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Conformity, Gender and the Sex Composition of the Group

Abstract
In light of the current debate of the sex distribution in Swedish company boards we study how a proportional increase of women would affect conformity behavior. We compare conformity levels between men and women as well as conformity levels between same-sex and mixed-sex groups. The results suggest that same-sex groups conform significantly more than mixed-sex groups due to higher levels of normative social influence. No differences are found in the levels of informational or normative social influence between men and women. These finding possibly suggest lower levels of normative social influence in company boards with more equal sex distribution.

Key Words: Conformity, Gender Differences, Group Composition

Authors: Makan Amini*
Fredrik Strömsten**
Tutor: Tore Ellingsen
Examiner: Örjan Sjöberg

*E-mail: 21248@student.hhs.se
**E-mail: 21159@student.hhs.se

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1. Introduction

> "The reward for conformity was that everyone liked you except yourself".
>
> Rita Mae Brown (1994)

Conformity, the process in which an individual's behaviors, attitudes or belief either unconsciously or consciously is adjusted to meet the ones of the group's, is well described in the psychological literature (Kenrick et al., 1999). In a series of now classic studies, Asch (1952), showed that surprisingly many of us find it hard deviate from the norms of a group and risk social disapproval, even if we are most certain the norms are wrong. It is easy to see how conformity, particularly in the form where one, without agreeing, consciously conforms to a collective consensus may jeopardize the quality of a group's decisions, making it a particularly interesting phenomenon to study. Numerous factors of conformity have been examined in the past, with gender being one of the more popular (e.g. Crano, 1970; Crutchfield, 1955; Reysen & Reysen, 2004). One particularly under-researched topic, however, is the effect of the sex-composition of a group on the conformity behavior (Eagly, 1987). Most previous research have been conducted in the United States, dates back to the 1960s and 1970s, shows little unanimity and is, in our opinion due to poor experimental design, not able to deduce the possible reasons behind these effects.

The importance of understanding the potential effects of conformity and the sex composition of the group is possibly of particular interest in Sweden at current time with an intensive ongoing debate of the representation of women in company boards. In January 2010 the Swedish liberal conservative Moderate Party announced that they were in favor of a gender quota legislation if the number of women in public company boards has not doubled before 2014 (Sveriges Radio, 2010). Later in March, Mona Sahlin, leader of the democratic socialist Swedish Social Democratic Party, said that she would enact a gender quota law already in 2012 if her coalition were to win the national elections in September 2010 (Sveriges Television, 2010). In the general public, the case for a more even gender balance in public company boards have involved arguments of equality (Norwegian Government, 2010) but also diversity as an asset that increases the profitability of companies (Svenska Dagbladet, 2009; Dagens Nyheter, 2010). The Swedish power company Vattenfall, for example, argued that diversity not only increases board innovativeness, but also reduces the risks for "group think" (Vattenfall, 2010). Thus, both the arguments for and the effect of an increased representation of women are complex issues. In this

thesis, we will concentrate on that latter argument. With the board being the highest decision making unit of a company, clearly an inhibited decision making process stemming from groupthink or conformity may have far-reaching consequences. By not only investigating the relationship between gender and conformity on an individual level, but also the effect on conformity stemming from the sex-composition of the group, we hope to contribute to the understanding of how an increased proportion of women in Swedish company boards could be expected to affect conformity behavior. If gender diversity could be shown to lessen the anticipated levels of conformity, this would possibly be yet another argument in support of an increased proportion of women in Swedish company boards.

The remainder of this thesis will be organized as follows: Section 2 starts by describing previous research on conformity with a focus on gender differences. Section 3 will present the experimental design and statistical methods followed by the results in Section 4. Section 5, finally offers a discussion on the results and suggestions of possible topics for future research.

2. Previous Research

In economic literature, conformity has often been explained by correlated effects, payoff externalities, information externalities or social preferences (Corazzini & Greiner, 2007). Correlated effects are said to be the cause of conformity when agents behave similarly for the reason that they are exposed to the same exogenous influences (Manski, 2000). Payoff externalities lead to conformity when the actions of an agent affect the payoffs of other agents in such way that everybody choosing the same action constitutes equilibrium (Arthur, 1989; Scharfstein & Stein, 1990; Schelling, 1960, 1978). For example, conventions such as driving on the right- or left-hand side of the road are self-enforcing once a few individuals follow the convention.

According to the third explanation, information derived from observing the choices of predecessors can induce an individual to ignore his private information in the decision making process (Banarjee, 1992; Bikchandi et al., 1992; Corazzini & Greiner, 2007). Finally, in economic and psychology literature, agents are often assumed to have a preference for conformity (Jones, 1984; Kenrick, Neuberg & Cialdini, 1999). Goeree and Yariv (2006), among others, show that, independently of their statistical information, the choices of others matter to individuals. Since conformity reduces the expected inequality between subjects, also other preferences such as inequality aversion have been assumed to influence (Bolton & Ockenfels, 2000; Dawes et al., 2007; Fehr & Schmidt, 1999)

As neither correlated effects nor payoff externalities are likely to depend upon characteristics of the agents this paper will focus on the latter two explanations, information externalities and social preferences. Extensive research has been conducted on both these explanations and rather than reproducing this research in its entirety, we focus below on some of the most influential reports in the field. For a more extensive review of previous research we refer the reader to Wren (1999) or McIlveen and Gross (1999).

2.1 General Conformity Research

2.1.1 Information Externalities (Informational Social Influence)

In psychological literature, the act of conforming to the behavior of others due to private acceptance of their behavior as a source of information is usually called informational social influence (Aronson et al., 2005) and was first documented by Muzafer Sherif (1936). In Sherif's experiment, the participants were first seated alone in a dark room and asked to focus their

attention on a small dot of light fifteen feet away. The participants were then asked to estimate how far the light had moved, which in fact was not moving at all. Instead, the effect was a result of an optical illusion known as the autokinetic effect. In the second phase of the experiment, participants were paired in groups of three, each who had the same prior experience alone with the light. This time, over the course of several trials, the participants agreed on a common estimate and each member conformed to that estimate. Even when the participants in a third phase were asked to judge the lights once more by themselves, they continued to give the same estimate as they had previously reached in groups. Sherif suggested that the participants had internalized the agreed estimate and that they were using each other as a source of information (Sherif, 1936).

Sherif's experiment has since led to countless variations of the study, the results of which have highlighted the importance of informational social influence in group conformity. Some key findings of this literature are that the likelihood of informational social influence increase with: (a) the ambiguity of the situation (Allen, 1965; Tesser et al., 1983; Walther, et al., 2002), (b) if the situation is perceived as a crisis (Aronson et al., 2005), (c) the perceived expertise of other group members (Allison, 1992; Cialdini & Trost, 1998) and (d) the task importance and the importance of being accurate (Baron et al., 1996; Levine et al., 2000).

2.1.2 Social Preferences (Normative Social Influence)

In contrast to informational social influence, normative social influence occurs when the influence of other people leads us to conform in order to become liked or accepted by them. This type of conformity results in public compliance with the group's behavior and beliefs without necessarily the private acceptance of them (Cialdini et al., 1991; Deutsch & Gerard, 1955; Levine, 1989; Nail et al., 2000).

Among the first to study this type of conformity behavior in a lab setting was Solomon Asch (1951, 1956). In a series of now classic studies he explored how a person's opinion of the size of an object was influenced by the opinion expressed by others. Naturally, people conformed in the Sherif studies, Asch reasoned, because the situation was highly ambiguous. But when the situation was completely unambiguous, he expected, people would act like rational and objective problem-solvers. Contrary to Asch expectations, 76 percent of the participants submitted themselves to the group's opinion on at least one trial, despite them being obviously wrong. On average, people conformed on about a third of the twelve trials on which the confederates gave the incorrect answer. In a control group, however, there were almost no errors of opinion (Asch,

1952). In a variation of the study, Asch (1957) confirmed the power of social disapproval in forming a person's behavior. When the participants, instead of announcing their answers out loud, were allowed to write them down on a piece of paper, conformity fell dramatically (Insko et al., 1986; Nail, 1986; Aronson et al., 2005).

Asch findings, that conformity for normative reasons can occur simply because one does not want to risk social disapproval, even from strangers we will never see again, have been reaffirmed through decades of research (e.g. Tanford & Penrod, 1984). Some key findings of this literature are that the likelihood of normative social influence increases with: (a) the size of the group, but at a diminishing marginal effect (Bond, 2005; Gerard, Wilhelmy & Conolley, 1968), (b) the importance of the group to the subject (Guimond, 1999; Nowak et al., 1990; Wolf, 1985), (c) if the group's culture is collectivistic (Bond & Smith, 1996; Milgram, 1961, 1977) and (d) if the subject has no allies (Allen & Levine, 1969; Nemeth & Chiles, 1988).

Later research has also examined the effect of task importance on normative social influence (Baron et al., 1996; Levine et al., 2000). Contrary to the case of informational social influence, normative social influence decrease with task importance and the importance of being accurate. However, even in settings with high importance of being accurate, people still demonstrated a tendency to conform (Baron et al., 1996). Thus, even when the group is wrong, there are strong incentives to be accurate and the correct answer is obvious, some people will find it hard to risk social disapproval, even from complete strangers (Hornsey et al., 2003). These findings have been summarized in Bibb Latané's (1981) *social impact theory*, a mathematical formula that has effectively predicted the actual amount of conformity in a series of studies (Bourgeois & Bowen, 2001; Latané, 1981; Latané & L'Herrou, 1996).

2.2. Gender Differences in Conformity

2.2.1 Gender as an Individual Variable

For many years, the prevailing wisdom was that there indeed was a difference between the sexes. In a review of the literature on conformity, Nord (1969) concluded that "[i]t has also been well established, at least in our culture, that females supply greater amounts of conformity under almost all conditions than males" (p. 198). The usual explanation was that these sex differences were "conditioned consequences of differences between prescribed roles for the male and female in our culture" (Krech et al., 1962, p. 523). Early empirical studies in a variety of group-pressure situations also appeared to support this supposition that women would yield more to social

pressure than men (e.g. Crutchfield, 1955; Endler, 1966; Patel & Gordon, 1960; Tuddenham, 1958). In at least a few experimental studies, however, the typical observation of a difference between the sexes was not apparent (e.g. Allien & Levine, 1969; Sistrunk, 1969; Timaeus, 1968) but these results were often explained as unusual exceptions to a longstanding rule (Sistrunk & McDavid, 1971).

Cooper (1979), however, raised an objection regarding the methodological approach of the "traditional literature review" (p. 132) on the matter, arguing that it "usually ignores the issue of relationship strength by rarely assessing the size of the effect under study" (p. 132) and "imprecisely weights conclusions with respect to the volume of available evidence" (p. 132). In an attempt to replace the traditional literary models of research with a statistical model, Cooper performed a meta-analysis of 47 independent studies of influenceability and conformity, concluding that the evidence at hand supported that females conform more than males. This was at odds with the conclusion Maccoby and Jacklin (1974) had reached using the very same sample. However, Cooper noted, these results were sensitive to the possible existence of a "publication bias" (p. 137), that null results or results that contradict previously published findings probably constitute the most frequent omissions from the literature.

With an increasing frequency of non-significant findings on this effect, Sistrunk and McDavid (1971) then questioned whether the social behavior of men and women were changing or whether it instead was something in the experimental procedures that had gradually changed. The authors suggested the latter hypothesis was correct and proposed that female conformity instead resulted from the use of task content that was more suited to men by virtue of greater interest and/or knowledge. This, according to the authors, would then be consistent with the findings of, among others, Allen (1965) that conformity increases with the ambiguity of the situation. Through a series of studies, in which they explicitly manipulated the sex-relevance of content, Sistrunk and McDavid established support for their hypothesis. An interaction of gender and sex-relevance of content was found, indicating that women was more likely to respond in the direction of a fictitious majority with masculine content and men more likely to do so for feminine content (Sistrunk & McDavid, 1971). Subsequent studies by Goldberg (1974, 1975) replicated these initial findings and similar results were also obtained by Cacioppo and Petty (1980).

