50$; Affective Autonomy, $\beta = -0.71$; and Intellectual Autonomy, $\beta = -0.45$. The variables average error and consistency were not appropriate given that all studies used the same stimulus materials.

[23] It is customary to explore cultural dimensions of values at the culture level where the country is treated as the unit of analysis, and we have chosen to follow that practice here, so our results are comparable with this other work (e.g., Hofstede, 1980; Schwartz, 1994). If each study is taken as the unit of analysis, somewhat different correlations are obtained because values are duplicated when there is more than one study from a particular country.

to conformity, and they were not expected to be so; thus, they are not included in the model. The regression equation with all four cultural dimensions did not provide an appreciably better fit ($Q_e = 334.31$, $df = 117$, multiple $R = 0.47$). The correlations between individualism–collectivism and the other predictor variables were modest. The correlation with date of study was largest, $r = -.47$, the remainder ranged from $-.21$ to $.25$, and the median absolute value $r = .13$.

[19] None of Schwartz's (1994) remaining culture-level value types—hierarchy, harmony, mastery, and egalitarian commitment—was significant, and they were not expected to be so. Their inclusion did not appreciably improve the fit of the model ($Q_e = 295.35$, $df = 113$, multiple $R = 0.56$), and hence they were excluded. The correlations between each measure of cultural values and the remaining predictor variables was typically modest: For Affective Autonomy, the correlations ranged between $-.30$ and $.53$, the median absolute value, r, was .13; for Intellectual Autonomy, the range was $-.13$ to .15, the median absolute value, r, was .07; and for Conservatism, the range was $-.54$ to .45, the median absolute value, r, was .11. For both Intellectual Autonomy and Conservatism, the largest correlations were with date of study ($r = .53$ and $r = -.54$ respectively).

Table 6
Continuous Model on Conformity Effect Sizes Including Trompenaars's (1993) Measures of Cultural Values

Variable	Simple regressions		Multiple regression	
	β	b	β	b
Moderator				
Type of paradigm[a]	0.11	0.085*	0.17	0.138**
Majority size (SIM)[b]	0.12	1.472*	0.20	2.386***
Response known to majority[c]	0.01	0.012	0.01	0.013
Stimulus ambiguity[d]	−0.04	−0.048	−0.05	−0.061
Consistency of majority[e]	−0.09	−0.269*	0.02	0.049
Majority out-group or not[f]	−0.16	−0.245***	−0.09	−0.144
Percentage of female respondents	0.17	0.002***	0.17	0.002***
Date of study	−0.09	−0.003	−0.22	−0.008***
Trompenaars (1993)				
Individualism–collectivism	0.30	0.041***	0.22	0.030***
Achievement–ascription	0.23	0.012***	0.22	0.012**
Constant				17.560
Multiple R				0.470
$Q_e{}^g$, $df = 119$				339.790**

Note. Models are weighted least-squares estimators of regression coefficients obtained by weighting each effect size by the reciprocal of its estimated variance (Hedges & Olkin, 1985, p. 174). In the multiple regression model, the predictors were entered simultaneously. b = unstandardized regression coefficient; β = standardized regression coefficient; df = degrees of freedom; Q_e = test of model specification.
[a] Coded: 1 = Asch (1956) paradigm, 2 = Crutchfield (1955) paradigm. [b] Tanford and Penrod's (1984) social influence model (SIM). [c] Coded: 1 = participant's response available to majority, 2 = not available. [d] Discrepancy between correct line and line chosen by majority in inches. [e] Ratio of number of critical trials to total number of trials. [f] Coded 0 = majority not an out-group, 1 = majority an out-group. [g] When Q_e is significant, the hypothesis of adequate model specification is rejected.
* $p < .05$. ** $p < .01$. *** $p < .001$.

There was virtually no improvement over the Schwartz (1994) model alone (the model specification statistic was Q_e = 327.35, df = 115, and multiple R = 0.50 compared with Q_e = 326.03, df = 117, and multiple R = 0.49 for the Schwartz model). Neither the Trompenaars (1993) or the Hofstede (1980) measures appear to carry information that predicts level of conformity that is not contained within the Schwartz measures.

Discussion

Summary of Findings

The results of this review can be summarized in three parts. First, we investigated the impact of a number of potential moderator variables, focusing just on those studies conducted in the United States where we were able to investigate their relationship with conformity, free of any potential interactions with cultural variables. Consistent with previous research, conformity was significantly higher, (a) the larger the size of the majority, (b) the greater the proportion of female respondents, (c) when the majority did not consist of out-group members, and (d) the more ambiguous the stimulus. There was a nonsignificant tendency for conformity to be higher, the more consistent the majority. There was also an unexpected interaction effect: Conformity was higher in the Asch (1952b, 1956) paradigm (as was expected), but only for studies using Asch's (1956) stimulus materials; where other stimulus materials were used (but where the task was

also judging which of the three comparison lines was equal to a standard), conformity was higher in the Crutchfield (1955) paradigm. Finally, although we had expected conformity to be lower when the participant's response was not made available to the majority, this variable did not have a significant effect.

The second area of interest was on changes in the level of conformity over time. Again the main focus was on the analysis just using studies conducted in the United States because it is the changing cultural climate of Western societies which has been thought by some to relate to changes in conformity. We found a negative relationship. Levels of conformity in general had steadily declined since Asch's studies in the early 1950s. We did not find any evidence for a curvilinear trend (as, e.g., Larsen, 1982, had hypothesized), and the direction was opposite to that predicted by Lamb and Alsifaki (1980).

