Susceptibility to Interpersonal Influence in an Investment Context

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Abstract

This paper demonstrates the relevance of the concept of consumers' susceptibility to interpersonal influence in an investment setting. A survey amongst 304 individual investors highlights the main antecedents and consequences of these conformity influences. We find that investment-related knowledge and experience, psychological and social risks, and social needs explain investors' susceptibility to informational and normative influence. The effect of social needs on susceptibility influences is pronounced by investors' level of ambiguity intolerance. Finally, we find that although both dimensions are related, they have opposite effects on the number of transactions investors make.

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1. Introduction

"We are influenced by others in almost every activity, and this includes investment and

financial transactions"

(Hirschleifer & Teoh, 2003: 25)

As suggested by the quote above, the vast majority of investors does not make their decisions in a social vacuum, but are susceptible to the influences of others. This is further illustrated by the facts, that investing has frequently been called a *"social activity"* (Shiller, 1984: 457), and by the large number of investors who deliberately discuss their investment decisions in investment clubs, during (business) dinners, or on web-based bulletin boards, thereby willingly exposing themselves to the public scrutiny of others.

Susceptibility to interpersonal influence has been found to be a general trait that varies across persons, and a person's relative influenceability in one situation tends to have a significant positive relationship to this person's influenceability in a range of other social situations (McGuire, 1968). The important effects of consumers' susceptibility to interpersonal influence on consumers' decision-making processes have been extensively documented in the consumer behavior and marketing literature (Bearden et al., 1989; Bearden et al., 1990; Bearden & Etzel, 1982; Bristol & Mangleburg, 2005; D'Rozario, 2001; Dahl et al., 2001; Kelman, 1958; Kropp et al., 1999b; Mascarenhas & Higby, 1993; McGrath & Otnes, 1995; Mourali et al., 2005; Price et al., 1987; Ratner & Kahn, 2002; Schroeder, 1996). However, studies in this field do not focus on investment products or investment decisions and even in the finance literature there is an apparent lack of attention for investors' susceptibility to interpersonal influences. To our best knowledge,

until this moment there are no empirical studies of investors' susceptibility to interpersonal influences, its antecedents, moderators, and possible consequences. Considering that even prominent finance scholars such as Fama and French (2005) have questioned the traditionally strict distinction between investments and consumption goods, we see no reason why processes of interpersonal influence would not play a role in an investment context. Therefore, we find this gap in the literature both surprising and worthy of scholarly attention.

Yet, apart from its academic relevance, studying investors' susceptibility to interpersonal influences also has societal relevance. After all, it is likely that groups of investors who are susceptible to these influences start trading in similar ways, or in other words, demonstrate conformist behavior. Conformist behavior of individual investors likely affects assets prices (De Bondt, 1998: 835) and might eventually result in herding (Bikhchandani et al., 1992; Hirschleifer, 2001; Kallinterakis et al., 2007; Shiller, 1995). As both policy makers such as the International Monetary Fund and finance scholars are concerned that herding by financial market participants destabilizes markets and increases the fragility of our financial system (Bikhchandani & Sharma, 2000; Kindleberger, 2000), it is important to further investigate the determinants of conformist behaviors of investors.

The purpose of this interdisciplinary study is to investigate the concept of consumers' susceptibility to interpersonal influences (CSII) in an investment setting. While the majority of the existing studies on CSII have focused on conspicuous and socially visible products such as cars (Bearden & Rose, 1990; Netemeyer et al., 1992), apparel (Meyer & Anderson, 2000; Miller, 1998), or women's cosmetics (Chao & Schor, 1998), we

demonstrate that this concept is also relevant for a less conspicuous and visible product category, namely investments (i.e. buying and selling shares of stock or bonds).

Moreover, by taking the antecedents and consequences of this behavior into account, this study adds to the emerging, but limited body of research that positions CSII in a nomological net (Batra et al., 2001). The literature has associated CSII with a variety of variables, such as self-esteem (Bearden et al., 1989; Bearden et al., 1990; Bearden & Rose, 1990; Clark & Goldsmith, 2005; Lascu et al., 1995), attention to social comparison information (ATSCI) (Bearden et al., 1990; Bearden & Rose, 1990; Netemeyer et al., 1992), motivation to comply (Bearden et al., 1989; Netemeyer et al., 1992), and public self-consciousness (Bearden & Rose, 1990; Schroeder, 1996). However, only few studies (e.g., Batra et al., 2001; Mangleburg et al. 2004) have positioned the CSII scale in a nomological net with the aim of providing a better theoretical understanding of the psychological underpinnings of the concept of susceptibility to interpersonal influence. We find that investors' level of knowledge and experience, psycho-social risks of investing, social needs, and intolerance of ambiguity explain the degree to which investors are susceptibility to interpersonal influence. Susceptibility to interpersonal influence subsequently drives investors' transaction frequency.

Finally, we will pay attention both to the *informational* and to the *normative* dimension of CSII (Bearden et al., 1989; 1990) using the original items as developed by Bearden et al. (1989). In spite of the abundant theoretical and empirical evidence for the existence of these two different dimensions and the different effects they may produce, current studies have frequently focused on a single dimension of CSII (Batra et al., 2001; Clark &

Goldsmith, 2005; Wooten & Reed II, 2004), or used alternative items for the measurement of the CSII scale (Batra et al. 2001; Mangleburg et al. 2004).

2. Background, Model and Hypotheses

2.1 Theoretical Background

To measure consumers' susceptibility to interpersonal influences, many studies in marketing and the consumer behavior literature rely on the CSII scale that was developed by Bearden et al. (1989; 1990). This validated scale distinguishes between susceptibility to informational and normative interpersonal influences.[1]

Susceptibility to *informational* interpersonal influence (SII) reflects an individual's tendency to accept information from others as credible evidence about reality (Bearden et al., 1989; Deutsch & Gerard, 1955). Informational influence can result from actively requesting information from knowledgeable others or from passively observing others (Park & Lessig, 1977). It operates through the process of internalization, which occurs if information from others increases an individual's knowledge about some aspect of the environment. Informational influence is driven by a desire to form accurate interpretations about the reality in order to make more informed decisions and behave in a correct way (Cialdini & Goldstein, 2004).