The Sistrunk and McDavid (1971) study, however, also attracted some heavily criticism. Karabenick (1983) raised the question whether the conclusions of Sistrunk and McDavid and similar studies were justified based on the design to measure conformity itself. Karabenick

pointed out that those studies operationalized conformity as agreement with a fictitious majority's counterfactual assertions. Thus, since incorrect responses and conformity were cofounded, the conclusion that these agreements with the counterfactual statement relied on an assumption of equal content knowledge. If this assumption was relaxed, some unknown proportion of the "conformity" may be due to variations in knowledge of the correct response, Karabenick argued. Replicating the Sistrunk and McDavid (1971) study, this time controlling for differences in previous knowledge, Karabenick however confirmed the findings of previous research.

Eagly and Carli (1981) also denied the implications of the Sistrunk and McDavid study, arguing that the explicit manipulation of sex-typed content in the study was larger than the content variance in previous studies and thus not likely to account for the difference in conformity between the sexes. In a meta-analysis of 145 studies of influenceability and conformity, Eagly and Carli, found no evidence that masculine stimulus materials had been overrepresented. Thus, they concluded, "the idea that researchers have selected a larger proportion of male-oriented topics than is characteristic of the natural environment is not supported" (p. 16). Instead, Eagly and Carli arrived at the same conclusion as Cooper (1979) had done, that women were more persuasible than men even though the effect was small.

Another finding of the study, however, that was both surprising and controversial, was the relation obtained between the sex of the researchers and the outcomes of their experiments. Male researchers, it appeared, were more likely to obtain female influenceability and conformity than were female researchers. In studies authored by women, there was no sex difference. Both male and female researchers, Eagly and Carli suggested, "portray their own gender more favorably than researchers of the opposite sex do. Researchers may design, implement, or report their studies in a way that results in an egotistical or flattering portrayal of the attributes of their own gender" (p. 17).

Sex differences in conformity has also been shown to depend on the type of conformity pressures imposed on people (Aronson et al., 2005). Gender differences are especially likely to be found in group pressure situations where an audience can directly observe how much a person conforms. (Cooper, 1979; Eagly, Wood & Fishbaugh, 1981; Maccoby & Jacklin, 1974; Reysen & Reysen, 2004). This was the situation of, for instance, the Asch (1951) experiment. In other situations, without surveillance, where we are the only ones who know whether we conform, sex differences virtually disappears (Aronson et al., 2005).

Newton and Schulman (1977) pointed out that one major drawback of most research on sex differences in conformity is that they are "unable to specify if the difference between females and males is due to the informational influence alone, the normative effect alone, or a combination of these sources of influence" (p. 512). Instead, they proposed, the components of conformity could be sorted out by comparing responses between subjects who have information about the group's responses and are anonymous to the group (anonymous condition) and subjects who have information about the group's responses and whose responses can be evaluated by the group (known condition). The results of the study, however, failed to support the hypotheses that there are sex differences in susceptibility to informational or normative influence. Although, as Eagly et al. (1981) noted, the Newton and Schulman (1977) study was compromised by the elimination of 40 percent of their subjects for suspicion of deception and other difficulties.

Eagly et al. (1981) used a similar approach to that of Newton and Schulman (1977) to sort the components of conformity. In the Eagly et al. experiment, all subjects gave their opinions twice after receiving the other members' opinions: once (with or without surveillance) as a part of the interaction between group members and again after this interaction had been terminated.

> To the extent that a shift toward other members' opinions manifested during the interaction is not maintained outside of the group context, the opinion change is likely to be a strategic or tactical response rather than an internalized belief and to be delivered for social impact rather than for expressing one's true opinion (Eagly et al. 1981, p. 386).

If females' greater conformity was due to interpersonal concern, they hypothesized, this conformity might not represent internalized beliefs and the manifested opinion would thus not be maintained outside of the group context. In accordance with their hypothesis, women were more conforming than men, but only when other group members had surveillance over subjects' opinions. This, they concluded, lent support to the idea of greater interpersonal concern among women (Eagly et al., 1981)

Eagly (1987) suggests that the pattern of this result may stem from the social roles men and women are taught in society where, she argues, women are taught to be more agreeable and supportive, whereas men generally are taught to be more independent in the face of direct social pressures. Another interpretation of this sex difference is that sex functions as a status cue in newly formed groups (Berger et al, 1977; Lockheed & Hall, 1976). Other examples of such status cues are race, age and physical attractiveness (Eagly & Chrvala, 1986). As status cues affect the

expectations of other people's performance, where higher status is associated with a greater likelihood of effective contribution to the group's task, higher-status people are consequently given more opportunities to participate. If men then generally have higher status than women in families or organizational hierarchies, sex might serve as a status cue leading men's comments to be taken more seriously. This in turn, would give males more latitude for nonconformity without facing rejection by the other group members. (Eagly et al., 1981; Ridgeway, 1978). Some support for this interpretation of sex differences in conformity has been obtained by studies of perceived influence (e.g. Eagly & Wood, 1982)

2.2.2 Conformity and the Sex Composition of the group

In stark contrast to gender as an individual variable, the effect on conformity stemming from the sex-composition of the group has been a topic of only limited research. Early literature on the matter often assumed that group conformity primarily was a function of the proportion of men, where both males and females were expected to be more influenced by the judgments of males than by judgments of females (Reitan & Shaw, 1964; Tuddenham et al., 1958) The theoretical foundation for this supposition mainly stemmed from the gender role and status cue hypotheses previously mentioned. It was argued that females in the society play a relatively submissive role, whereas males play a relatively dominant role (Eagly, 1987). Furthermore, the prevailing stereotyped belief was that men were superior to women in certain areas of cognitive functioning, such as judgments of size and distance. These considerations lead both to the expectation that females would demonstrate more conformity behavior than males, and that both males and females would be more influenced by the judgments of males than by the judgments of females (Crano, 1970; Messé et al., 1968; Reitan & Shaw, 1964) Crano (1970) proposed that "if the norms of a situation define the male as the more able […], then the most logical strategy for the female would be to follow his lead, while he should resist her influence and depend upon his own perceptions" (p. 241).

The early experimental evidence, however, was conflicting. Tuddenham et al. (1958) reported findings in accord with such expectations, with females confirming more in mixed-sex groups and men more in same-sex settings. The results of Luchins and Luchins (1955) though, indicated that both men and women tended to confirm more in cross-sex settings. In their experiment, Luchins and Luchins found that in dyads males tended to conform more to the erroneous judgments of a female confederate than to erroneous judgments of a male confederate.

Eagly (1978) claimed that "little can be concluded from such a diversity of findings, particularly in view of the generalizability problems inherent in several of these studies' use of only one or very few influencing agents of each sex" (p. 99). Instead, she joined in the Newton and Schulman (1977) criticism arguing that the effects of communicator sex would not be understood until they were conceptualized to take into account the message recipient's goals. As Newton and Schulman had pointed out, conformity may occur both for normative and informational reasons (Deutsch & Gerard, 1955; Eagly, 1978; Kelman, 1958, 1961). If the recipient is concerned primarily with obtaining valid information, Eagly argued, males' usual edge in perceived competence may lend them greater power to influence both women and men (Eagly, 1978). However, if interpersonal goals are primary, other patterns may obtain, depending on the exact nature of these goals. Shaffer (1975), for example, suggested that communicator sex may influence sex differences in conformity through interpersonal attraction. Another consideration regarding the effects of communicator sex is that:

> Normative pressures regulating the overt expression of opinions may vary with the composition of the communicator-recipient dyad. For example, in a traditional setting, males may follow a norm of chivalry and therefore show more overt agreement in the presence of a female compared with a male influencing agent. Females may adhere publicly to a norm of deference to a male authority and therefore show more overt agreement with males than with females. Such pressures may create effects of communicator sex on the behavior of agreeing, and these would be independent of any effects on genuine change of attitude and beliefs (Eagly, 1978, p. 99).

The theoretical debate notwithstanding, only few empirical studies have been conducted. One of the most cited of these studies on the relationship between conformity and sex-composition of the group is Reitan and Shaw (1964). In a study of 96 subjects, they found that all subjects, regardless of sex, conformed more in mixed-sex contexts. Thus, leading them to conclude that "the bulk of the evidence at the present time seems to indicate that both sexes conform more in mixed-sex than in same-sex groups" (p. 50). Since then, not many studies have focused explicitly and systematically on the effects of sex heterogeneity on conformity behavior and, as Schruijer and Mostert (1997) pointed out, the wisdom that "members are expected to conform more in mixed-sex than same-sex groups" (p. 176) still prevails.

2.3 Summation of Previous Research and Hypotheses

Gender, and its' implications for conformity behavior, has been one of the most widely studied individual variable in conformity research. Researchers, however, have yet to reach anything near consensus. For many years, gender differences in conformity were regarded as an undisputable fact. More recent studies, however, have started to question this supposition, partially on methodological grounds. Nevertheless, it appears as if most research point in the direction of women being more susceptible to social influences, but that this relationship is closely linked to a) the sex-relevance of the task content and b) the type of conformity pressures impinged on people. Thus, we formulate our first two hypotheses accordingly:

Hypothesis I: *Females will exhibit more conformity behavior than males.*

Hypothesis II: *Females will yield more normative social influence than males.*

In contrast to gender as an individual variable, sex-composition of the group has been the subject of only limited previous research. Even so, there seems to exist a consensus on that mixed-sex groups are expected to conform more than single-sex groups. This difference has generally been explained as stemming from interpersonal concerns. However, we argue, this consensus appears to be built on fragile grounds mainly referring to a single study conducted in the 1960s. Further, in order to incorporate some of the criticism of Newton and Schulman (1977) regarding the inability of previous research to specify the underlying reasons for a possible difference in conformity, we will make use of a method similar to that of Eagly et al. (1981). By doing so, we hope to contribute to greater clarity regarding the underlying causes of any potential effect of sex-composition on overall conformity. Thus, we formulate our last two hypotheses accordingly:

Hypothesis III: *Members of mixed-sex groups will conform more than members of same-sex groups.*

Hypothesis IV: *Members of mixed-sex groups will yield more to normative social influence than members of same-sex groups.*

3. Experimental Design and Statistical Methods

The experiment was designed to effectively test the four formulated hypotheses and simultaneously be comparable to real world situations when company board members express their opinions in traditional face-to-face meetings. The experiment rounds were performed at the Stockholm School of Economics (hereafter SSE) over seven days in the end of April 2010 after three pilot rounds with non-student subjects (hereafter denoted "*S*s") had been conducted. The pilot rounds are not included in the results since the design of the experiment was considerably improved before the real experiment rounds.

3.1 Experimental design

3.1.1 Participants

A total of 113 students (56 men and 57 women) participated in the experiment. All *S*s were treated to a lunch and lottery ticket[1] in order to increase the number of participants. The age of participants ranged from 18 to 29 years with a mean of 21.6 and median of 21. Fifty of the students were enrolled in 2009, 22 in 2008, 37 in 2007 and 4 earlier than 2007. Nineteen groups were randomly formed out of which six groups contained only women, six groups contained only men and seven groups contained an equal proportion of women and men. All groups consisted of six participants except from one which consisted of five participants due to a late dropout[2].

3.1.2 Procedure

Participants received a random number (1-6) and were seated in a circle structure facing each other with screens preventing them from seeing the tables of other participants. The instructor informed the participants that the study would observe how their problem solving ability was affected by different external factors and that further explanation would be given after the completion of all experiments. Participants were then asked to introduce themselves to the rest of the group with their name, age and grade in order to decrease the level of anonymity between group members.

[1] Students enrolled 2009 were also paid a show-up fee of 100 SEK. The exchange rate for USD/SEK was around 7.2 for the time of the experiment.
[2] For purpose of simplification the description of the experimental design will be reported for groups with six participants only.