The third and major area of interest was in the impact of cultural values on conformity, and specifically differences in individualism–collectivism. Analyses using measures of cultural values derived from Hofstede (1980, 1983), Schwartz (1994), and Trompenaars (1993) revealed significant relationships confirming the general hypothesis that conformity would be higher in collectivist cultures than in individualist cultures. That all three sets of measures gave similar results, despite the differences in the samples and instruments used, provides strong support for the hypothesis. Moreover, the impact of the cultural variables was greater than any other, in-

Table 7

Correlations Between Measures of Cultural Values

Measure	Hofstede (1983) Individualism	Schwartz (1994) Conservatism	Schwartz (1994) Affective autonomy	Schwartz (1994) Intellectual autonomy	Trompenaars (1993) Individualism–collectivism
Schwartz (1994)					
Conservatism	−.41	—	−.86	−.83	
Affective autonomy	.77		—	.63	
Intellectual autonomy	.19			—	
Trompenaars (1993)					
Individualism–collectivism	.55	−.47	.58	.25	
Achievement–ascription	.62	−.78	.84	.47	.53

Note. These are "country-level" correlations where the country mean on the relevant dimension is the unit of analysis in line with other analyses of the relationship between dimensions of cultural values (e.g., Hofstede, 1980; Schwartz, 1994).

cluding those moderator variables such as majority size typically identified as being important factors. Cultural values, it would seem, are significant mediators of response in group pressure experiments.

Limitations of This Review

Meta-analyses that look for moderator variables of effect size are correlational investigations, and the interpretation of relationships is subject to the familiar concerns of the presence of possible confounded variables. One strength of this investigation has been that by applying strict criteria for the inclusion of studies, essentially admitting only replications of Asch's (1952b, 1956) study but including those using a Crutchfield (1955) paradigm, the sample is relatively homogenous, and we have been able to assess and control for the moderator variables which previous research had indicated might be significant.

Of course, a good deal of the variance in conformity was not explained by the variables we studied, and there are several reasons why we would expect this. First, whereas we sought to include the major variables, there are other factors which, in some studies at least, may have been important. In particular, suspicion on the part of the participants may account for some of the wide variation in effect sizes. The necessary deception is difficult to achieve in both the Asch (1952b, 1956) and Crutchfield (1955) paradigms (Stricker, Messick, & Jackson, 1967), and it is unlikely that it was achieved for all participants in the wide range of studies included here.

Second, it is likely that the impact of several moderator variables on conformity is also dependent on cultural values, and yet the sample of studies did not permit an exploration of potential interaction effects. We have already remarked that there is no reason to suppose that the changes in cultural climate over time would have the same impact on conformity in every country; indeed, it is highly unlikely that this would be so. The importance of gender differences is also likely to vary cross-culturally. We discuss in *Theoretical Implications* reasons for believing that there will be cross-cultural differences in the significance of whether the majority is an in-group or out-group and in whether the participant's response is public or private.

Our analyses have been unable to capture these potential interaction effects.

Third, we have not measured the importance attached to cultural values by the participants in conformity experiments but have instead assumed that their values are adequately represented by the findings of surveys using other samples. This assumption is not warranted to the extent that there is heterogeneity within a culture with respect to values and to the extent that the population sampled in the conformity experiments differs in relevant respects from that sampled in the survey of values. The result is to underestimate the impact of cultural values.

Fourth, countries are not homogenous, and differences in individualistic and collectivist values within countries have been a separate area of research (e.g., Schwartz, 1992; Triandis, Leung, Villareal, & Clack, 1985; Triandis, Marin, Lisansky, & Betancourt, 1984). However, both the conformity experiments and the surveys of cultural values were biased toward sampling from the middle class and from the majority groups within each country, so the impact of heterogeneity of values may not have been large. Almost all the conformity experiments used samples of students who in all the countries would have consisted mainly of young people from the middle-class majority group. The value surveys on whose data we relied were also derived from predominately middle-class respondents. Students, those of higher social class, and those from urban areas are generally believed to be more individualistic (Triandis, 1989), and therefore those with more collectivist values are likely to be underrepresented in the conformity studies.

A fifth factor is the differences in when the conformity experiments were conducted and when the survey of cultural values was carried out. Hofstede's (1980) survey was conducted between 1967 and 1973. Both the Schwartz (1994) and Trompenaars (1993) data were collected more recently. These surveys have been taken to represent the values of participants over a period of nearly 40 years, and yet it is likely that there has been some change in values over this period. Indeed, one explanation for our finding of declining levels of conformity over time might be that it reflects increasing endorsement of individualistic values. Increased individualism is seen by a variety of authors as a

component of increased modernity (e.g., Hofstede, 1980; Kim et al., 1994; Yang, 1988). To the extent that there have been such changes, our study has underestimated the relationship between values and conformity.

There is also the familiar problem in cross-cultural research of whether there may be cultural differences in, for example, the relevance, familiarity, or difficulty of the method which are confounded with the differences in the behavior of interest. In the context of the Asch (1952b, 1956) paradigm, this raises such issues as whether the line judgment task or the apparatus used are more familiar or more meaningful for members of one culture rather than another, and it is these differences rather than social influence which give rise to differences in *conformity*. The results from studies using control groups, however, suggest that this may not be a serious problem. The majority of studies conducted outside the United States included in this review ran control groups which confirmed that in the absence of group pressure, individuals achieve the task with near total accuracy (with the exception of Claeys's, 1967, study in Zaire where control group errors were 15%). This reassures us that accuracy appears to be cross-culturally stable and therefore that the method appears equally appropriate across cultures. Of course, it is still possible to argue that there may be cross-cultural differences in the confidence with which judgments are held, and this may in part explain differences in response to group pressure.