Susceptibility to *normative* interpersonal influence (SNI) reflects an individual's tendency to comply with the positive expectations of others (Deutsch & Gerard, 1955: 629). Susceptibility to this type of influence is driven by a desire to achieve a sense of belonging, to identify with others or to obtain their social approval (Cialdini & Goldstein,

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[1] Early research subdivided the category of normative influences in value-expressive and utilitarian influences. Yet, in line with Bearden et al. (1989, 1990) and Mangleburg (2004), we conceptualize normative influence as composed of both value-expressive and utilitarian components.

2004). Normative influences are particularly salient when one's behavior can be observed by others (Bearden & Etzel, 1982; Burnkrant & Cousineau, 1975; Childers & Rao, 1992; Deutsch & Gerard, 1955; Park & Lessig, 1977). In general one's investment behavior will be less observable by others than e.g., one's movie visits or shopping activities. Still, we argue that interpersonal influences can play an important role in such decisions as whether to invest or not, and which stocks or bonds to buy.

First, many investors deliberately increase the visibility of their investment decisions by engaging in social interactions, such as becoming a member of an investment club or discussing about their investments with their friends or neighbors.

Second, Statman (2004) argues that already the *self-signaling* benefits (see e.g., Quattrone and Tversky, 1984) of making e.g., socially responsible investments help to explain the preference of some investors for these stocks. That is, even in the absence of direct visibility, investors are concerned which investments would potentially make a good impression on others.

2.2 Model Development

Based on a careful review of the relevant literature on consumers' susceptibility to interpersonal influences and its possible antecedents and consequences, we developed the model as depicted in Figure 1.

In previous studies the CSII scale has been related to or predicted by a number of consumer factors, including demographics (gender, age, education, income, ethnicity), general psychographic traits (attention to social comparison information, tendency to conform, self-esteem, interpersonal orientation, public self-consciousness), expertise (domain-specific knowledge and experience), personal/human values (individual versus

social, internal versus external orientation), and by several situational factors, such as group size, group expertise, and the visibility of one's behavior (cf. Batra et al., 2001; Bearden et al., 1989, 1990; Bearden & Rose, 1990; Clark & Goldsmith, 2005; Lascu et al., 1995; Mangleburg et al., 2004; Netemeyer et al., 1992; Schroeder, 1996). The aim of this article is, however, not to provide an exhaustive list of all potential correlates of investors' susceptibility to interpersonal influence. Rather, the purpose is to position this concept into a nomological net by incorporating its primary antecedents and consequences.

We argue that investors' susceptibility to interpersonal influences can either be explained by motivations to increase the accuracy of their decisions, motivations to decrease the potential for embarrassment or psychological discomfort, or by more hedonic or social motivations. Specifically, we argue that investors' knowledge of and experience with investing, their perceptions of the social and psychological risks of investing, and the strength of their socially oriented needs influence their susceptibility to informational and normative interpersonal influence. We allow these three antecedents to be correlated with each other, but we do not propose any structural relationships between them. Moreover, we intend to demonstrate how the weights of these antecedents are moderated by an investor's intolerance of ambiguity. Lastly, the consequences of investors' susceptibility to each of the two dimensions of interpersonal influence on their investment behavior are examined by investigating individual investors' yearly number of transactions.

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2.3 Formulation of Hypotheses

2.3.1 Antecedents

Knowledge and Experience

Knowledge and experience are included in our model because of these concepts' centrality in explaining both product decisions (Alba & Hutchinson, 1987) and susceptibility to interpersonal influences (Furse et al., 1984). An individual's level of knowledge and experience with respect to a product or service has been found to negatively influence this individual's susceptibility to both informational and normative interpersonal influence (Furse et al., 1984; Gilly et al., 1998; Mangleburg et al., 2004).

In general, individuals with less product knowledge and experience have less product expertise (Alba & Hutchinson, 1987) and are therefore more likely to doubt their own ability to make a good decision. Consequently, these individuals are likely to feel compelled to ask knowledgeable others for advice and to rely more strongly on this information in comparison to individuals with more expertise (Festinger, 1954; Furse et al., 1984; Mangleburg et al., 2004). In contrast, individuals with a high level of product expertise will be more confident about making correct decisions, and are therefore expected to demonstrate less concern for the opinions of others (Bearden et al., 1990; Locander & Hermann, 1979).

These results can be explained by the fact that product-specific risk affects the use of risk-reduction strategies (Dowling & Staelin, 1994). Especially in high-risk situations, consumers have been found to strongly rely on the opinions of others when making their

decisions (Mitchell & McGoldrick, 1996; Mitchell, 1999). Inexperienced individuals or individuals with low levels of product knowledge generally perceive greater risks, and in order to reduce this risk, they are more likely to seek and rely on the opinions of credible others (Gilly et al., 1998). By extending this finding to an investment setting, we argue that investors who have little expertise (i.e. low levels of investment-related knowledge and experience) are more susceptible to interpersonal influences than those who have more expertise. Based on these arguments, we propose the following hypotheses:

H1. Investors' amount of knowledge and experience is negatively associated with susceptibility to informational interpersonal influence.

H2. Investors' amount of knowledge and experience is negatively associated with susceptibility to normative interpersonal influence.

Psychological and Social Risks

In the previous section, we explained that investors with less knowledge and experience will generally perceive greater risk in their decision-making than investors with more knowledge and experience. A lack of knowledge and experience generally translates into higher perceptions of product or performance risk, that is the risk perceptions of making a wrong decision and eventually losing money. Yet, investors - like consumers - may also experience a number of other, more specific types of risk while making their decisions. Most importantly, they may also experience social and psychological risks that may discourage them from behaviors that are not accepted by their reference group or that are in conflict with their own personality (Cialdini & Goldstein, 2004). Research on purchase

pals, for example, has indicated that teenagers frequently shop together not only to reduce functional risks, but also to reduce the perceived psychological and social risks associated with their purchases. By shopping together, teens can adjust their decisions according to the opinions of relevant others, and consequently increase the confidence they have in their purchase decisions (Kiecker & Hartman, 1993).