The experiment consisted of three different problem solving parts which were solved after each other (hereafter denoted P1, P2 and P3). P1 and P3 contained eight problems while P2 contained thirty. Problems in P1 and P3 were identical though presented in a different order. The same eight problems were also found in P2. All problems followed the same structure where the *S* was shown a three times three matrix with one of the nine squares missing. The *S*s were asked to use the logical patterns found in the matrix and choose one of the alternatives (A-E) which they believed best fit the missing square. The squares contained both figures and digits (although never both in the same question) and were either similar to or direct copies of the questions used in the Mensa Sweden's sample test measuring IQ-levels up to 126 points.

P1 and P3, with a time limit of four minutes each, were solved individually and silently with participants using pens to mark their answers. In P2 *S*s were asked to state their answers out loud. The instructor told the *S*s when to move on to the next problem. *S*s were given twenty seconds to choose an answer and were then asked to give their answer, one after each other. The answers were given in a clockwise direction with the person starting shifting for each problem so that all participants started (and ended) the answering rounds five times each. *S*s were informed that they should make an individual decision during the silent twenty seconds and that they were all facing the same problems. They were also instructed to only state their answer loud and clear without any further explanation or justification.

The actual design of the questions differed from the instructions given to the *S*s. All participants were given the same problems in P1 and P3 but in twelve of the thirty answering rounds in P2 one participant was presented with a different problem than the rest of the group. Thus, twice in P2 each *S* was facing a problem with a correct answer that differed from the five other participant's problem and correct answer. The two problems which differed from the rest of the group's (see *Appendix A*) were the same for all participants (hereafter called E and H with the E-problem beforehand believed to be significantly easier than the H-problem). Both E and H were included in P1 and P3 as well.

The *S* with the E- or H-problem always answered after the other five participants. The other problems were designed to be easy enough for the participants to give a unanimous answer thus leaving the sixth *S* with the choice of either conforming to the group's incorrect answer or deviate from the group by stating the correct answer. The technique left the last *S* in a situation

very much similar to Asch's original study from 1952[3], at the same time offering the advantages of using all six participants as true *S*s at different problems.

3.1.3 Strategies Used to Decrease Risk of Overly Suspiciousness

One important consideration regarding the design of any conformity experiment is that participants should not be overly suspicious concerning deception or persuasive intent (Eagly et al., 1981; Glinski et al., 1970; Stang, 1976). Stricker et al. (1967), for instance, found that the suspiciousness is negatively related to conformity scores, which increases the risk for not identifying any potential differences. In our study, all experiment rounds were conducted in the same university, over a time period of seven days and were relatively similar to the fairly well-known conformity study by Asch (1952). These factors increased the risk that participants would see through the experiment, become aware of its true purpose and maybe reveal it to students who had not yet participated. This, in turn, would decrease the validity of the study as an experiment of genuine behavior. Our pilot experiments confirmed our qualms and for the real experiment a number of strategies were introduced to minimize these risks.

The second phase of the experiment, P2, started with six problems which, as instructed, were completely identical for all *S*, thus increasing the participants' trust in the experiment and information given by the instructor. In the following twenty-four problems, one participant was facing either the E- or H-problem half the time. Thus, a total of eighteen problems identical for all *S*s were used in P2. Another method used in the design of the questions was to apply the findings of our pilot rounds regarding which answers were second most likely to be chosen after the correct one for each problem. The correct answer to the E- and H-problem was then matched to the other participants' second most likely answer and their correct answer were likewise matched to the second most likely answer to the E- and H-questions. Consequently the participants' suspicion that a different problem was presented to the last *S* answering should have been reduced.

Furthermore, the very type of problems chosen in the study also served the purpose of reducing the risk of participants seeing through the setting. Problems were hard to duplicate outside the experiment room due to their rather complicated figures and the fact that the experiment reminded of an intelligence measuring exercise was believed to further decrease participants' interest in discussing the problems at a later point.

[3] In the Asch (1952) experiment, all group members except one were confederates (actors stating pre-determined incorrect answers).

A final method used was the framing of the whole experiment as caffeine-related. Before participants actually answered P1 they were asked to fill out a questionnaire regarding their intake of caffeinated beverages. Between P1 and P2 half the group was asked to drink one glass of a well-known caffeinated energy drink. The rest of the group drank one glass between P2 and P3.

The explanation of the use of the questionnaire or the intake of the energy drink was never given thus leaving the participants to draw their own conclusions. It is, however based on the participants' comments after the experiments, reasonable to conclude that the questionnaire and energy drinks served the purpose of passively encouraging the students to think that the caffeine and not the social pressure was the external factor affecting their problem solving skills.

3.1.4 Breakdown of Conformity in Informational and Normative Social Influence

By dividing the experiment into three different parts, with the first and last answered in private and the second part answered in group under surveillance we intend to incorporate some of the criticism of Newton and Schulman (1977) into our methodological design. Since the E- and H-problems are present in all three parts of the experiment, it will be possible to observe how *S*s answer the same problem in three different situations. In P1 *S*s have no information of how other group members have answered and their answers are not shared with the group. In P2, *S*s are both given the opportunity to hear other group members answer to what, they think, are the same problems as they are facing and then asked to share their own answer with rest of the group. Finally, in P3 the questions are again answered in private, but the *S*s now have information on how the other group members have responded to these problems.

Eagly et al. (1981) suggested that a shift toward other members' opinion that is only manifested during the interaction and not maintained outside of the group context is likely to be a strategic or tactical response delivered for social impact rather than an internalized belief. In our experiment then, *S*s conforming due to such normative reasons should revert back to their original answer in the third part when the interaction with other group members has been terminated. If the change of opinion instead is a manifest of an internalized belief the *S*s should maintain this answer also in the third part of the experiment.

3.1.5 The Classification Scheme

Conformity is noted whenever *S*s change to the group's false answer (F_G) in P2 after previously, in P1, having stated an answer different from F_G. The conformity is noted as a case of normative

social influence if the answer given by the *S* in P3 differs from F_G or a case of informational social influence if the answer given by the *S* in P3 is still F_G. This implies that *S*s do not conform when they differ from the group in P2, either stating the right answer or a wrong answer separate from F_G.

Earlier research has indicated that the level of conformity is considerably reduced when one of the other group members support the *S*'s point or even opposes the group with an opinion which is not shared by the *S* (Asch, 1952; Morris and Miller, 1975; Nemeth and Chiles, 1988). In order to increase the liability of the study, observations where the other group members did not answer unanimously were excluded from the results. Observations were also excluded in the situations where the *S*, accidentally or intentionally, had chosen F_G in P1 and stuck to this answer in P2.

3.1.6 Background Information of Participants

In order to enable the inclusion of several control variables, a shorter demographic questionnaire was also distributed to the *S*s. However, we anticipated that the questionnaire could raise suspicions regarding the actual intent of the experiment as it, among other things, included questions regarding previous interpersonal relations among the *S*s. Hence, the questionnaire was not sent out until all experimental rounds had been completed. The drawback of this method, however, was that some of the control variables only could be calculated on a group level. The survey was distributed over e-mail and the *S*s were given a list of the names on the other members of their group and asked to rank how well they knew the other students on a five-point scale. They were also asked for information regarding how many of their parents were born overseas as an approximation for ethnicity.[4] For an English translation of the questionnaire, please see *Appendix B*. Finally, age and matriculation year of the *S*s was extracted primarily from an internal school database in combination with public records.

3.1.7 Statistical Methods

Following the classification scheme, the dependent variable can assume values of 0, 0.5 and 1 depending on the percentage of the time each *S* conforms to the group's faulty answer. In accordance with, among others, Schulman (1967) and Beloff (1958) we use both parametric, the Student's t-test, and non-parametric, the Mann-Whitney U-test, tests to statistically verify any differences. Performing the one-sample Kolmogorov-Smirnov test, we conclude that our data is

[4] Similar proxies are used by Statistics Sweden (Statistiska Centralbyrån).

not normally distributed (see *Appendix C*) and we thus only perform the parametric Student's t-test when the number of observations is larger than 30 (as suggested by Newbold et al., (2007)). Further, in order to enable the inclusion of control variables that we anticipated could differ systematically between the sexes and different group constellations, several linear regression models was estimated using the Ordinary Least Square (OLS) method.

The variables included in the linear regression models are presented in *Table 1*. The dependent variable is either *TotalConformity*, *NormativeConformity* or *InformationalConformity* and may assume values between zero and one for each *S*s. The number of explanatory variables is at most five. The first one, *Combined*, is a dummy variable that takes on the value 1 if the *S* is assigned to a same-sex group and 0 otherwise. The second variable, *Gender*, is likewise a dummy variable that either takes on the value 1 if the *S* is a man or 0 if the *S* is a woman. The third variable, *MatriculationYear*, is the average matriculation year of the group. Previous research (e.g. Eagly and Chrvala, 1986) has indicated that the matriculation year may function as a status cue in a similar way as gender. Hence, we expect the coefficient on *MatriculationYear* to be positive.

The fourth variable, *Interpersonal*, is intended as an estimate of how well the *S*s know each other since before. It is retrieved from the interpersonal questionnaire sent out to participating students after all experimental rounds had been completed. Previous research has indicated that conformity due to normative social influence increases with the importance of the group to the *S* (Guimond, 1999; Wolf, 1985) and that this importance increases with the level of interpersonal relations (Nowak et al., 1990). Thus, we expect the coefficient on *Interpersonal* to be positively correlated with *Conformity*. Moreover, earlier studies including Cantor (1975) and Mock and Tudden (1971) have indicated that the ethnic composition of a group may affect conformity behavior in a similar way as gender. Thus, as a final explanatory variable we include *Ethnicity*, which is calculated as the percentage of the group members' parents not born in Sweden. For three of the first six regressions under *4.1 Conformity and Gender as an Individual Variable* below, an interaction variable, *Interaction,* measuring any possible conditional effects of gender on group sex composition, was also included. The *Interaction* dummy, however, was statistically insignificant in all three cases and thus excluded from subsequent estimations.

TABLE 1: Description of Variables

Variable Name	Description
TotalConformity	Measures total conformity. The variable takes the value 0 if the *S* never conforms, 0.5 if the *S* conforms half the time and 1 if the *S* conforms on all eligible observations.
InformationalConformity	Measures conformity due to informational social influence. The variable takes the value 0 if the *S* never conforms, 0.5 if the *S* conforms half the time and 1 if the *S* conforms on all eligible observations.
NormativeConformity	Measures conformity due to normative social influence. The variable takes the value 0 if the *S* never conforms, 0.5 if the *S* conforms half the time and 1 if the *S* conforms on all eligible observations.
Combined	Dummy variable that takes the value 1 if the *S* is assigned to a same-sex group and 0 otherwise.
Gender	Dummy variable that takes the value 1 if the *S* is a man and 0 if the *S* is a woman.
MatriculationYear	The average matriculation year of the group.
Interpersonal	The average score among *S*s of the group on the interpersonal
Ethnicity	Average percentage of the *S*s' parents that is not born in Sweden.
Interaction	Dummy variable that takes the value 1 if the *S* is a man assigned to a same-sex group and 0 otherwise.

3.1.8 Linear Regression Models

To test for any difference in conformity between the sexes we estimate the following regression models (1) – (6):

$$TotalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i \quad (1)$$

$$TotalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 Interaction_i \quad (2)$$

$$NormativeConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i \quad (3)$$

$$NormativeConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 Interaction_i \quad (4)$$

$$InformationalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i \quad (5)$$

$$InformationalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 Interaction_i \quad (6)$$

As *Combined* takes the value 1 if the *S* is assigned to a same-sex group and *Gender* takes the value 1 if the *S* is of male sex, the base case is a female *S* assigned to a mixed-sex group. Further, to test for any effect on conformity stemming from sex-group composition, we also estimate the following regression (7) – (9):

$$TotalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 MatriculationYear_i + \beta_4 Interpersonal_i + \\ + \beta_4 Ethnicity_i \quad (7)$$

$$InformationalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 MatriculationYear_i + \beta_4 Interpersonal_i + \\ + \beta_4 Ethnicity_i \quad (8)$$

$$NormativeConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 MatriculationYear_i + \beta_4 Interpersonal_i + \\ + \beta_4 Ethnicity_i \quad (9)$$

4. Results

Of the 113 participating *S*s, 11 were excluded either due to inconsistency in the answers of other participants or due to answering in accordance with the group's faulty answers (F_G) in the first part of the experiment, thus leaving 102 *S*s eligible for analysis. The distribution of these *S*s in different group sex compositions is shown in *Table 2*. Forty-two of the 102 *S*s yielded at least once; corresponding to a total of 51 times out of 146 opportunities, or 35 per cent of the time. It was hypothesized that question E would be remarkably easier than question H, however, in P1, the difference in the percentage of correct answers was not significant at any level (see A*ppendix D*) and so data for the two questions were combined for purposes of analysis.