Note, though, that whereas the method appears a reliable means of assessing responsiveness to group pressure across cultures, it is questionable whether that behavior is always best described as conformity, given its negative connotations with "yielding," "submission," and so on. Such connotations stem from Western values which stress the importance of self-expression, of stating one's opinion in the face of disagreement with others. In other cultures, however, harmony with others may be valued more highly; agreement in public while privately disagreeing may be regarded, for example, as properly displaying tact or sensitivity. Viewed from this perspective, conformity in the Asch (1952b, 1956) paradigm may be better described as "tactfulness" or "social sensitivity," and *independence* as "tactlessness" or "insensitivity." We have chosen to describe the behavior as conformity because that is how this area of research is known within social psychology, but in doing so we recognize an inconsistency between describing the behavior in such a way that assumes a set of values, while arguing that the behavior, and its meaning, needs to be understood as stemming at least in part from the values attached to it within a given cultural context. The Asch paradigm may be a fair way of assessing across cultures how people respond to a discrepant group judgment, but its description as conformity may not be cross-culturally appropriate.

Theoretical Implications

The nature of the relationship between cultural values and conformity requires further elaboration and investigation. Although we have focused on the construct of individualism–collectivism, the question of what are the significant value dimensions on which cultures vary is a topic of current research

and debate, and individualism–collectivism has been criticized for being a higher order abstraction which glosses over important distinctions. Triandis et al. (1986), for example, identified four factors within an individual-level measure of individualism–collectivism. There are differences between cultures in the nature of collectivism: For example, in Japan it is much more focused on the work group than in many other cultures (Nakane, 1970); in Chinese societies, it is more strongly associated with the family (Bond, 1986); and in Latin American cultures, collectivist values find expression in relations between peers (Triandis et al., 1984). Schwartz (1990) pointed out that overall classifications into individualist or collectivist types often obscure important distinctions and that differences between them are not always consistent. He sees his value dimensions as distinct from the individualist–collectivist dimension described by others such as Hofstede (1980) and has chosen to use different terms to label the dimensions to emphasize this distinctiveness (Schwartz, 1994). In terms of the present study, it is significant that measures of individualism–collectivism predicted conformity and, more important, that whereas the measures used were somewhat distinctive both empirically and conceptually, there appears to be a common factor running through them. Individualism–collectivism may be a higher order abstraction, but it appears nonetheless to capture an important difference between cultures as far as conformity is concerned.

Just how individualism–collectivism relates to the process of social influence requires further clarification. Triandis's (1989) emphasis on cognitive processes suggests one avenue for further research. He distinguishes the private self, the collective self (assessment by the generalized other), and the public self (assessment by a specific reference group) and argues that, in collectivist societies, the collective self is more complex and more frequently sampled, whereas in individualist cultures it is the private self that is more complex and frequently sampled. When the collective self is sampled, the norms and values of the in-group are more salient and individuals are more responsive to whether others are in-group or out-group members. Differences in conformity behavior between collectivist and individualist cultures, therefore, might be expected to be due to differences both in values and in what is salient. Moreover, there would be less difference between conditions of public and private responding in collectivist cultures because of the internalization of in-group goals.

Differences in values, and consequently different sources of self-esteem, are discussed also by Markus and Kitayama (1991), who distinguish an independent from an interdependent construal of self which are differentiated on a number of dimensions potentially relevant to conformity. For example, those with an interdependent (i.e., collectivist) construal of self are seen as motivated to belong and fit in rather than be unique, to promote others' goals rather than one's own, and to occupy one's proper place. They derive self-esteem from an ability to adjust and to maintain harmony with the social context. The self is construed more in a contextualized manner, by the groups and the settings in which time is spent, rather than as having trans-situational personal qualities (cf. Cousins, 1989). In contrast, those with independent selves derive self-esteem

from being able to express themselves and validate their internal attributes.

Ting-Toomey (1988) argued that in all cultures members seek to save face when confronting potential embarrassment, but in individualist cultures the focus is most strongly on the "I," the actor, whereas in collectivist cultures the focus is on "We," the collectivity. The interdependent person is concerned that incorrect behavior embarrasses others as well as leads to a loss of personal face and that they and other group members seek to anticipate and preempt the occurrence of embarrassing events. Singelis and Sharkey (in press) have confirmed a significant relationship between interdependence and embarrassibility, both among European Americans and Asian Americans but especially among the latter.

These analyses point to reasons why collectivists may be more likely to conform in general and to reasons why it may depend on the group context in which they find themselves. Collectivists may in general be more likely to conform because they attach greater importance to collective goals and are more concerned about how others both regard and are affected by their behavior and because child-rearing practices in collectivist societies emphasize obedience and proper behavior.