In a similar vein, investors do not only run financial risks, but they may also encounter psychological and social risks (Jacoby & Kaplan, 1972; Kaplan et al., 1974; Peter & Tarpey, 1975). For example, investors may want to invest in a small company that is still unknown, but of which they have reason to believe that it offers good potential for future profits. Apart from the financial risks of this investment (e.g., bankruptcy), the fact that the company is relatively unknown may be reason for their peers to make fun of them in public in case the company actually happens to go bankrupt ("…didn't we tell you not to invest in such small and unknown companies?"). In other words, besides the possibility of losing money (financial or performance risk), investors encounter the risk that their peers will not accept their choices or to embarrass themselves in public (social risk), and they also run the risk of experiencing psychological discomfort or frustration because their actions are not consistent with their self-concept (psychological risk). As such, psycho-social risk clearly relates to the normative dimension of interpersonal influence which operates trough processes of identification (maintaining a positive self-concept) and compliance (receiving social rewards and avoiding social punishments) (Burnkrant & Cousineau, 1975). Therefore, investors who experience higher levels of psycho-social risk can be expected to be more susceptible to normative interpersonal influence. However, we also believe that investors who perceive greater psycho-social risks are

more susceptible to *informational* interpersonal influence. After all, by increasing their knowledge base through asking and/or observing the behavior of others (internalization), these investors may avoid future punishments. Through these social comparison processes, these investors learn about the "socially correct" behavior. We therefore hypothesize that:

H3. Investors' level of perceived psycho-social risk is positively associated with susceptibility to informational interpersonal influence.

H4. Investors' level of perceived psycho-social risk is positively associated with susceptibility to normative interpersonal influence.

Social Needs

Consumers do not only engage in social interactions in order to reduce the perceived risks of certain purchase situations, but also because of the perceived benefits that can be derived from fulfilling their social needs. Humans have social needs: they are fundamentally motivated to create and maintain meaningful social relationships with others. Individuals often deliberately attempt to gain the social approval of others, to build rewarding relationships with them, and in the process, to enhance their self-esteem (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998). The strength of these social needs differs across individuals, and similar to personal values, they guide an individual's behavior.

Personal or human values guide consumers in their daily decision-making by affecting the criteria people use to evaluate actions, people, and events. They include a set of

individual (internal) values (e.g., self-fulfillment, a sense of accomplishment, and self-respect) and social (external) values (e.g., being well-respected and having warm relationships with others) (Batra et al., 2001). These human values are motivational in nature, as they refer to desirable goals that consumers strive to attain. These rather abstract and stable values are assumed to be important antecedents to situation-specific predispositions such as someone's susceptibility to normative influences (see Batra et al. (2001) for a further explanation on the causality link between values and susceptibility to interpersonal influence).

In this respect, Bearden and Rose (1990) have found two socially related general consumer traits, namely consumer interpersonal orientation (i.e. a consumer's willingness to interact with others regarding consumer related topics), and attention to social comparison information (ATSCI) to be positively associated with consumers' susceptibility to both informational and normative interpersonal influence. Moreover, it has been reported that persons who are more susceptible to interpersonal influence rate values of belonging, being well-respected and warm relationships with others more highly than people who are less susceptible to interpersonal influence (Batra et al., 2001; Kropp et al., 1999a).

Based on the previous arguments, we expect that investors with strong social needs are more susceptible to interpersonal influence than those who have less explicit social needs as these investors prefer to belong to and identify with social others (Cialdini & Goldstein, 2004; Maslow, 1954; Max-Neef, 1992). Socially oriented investors are more other-directed and are more likely to buy stocks of which they expect their reference

group will approve or stocks through which they can identify themselves with other investors. This leads to the following hypotheses:

H5. Investors' strength of social needs is positively associated with susceptibility to informational interpersonal influence.

H6. Investors' strength of social needs is positively associated with susceptibility to normative interpersonal influence.

2.3.2 Consequences

This study intends to link an individual investor's susceptibility to interpersonal influence with a specific characteristic of this investor's (trading) behavior: his or her yearly number of transactions. We chose this concept because of its central role in the financial literature and the detrimental effects trading may have on an investor's financial health. Due to transaction costs, overtrading has been found to lead to substantially lower investment returns. The best known explanation in the financial literature for the large number of transactions by many individual investors is their overconfidence (Barber & Odean, 2001; Odean, 1998; Odean & Barber, 2000b; Odean & Barber, 2002). Our study is, however, the first attempt to link individual investors' number of transactions to their susceptibility to social influences.

Prior research has already made a connection between a consumers' susceptibility to normative influence and his or her willingness to adopt new products. It was found that individuals who are more susceptible to normative influence are less willing to make an adoption decision until it is clear that a majority of relevant others also supports the new

concept. Individuals who score high on susceptibility to normative influence generally score low on self-esteem and high on motivation to comply as well as attention to social comparison information (Steenkamp & Gielens, 2003).

Extending this finding to an investment setting, we could expect that individuals who are more susceptible to normative influence only engage in investment transactions when they are relatively certain that others will agree with (or approve of) their decisions. This would potentially have a negative effect on these investors' number of transactions. On the other hand, susceptibility to normative influence is also positively related with market mavenism (Feick & Price, 1987; Steenkamp & Gielens, 2003), which may attenuate this negative effect on the number of transactions because market mavens generally spend more money than non-mavens (Goldsmith et al., 2003).

Prior research in the field of purchase pals investigated the influence of both dimensions of susceptibility to interpersonal influence on teen's frequency of shopping with friends (Mangleburg et al., 2004). It was found that susceptibility to informational interpersonal influence led to a higher frequency of shopping with friends, while susceptibility to normative influence had a negative effect on teens' frequency of shopping with friends. The frequency of shopping with friends was strongly positively associated with the amount of money spent while doing so; the number of transactions, however, was not studied.