TABLE 2 Categorization of Subjects

	Mixed-sex	Same-sex	Total
Male	21	31	52
Female	19	31	50
Total	40	62	102

4.1 Conformity and Gender as an Individual Variable

The effect of gender as an individual variable was evaluated by testing differences in conformity for males and females in mixed-sex groups only, and in mixed-sex groups and same-sex groups combined, controlling for any effect of sex-group composition. Initially, only *S*s of mixed-sex groups were used as the external conditions facing members of same-sex groups differed. Thus, in these groups, any potential difference could possibly be attributable to the sex-composition of the group and not gender as an individual variable. Due to the rather small number of observations remaining with members of same-sex groups excluded ($N_{Male} = 21$ and $N_{Female} = 19$) data were primarily analyzed by the nonparametric Mann-Whitney U-test (Siegel, 1956).

Furthermore, a linear regression model was estimated in which the dependent variable was assigned values between 0 and 1 depending on the extent the *S*s conformed. This allowed us to also include *S*s of same-sex groups while controlling for the sex-composition of the group, raising the number of observations to 102.

Hypothesis I: *Females will exhibit more conformity behavior than males.*

TABLE 3 Mann-Whitney U-test of Difference in Overall Conformity Between the Sexes in Mixed-Sex Groups

	Male	Female	
N	21	19	
Mean Rank	19.71	21.37	
Sum of Ranks	414	406	
Average conform.	.1905	.2632	
p (2-tailed)			.648

In *Table 3* the results for *S*s in mixed-sex groups only are presented for each gender separately. Among female *S*s in these groups, the average rate of conformity was 26.3 percent, compared to 19.1 percent among male *S*s. Thus, the results were in same direction as our hypothesis but the difference was not large enough to be statistically significant ($p = 0.65$). As *Table 4* shows, even if all *S*s, including those in same-sex male and same-sex female groups, would have been included, no statistically significant difference would have been obtained when the sex-composition of the group was controlled for.

TABLE 4 Linear Regression for Total Conformity

	Total Conformity	
Variable	(1)	(2)
Constant	**0.245*** **	**0.263*** **
	(.082)	(.099)
Gender	**-.038**	**-.073**
	(.085)	(.137)
Combined	**0.201** **	**.172**
	(.087)	(.126)
Interaction		**.057**
		(.176)

*** p<0.01 ** p<0.05 * p<0.10

Thus, our data does not lend support to the hypothesis that females exhibit more conformity than males.

Hypothesis II: *Females will yield more normative social influence than males.*

Previous research, including Eagly et al. (1981) and Eagly (1987) had suggested that the underlying reason for any difference in conformity between the sexes could possibly stem from a

greater interpersonal concern among females. In our experiment, *S*s conforming due to interpersonal reasons should revert back to their original answer in the third part when the interaction with other group members has been terminated. As already stated, such a reversion would be classified as conformity due to normative social influence in the experiment.

TABLE 5 Mann-Whitney U-test of Difference in Normative and Informational Social Influence Between the Sexes in Mixed-Sex Groups

	Normative Social Influence			Informational Social Influence		
	Male	Female		Male	Female	
N	21	19		21	19	
Mean Rank	19.31	21.82		21.21	19.71	
Sum of Ranks	405.50	414.50		445.50	374.50	
Average conform.	.0476	.1579		.1429	.1053	
p (2-tailed)			.270			.664

Table 5 shows the results for *S*s in mixed-groups only, broken down by normative and informational social influence. As for the susceptibility to normative social influence, the difference in mean was considerable. Among female *S*s in mixed-sex groups, the average rate of conformity due to normative reasons was 15.8 percent, compared to only 4.8 percent among male members of the same groups. Nevertheless, as *Table 5* shows, this difference was not significant when analyzed by the Mann-Whitney U-test (p = 0.27). Turning to the informational component then, the obtained difference between the sexes is notably smaller with male *S*s yielding to a greater extent, 14.3 percent compared to 10.5 percent for female *S*s. This difference is also not significant (p=0.66).

TABLE 6 Linear Regression for Normative and Informational Social Influence

	Normative Social Influence		Informational Social Influence	
Variable	(3)	(4)	(5)	(6)
Constant	**.143****	**.158***	**.102***	**.105**
	(.071)	(.087)	(.057)	(.069)
Gender	**-.082**	**-.110**	**.044**	**.038**
	(.074)	(.120)	(.059)	(.095)
Combined	**.221*****	**.197***	**-.019**	**-.025**
	(.076)	(.110)	(.061)	(.088)
Interaction		**.046**		**.011**
		(.153)		(.122)

*** p<0.01 ** p<0.05 * p<0.10

The results of all *S*s, including those in same-sex groups, when evaluated by the estimated linear regression model are presented in *Table 6*. The obtained differences between the sexes are of similar size and equal direction as before, but again this difference is not statistically significant at when controlling for the sex-composition of the group.

Thus, we conclude that, although there appears to be a difference in susceptibility to normative social influence leastwise, this difference cannot be verified statistically and the supposition that there are no differences in either normative or informational social influence cannot be rejected.

4.2 Conformity and the Sex-Composition of the Group

The effect of the sex-composition variable was evaluated by testing differences in conformity in same-sex and mixed-sex groups for males and females combined, and for both males and females considered separately. Due to the greater number of observations all differences were tested using both the Student's t-test and the Mann-Whitney U-test. Finally, under *4.3 Robustness of Our Findings* below, a linear regression model was estimated in order to enable the inclusion of control variables that we anticipated could differ systematically between the group constellations.

Hypothesis III: *Members of mixed-sex groups will conform more than members of same-sex groups.*

TABLE 7 Student's t-test of Difference in Overall Conformity Between Mixed-sex and Same-sex Groups

	Mixed-sex	Same-sex	
N	40	62	
Average conform.	.2250	.4274	
p (2-tailed)			.018

TABLE 8 Mann-Whitney U-test of Difference in Overall Conformity Between Mixed-sex and Same-sex Groups

	Mixed-sex	Same-sex	
N	40	62	
Mean Rank	43.94	56.38	
Sum of Ranks	1757.50	3495.50	
Average conform.	.2250	.4274	
p (2-tailed)			.020

The tests were first performed having the two same-sex groups combined as one sample. *Table 7* and *Table 8* show the results of the Student's t-test and the Mann-Whitney U-test respectively. The difference in total conformity between same-sex and mixed-sex groups was considerable, with mixed-sex groups yielding less than same-sex groups (22.5 percent compared to 42.7 percent). This difference was significant when tested both by the Student's t-test ($p < 0.05$) and by the Mann-Whitney U-test ($p < 0.05$). Hence, contrary to our hypothesis (based on the previous findings of Reitan and Shaw, 1964) there appears to be significant support for the supposition that members of same-sex groups are more likely to yield to conformity.

TABLE 9 Student's t-test of Differences in Overall Conformity Between Male Same-sex and Mixed-sex Groups

	Mixed-sex	Male Same-sex	
N	40	31	
Average conform.	.2250	.4194	
p (2-tailed)			.054

TABLE 10 Mann-Whitney U-test of Differences in Overall Conformity Between Male Same-sex and Mixed-sex Groups

	Mixed-sex	Male Same-sex	
N	40	31	
Mean Rank	32.01	41.15	
Sum of Ranks	1280.50	1275.50	
Average conform.	.2250	.4194	
p (2-tailed)			.035

Secondly, the tests were performed having the female same-sex and male same-sex groups considered separately. The comparison between male same-sex groups and mixed-sex groups is presented in *Table 9* and *Table 10*. Again, the difference in overall conformity is substantial with *S*s in same-sex male groups yielding notably more than those in mixed-sex groups (41.9 percent for same-sex male groups compared to 22.5 percent for mixed-sex groups). As was the case for the two kinds of same-sex groups combined, this difference proved significant when analyzed both with the Student's t-test ($p = 0.05$) and by the Mann-Whitney U-test ($p < 0.05$).

TABLE 11 Student's t-test of Differences in Overall Conformity Between Female Same-sex and Mixed-sex Groups

	Mixed-sex	Female Same-sex	
N	40	31	
Average conform.	.2250	.4355	
p (2-tailed)			.052

TABLE 12 Mann-Whitney U-test of Differences in Overall Conformity Between Female Same-sex and Mixed-sex Groups

	Mixed-sex	Female Same-sex	
N	40	31	
Mean Rank	32.43	40.61	
Sum of Ranks	1297.00	1259.00	
Average conform.	.2250	.4355	
p (2-tailed)			.062

As for the comparison between female same-sex groups and mixed-sex groups, the difference was even larger with the average rate of conformity in female same-sex groups being almost twice that of mixed-sex groups (see *Table 11* and *Table 12*). *S*s in female same-sex groups yielded on average 43.6 percent of the times, compared to 22.5 percent for *S*s in mixed-sex groups, a difference statistically significant when tested by the Student's t-test ($p = 0.05$) as well as when tested with the Mann-Whitney U-test ($p < 0.10$). As was the case for the male same-sex groups, the level of significance for the comparison between the female same-sex and mixed-sex groups was slightly lower than it had been using the combined sample. The reason for this was probably the reduced N when the male and female same-sex groups were considered separately.

TABLE 13 Student's t-test of Difference in Overall Conformity Between Male Same-sex and Female Same-sex Groups

	Male Same-sex	Female Same-sex	
N	31	31	
Average conform.	.4194	.4355	
p (2-tailed)			.889

TABLE 14 Mann-Whitney U-test of Difference in Overall Conformity Between Male Same-sex and Female Same-sex Groups

	Male Same-sex	Female Same-sex	
N	31	31	
Mean Rank	31.39	31.61	
Sum of Ranks	973.00	980.00	
Average conform.	.4194	.4355	
p (2-tailed)			.999

Finally, any potential difference between the male and female same-sex groups was tested for, with the results presented in *Table 13* and *Table 14*. The difference in total conformity between these groups, however, was small with an average rate of conformity of 41.9 percent in male same-sex groups compared to 43.6 percent in female same-sex groups. Neither with the Student's t-test nor with the Mann-Whitney U-test was this difference significant at any level (p = 0.89 and p = 1.00 respectively).

Thus, all *S*s, regardless of sex seemed to conform more in same-sex groups than in mixed-sex groups and our hypothesis is rejected in favor of the conclusion that members of same-sex groups are more prone to conform.

Hypothesis IV: *Members of mixed-sex groups will yield more to normative social influence than members of same-sex groups.*

As the literature review pointed out, there have been disagreements among previous studies not only in which direction the sex-composition of the group should affect conformity but also on what grounds (Berger et al., 1977; Eagly, 1987). Eagly (1978) proposed a series of theoretical explanations in an attempt to explain the findings of Reitan and Shaw (1964), that *S*s of mixed-sex groups appeared to conform more than *S*s of same-sex groups. Most of these explanations

relied on interpersonal considerations, why we hypothesized that any potential difference in conformity between mixed-sex and same-sex groups would be due to normative reasons.