However, it can also be argued that collectivists would only conform more to in-group members and that where the majority consist of out-group members, they would be less likely to conform than individualists. Because their identity rests more firmly on their continuing group membership, collectivists are more sensitive to in-group–out-group distinctions and tend to be cooperative and helpful with in-group members but competitive and not helpful with out-group members (Smith & Bond, 1993). There is also evidence that members of individualist cultures behave more cooperatively than members of collectivist cultures when groups are formed for the first time (Triandis, 1989). In line with this view, Frager's (1970) finding that Japanese students did not show more conformity in an Asch-type study has been explained by the fact that the majority were strangers and hence would be perceived as out-group members (e.g., Mann, 1988; Triandis, 1989; Williams & Sogon, 1984). Likewise, Markus and Kitayama (1991) argued that in general those with interdependent (i.e., more collectivist) selves would show less conformity in the Asch (1952b, 1956) paradigm than is found in the United States, also on the basis that the majority typically are strangers and therefore would be perceived as out-group members.[•]

The finding of the present study, that collectivists conform more, may therefore come as a surprise in the light of this argument. It raises questions, however, of just how the majority are perceived in Asch-type studies and what constitutes an in-group in the context of that paradigm. In the typical study, the majority may be strangers, but they are also fellow students. Are they perceived as in-group members or out-group members? The *in-group* in the British study by Abrams et al. (1990) was defined as fellow psychology students, even though they were from a neighboring university and hence unknown to the participant, and this was sufficient to give rise to significantly more conformity than to *out-group* members, defined as studying a different discipline. Not one of the studies in the present review has directly assessed how the majority is perceived by the participant

in terms of in-group–out-group membership, and this is clearly an issue which future research needs to clarify.

It is likely that the range and significance of in-groups varies between societies and in ways that are not captured by that society's position on an individualism–collectivism dimension. Triandis (1989) points out that in traditional Greece, for example, the *in-group* is defined as family and friends and people concerned with the individual's welfare, whereas in the United States it may be those who agree on important issues and values. Triandis, Bontempo, Villareal, Asai, and Lucca (1988) in a questionnaire study comparing students from the United States, Japan, and Puerto Rico found that different in-groups were significant in relation to different attitudes and behaviors. Japanese students reported conforming less, in general, than students from the United States (despite Japan being a more collectivist country), and the Japanese differentiated in-groups from out-groups more sharply. They concluded,

> People in collectivist cultures do *not* necessarily conform more, feel more similar to others, and/or uniformly subordinate their goals to the goals of others. Such responses are more selective. . . . One may be a collectivist in relation to one ingroup but not in relation to other groups. (Triandis et al., 1988, p. 333, italics in original)

Moreover, the relationship of in-group or out-group status to conformity may not be straightforward. For example, Matsuda (1985) distinguished three types of personal relationship in Japan, differing in degree of intimacy, and predicted that the highest conformity would be found in the type of relationship with an intermediate level of intimacy because the most intimate relationships are more tolerant of deviation.

It is important also to recognize that what constitutes the in-group will change depending on salient features of the situation, and the issue therefore arises as to what are the salient features of the Asch (1952b, 1956) paradigm in this respect and how do these interact with the wider cultural context. In Hogg and Turner's (1987) analysis of conformity, social influence is seen as originating "in the need of people to reach agreement with others perceived to be interchangeable in respect of relevant attributes (psychological ingroup members in the given situation) in order to validate their responses as correct, appropriate and desirable" (p. 150). In the Asch paradigm involving judgments of line length, the relevant attribute for validating correctness is normal eyesight; hence, for that situation it might be expected that any majority consisting of people with normal eyesight would be categorized as "psychological" in-group members. Participants in the Asch situation are concerned not just with being correct, however, but also with, for example, not wishing to stand out, being ridiculed, or breaking ranks, and such (Asch, 1956; Deutsch & Gerard, 1955). It remains to be clarified, though, how other group categorizations (family vs. nonfamily, own race vs. different race, psychology students vs. history students, etc.) are relevant to these concerns, and how this in turn might depend on the broader cultural context.

This leads, finally, to the question of how well does behavior in the Asch (1952b, 1956) paradigm address the wider issue of conformity across cultures. Even if, as we have argued, the Asch paradigm provides one instance where social influence processes may be compared across cultures, it remains limited in

its use of an unambiguous physical judgment task and by the fact that those who conform typically merely comply. Thus, the effects of group pressure have been found to vary between tasks requiring physical judgments and those concerning attitudinal or aesthetic judgments (Allen, 1965, 1975), and it is likely that this distinction would be important for conformity across cultures. On the basis of our discussion, we would expect differences in susceptibility to social influence between individualist and collectivist cultures to be even greater when the task was, for example, an opinion issue.

It has long been recognized that *conformity* is an imprecise concept and that a number of different responses to social influence need to be distinguished. For example, Festinger (1953) was the first to distinguish "internalization" from "compliance" (the former where the individual agrees both publicly and privately; the latter where public agreement is associated with private disagreement), and this distinction has continued to be important in, for example, Moscovici's (1980) dual-process theory of majority and minority influence. Nail's (1986) careful review of this literature proposed an eightfold typology of responses to social influence. These distinctions are important for the issue of conformity and cultural values. The Asch (1952b, 1956) paradigm is regarded as producing mostly compliance (Asch, 1956; Moscovici, 1980; Turner, 1991), and hence this review is limited to that behavior. The relationship between cultural values and other responses to social influence, such as internalization or conversion, must be investigated using different experimental paradigms, and the theoretical analysis needs to be more fine grained than it has been possible to present here.

In conclusion, although this research has indicated that cultural values are an important factor in conformity, further research needs to identify more clearly how such values enter the processes underlying social influence and to examine the possibility of subtle interactions between culture, conformity, and salient features of the task and its social context.