Notwithstanding the mixed and sometimes inconclusive results of prior studies, we propose that investors' susceptibility to both informational and normative influences increases their number of transactions. As a result of their susceptibility to interpersonal

influences, investors will be more likely to observe other investors' behavior, ask for their opinions, and as a result trade (unnecessarily) much. We therefore hypothesize that:

H7. Investors' susceptibility to informational interpersonal influence is positively associated with the yearly number of transactions.

H8. Investors' susceptibility to normative interpersonal influence is positively associated the yearly number of transactions.

Finally, an investor's level of knowledge and experience is also indicative for this investor's number of transactions. An individual with more expertise is more familiar with investing, perceives less risk, is more involved with the product category, and is therefore more likely to transact. Sometimes, an investor's perception of his or her knowledge and experience even leads to overconfidence. Especially overconfident investors have been found to trade very heavily (Barber & Odean, 2001; Dorn & Huberman, 2005; Odean, 1998; Odean & Barber, 2000b; Odean & Barber, 2002). Therefore, we hypothesize that:

H9. Investors' level of knowledge and experience is positively associated with the yearly number of transactions.

2.3.3 Moderating Influence of Intolerance of Ambiguity

Intolerance of uncertainty and ambiguity constitutes investors' risk-taking behavior. Investors who are intolerant towards ambiguous situations interpret them as sources of

threat, while investors who are tolerant towards ambiguous situations perceive them as desirable (Budner, 1962: 29). Ambiguous situations occur when individuals cannot adequately structure or categorize a situation because of a lack of sufficient cues (Budner, 1962: 30). Ambiguous situations are likely to occur in stock markets because investors frequently lack up-to-date information on the real value of shares or are confronted with a great number of sometimes contradictory cues. In these ambiguous situations, individuals can respond either through submission (ignore the problem) or denial (seek additional information). Typical examples of denial involve searching for more information from factual sources or from others in one's social network. Indeed, prior studies (Norton, 1975) have found that the higher an individual's intolerance of ambiguity, the more information he or she will seek in an effort to become more confident about the decision(s) at hand. In line with current research (Frone, 1990) we use intolerance of ambiguity as a moderator rather than as a predictor. Investor's intolerance of ambiguity does not necessarily need to result in a higher susceptibility to interpersonal influences. Only when other factors, such as for example an investor's lack of knowledge and experience, cause a situation to become ambiguous, the effect of ambiguity intolerance will reveal itself.

Investors who are intolerant to ambiguous situations are more strongly influenced by a lack of information, and are more likely to seek and rely on the information provided by reference groups. As such, it is expected that an investor's level of intolerance of ambiguity moderates the effect of an investor's level of investment-related knowledge and experience on his or her susceptibility to informational and normative influences, in the sense that:

H10: The higher an investor's intolerance of ambiguity, the stronger the relationship will be between an investor's level of investment-related knowledge and experience and this investor's susceptibility to (a) informational and (b) normative interpersonal influence.

In a similar vein, it is expected that the relationship between an investor's perceived level of psycho-social risk and his or her susceptibility to both dimensions of interpersonal influences becomes more pronounced when this investor also displays a high level of intolerance of ambiguity. When investors perceive high psycho-social risks and are also intolerant towards ambiguous situations, they are expected to be particularly susceptible to the social influence of those who surround them to reduce these risks. Therefore, we hypothesize that:

H11: The higher an investor's intolerance of ambiguity, the stronger the relationship will be between an investor's perceived level of psycho-social risk and this investor's susceptibility to (a) informational and (b) normative interpersonal influence.

Finally, the relationship between the strength of an investor's social needs and this investor's susceptibility to social influences can be expected to be more pronounced for those individuals who display a higher intolerance of ambiguity. When individuals who are strongly concerned with the fulfillment of their social needs by getting approval from relevant others for their decisions, also perceive ambiguous situations as threatening, they become very sensitive to the information and norms provided by others in order to effectively reduce their perceptions of risk. Therefore, we hypothesize that:

H12: The higher an investor's intolerance of ambiguity, the stronger the relationship will be between an investor's strength of social needs and this investor's susceptibility to (a) informational and (b) normative interpersonal influence.

2.3.4 Covariates

Three socio-demographic variables are also included in our analysis: age, gender, and membership of an investment club. *Age* is suggested to negatively influence investors' susceptibility to interpersonal influences (Mangleburg et al., 2004; Park and Lessig, 1977). However, this effect is particularly pronounced for teenagers and young adults. Above the age of young adulthood, the susceptibility to interpersonal influences does not vary that much with age. Consequently, we did not a priori hypothesize any specific effect of age on the susceptibility variables.

Although in general, women appear to be more strongly influenced by group norms than men, empirical evidence for *gender* effects seems to be inconclusive. Therefore, we also did not a priori hypothesize any specific effect of gender on the susceptibility variables.

Membership of an investment club can be expected to positively influence investors' susceptibility to interpersonal influence. In fact, the motivations to become member of such clubs have some overlap with the above-mentioned antecedents of investors' susceptibility to interpersonal influences: a willingness to increase one's investment-related knowledge and experience, and a motivation to fulfill one's social needs. Controlling for these variables provides us with a stronger test of our hypotheses and leads to more accurate parameter estimates for our focal constructs.

3 Research Methodology

3.1 Method

This study used a survey approach to collect data from individual investors. An online questionnaire was developed and pre-tested amongst 78 Bachelor and Master students at the authors' university. After revising the questionnaire in terms of wording and lay-out, five academics agreed that the items closely resembled the intended constructs. The empirical data were subsequently collected through an online questionnaire that was targeted at visitors of four investment-related websites. These websites provide daily information about a wide range of investment-related topics, such as analyst reports on stock market developments and individual stocks, as well as financial news items. Moreover, they allow visitors to interact through online discussion groups. These websites were selected to attract visitors with various levels of experience and backgrounds. The call to participate provided a brief summary of the purpose of the study and a link to the online questionnaire. To prevent the sample to contain duplicates, respondents could only complete the questionnaire once. Finally, respondents were told that their responses would remain anonymous and that they would be treated strictly confidential.