TABLE 15 Student's t-test of Difference in Normative and Informational Social Influence Between Mixed-sex and Same-sex Groups

	Normative Social Influence			Informational Social Influence		
	Mixed-sex	Same-sex		Mixed-sex	Same-sex	
N	40	62		40	62	
Average conform.	.1000	.3226		.1250	.1048	
p (2-tailed)			.002			.745

TABLE 16 Mann-Whitney U-test of Difference in Normative and Informational Social Influence Between Mixed-sex and Same-sex Groups

	Normative Social Influence			Informational Social Influence		
	Mixed-sex	Same-sex		Mixed-sex	Same-sex	
N	40	62		40	62	
Mean Rank	43.55	56.63		52.18	51.06	
Sum of Ranks	1742.00	3511.00		2087.00	3166.00	
Average conform.	.1000	.3226		.1250	.1048	
p (2-tailed)			.007			.746

Table 15 and *Table 16* present the results of the Student's t-test and the Mann-Whitney U-test when the female and male same-sex groups are treated as one sample. As the two tables show, the difference in susceptibility to informational influence between mixed-sex and the combined same-sex groups was small. Mixed-sex groups yielded on average 12.5 percent of the time due to informational influence while the combined same-sex groups yielded 10.5 percent of the time. This difference was not significant either with the Student's t-test ($p = 0.75$) or the Mann-Whitney U-test ($p = 0.75$).

As *Table 15* and *Table 16* also show, however, the difference in receptiveness for normative social influence was substantial. The average rate of conformity due to normative concerns amounted to 32.3 percent in the same-sex groups combined, compared to only 10.0 percent for mixed-sex groups. This difference was strongly significant, tested both by the Student's t-test ($p < 0.01$) and by the Mann-Whitney U-test ($p < 0.01$). Thus, our findings went against our hypothesis. It

appears as if the conformity difference between the different sex-group constellations is due to normative concerns, as we hypothesized. The direction of this normative social influence, however, is contrary to our hypothesis. Instead, it seems like same-sex groups, and not mixed-sex groups, are more vulnerable to this sort of influence. Our findings then, stand in contrast to those of Reitan and Shaw (1964).

TABLE 17 Student's t-test of Difference in Normative and Informational Social Influence Between Male Same-sex and Mixed-sex Groups

	Normative Social Influence			Informational Social Influence		
	Mixed-sex	Male Same-sex		Mixed-sex	Male Same-sex	
N	40	31		40	31	
Average conform.	.1000	.2903		.1250	.1290	
p (2-tailed)			.027			.958

TABLE 18 Mann-Whitney U-test of Difference in Normative and Informational Social Influence Between Male Same-sex and Mixed-sex Groups

	Normative Social Influence			Informational Social Influence		
	Mixed-sex	Male Same-sex		Mixed-sex	Male Same-sex	
N	40	31		40	31	
Mean Rank	32.18	40.94		35.85	36.19	
Sum of Ranks	1287.00	1269.00		1434.00	1122.00	
Average conform.	.1000	.2903		.1250	.1290	
p (2-tailed)			.021			.950

Furthermore, as before, we also performed the tests having the same-sex female and same-sex male groups considered separately. The comparison between male same-sex groups and mixed-sex groups is presented in *Table 17* and *Table 18*. The obtained difference in the informational component was very small between the two constellations with *S*s of male same-sex groups on average yielding 12.9 percent of the time due to informational influence compared to 12.5 percent for *S*s of mixed-sex groups, a difference neither significant with the Student's t-test (p = 0.96) nor with the nonparametric Mann-Whitney U-test (p = 0.95). As for the difference in conformity due to normative social influence, the results were of equal direction and fairly similar size as those in the comparison between the combined same-sex groups and mixed-sex groups. *S*s in male same-sex groups conformed 29.0 percent of the time due to normative influence while *S*s in mixed-sex groups conformed 10.0 percent of the time for the same reasons.

In contrast to the informational component, this difference was statistically significant, tested both by the Student's t-test ($p < 0.05$) and by the Mann-Whitney U-test ($p < 0.05$).

TABLE 19 Student's t-test of Difference in Normative and Informational Social Influence Between Female Same-sex and Mixed-sex Groups

	Normative Social Influence			Informational Social Influence		
	Mixed-sex	Female Same-sex		Mixed-sex	Female Same-sex	
N	40	31		40	31	
Average conform.	.1000	.3548		.1250	.0806	
p (2-tailed)			.009			.519

TABLE 20 Mann-Whitney U-test of Difference in Normative and Informational Social Influence Between Female Same-sex and Mixed-sex Groups

	Normative Social Influence			Informational Social Influence		
	Mixed-sex	Female Same-sex		Mixed-sex	Female Same-sex	
N	40	31		40	31	
Mean Rank	31.88	41.32		36.83	34.94	
Sum of Ranks	1275.00	1281.00		1473.00	1083.00	
Average conform.	.1000	.3548		.1250	.0806	
p (2-tailed)			.012			.642

Turning to the comparison between female same-sex groups and mixed-sex groups then, the results are similar to those obtained for the male same-sex groups above. These are presented in *Table 19* and *Table 20*. For the informational component, the difference is slightly larger than for the male same-sex comparison. *S*s in female same-sex groups yielded on average 8.1 percent of the time due to informational influence, compared to 12.5 percent for *S*s in mixed-sex groups. Again, however, this difference was not significant either with the Student's t-test ($p = 0.52$) or Mann-Whitney U-test ($p = 0.64$). On normative social influences, the difference was even larger than between male same-sex and mixed-sex groups. *S*s of female same-sex groups conformed more than three times as often due to normative reasons as did *S*s of mixed-sex groups, 35.5 percent compared to 10.0 percent. This difference was strongly significant tested both by the Student's t-test ($p < 0.01$) and by the Mann-Whitney U-test ($p = 0.01$).

TABLE 21 Student's t-test of Difference in Normative and Informational Social Influence Between Male Same-sex and Female Same-sex Groups

	Normative Social Influence			Informational Social Influence		
	Male Same-sex	Female Same-sex		Male Same-sex	Female Same-sex	
N	31	31		31	31	
Average conform.	.2903	.3548		.1290	.0806	
p (2-tailed)			.564			.513

TABLE 22 Mann-Whitney U-test of Difference in Normative and Informational Social Influence Between Male Same-sex and Female Same-sex Groups

	Normative Social Influence			Informational Social Influence		
	Male Same-sex	Female Same-sex		Male Same-sex	Female Same-sex	
N	31	31		31	31	
Mean Rank	30.73	32.27		32.48	30.52	
Sum of Ranks	952.50	1000.50		1007.00	946.00	
Average conform.	.2903	.3548		.1290	.0806	
p (2-tailed)			.673			.627

Finally, we also tested for any potential differences between the female and male same-sex groups. The results of these tests are presented in *Table 21* and *Table 22*. The overall pattern of these tests appear to indicate that male same-sex groups are more susceptible to informational influence (12.9 percent compared to 8.0 percent for female same-sex groups) and that female same-sex groups are more likely to conform due to normative reasons (35.5 percent compared to 29.0 percent for male same-sex groups). However, neither of these differences is statistically significant. ($p = 0.51$ and $p = 0.63$ for informational social influence and $p = 0.56$ and $p = 0.67$ for normative social influence when tested with the Student's t-test and the Mann-Whitney U-test respectively).

Thus, we reject our hypothesis. The results of our tests lend support to the conclusion that normative concerns exert considerable influence over conformity behavior in groups, as hypothesized. In contrast to our hypothesis, however, it appears as if these concerns are greater in same-sex than in mixed-sex group constellations.

4.3 Robustness of Our Findings

In order to test the robustness of our findings we estimate three linear regression models using OLS in which the dependent variable assumes values between zero and one depending on the proportion of the time the *S*s conforms.

$$TotalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 MatriculationYear_i + \beta_4 Interpersonal_i + \\ + \beta_4 Ethnicity_i \quad (7)$$

$$InformationalConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 MatriculationYear_i + \beta_4 Interpersonal_i + \\ + \beta_4 Ethnicity_i \quad (8)$$

$$NormativeConformity_i = \alpha_0 + \beta_1 Combined_i + \beta_2 Gender_i + \beta_3 MatriculationYear_i + \beta_4 Interpersonal_i + \\ + \beta_4 Ethnicity_i \quad (9)$$

TABLE 23 Linear Regression for Total Conformity, Normal and Informational Social Influence

Variable	Total Conformity (7)	Inform. Social Infl. (8)	Norm. Social Infl. (9)
Combined	**.215****	**-.018**	**0.233*****
	(.089)	(.062)	(.078)
Gender	**-.036**	**.044**	**-.080**
	(.086)	(.060)	(.075)
MatriculationYear	**.113**	**.023**	**.090**
	(.109)	(.076)	(.095)
Interpersonal	**-.014**	**-.013**	**-.001**
	(.111)	(.078)	(.097)
Ethnicity	**-.216**	**.049**	**-.265**
	(.436)	(.305)	(.381)

*** p<0.01 ** p<0.05 * p<0.10

Table 23 shows the results of the OLS regression. In regression (7), on total conformity, the only explanatory variable significantly different from zero is *Combined* ($p < 0.05$). This variable carries a positive coefficient indicating that *S*s of same-sex groups, on average, conform 21.5 percent more than *S*s of mixed-sex groups. Thus, our findings from the Student's t-test and the Mann-Whitney U-test are confirmed, albeit on firmer methodological grounds.

Turning to the second regression (8), none of the explanatory variables are statistically different from zero. Thus, as the Student's t-test and the Mann-Whitney U-test had indicated, we cannot reject that neither gender nor the sex-composition of the group are unrelated to susceptibility to informational social influence. In the final regression (9), on conformity due to normative social

influence, the only explanatory variable significantly different from zero is again *Combined* ($p < 0.01$). As was the case in regression (1), this variable has a positive coefficient indicating that *S*s of same-sex groups, on average, conforms 23.3 percent more than *S*s of mixed-sex groups due to normative reasons. Again, our findings from the Student's t-test and the Mann-Whitney U-test are confirmed.

5. Discussion

5.1 Analysis of the Results

Of our four hypotheses, none is confirmed by the results. Our findings on the first two hypotheses, regarding gender as an individual variable, point in the direction of females being more susceptible to normative social influence. This difference, however, cannot be verified statistically which puts our findings in line with those of, among others, Ross et al. (1976) and Endler et al. (1975). Regarding the relationship between conformity and the sex-composition of the group, our findings are a bit more surprising. In contrast to previous empirical studies on the matter (Crano, 1970; Reitan & Shaw, 1964), we find that all *S*s, regardless of sex, seem to conform more in same-sex groups than in mixed-sex groups.

5.1.1 Possible Explanations to Differences in Our Findings and Previous Research

5.1.1.2 Gender as an Individual Variable

Although our results fail to statistically verify any differences in conformity between the sexes, one could possible argue that there indeed are sex differences in susceptibility to informational and normative social influence, only that our tests have failed to detect them. As for the non-parametric tests, only including *S* of mixed-sex groups, a significant finding in such sample size would probably imply a remarkably large difference between the sexes. Smaller differences that might have been detected using larger sample sizes (for instance, in the Cooper (1979) literature review, the sample sizes ranged between 42 and 403 participants) could thus have gone undetected in our experiment. Further, in the linear regression models, there might have been an interaction, although not large enough to be statistically significant, between same-sex groups and gender making it more difficult to statistically verify any differences.

Nevertheless, another reasonable explanation of our failure to statistically verify our first two hypotheses is, evidently, that there are no sex differences in conformity behavior. This interpretation would be in line with several published studies (e.g. Maccoby & Jacklin, 1974; Cacioppo & Petty, 1980) and, as Cooper (1979) argues, possibly also supported by several findings never published due to the existence of a publication bias.

A third possible explanation to why our results differ from the current state of research could also be differences in the populations from which the samples are drawn. Krech et al. (1962) explained sex differences in conformity in terms of dissimilarities in the prescribed roles for men

and women in society. There might be reason to believe that these prescribed gender roles and the differences between them are not equal in Sweden and the United States, where the vast majority of earlier research has been conducted. Recent studies on gender gaps between countries rank Sweden as one of the four countries in the world with the smallest sex differences in economic participation, economic opportunity, educational attainment, health survival and political empowerment (Hausmann et al., 2009). In contrast, the United States is only ranked 31 among 134 participating countries. One possible implication of this difference in gender gap could be that the gender roles described by Krech et al. are not as contrasting between men and women in Sweden as they are in the United States. This, in turn, could possibly lead to smaller sex differences in conformity.