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(Appendix A follows on next page)

Appendix A

Studies Included in the Meta-Analysis

Source	Experimental condition	Country	Paradigm[a]	Majority size	Majority type[b]	Was response known to majority	Stimuli[c]	n	% women	% errors	% errors controls	Effect size d[d]
North America												
Asch (1951)	Majority size 2	USA	Asch	2	NI	Yes	Asch 56	15	0	13.0	0.5	0.48
Asch (1951)	Majority size 3	USA	Asch	3	NI	Yes	Asch 56	10	0	33.3		1.26
Asch (1951)	Majority size 4	USA	Asch	4	NI	Yes	Asch 56	10	0	35.0		1.32
Asch (1951)	Majority size 11–15	USA	Asch	13	NI	Yes	Asch 56	12	0	31.3		1.20
Asch (1952b)	Experiment 1	USA	Asch	8	Acq	Yes	Asch 52	31	0	33.2	7.4	0.87
Asch (1952b)	Experiment 2	USA	Asch	8	NI	Yes	Unique	13	69	27.7	2.0	0.69
Deutsch & Gerard (1955)	Face-to-face	USA	Asch	3	Acq	Yes	Asch 56	13	NA	25.0		1.37
Deutsch & Gerard (1955)	Anonymous	USA	Crutchfield	3	Acq	Yes	Asch 56	13	NA	23.0		1.26
Asch (1956)	Experiment 1—Group 1: private college	USA	Asch	8	Acq	Yes	Asch 56	70	0	33.4		1.09
Asch (1956)	Experiment 1—Group 2: metropolitan college	USA	Asch	8	Str	Yes	Asch 56	25	0	43.0		1.26
Asch (1956)	Experiment 1—Group 3: teachers	USA	Asch	8	Str	Yes	Asch 56	28	0	39.3		1.02
Asch (1956)	Experiment 3—used thinner lines	USA	Asch	8	NI	Yes	Asch 56*	11	0	25.3		0.91
Asch (1956)	Experiment 4—written response	USA	Asch	8	Str	No	Asch 56	14	0	12.5		0.77
Asch (1956)	Experiment 5—36 critical trials	USA	Asch	8	NI	Yes	Unique	19	0	37.6		0.97
Asch (1956)	Experiment 7a—2 neutral and 12 critical trials	USA	Asch	8	NI	Yes	Asch 56*	14	0	53.0		2.09
Asch (1956)	Experiment 7c—12 neutral and 12 critical trials	USA	Asch	8	NI	Yes	Asch 56*	19	0	38.6		1.52
Asch (1956)	Experiment 7d—26 neutral and 6 critical trials	USA	Asch	8	NI	Yes	Asch 56*	14	0	26.2		1.99
Asch (1956)	Experiment 9—warned would check	USA	Asch	8	NI	Yes	Asch 56	11	0	36.4		0.90
Kagan & Mussen (1956)		USA	Asch	4	Str	Yes	Asch 52	27	0	22.8		0.49
Moeller & Applezweig (1957)		USA	Asch	5	Acq	Yes	Asch 56	41	100	42.5		1.24
Whittaker, Rosenau, Farnsworth, & Grosz (1957)		USA	Asch	8	NI	Yes	Asch 52	31	NA	39.2	5.7	2.18
Cohen (1958)	Moderate errors	USA	Asch	7	Str	Yes	Unique	33	NA	29.9		0.88
Cohen (1958)	Extreme errors	USA	Asch	7	Str	Yes	Unique	27	NA	21.5		0.67
Gorfein, Kindrick, Leland, McAvoy, & Barrows (1960)		USA	Crutchfield	5	Str	Yes	Asch 56	40	45	15.0		0.55
Levy (1960)		USA	Crutchfield	4	Str	Yes	Asch 56	96	0	19.1		0.73
Gerard & Rotter (1961)		USA	Crutchfield	3	Str	Yes	Asch 56*	96	50	28.3		1.01
Feldman & Goldfried (1962)		USA	Crutchfield	3	Acq	Yes	Unique	42	100	26.7	1.4	0.78
Cohen (1963)	Experiment 3	USA	Asch	7	Str	Yes	Unique	50	0	31.0	0.0	0.82

Appendix continues

Appendix A (continued)