3.2 Sample

In total, the sample consisted of 304 questionnaires of which 287 remained for further analysis after list-wise deletion of incomplete questionnaires. The average age of the respondents was 53 years (SD=13). Only twelve percent of the respondents were female. More than two-thirds of the respondents had at least a college degree. The average years of investing experience was 16 years (SD=11) and the average yearly number of

transactions was 77 (SD=122, median=30). Almost all respondents (98%) invested independently, and did not let others invest for them. The dominant purchasing channels of these investors were investigated: 56% used an online broker, 36% used a bank, 4% used a direct telephone order line, and 4% used the advice from experts. The average portfolio size was €207,000 with a median of €70,000. Twenty-percent of the sample was member of an investment club.

To investigate the possibility for sample bias, we compared these sample characteristics to the characteristics of the general population of investors with direct investments in the Dutch stock market (VEB, 2002). This comparison showed that our respondents were slightly older (53 years as compared to 48 years), and more likely to be male (88% as compared to 71%). The modal portfolio size, however, was equal to the size that can be found in the general investment population, namely €50,000. Also, the median portfolio size closely corresponded with estimates from the Dutch National Bank (2006) showing that the average portfolio size per investing household is €70,000. The sample is thus similar to the overall population of Dutch investors with regard to the selected background characteristics.

3.3 Research instrument

The items used to measure the relevant constructs used five-point Likert scales and are presented in Table 1. The CSII scale, comprising the constructs of susceptibility to informational (SII) and normative (SNI) interpersonal influence, was used from Bearden et al. (1989). The investors' susceptibility to informational influence was measured using all four items proposed by Bearden et al. (1989), whereas the susceptibility to normative influence was gauged by five items derived from the original eight item scale.

Although prior literature in the field of behavioral finance suggested that experience and knowledge are important underlying constructs to understanding investment decisions (Martenson, 2005), empirically tested scales are not readily available. Therefore, we had to develop these scales specifically for this study. We have chosen to use two self-reported items to indicate the investor's level of prior knowledge and experience with investing, as past research showed that investors' self-reported survey responses with regard to these concepts are fairly accurate (Dorn & Huberman, 2005: 440). The strength of social needs was measured using items from the study of Cheek and Buss (1981) on sociability. The items of this construct were adjusted to measure the preference for affiliation and engagement in conversations with other investors. The two items measuring psychological and social risk originate from the work of Kaplan, Szybillo and Jacoby (1974). Investors' intolerance of ambiguity was gauged through four items, indicating the levels of intolerance investors in general have towards ambiguous situations (Budner, 1962; Kirton, 1981). Although the reliability of this validated scale was relatively low (α=.54), we chose to maintain all items in order to ensure content validity.

Standard psychometric procedures were subsequently used to test the reliability and validity of the scales (Hair et al., 1998; Nunnally, 1978). We first performed reliability tests to analyze the item-to-total correlations and Cronbach's alphas. The reliability coefficients ranged from .74 to .87, clearly exceeding the suggested minimum level of consistency of .70 (Nunnally, 1978) (see Table 1). To check for the validity of the constructs, they were subjected to confirmatory factor analyses (CFA) using AMOS 7. The measurement model with ML estimation demonstrated acceptable fit (χ^2/df=1.68,

GFI=.94, CFI=.96, RFI=.89, NNFI=.95, RMSEA=.049), and no items had to be deleted. Evidence of convergent validity and unidimensionality was found as each item loaded significantly (p<.001) on its assigned factor and had insignificant cross-loadings. Next, the average variance extracted (AVE) of all constructs was found to be greater than .50 with the exception of the SNI scale that was marginally below the required level (Hair et al., 1998). Discriminant validity was established in two ways. First, the intercorrelations between the latent factors (+/- two standard errors) did not include unity (see Table 2). Second, the AVE of each latent construct was greater than the squared correlations between each set of two constructs. Composite reliabilities ranged from .74 to .88 indicating high levels of construct reliability (Bagozzi & Yi, 1988).

In sum, the above-described analyses provided adequate evidence that the scales had sufficient levels of reliability, unidimensionality, convergent and discriminant validity.

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4. Results

4.1 Structural Model

Figure 2 shows the structural model and the significance of its relationships. The structural model fits the data well (χ^2/df=2.00, GFI=.92, CFI=.94, RFI=.87, NNFI=.93, RMSEA=.059) and explains a reasonable part of variance in SNI (R^2=36.6%) and SII (R^2=38.1%). Additionally, the antecedents account for 9.9% of the variance of investors' yearly number of transactions. To determine the existence and degree of multicollinearity, we assess the variable inflation factor (VIF) for each independent

variable in a set of regression analyses; the maximum VIF value is 1.35, indicating moderate but not strong evidence for multicollinearity (Hair et al., 1998).

As an additional check, we investigated the influence of age, gender, and investment club membership on SII and SNI. The results show that the means do not differ across age categories for SII $(F(3, 283)=.82, p=.48)$ and SNI $(F(3, 283)= .30, p=.83)$. The means of SII and SNI also did not differ significantly between males and females according to Mann-Whitney U tests $(p>.10)$. Members of investment clubs were significantly more susceptible to both SII $(t(283)=2.58, p =0.01)$ and SNI $(t(283)=1.96, p=0.05)$. However, as performing the structural analyses without the investment club members yields very similar results, the complete dataset is used in the subsequent analyses.

All of the hypothesized relationships in the structural model are found to be significant. Consistent with previous studies (Gilly et al., 1998; Mangleburg et al., 2004; Park & Lessig, 1977), our study finds that the investor's level of knowledge and experience is negatively associated with both SII (H1: β=-.19, p= .005$)$ and SNI (H2: β=-.16, p= .010$)$. These results indicate that the greater an investor's amount of knowledge and experience, the less likely he or she is to be susceptible to interpersonal influence.

The results also support the proposed positive associations between psycho-social risk and SII (H3: β=.25, p<.001) and SNI (H4: β=.37, p<.001). As anticipated, the effect sizes of the coefficients show that perceived risk of social and/or psychological risk has a stronger impact on an investor's susceptibility to *normative* interpersonal influence than on *informational* interpersonal influence.