5.1.1.3 Sex-Composition of the Group

The potential difference in prescribed gender roles between the United States and Sweden could also possibly help to explain the rejection of our last two hypotheses, which mainly were based on the previous findings of Reitan and Shaw (1964). Eagly (1978) presented several possible theoretical explanations in support of both the supposition that conformity would be greater among groups of mixed sexes and the rivaling belief that conformity primarily would be a function of the proportion of men in the group. However, the behavior of individuals in different group constellations as described by Eagly (1978) are, at least intuitively, likely to be influenced by the potential of differing prescribed gender roles between the two countries. For example, Eagly argued that males' usual edge in perceived competence may lend them greater power to influence both women and men. If this difference in perceived competence is correlated with the gender gap, it is plausible that men and women in Sweden are on more equal standing regarding their respective ability to persuade through informational influence.

Furthermore, it is also possible to argue that also the societal norms for female behavior are likely to be closely related to the gender gap. Thus, in a country with relatively smaller gender gap, it should be less likely that females play a relatively submissive role compared to their male counterparts. This, in turn, would render them less probable to adhere publicly to a norm of deference to a male authority and therefore show more overt agreement in the presence of a female compared with a male influencing agent.

Even more important than the potential difference between Sweden and the United States, however, could be the time elapsed between the studies conducted in the 1950s, 60s and 70s and our findings in 2010. Gender gap, if measured as a ratio of female to male labor force

participation and earnings, has narrowed radically in the 90s compared to the 50s and 60s in the United States (Goldin, 2008) and the same transformation has been present also in the Swedish labor market (Schön, 2007). If these trends have either caused or been caused by underlying changes in the set of behavior and beliefs discussed by Eagly (1978), there is good reason to believe that the contrasting findings of ours compared to earlier research only indicate that previous research is becoming less relevant for the conformity behavior of today.

Other possible explanations for our contrasting results are related to the experimental design. As previously stated, we took into account some of the criticism regarding the experimental design of previous studies and designed our method to allow for a breakdown of overall conformity into conformity occurring due to normative and informational social influence respectively. As our results suggest, it seems like the entire difference in levels of conformity between same-sex and mixed-sex groups can be explained by different susceptibility to normative social influence. As for the informational social influence component, our results actually indicate that such influence is greater in mixed-sex than in same-sex settings, even though this difference cannot be verified statistically. Thus, there might still be some possibility that this sort of influence really is more common in mixed-sex groups. Further, since none of the previous studies on conformity and the sex-composition of the group have made an attempt to deduce the causes of any differences conformity we cannot rule out the possibility that informational social influence played a relatively more important role in previous experiments.

Taken together, it is possible that the *S*s in Reitan and Shaw's (1964) study did yield more due to normative social influence in the same-sex groups but at the same time more due to informational social influence in the mixed-sex groups. If the informational social influence component then was relatively more important in their experiment, it is possible that this effect outweighed that of normative concerns and that this caused mixed-sex groups to display greater levels of overall conformity. There are several possible factors that may have caused the informational social influence component to become relatively more important. One could be if the experiment of Reitan and Shaw was perceived as relatively more ambiguous than ours. Several studies on the relationship between ambiguity and conformity have pointed out that the likelihood of informational social influence increases with the ambiguity of the situation (e.g. Tesser et al., 1983; Walther et al., 2002). As for normative influence, however, there is no clear reason why this should increase with ambiguity. Perhaps even more important, the task importance and the importance of being accurate has been shown to increase the likelihood of informational social influence (e.g. Baron et al., 1996) while having the opposite effect on

normative social influence (e.g. Levine et al., 2000). Thus, if participants in the Reitan and Shaw (1964) study perceived the experiment as relatively more important that may also have been a contributing factor to our contrasting results.

Finally, there are of course many other aspects in the design of the experiment, the samples used and how the results have been interpreted and reported which individually or taken together probably could help to explain our differing results. However, since large parts of the description regarding the experimental design have been omitted in previous research, a more thorough comparison has not been possible.

5.1.2 Possible Explanations to Higher Levels of Normative Social Behavior in Same-sex Groups

As early empirical findings indicated that conformity primarily was an issue of mixed-sex groups, most of the debate on the matter have centered on the potential causes and explanations for these findings (Eagly, 1978, 1987). Nevertheless, there are also possible explanations for why same-sex groups could be more susceptible to conformity pressures, and particularly such normative influences. Research on the relationship between cohesiveness and conformity, for example, have indicated that members of cohesive groups are more likely to conform to the norms of the group (Berkowitz, 1954; Lott & Lott, 1961; Wyer, 1966). "Teams with similar values will be more likely to see members as sources of informational influence with whom they would agree […] They would be more likely to accept normative influence from members of their team because they are more motivated to present themselves favorably to their own in-group." (Dose & Klimoski, 2001, p. 97)

Several researchers and studies have pointed out that demographic homogeneity has been found to be helpful in the development of cohesion (George, 1971; Rosen et al., 1999). The relationship of gender composition and group cohesion has also been examined in a number of studies. Rosen et al. (1996), for example, found a significant negative correlation between the proportion of women in a work group and the cohesion of the group among male enlisted soldiers. Similar findings were later obtained by Rosen et al. (1999) in a meta-analysis of the relationship between gender composition and group cohesion across five studies. Thus, due to the relationship between cohesion and conformity, there may also exist theoretical arguments for why members of a gender-homogeneous group could be expected to yield more to conformity.

5.2 Validity of the Study

The overall purpose of this study was to examine the relationship between gender, the sex-composition of the group and conformity. As already stated, we expected our results, among other things, could contribute to increased understanding of the behavioral effects of an increased proportion of women in the Swedish company boards. The section on the validity of the study will therefore be divided into two parts. An evaluation of the method itself as a tool for testing our four hypotheses as well as an assessment of the possibilities to generalize our results to also apply to the conditions in the Swedish company boards.

5.2.1 Evaluation of the Method

Throughout the study, efforts were made to keep the internal validity high and to avoid possible systematic biases which could affect the results or the interpretation of these. All participants were recruited from the same population of students and were randomly assigned to different experimental groups. The manuscript used by the instructors was detailed and rehearsed in three pilot groups before the actual experiments were conducted in order to minimize differences in instructions given to the *S*s before and during the experiment. Since participation was voluntary, however, it is possible that our sample suffers from a self-selection bias which could lead to a certain, non-representative, behavior in the experiments. Thus, it is possible that the sex differences in our sample are both smaller and larger than those of the average Stockholm School of Economics student.

As two of our hypotheses were related to the groups' composition there were obviously systematic differences in the sex-composition of the groups. Special attention was therefore paid to factors that could be expected to affect conformity behavior and be correlated with the sex-composition of the groups without necessarily represent actual attributes of the sex-composition itself. The factor thought to be most important was the possibility for systematic differences in the level of previous interpersonal relations between the *S*s in the different groups. It was hypothesized that *S*s of same-sex groups, on average, would know each other better than *S*s of mixed-sex groups due to the likelihood of a greater interaction with students of the same sex. Since previous studies had shown that the importance of the group to the *S*s increase the levels of conformity (Guimond, 1990; Nowak et al., 1990) we tested for a potential bias in the interpersonal relations between the groups. However, neither could such a bias be found nor could it be statistically verified that the interpersonal relations had an effect on conformity behavior.

Another consideration regarding the internal validity of our experimental design was that the problems either were similar to or direct copies of the Mensa Sweden's sample IQ test. Several studies have pointed out that males, on average, over-estimate their IQ while females don't (e.g. Reilly & Mulhem, 1995). This could imply that the typical male *S* was less inclined to follow the judgments of others than the typical female *S*. Further, if this over-confidence is not only restricted to their personal ability but also that of the average male this could have more profound consequences for conformity. As Crano (1970) proposed; "if the norms of a situation define the male as the more able […], then the most logical strategy for the female would be to follow his lead, while he should resist her influence and depend upon his own perceptions." Thus, if female *S*s perceived male *S*s as relatively superior in the areas of cognitive functioning we would expect conformity due to informational social influence to be higher in groups with a greater proportion of men. However, as *Appendix H* shows, conformity due to informational social influence was greater in mixed-sex groups for both men and women although this difference was not statistically significant. Moreover, there have also been several studies on sex differences in self-estimated cognitive abilities that have failed to find any differences between the sexes (e.g. Eagly, 1981).

Some final considerations regard the ambiguity of the conducted experiment. As already discussed, the ambiguity of the situation is expected to increase the likelihood of informational social influence (Allen, 1965; Walther et al., 2002). The fact that both our experiment questions were correctly answered in almost four out of five times when individually solved in the first part of the experiment suggests that task ambiguity in the experiment was rather low. This probably lead to relatively lower levels of informational social influence than if the problems would have been considerably more difficult. This, in turn, meant an increased risk of failing to detect potential differences in susceptibility to informational social influence. It is theoretically possible that if these differences exist and are of considerable size, our conclusion that the overall levels of conformity are greater in same-sex settings could be wrong. The rejection of our third hypothesis, that overall conformity is greater within mixed-sex groups, could then possibly depend on the type of task used in the experiment. In an attempt to address this issue we used two different questions that, based on the findings from our pilot groups, we hypothesized would differ considerably in difficulty. In the actual experiment, however, the *S*s appeared to find the questions to be of equal difficulty (see *Appendix D*).

Moreover, it is implausible that our tests have included all factors that influence the likelihood to conform. If any of the omitted variables differ systematically between men and women or

mixed-sex and same-sex groups the coefficients on our variables will be biased. Whether this potential bias constitute a problem depends on the study's objective. If the purpose was to find a stable causal relationship between the *S*s gender, the sex-composition of the group and conformity such an omitted variable bias would be problematic. However, since our main purpose was to investigate whether conformity, either due to informational or normative social influence, differs between the sexes and different group sex compositions a potential bias does not necessarily constitute a major problem.

5.2.2 Generalizability to Swedish Company Boards

To what extent our results are generalizable to the Swedish company boards depends on the external validity of the study (Mitchell and Jolley, 2001; Brewer, 2000). Inevitably, some apparent differences between the settings in our experiment and the conditions in the typical company board emerge. Some of the most apparent ones are probably related to the study *S*s. The average age of the experimental participants is 21.6 years, notably lower than the average age of 56.8 years for Swedish board members[5] (Lundberg Markow, 2010). Previous studies have found both higher (Klein, 1972; Quraishi et al., 1981) and lower (Pasupathi, 1999) levels of conformity among older compared to younger *S*s. The Pasupathi (1999) study, however, found only minor differences between the different age groups and the results of Klein (1972) was later explained by differences in perception of task competence (Klein and Birren, 1973). This diversity of findings could either be interpreted as an indication of small, or possibly non-existing, differences between different age groups, or evidence of the lack of sufficient research on the matter. In the case that there are large, yet undiscovered, differences in conformity behavior between different age groups, our findings would clearly have less implications for the behavior in Swedish company boards.

Another consideration concerns the size of our experiment groups. The median group size in our study amounted to six people, which differs slightly from the average of 8.1 board members in Swedish of companies but is assumed not be an unrealistic reflection of the number of actual attendants at many of the board meetings (Lundberg Markow, 2010). Furthermore, previous research has indicated that such group size is adequate for confirmation studies (Bond, 2005; Gerard et al., 1968). Several studies conclude that the marginal effect from adding another group member decreases considerably after six people and in much larger groups it can even be

[5] Here and henceforth, data for Swedish publicly traded companies on OMX Large Cap are used when referring to the demographics of company boards.

negative (e.g. Rosenberg, 1961; Stang, 1976). As previous research seems to predict only small differences in conformity due to the discrepancy between the median number of group members in our study and the average number of members in a Swedish company board, the smaller group size of our experiment should be a minor issue.