Source	Experimental condition	Country	Paradigm[a]	Conditions of responding			Stimuli[c]	Participants		Results		
				Majority size	Majority type[b]	Was response known to majority		n	% women	% errors	% errors controls	Effect size d[d]
		North America (continued)										
Linde & Patterson (1964)	Disabled participant and majority	USA	Asch	4	Str	Yes	Asch 56	18	0	33.3		1.40
Linde & Patterson (1964)	Able-bodied participant and majority	USA	Asch	4	Str	Yes	Asch 56	26	0	30.8		1.31
Linde & Patterson (1964)	Able-bodied participant, disabled majority	USA	Asch	4	Out	Yes	Asch 56	29	0	8.3		0.34
Linde & Patterson (1964)	Disabled participant, able-bodied majority	USA	Asch	4	Out	Yes	Asch 56	27	0	15.8		0.66
Reitan & Shaw (1964)		USA	Crutchfield	3	Str	Yes	Unique	96	50	14.2	2.8	0.95
Berkhouse (1965)		USA	Crutchfield	3	Str	Yes	Unique	109	0	52.3	24.1	1.00
Nikols (1965)		USA	Crutchfield	3	Str	Yes	Unique	22	100	10.2	0.7	0.66
Costanzo & Shaw (1966)	Male participants	USA	Crutchfield	3	Str	Yes	Unique	12	0	34.3	0.0	2.19
Costanzo & Shaw (1966)	Female participants	USA	Crutchfield	3	Str	Yes	Unique	12	100	32.1	0.0	2.56
Kidd & Karpan (1967)		USA	Asch	7	Str	Yes	Asch 56	24	0	40.0	0.0	1.63
Long (1967)		USA	Asch	3	Acq	Yes	Unique	59	0	28.7	5.3	0.89
Rotter (1967)	Male participants	USA	Crutchfield	3	Str	Yes	Unique	64	0	13.8		0.70
Rotter (1967)	Female participants	USA	Crutchfield	3	Str	Yes	Unique	64	100	22.6		1.16
Schulman (1967)	Response observed by E and majority: male participants	USA	Crutchfield	3	Str	Yes	Unique	23	0	37.6	6.8	0.97
Schulman (1967)	Response observed by E and majority: female participants	USA	Crutchfield	3	Str	Yes	Unique	21	100	57.7	6.8	1.59
Schulman (1967)	Response observed by majority only: male participants	USA	Crutchfield	3	Str	Yes	Unique	18	0	47.7	6.8	1.27
Schulman (1967)	Response observed by majority only: female participants	USA	Crutchfield	3	Str	Yes	Unique	23	100	52.3	6.8	1.43
Schulman (1967)	Response observed by E only: men	USA	Crutchfield	3	Str	No	Unique	24	0	22.0	6.8	0.48
Schulman (1967)	Response observed by E only: women	USA	Crutchfield	3	Str	No	Unique	21	100	53.7	6.8	1.46
Schulman (1967)	Response not observed: men	USA	Crutchfield	3	Str	No	Unique	23	0	35.0	6.8	0.88
Schulman (1967)	Response not observed: women	USA	Crutchfield	3	Str	No	Unique	21	100	48.3	6.8	1.30
Balance (1968)		USA	Asch	9	Str	No	Asch 56	62	NA	7.5	0.5	0.65
Critchlow, Herrup, & Dabbs (1968)		USA	Crutchfield	4	Str	Yes	Unique	113	NA	37.5		1.34
Gerard, Wilhelmy, & Conolley (1968)	Majority size 2	USA	Crutchfield	2	Str	No	Asch 52*	18	100	21.0		0.80
Gerard, Wilhelmy, & Conolley (1968)	Majority size 3	USA	Crutchfield	3	Str	No	Asch 52*	16	0	25.9		1.02
Gerard, Wilhelmy, & Conolley (1968)	Majority size 4	USA	Crutchfield	4	Str	No	Asch 52	20	100	33.6		1.39
Gerard, Wilhelmy, & Conolley (1968)	Majority size 5	USA	Crutchfield	5	Str	No	Asch 52	24	0	24.1		0.96

Appendix A (continued)

Source	Experimental condition	Country	Paradigm[a]	Majority size	Majority type[b]	Was response known to majority	Stimuli[c]	n	% women	% errors	% errors controls	Effect size d[d]
			North America (continued)									
Gerard, Wilhelmy, & Conolley (1968)	Majority size 6	USA	Crutchfield	6	Str	No	Asch 52	28	100	34.6		1.45
Gerard, Wilhelmy, & Conolley (1968)	Majority size 7	USA	Crutchfield	7	Str	No	Asch 52	32	0	30.1		1.25
Pollis & Cammalleri (1968)		USA	Asch	8	Str	Yes	Asch 52	40	100	37.9	7.1	1.18
Gould (1969)		USA	Asch	4	Str	Yes	Unique	30	0	28.8	3.3	0.52
Marsella (1969)	Male participants	USA	Asch	3	Str	Yes	Asch 56	11	0	40.1		1.18
Marsella (1969)	Female participants	USA	Asch	3	Out	Yes	Asch 56	11	100	37.8		1.07
Schuman (1970)	Male participants	USA	Asch	4	Str	Yes	Asch 56	36	0	13.0	1.7	1.09
Schuman (1970)	Female participants	USA	Asch	4	Str	Yes	Asch 56	36	100	12.3	1.7	1.01
Costanzo (1970)		USA	Crutchfield	3	Str	Yes	Unique	36		32.0	0.0	1.91
Horowitz & Rothschild (1970)	Majority size 2	USA	Crutchfield	2	Str	Yes	Asch 52	15	0	17.6		0.51
Horowitz & Rothschild (1970)	Majority size 4	USA	Crutchfield	4	Str	Yes	Asch 52	15	0	24.7		0.78
Long (1970)	Black Ss: White majority	USA	Asch	3	Out	Yes	Unique	29	0	25.0	0.0	1.22
Long (1970)	Black Ss: Black majority	USA	Asch	3	Str	Yes	Unique	27	0	18.3	0.0	0.89
Long (1970)	White Ss: Black majority	USA	Asch	3	Out	Yes	Unique	26	0	14.2	0.0	0.69
Long (1970)	White Ss: Black majority	USA	Asch	3	Str	Yes	Unique	28	0	9.8	0.0	0.48
Cull (1971)	Male majority	USA	Asch	4	Str	Yes	Asch 56	16	0	11.5	4.5	0.28
Cull (1971)	Female majority	USA	Asch	4	Out	Yes	Asch 56	16	0	2.1	4.5	0.00
Long (1972)		USA	Asch	3	Str	Yes	Unique	39	0	48.6	0.0	0.96
Conger (1973)	Male participants	USA	Asch	3	Str	Yes	Asch 56	24	0	9.3		0.81
Conger (1973)	Female participants	USA	Asch	3	Str	Yes	Asch 56	24	100	17.9		0.75
Cull & Parker (1973)		USA	Asch	4	Str	Yes	Asch 56	15	0	8.9	4.7	0.21
Toder & Marcia (1973)		USA	Asch	3	In/Out	Yes	Asch 56*	64	100	20.2		0.81
Wagner & Shaw (1973)		USA	Crutchfield	4	Str	Yes	Unique	10	0	5.0		0.20
Hornik (1974)		USA	Crutchfield	3	Str	Yes	Unique	39	100	44.9	5.6	1.12
Larsen (1974)	Male participants	USA	Asch	NA	NI	Yes	Asch 56	11	0	9.1		0.33
Larsen (1974)	Female participants	USA	Asch	NA	NI	Yes	Asch 56	13	100	28.2		1.08
Stamps & Teevan (1974)		USA	Asch	7	NI	Yes	Asch 56	32	0	35.7		1.05
Cohen & Lee (1975)	Experiment 11	USA	Asch	3	Str	Yes	Unique	120	0	26.2		0.83
Cohen & Lee (1975)	Experiment 20	USA	Asch	3	Str	Yes	Unique	70	100	46.1		1.27
Cohen & Lee (1975)	Experiment 21	USA	Asch	3	Out	Yes	Unique	56	100	29.4		0.94
Larsen, Triplett, Brant, & Langenberg (1979)	Majority peers: male participants	USA	Asch	6	Str	Yes	Asch 56	10	0	13.5		0.34
Larsen, Triplett, Brant, & Langenberg (1979)	Majority peers: female participants	USA	Asch	6	Str	Yes	Asch 56	10	100	33.5		0.87
Larsen, Triplett, Brant, & Langenberg (1979)	Majority high status: male	USA	Asch	6	Out	Yes	Asch 56	10	0	37.5		1.37
Larsen, Triplett, Brant, & Langenberg (1979)	Majority high status: female	USA	Asch	6	Out	Yes	Asch 56	10	100	14.1		0.50
Lamb & Alsifaki (1980)	Male participants	USA	Crutchfield	6	Str	Yes	Asch 52	49	0	44.9	6.9	1.02
Lamb & Alsifaki (1980)	Female participants	USA	Crutchfield	6	Str	Yes	Asch 52	51	100	60.1	6.9	1.43
Ryan (1983)	Male participants	USA	Asch	4	Str	Yes	Asch 56*	40	0	24.6		0.86
Ryan (1983)	Female participants	USA	Asch	4	Str	Yes	Asch 56*	40	100	20.3		0.66