The results indicate that an investor's strength of social needs is strongly related to both SII (H5: β=.40, p<.001) and SNI (H6: β=.51, p<.001$)$. Thus, investors who attribute

more importance to the social aspects of investing are more strongly susceptible to both the informational as well as the normative influence of others.

Based on the standardized effects of the coefficients, we can conclude that social needs have the strongest influence on an investor's susceptibility to interpersonal influences, followed by the perceived psycho-social risk, and, finally, an investor's level of investment-related knowledge and experience.

SNI and SII have differential outcomes on investor's transaction frequency. In contrast to our expectations, SII is negatively associated with the number of transactions (H7: β=-.22, p=.002). Yet, in line with our expectations, SNI is positively associated with the amount of transactions (H8: β=.15, p=.030). Social comparison theory (Festinger, 1954) may provide explanations for these findings.

On the one hand, investors who are susceptible to the informational influence of others may - after requesting and receiving information from these others - be reinforced in their belief that they simply have insufficient knowledge to make well-informed decisions. Therefore, they may minimize the number of transactions to avoid making the 'wrong' decisions and to limit the impact of such wrong decisions. Another logical explanation is that investors who are susceptible to informational influence may hear from others that a buy-and-hold strategy often is the best option, resulting in fewer transactions.

On the other hand, investors who are susceptible to normative influence are more likely to be carried away by the opinions of others, and therefore to transact for the sake of reinforcing social bonds or complying with the expectations of others.

4.2 Moderation Tests

The moderating effect of investors' intolerance of ambiguity is tested by analyzing the inequality of the structural relationships across two consumer groups. In this respect, multiple group analysis is considered to be a good technique to test these interaction effects (Byrne, 2001). We first test for measurement invariance because this is a logical prerequisite for testing the invariance of structural relationships (Vandenberg & Lance, 2000).

Measurement invariance reflects whether the same construct is measured in the same way across groups. Invariance tests of structural relationships are only meaningful, when the items measure the same underlying construct to the same degree for each group (Byrne, 2001; Vandenberg & Lance, 2000).

We divided the sample into two groups based on a median split of the construed scale (low intolerance of ambiguity vs. high intolerance of ambiguity). Subsequently, we test whether the items are invariant across groups. The tests show that full configural and metric invariance is established for the multi-group model (Byrne, 2001), thereby lending sufficient support for meaningful structural invariance tests (Steenkamp & Baumgartner, 1998).

Configural measurement invariance is established as all items load significantly and substantially different from zero on their assigned factors, load insignificantly on the other factors, and the correlations between the latent factors are significantly below unity (Steenkamp & Baumgartner, 1998). Moreover, both the baseline models and the stacked model demonstrate sufficient fit indices (NNFI>.90, CFI>.90, RMSEA <.08).

Metric invariance is a stronger test of invariance by testing for equal metrics or scale intervals across groups. Full metric invariance is established, as constraining the item loadings to be equal across groups does not lead to a significant worsening of the fit, based on a Chi-square difference test with thirteen degrees of freedom ($\chi^2(13)=14.4$, $p=.35$).

Next, we performed the structural invariance tests. Each moderation effect is tested by constraining the structural coefficients – one at a time – to be equal for the two groups. The subsequent Chi-square increase is tested with one degree of freedom. A significant worsening of the fit is indicative for the existence of moderation. Table 3 reports the *un*standardized structural relationships of each group as these parameters are better comparable across groups than standardized coefficients (Diamantopoulos & Siguaw, 2000).

<<insert table 3 about here>>

The analyses show that investors' intolerance of ambiguity moderates two of the six tested relationships.

Intolerance of ambiguity strengthens the negative effect of knowledge/experience on susceptibility influences (H10a and H10b), but the relative strength of knowledge/experience in explaining SII and SNI does not significantly ($p>.10$) differ across investors that are tolerant or intolerant to ambiguity. Therefore, although in the proposed direction, hypotheses H10a and H10b could not be confirmed by our data.

The relationships between psycho-social risk and the investor's susceptibility to informational (H11a) and normative (H11b) interpersonal influence are not affected by the investor's level of ambiguity intolerance. Hence, H11a and H11b are not supported by our empirical data.

Intolerance of ambiguity significantly enhances the positive effect of social needs on both dimensions of investors' susceptibility to interpersonal influence (p<.05). Thus, the effect of social needs becomes stronger when investors are more intolerant towards ambiguous situations. In these circumstances, they appear to be strongly susceptible to both informational (H12a) and normative influences (H12b), thereby confirming H12a and H12b.

5. Discussion

5.1 Conclusion

To the best of our knowledge, this is the first study to empirically investigate the antecedents and consequences, as well as a moderator of individual investors' susceptibility to interpersonal influence. Although the existing literature implicitly assumes that susceptibility to interpersonal influence only plays a role of importance for conspicuous or (socially) visible products, we have demonstrated the relevance of this concept for the less conspicuous and less visible product category of investments.

Apart from this, our study also offers a number of important findings with regard to the determinants of this behavior. Not surprisingly, this study finds that investors who lack the necessary investment-related knowledge and experience, or who perceive investing to be a risky activity in terms of the associated psychological and social risks, are especially susceptible to interpersonal influence. Although the relevant literature has only

infrequently included social needs into a nomological net for susceptibility to interpersonal influence (Batra et al., 2001), our study shows that these socially oriented needs actually strongly influence investors' susceptibility to interpersonal influence. Therefore, solely focusing on the reduction of psycho-social risks or the possible negative consequences of a lack of knowledge and experience is not sufficient to fully explain investors' susceptibility to interpersonal influence. Rather, more attention is needed for investing as a social activity and the potential benefits this may bring to investors. Interestingly, the effects of social needs become even stronger when investors are also intolerant towards ambiguity.

Another important finding of this study relates to the effect that investors' susceptibility to social influence has on these investors' yearly number of transactions. Realizing that investors' susceptibility to *normative* interpersonal influence has been found to lead to an increase in these investors' yearly number of transactions, and the fact that overtrading is one of the most important reasons for underperformance (Odean & Barber, 2000a), this research may shed some new light on the severe underperformance of investment clubs. After all, members' reasons to join an investment club seem to overlap with the antecedents of an investor's susceptibility to interpersonal influence and indeed members of an investment club were found to be significantly more susceptible to these influences than non-members.