A third consideration regards the interpersonal relations among the members of respective group. In the interpersonal relations questionnaire distributed after the experiments, the average group score amounted to only 1.8 on the five-point scale. Further, out of 560 dyadic inter-group relations, only 11,8 percent received a score of four or five which corresponded to "I know him/her somewhat well" and "I know him/her very well". By far the most common score given was one, corresponding to "I do not know him/her at all". In contrast, it is plausible that the members of a typical Swedish company board have formed relatively stronger interpersonal bonds through regular meetings over a longer period of time. It could possibly also be argued that the network of board members is relatively more important to the average board member than the network of students is to the average participant in our study. Taken together, it is credible that the importance of the group to the *S* is greater in Swedish company boards than in the experiments conducted in our study. As conformity due to normative concerns has been shown to increase with group importance (Guimond, 1990; Wolf, 1985), the levels of conformity could be higher in Swedish company boards, all other things being equal. However, unless the effect of group importance differs systematically between men and women or mixed-sex and same-sex groups this consideration would not affect our conclusions.

Perhaps the most serious consideration, however, lies in the dissimilarities between the experimental task content and the challenges dealt with by company boards. For example, factors such as task importance, the ambiguity of the situation and if the situation is perceived as a crisis have all been shown to increase the relative importance of informational social influence to normative social influence (Baron et al., 1996; Aronson et al., 2005; Walther et al., 2002). It is very possible that these factors, at least to some degree, are more present in the work of a company board than in our experiment. As already discussed, our study fail to identify any differences between the sexes and different group sex compositions regarding susceptibility to informational social influence. If these differences exist, and point in the opposite direction to our findings on normative social influence, then the dissimilarities in task content could potential constitute to an issue regarding our conclusion on overall conformity.

5.3 Theoretical and Practical Implications

While our study offers no unanticipated insights on conformity difference between the sexes, it contributes to the relative limited research on conformity and the sex-composition of the group. In contrast to previous research on the matter, our results indicate that members of same-sex groups and not mixed-sex groups are more susceptible to conformity pressures. However, our findings also stress the importance of designing conformity experiments so that they are able to specify if any obtained difference in conformity is due to informational influence alone, normative effect alone, or a combination of these sources of influence. Overall conformity is the sum of the relative weights of the normative and informational social influence, which in turn may differ in prominence in different group compositions. Our results are clear in terms of normative influence but as for informational social influence we are not able to verify any differences statistically, which might be a matter for future research. Thus, if the relative importance of the two components had been different, another conclusion regarding overall conformity might have been drawn.

Our findings may also have important practical implications, however. The results of our study support the supposition that normative concerns seem to be of great importance in explaining conformity behavior and that these concerns appear to be greatest in same-sex groups. For instance, this type of conformity should probably be regarded as having negative implications for the decision making process since group members are willing suppress their own beliefs in favor of public compliance with the group's opinion. Thus, some of the potential gains stemming from decision making in groups, the exchange of ideas and beliefs and the collective consciousness, may be lost. Then, if our findings are generalizable to include also company boards, it could be argued that an increased proportion of female board members would not only bring different perspectives to the table, but also allow for a better utilization of the knowledge which already exists. In short, a greater proportion of women in company boards could possibly bring about increased openness and levels of discussions among group members, contributing to a better decision making process.

5.4 Future Research

Taken together, conformity, groupthink and herd behavior are well researched topics of both psychology and economic literature. As for conformity, sex differences is a particularly researched topic in the literature, possibly due to the obvious practical implications of differences in informational and normative social influence between men and women in society. The effect

on conformity stemming from different group constellations, however, is a relatively under-researched field within previous literature. One possible reason for this neglect may have been difficulty in finding important practical implications for such research. With a likely increase in the proportion of women in decision making groups in society, however, the practical implications of the effects of sex composition on conformity could become more apparent.

We agree with Newton and Schulman (1977) and Eagly (1987) in their criticism of the methodology of previous research. If the experiments are not designed to enable the separation of conformity due to normative influence and conformity due informational influence, the total conformity effect will vary between different experimental designs and wrong conclusions may be drawn regarding the causes of these differences. We see the need for future research especially regarding the effect of the sex-composition of the group on informational social influence to get a more complete picture on how overall conformity is affected by different group compositions.

We also encourage conformity research that does not aim to answer the question of whether men or women in general are more prone to conformity behavior, but instead concentrate on in which situations conformity differs between the sexes and whether these differences are due to informational or normative social influence. Only with more sophisticated experimental designs, substantiated conclusions are likely to be drawn as the answers to our questions seldom are unanimous for all situations. Not implausibly, this is also the reason behind the rather diversified findings of previous research.

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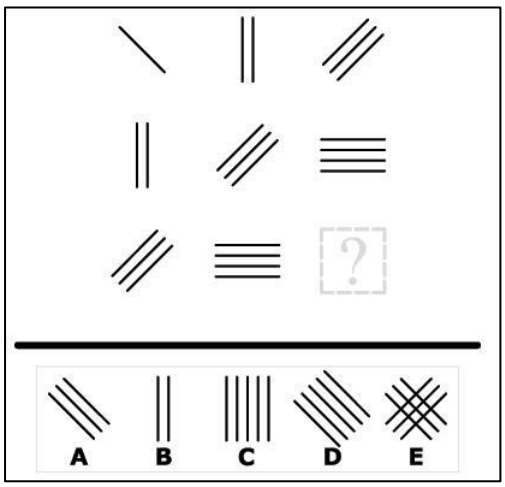
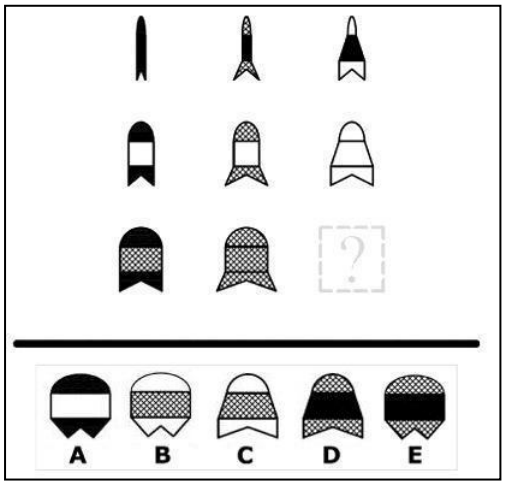
Appendix A. E- and H-Problems

E-problem



H-problem



Appendix B. Translated Demographic E-mail Questionnaire

As a final part in this study, we would like to ask you both to quickly assess, on a five-point scale, how well you know the other members of the group you participated in (after of course removing yourself, that is) and also indicate how many of your parents are foreign born.

Team members in your group were:

a) Name A
b) Name B
c) Name C
d) Name D
e) Name E
f) Name F

Scale: 1: Not at all, 5: Very good

Feel free to respond by simply replying to this email, for example:

a) 3
b) 4
c) 5
d) 2
e) 1

or

Anders Andersson, 1
Lisa Nilsson, 2

etc…

as well as:

"One of my parents are foreign born"

or

"None of my parents are foreign born"

Your answers will of course remain anonymous in the study.

Appendix C. Kolmogov-Smirnov Test for Normal Distribution

One-Sample Kolmogorov-Smirnov Test

		Total	Informational	Normative
N		102	102	102
Normal Parameters	Mean	.3480	.1127	.2353
	Std. Deviation	.43821	.29774	.38988
Most Extreme Differences	Absolute	.365	.510	.433
	Positive	.365	.510	.433
	Negative	-.214	-.352	-.273
Kolmogorov-Smirnov Z		3.685	5.154	4.371
Asymp. Sig. (2-tailed)		.000	.000	.000

Appendix D. Paired Student's t-test for Difference in Difficulty for E- and H-Problem

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
E	.7788	113	.41693	.03922
H	.7611	113	.42833	.04029

Paired Samples Correlations

	N	Correlation	Sig.
E & H	113	.101	.286

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Lower	Upper			
E - H	.01770	.56667	.05331	-.08792	.12332	.332	112	.740

Appendix E. Detailed Results of Statistical Tests

E.1 Non-parametric Statistical Tests (Mann-Whitney U-test)

E.1.1 Difference in Overall Conformity and Normative and Informational Social Influence Between Male and Female Subjects in Mixed-sex Groups

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Overall	Male	21	19.71	414.00
	Female	19	21.37	406.00
	Total	40		
Normative	Male	21	19.31	405.50
	Female	19	21.82	414.50
	Total	40		
Informational	Male	21	21.21	445.50
	Female	19	19.71	374.50
	Total	40		

Test Statistics

	Overall	Normative	Informational
Mann-Whitney U	183.000	174.500	184.500
Wilcoxon W	414.000	405.500	374.500
Z	-.571	-1.091	-.655
Asymp. Sig. (2-tailed)	.568	.275	.513
Exact Sig. [2*(1-tailed Sig.)]	.668	.503	.688
Exact Sig. (2-tailed)	.648	.270	.664
Exact Sig. (1-tailed)	.339	.156	.381
Point Probability	.109	.085	.107

E.1.2 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Mixed-sex and Same-sex Groups

Ranks

	Group composition	N	Mean Rank	Sum of Ranks
Overall	Mixed-sex	40	43.94	1757.50
	Same-sex	62	56.38	3495.50
	Total	102		
Normative	Mixed-sex	40	43.55	1742.00
	Same-sex	62	56.63	3511.00
	Total	102		
Informational	Mixed-sex	40	52.18	2087.00
	Same-sex	62	51.06	3166.00
	Total	102		

Test Statistics

	Overall	Normative	Informational
Mann-Whitney U	937.500	922.000	1213.000
Wilcoxon W	1757.500	1742.000	3166.000
Z	-2.344	-2.722	-.310
Asymp. Sig. (2-tailed)	.019	.006	.757
Exact Sig. (2-tailed)	.020	.007	.746
Exact Sig. (1-tailed)	.010	.003	.417
Point Probability	.003	.001	.092

E.1.3 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Mixed-sex and Male Same-sex Groups

Ranks

	Group composition	N	Mean Rank	Sum of Ranks
Overall	Mixed-sex	40	32.01	1280.50
	Male	31	41.15	1275.50
	Total	71		
Normative	Mixed-sex	40	32.18	1287.00
	Male	31	40.94	1269.00
	Total	71		
Informational	Mixed-sex	40	35.85	1434.00
	Male	31	36.19	1122.00
	Total	71		

Test Statistics

	Overall	Normative	Informational
Mann-Whitney U	460.500	467.000	614.000
Wilcoxon W	1280.500	1287.000	1434.000
Z	-2.119	-2.329	-.111
Asymp. Sig. (2-tailed)	.034	.020	.912
Exact Sig. (2-tailed)	.035	.021	.950
Exact Sig. (1-tailed)	.021	.013	.525
Point Probability	.004	.006	.116

E.1.4 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Mixed-sex and Female Same-sex Groups

Ranks

	Group composition	N	Mean Rank	Sum of Ranks
Overall	Mixed-sex	40	32.43	1297.00
	Female	31	40.61	1259.00
	Total	71		
Normative	Mixed-sex	40	31.88	1275.00
	Female	31	41.32	1281.00
	Total	71		
Informational	Mixed-sex	40	36.83	1473.00
	Female	31	34.94	1083.00
	Total	71		

Test Statistics

	Overall	Normative	Informational
Mann-Whitney U	477.000	455.000	587.000
Wilcoxon W	1297.000	1275.000	1083.000
Z	-1.947	-2.515	-.662
Asymp. Sig. (2-tailed)	.052	.012	.508
Exact Sig. (2-tailed)	.062	.012	.642
Exact Sig. (1-tailed)	.032	.006	.329
Point Probability	.011	.001	.124

E.1.5 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Male and Female Same-sex Groups