Appendix continues

Appendix A (*continued*)

Source	Experimental condition	Conditions of responding					Participants		Results		
		Paradigm[a]	Country	Majority size	Majority type[b]	Was response known to majority	Stimuli[c]	n	% women	% errors	% errors controls	Effect size d[d]
North America (continued)												
Nicholson, Cole, & Rocklin (1985)		Asch	USA	3	NI	Yes	Asch 56*	21	0	15.5	0.0	0.47
Brassard (1986)		Asch	USA	3	Str	Yes	Asch 56	30	100	27.8		0.90
Liberman & Meyerhoff (1986)		Asch	USA	NA	NI	Yes	Asch 56	9	0	26.4	0.0	0.67
Larsen (1990)		Asch	USA	6	Str	Yes	Asch 56	22	55	24.2		0.99
Gorfein (1961)		Asch	Canada	5	Str	Yes	Asch 52	24	NA	29.2		1.37
Western Europe												
Seaborne (1962)		Asch	UK	5	NI	Yes	Unique	20	NA	36.8	23.5	0.45
Perrin & Spencer (1981)	Students	Asch	UK	6	Str	Yes	Asch 56	33	0	30.0		0.00
Perrin & Spencer (1981)	West Indians	Asch	UK	5	Str	Yes	Asch 56	16	0	27.1		0.90
Perrin & Spencer (1981)	Probationers	Asch	UK	5	Out	Yes	Asch 56	20	0	31.3		0.89
Vine (1981)		Asch	UK	NA	NI	Yes	Asch 56	16	NA	27.6		1.08
Nicholson, Cole, & Rocklin (1985)		Asch	UK	3	NI	Yes	Asch 56*	38	0	4.8	0.0	0.48
Abrams, Wetherall, Cochrane, Hogg, & Turner (1990)	In-group majority/public response	Asch	UK	3	Str	Yes	Asch 56*	12	54	58.1		1.98
Abrams et al. (1990)	In-group majority/private response	Asch	UK	3	Str	No	Asch 56*	12	54	33.3		1.13
Abrams et al. (1990)	Out-group majority/public response	Asch	UK	3	Out	Yes	Asch 56*	12	54	8.3		0.28
Abrams et al. (1990)	Out-group majority/private response	Asch	UK	3	Out	No	Asch 56*	12	54	25.9		0.88
Avramov-Kiwetz & Gaffié (1974)	Majority peers	Asch	France	4	Acq	Yes	Unique	24	100	8.3	0.0	0.67
Avramov-Kiwetz & Gaffié (1974)	Majority strangers	Asch	France	4	Str	Yes	Unique	24	100	3.1		0.45
Vlaander & van Rooijen (1985)		Asch	Holland	7	Str	Yes	Asch 56	20	75	24.2	3.3	0.74
Doms & van Avermaet (1981)		Crutchfield	Belgium	3	Str	Yes	Unique	NA	NA	36.5	4.0	1.13
Hatcher (1982)		Crutchfield	Belgium	4	Str	Yes	Asch 56	19	50	32.0	0.9	1.08
Doms & van Avermaet (1985)	Experiment 1a	Crutchfield	Belgium	2	Str	Yes	Unique	NA	NA	30.8	4.0	0.93
Doms & van Avermaet (1985)	Experiment 1b	Crutchfield	Belgium	2	Str	Yes	Unique	NA	NA	22.0	4.2	0.62
Timaeus (1968)		Asch	Germany	7	NI	Yes	Asch 56	35	37	NA	NA	0.92
Neto (1995)		Asch	Portugal	3	Str	Yes	Asch 56*	39	100	18.2	3.3	0.58
Far East												
Frager (1970)	No prize	Asch	Japan	3	Str	Yes	Asch 56*	62	48	23.8	5.0	0.67
Sako (1975, cited in Matsuda, 1985)		Asch	Japan	NA	NI	Yes	Asch 56	NA	NA	18.2		0.73
Sako (1979, cited in Williams & Sogon, 1984)		Asch	Japan	NA	NI	Yes	Asch 56	NA	NA	22.0		0.89
Williams & Sogon (1984)	Majority peers	Asch	Japan	3	Acq	Yes	Asch 52	24	0	50.6		3.11
Williams & Sogon (1984)	Majority strangers	Asch	Japan	3	Str	Yes	Asch 52	36	50	27.8	0.0	1.69
Whittaker & Meade (1967)		Asch	Hong Kong	8	NI	Yes	Asch 52	14	NA	31.6		1.93