The results yield several managerial implications. Successful marketing of financial products to consumers requires a thorough understanding of the factors that drive their behavior. This study elaborated on the role of others in individual investors decision-making and may serve marketers in better targeting their prospects and designing

products that better fit the need of existing as well as prospective clients. Second, it is important that companies provide investors with ways to increase their investment-related knowledge and experience so that they are less dependent on others and may trade less or more wisely. In this respect, the recent initiative by a large online brokerage house in the Netherlands to start an "investor academy" is a step in the right direction.

5.2 Limitations and Future Research

This study has a number of limitations that should temper the study's results. First, the survey-approach entails some limitations. Common-method variance can be a problem, and may have inflated the relationships that have been found (Doty & Glick, 1998). Moreover, our survey used self-reported measures and although prior research showed that the self-perceptions of investors are fairly accurate (Dorn & Huberman, 2005), the use of behavioral data would enrich the current insights and reduce possible common-method bias effects. Finally, experimental and longitudinal studies can be used to address causality issues that are apparent to these types of cross-sectional studies (e.g., Batra et al., 2001).

Second, this study investigates only one of the potential consequences of investors' susceptibility to interpersonal influence, namely their yearly number of transactions. Future research could include other consequences to further increase our understanding of the effects of investors' susceptibility to interpersonal influence. Prior research has for example argued that social influence operates on two levels: product purchases and brand choices (Schroeder, 1996). Yet, our study only focused on the investment decision, but not on which stocks investors actually want to buy. Future research could investigate the degree to which investors align their actual portfolio choice(s) to the suggestions made by

other investors. A dyadic approach might be appropriate and useful here. Next, future research could link susceptibility influences to investor returns: Do investors who are more susceptible to informational and/or normative interpersonal influence obtain better or worse returns on their portfolios?

Third, our sample may suffer from a potential sample bias. The purpose of this study was to attract investors with varying levels of expertise rather than to obtain a student sample. Nevertheless, as the respondents could select themselves and are visitors of investment-related websites, this introduces the possibility of a sample bias. That is, considering that the respondents are willing to invest their free time in accessing investment-related websites on their computers makes it likely that they have a greater interest in seeking out investment-related news than the more general population.

Fourth, although this study successfully shows that higher perceptions of psycho-sociological risk are positively associated with susceptibility to social influence, it seems fruitful to further investigate the relationships between the types and degree of risk and the susceptibility to social influence. In doing so, future research could broaden the concept of CSII, which is currently limited to measuring the susceptibility to *personal* influences (i.e., the influence of close friends and relatives), by considering the susceptibility to rely on other sources of information, such as business experts, bank employees, or investment-related websites. As such, it is possible to investigate how different types of risk and different degrees of perceived risk influence investors' use of and reliance on personal and non-personal information sources. Given the tremendous growth of online investment clubs and investment-related websites, this seems a rich venue for future research.

Despite these limitations, this study contributes to the literature by shedding some light on the processes through which reference group influences operate in an investment setting and affect the behavior of individual investors. Moreover, by demonstrating the relevance of these interpersonal influences in a situation with less conspicuous and less visible products, this study opens up many research avenues for such product categories.

Figure 1: Conceptual model
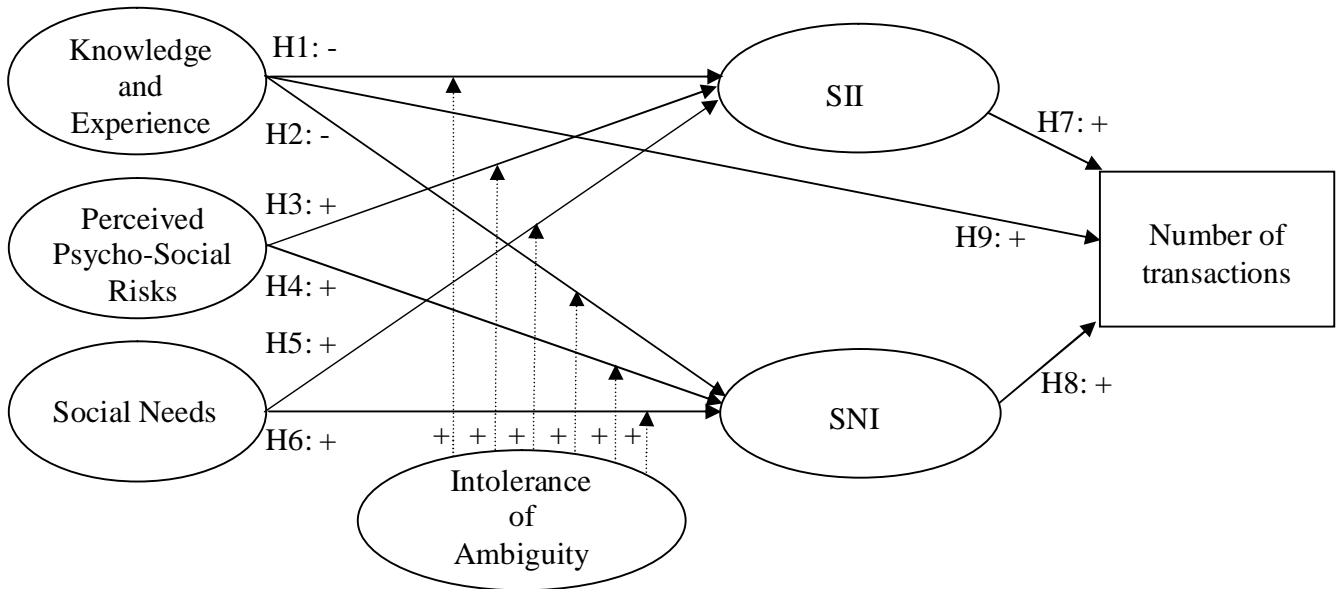
Notes: Solid lines indicate direct effects, while dotted lines indicate moderation effects.