Ranks

	Group composition	N	Mean Rank	Sum of Ranks
Overall	Male	31	31.39	973.00
	Female	31	31.61	980.00
	Total	62		
Normative	Male	31	30.73	952.50
	Female	31	32.27	1000.50
	Total	62		
Informational	Male	31	32.48	1007.00
	Female	31	30.52	946.00
	Total	62		

Test Statistics

	Overall	Normative	Informational
Mann-Whitney U	477.000	456.500	450.000
Wilcoxon W	973.000	952.500	946.000
Z	-.054	-.390	-.738
Asymp. Sig. (2-tailed)	.957	.697	.461
Exact Sig. (2-tailed)	.999	.673	.627
Exact Sig. (1-tailed)	.499	.337	.313
Point Probability	.015	.017	.121

E.2 Statistical Tests using Student's T-test

E.2.1 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Mixed-sex and Same-sex Groups

Group Statistics

	Group composition	N	Average	Std. Dev.	Std. Er. M.
Overall	Mixed-sex	40	.2250	.39141	.06189
	Same-sex	62	.4274	.45129	.05731
Normative	Mixed-sex	40	.1000	.25820	.04082
	Same-sex	62	.3226	.43511	.05526
Informational	Mixed-sex	40	.1250	.31521	.04984
	Same-sex	62	.1048	.28826	.03661

Independent Samples Test

		Eq. of Var.		t-test for Equality of Means						
									95% Confidence	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Er. Dif.	Lower	Upper
Overall	Eq. var assumed	5.254	.024	-2.327	100	.022	-.20242	.08699	-.37500	-.02984
	Eq. var not assumed			-2.400	91.536	.018	-.20242	.08435	-.36996	-.03488
Normative	Eq. var assumed	37.460	.000	-2.918	100	.004	-.22258	.07628	-.37392	-.07124
	Eq. var not assumed			-3.240	99.431	.002	-.22258	.06870	-.35890	-.08627
Informational	Eq. var assumed	.428	.514	.332	100	.740	.02016	.06065	-.10017	.14049
	Eq. var not assumed			.326	77.932	.745	.02016	.06184	-.10295	.14328

E.2.2 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Mixed-sex and Male Same-sex Groups

Group Statistics

	Group composition	N	Average	Std. Dev.	Std. Er. M.
Overall	Mixed-sex	40	.2250	.39141	.06189
	Male	31	.4194	.43005	.07724
Normative	Mixed-sex	40	.1000	.25820	.04082
	Male	31	.2903	.40361	.07249
Informational	Mixed-sex	40	.1250	.31521	.04984
	Male	31	.1290	.31538	.05664

Independent Samples Test

		Eq. of Var.		t-test for Equality of Means						
									95%	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Er. Dif.	Lower	Upper
Overall	Eq. var assumed	1.180	.281	-1.988	69	.051	-.19435	.09779	-.38944	.00073
	Eq. var not assumed			-1.964	61.414	.054	-.19435	.09898	-.39224	.00353
Normative	Eq. var assumed	17.313	.000	-2.415	69	.018	-.19032	.07882	-.34757	-.03308
	Eq. var not assumed			-2.288	48.309	.027	-.19032	.08320	-.35757	-.02307
Informational	Eq. var assumed	.005	.943	-.053	69	.958	-.00403	.07544	-.15454	.14647
	Eq. var not assumed			-.053	64.633	.958	-.00403	.07545	-.15473	.14666

E.2.3 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Mixed-sex and Female Same-sex Groups

Group Statistics

	Group composition	N	Average	Std. Dev.	Std. Er. M.
Overall	Mixed-sex	40	.2250	.39141	.06189
	Female	31	.4355	.47857	.08595
Normative	Mixed-sex	40	.1000	.25820	.04082
	Female	31	.3548	.46893	.08422
Informational	Mixed-sex	40	.1250	.31521	.04984
	Female	31	.0806	.26130	.04693

Independent Samples Test

		Eq. of Var.		t-test for Equality of Means						
									95%	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Er. Dif.	Lower	Upper
Overall	Eq. var assumed	7.881	.006	-2.039	69	.045	-.21048	.10325	-.41646	-.00451
	Eq. var not assumed			-1.987	57.318	.052	-.21048	.10592	-.42255	.00158
Normative	Eq. var assumed	38.884	.000	-2.917	69	.005	-.25484	.08736	-.42912	-.08056
	Eq. var not assumed			-2.723	43.890	.009	-.25484	.09359	-.44348	-.06620
Informational	Eq. var assumed	1.555	.217	.633	69	.529	.04435	.07011	-.09551	.18422
	Eq. var not assumed			.648	68.654	.519	.04435	.06846	-.09223	.18094

E.2.4 Difference in Overall Conformity and Normative and Informational Social Influence Between Subjects in Male and Female Same-sex Groups

Group Statistics

	Group composition	N	Average	Std. Dev.	Std. Er. M.
Overall	Male	31	.4194	.43005	.07724
	Female	31	.4355	.47857	.08595
Normative	Male	31	.2903	.40361	.07249
	Female	31	.3548	.46893	.08422
Informational	Male	31	.1290	.31538	.05664
	Female	31	.0806	.26130	.04693

Independent Samples Test

		Eq. of Var.		t-test for Equality of Means						
									95%	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Er. Dif.	Lower	Upper
Overall	Eq. var assumed	2.727	.104	-.140	60	.889	-.01613	.11556	-.24728	.21503
	Eq. var not assumed			-.140	59.327	.889	-.01613	.11556	-.24734	.21508
Normative	Eq. var assumed	3.436	.069	-.581	60	.564	-.06452	.11112	-.28679	.15776
	Eq. var not assumed			-.581	58.699	.564	-.06452	.11112	-.28690	.15786
Informational	Eq. var assumed	1.594	.212	.658	60	.513	.04839	.07356	-.09875	.19553
	Eq. var not assumed			.658	57.996	.513	.04839	.07356	-.09886	.19563

Appendix F. Detailed Statistics for Linear Regression Models (Gender)

F.1 Total Conformity Excluding Interaction Variable

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.245	.082		3.007	.003
Combined	.201	.087	.226	2.306	.023
Man	-.038	.085	-.044	-.449	.655

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.034	2	.517	2.786	.066
Residual	18.361	99	.185		
Total	19.395	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.231	.053	.034	.43066

F.2 Total Conformity Including Interaction Variable

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.263	.099		2.651	.009
Combined	.172	.126	.193	1.367	.175
Man	-.073	.137	-.083	-.531	.597
Interaction	.057	.176	.060	.322	.748

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.053	3	.351	1.875	.139
Residual	18.342	98	.187		
Total	19.395	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.233	.054	.025	.43262

F.3 Normative Social Influence Excluding Interaction Variable

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.143	.071		2.015	.047
Combined	.221	.076	.278	2.893	.005
Man	-.082	.074	-.106	-1.107	.271

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.378	2	.689	4.880	.010
Residual	13.975	99	.141		
Total	15.353	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.300	.090	.071	.37572

F.4 Normative Social Influence Including Interaction Variable

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.158	.087		1.823	.071
Combined	.197	.110	.248	1.791	.076
Man	-.110	.120	-.142	-.923	.358
Interaction	.046	.153	.054	.299	.766

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.390	3	.463	3.253	.025
Residual	13.963	98	.142		
Total	15.353	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.301	.091	.063	.37746

F.5 Informational Social Influence Excluding Interaction Variable

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.102	.057		1.795	.076
Combined	-.019	.061	-.031	-.313	.755
Man	.044	.059	.075	.744	.459

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.060	2	.030	.332	.719
Residual	8.894	99	.090		
Total	8.953	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.082	.007	-.013	.29973

F.6 Informational Social Influence Including Interaction Variable

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.105	.069		1.523	.131
Combined	-.025	.088	-.041	-.280	.780
Man	.038	.095	.063	.394	.694
Interaction	.011	.122	.017	.088	.930

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.060	3	.020	.221	.881
Residual	8.893	98	.091		
Total	8.953	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.082	.007	-.024	.30124

Appendix G. Detailed Statistics for Linear Regression Models (Robustness)

G.1 Total Conformity

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-227.348	219.140		-1.037	.302
Combined	.215	.089	.241	2.407	.018
Man	-.036	.086	-.041	-.417	.678
Inskrivning	.113	.109	.114	1.039	.302
Interperson	-.014	.111	-.013	-.128	.898
Ethnicity	-.216	.436	-.055	-.496	.621

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.239	5	.248	1.310	.266
Residual	18.156	96	.189		
Total	19.395	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.253	.064	.015	.43488

G.2 Normative Social Influence

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-180.275	191.232		-.943	.348
Combined	.233	.078	.293	2.989	.004
Man	-.080	.075	-.103	-1.059	.292
Inskrivning	.090	.095	.102	.943	.348
Interperson	-.001	.097	-.001	-.013	.990
Ethnicity	-.265	.381	-.076	-.696	.488

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.527	5	.305	2.121	.069
Residual	13.826	96	.144		
Total	15.353	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.315	.099	.053	.37950

G.3 Informational Social Influence

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-47.072	153.192		-.307	.759
Combined	-.018	.062	-.030	-.287	.775
Man	.044	.060	.074	.726	.470
Inskrivning	.023	.076	.035	.308	.759
Interperson	-.013	.078	-.018	-.168	.867
Ethnicity	.049	.305	.018	.160	.874

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.081	5	.016	.175	.971
Residual	8.873	96	.092		
Total	8.953	101			

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.095	.009	-.043	.30401

Appendix H. Detailed Results of Intra-Gender Statistical Tests

H.1 Non-parametric Statistical Tests (Mann-Whitney U-test)

H.1.1 Difference in Informational Social Influence Between Men In Same-sex Groups and Men in Mixed-sex Groups

Ranks

	Group Composition	N	Mean Rank	Sum of Ranks
Informational	Mixed-sex	21	26.90	565.00
	Same-sex	31	26.23	813.00
	Total	52		

Test Statisticsa

	Informational
Mann-Whitney U	317.000
Wilcoxon W	813.000
Z	-.241
Asymp. Sig. (2-tailed)	.810
Exact Sig. (2-tailed)	.954
Exact Sig. (1-tailed)	.487
Point Probability	.132

H.1.1 Difference in Informational Social Influence Between Female In Same-sex Groups and Female in Mixed-sex Groups

Ranks

	Group Composition	N	Mean Rank	Sum of Ranks
Informational	Mixed-sex	19	25.68	488.00
	Same-sex	31	25.39	787.00
	Total	50		

Test Statisticsa

	Informational
Mann-Whitney U	291.000
Wilcoxon W	787.000
Z	-.134
Asymp. Sig. (2-tailed)	.893
Exact Sig. (2-tailed)	.855
Exact Sig. (1-tailed)	.493
Point Probability	.218

H.2 Parametric Statistical Tests (Student's t-test)

H.2.1 Difference in Informational Social Influence Between Men In Same-sex Groups and Men in Mixed-sex Groups

Group Statistics

	Group Composition	N	Average	Dev.	M.
Informational	Mixed-sex	21	.1429	.32183	.07023
	Same-sex	31	.1290	.31538	.05664

Independent Samples Test

		Eq. of Var.		t-test for Equality of Means						
									95%	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Er. Dif.	Lower	Upper
Informational	Equal variances assumed	.056	.814	.154	50	.878	.01382	.08987	-.16668	.19433
	Equal variances not assumed			.153	42.496	.879	.01382	.09022	-.16819	.19584

H.2.1 Difference in Informational Social Influence Between Female In Same-sex Groups and Female in Mixed-sex Groups

Group Statistics

	Group Composition	N	Average	Dev.	M.
Informational	Mixed-sex	19	.1053	.31530	.07234
	Same-sex	31	.0806	.26130	.04693

Independent Samples Test

		Eq. of Var.		t-test for Equality of Means						
									95%	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Er. Dif.	Lower	Upper
Informational	Equal variances assumed	.411	.524	.299	48	.766	.02462	.08239	-.14103	.19027
	Equal variances not assumed			.286	32.851	.777	.02462	.08623	-.15084	.20008