Appendix continues

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Appendix A (continued)

Appendix continues

| | | | | Conditions of responding | | | | Participants | | Results | | |
Source	Experimental condition	Country	Paradigm[a]	Majority size	Majority type[b]	Was response known to majority	Stimuli[c]	n	% women	% errors	% errors controls	Effect size d[d]
Far East (continued)												
Chandra (1973)	Fijians	Fiji	Asch	8	In/Out	Yes	Asch 52	27	49	35.5		1.77
Chandra (1973)	Fijian Indians	Fiji	Asch	8	In/Out	Yes	Asch 52	24	49	58.3		3.20
Africa												
Whittaker & Meade (1967)		Zimbabwe	Asch	8	NI	Yes	Asch 52	20	NA	50.7	7.2	2.72
Claeys (1967)		Zaire	Crutchfield	4	Acq	Yes	Unique	92	0	35.8	14.7	0.89
McKissack (1971)		Ghana	Asch	5	Str	Yes	Asch 56	26	NA	47.4	0.5	1.91
South America												
Whittaker & Meade (1967)		Brazil	Asch	8	NI	Yes	Asch 52	33	NA	34.1	1.9	2.05
Rodrigues (1982)	Experiment 1	Brazil	Asch	NA	NI	Yes	Asch 56	NA	NA	35.0		1.43
Rodrigues (1982)	Experiment 2	Brazil	Asch	NA	NI	Yes	Asch 56	NA	NA	32.0		1.31
Middle East												
Amir (1984)		Kuwait	Asch	8	NI	Yes	Asch 52	80	50	29.3	4.8	1.03
Whittaker & Meade (1967)		Lebanon	Asch	8	NI	Yes	Asch 52	48	NA	30.9	5.5	1.59

[a] Asch = confederates in face-to-face situation; Crutchfield = participants in individual booths given false feedback on others' responses.   [b] Str = majority were strangers to participant; Acq = majority were friends or acquaintances of participant; Out = majority identified as out-group members; In/Out = majority identified as both in-group and out-group members; NI = no information available.   [c] Asch 52 = the sets of lines reported in Asch (1952b) consisting of 12 trials of which 7 are critical; Asch 56 = the sets of lines reported in Asch (1951, 1956) consisting of 18 trials of which 12 are critical; Asch 52* = Asch (1952b) stimuli with slight modifications; Asch 56* = Asch (1951, 1956) stimuli with slight modifications; Unique = author constructed own stimulus set.   [d] Measure of effect size using the experimental group standard deviation as denominator and correcting for bias. NA = not available; E = experimenter; Ss = participants.

Appendix B

Intercorrelations Between Moderator Variables for Full Sample and for U.S. Studies Only

	Variable	1	2	3	4	5	6	7	8
	All studies ($n = 133$)								
1	Type of paradigm[a]	—	-.29	.16	-.01	-.17	-.20	.03	-.11
2	Majority size (SIM)[b]		—	.01	.01	-.20	.07	-.01	-.25
3	Response known to majority[c]			—	.10	.00	-.03	.03	-.07
4	Stimulus ambiguity[d]				—	.23	.02	.02	-.21
5	Consistency of majority[e]					—	.10	.04	.08
6	Majority out-group or not[f]						—	-.01	.02
7	Percentage of female respondents							—	.21
8	Date of study								—
	U.S. studies ($n = 97$)					.			
1	Type of paradigm[a]	—	-.10	.19	-.08	-.34	-.24	.11	-.08
2	Majority size (SIM)[b]		—	-.10	.06	.05	.04	-.03	.05
3	Response known to majority[c]			—	.11	.01	-.10	.03	.00
4	Stimulus ambiguity[d]				—	.28	.04	.08	-.17
5	Consistency of majority[e]					—	.16	-.01	.07
6	Majority out-group or not[f]						—	.01	.06
7	Percentage of female respondents							—	.22
8	Date of study								—

[a] Coded: 1 = Asch (1956) paradigm, 2 = Crutchfield (1955) paradigm. [b] Tanford and Penrod's (1984) social influence model (SIM). [c] Coded: 1 = participants response available to majority, 2 = not available. [d] Discrepancy between correct line and line chosen by majority in inches. [e] Ratio of number of critical trials to total number of trials. [f] Coded 0 = majority not an out-group, 1 = majority an out-group.