Figure 2: Structural model results
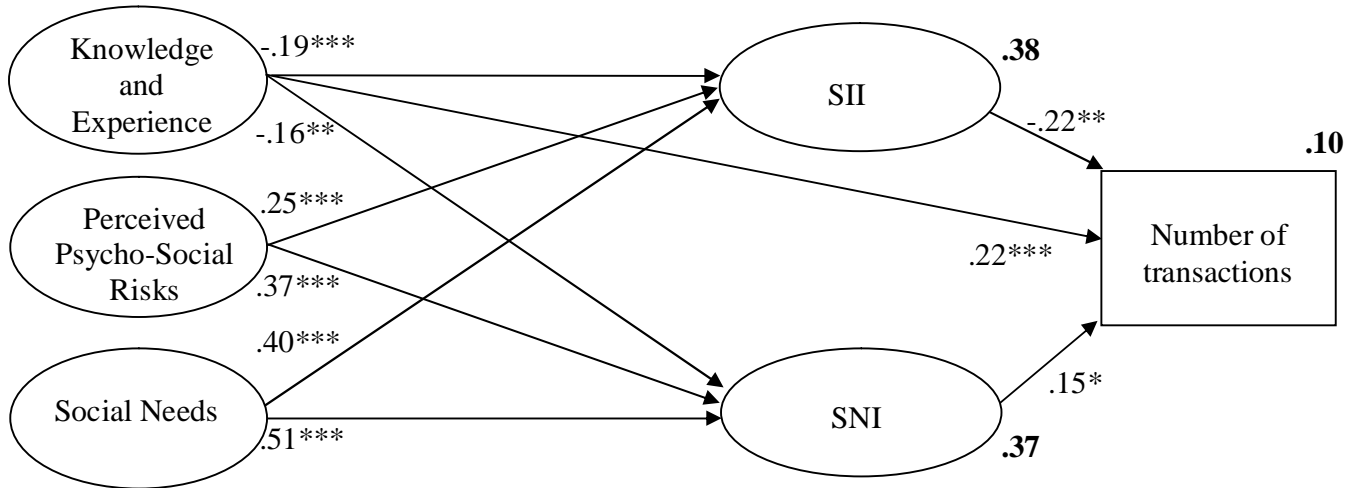
Notes: * p<.05, ** p<.01; *** p<.001; Standardized regression weights are shown.

Numbers in bold are squared multiple correlations.

Table 1: Measurement model results

Construct	Item Wording [a]	Standardized item loading (t-values)
Knowledge/ experience α =.87 CR=.88	Knowl/exp1: How would others characterize you with regard to the level of KNOWLEDGE you have about investing? (1=Very little knowledge, 5=Very much knowledge)	.79 (-)
	Knowl/exp2: How would others characterize you with regard to the level of EXPERIENCE you have with investing? (1=Very limited experience, 5=Very extended experience)	.98 (6.39)
Psycho-social risk (Kaplan et al., 1974) α =.71 CR=.74	Psych/socrisk1: What is the probability that an investment in an unfamiliar stock will lead to a PSYCHOLOGICAL LOSS for you because it would not fit well with your self image or self-concept? (1=Very unlikely, 7=Very likely)	.64 (-)
	Psych/socrisk2: What is the probability that an investment in an unfamiliar stock will lead to a SOCIAL LOSS for you because others would think less highly of you? (1=Very unlikely, 7=Very likely)	.88 (5.22)
Social needs	SocNeed1: I invest because I like to participate in	.75 (7.15)

(Cheek & Buss, 1981) α =.74 CR=.74	investment related conversations with others	
	SocNeed2: I invest because I like to affiliate with other investors	.79 (-)
Susceptibility to informational influence (SII) (Bearden et al., 1989) α =.78 CR=.78	SII1: I frequently gather information about (type of) stock from friends or family before I invest in them.	.69 (10.37)
	SII2: To make sure I buy the right stock, I often observe what other investors invest in.	.62 (9.47)
	SII3: I often consult other people to help choose the best stock to invest in.	.69 (9.99)
	SII4: If I have little experience with a (type of) stock, I often ask my friends and acquaintances about the stock	.77 (-)
Susceptibility to normative influence (SNI) (Bearden et al., 1989) α =.86 CR=.87	SNI1: I like to know what investment decisions make good impressions on others	.66 (11.50)
	SNI2: I generally purchase those stocks that I think others will approve of.	.70 (12.40)
	SNI3: I often identify with other people by purchasing or selling the same stocks they sell or purchase.	.81 (14.76)
	SNI4: I achieve a sense of belonging by	.79 (14.19)

	purchasing or selling the same stocks that others purchase or sell	
	SNI5: If others can see in which stocks I invest, I often invest in stocks that they invest in.	.81 (-)
Intolerance of ambiguity (Budner, 1962; Kirton, 1981) α =.54	Intolerance1: In the long run it is possible to get more done by tackling small, simple problems rather than large and complicated ones	
	Intolerance2: What we are used to is always preferable to what is unfamiliar	
	Intolerance3: A person who leads an even, regular life in which few surprises or unexpected happenings arise, really has a lot to be grateful for	
	Intolerance4: I like parties where I know most of the people more than ones where all or most of the people are complete strangers.	

Notes:

a. 5-point (and 7-point) Likert scales were used, anchoring at 1= totally disagree and 5=totally agree.

b. Means and standard deviations were based on total sample (N=286).

Table 2: Construct correlations and AVE

Construct	Knowledge/ Experience	Psycho-Social Risk	Social Needs	SII	SNI	Number of Transactions
Knowledge/ Experience	**.79**					
Psycho-Social Risk	.04 (.08)	**.59**				
Social Needs	.15 (.09)	.24*** (.07)	**.59**		.	
SII	-.08 (.07)	.31*** (.08)	.47*** (.08)	**.47**		
SNI	-.06 (.07)	.42*** (.07)	.40*** (.07)	.62*** (.06)	**.57**	
Number of Transactions	.24** (.08)	-.01 (.07)	-.03 (.06)	-.15** (.06)	.01 (.06)	**N/A**

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

Note: The numbers above the diagonal represent the correlations between two latent

constructs. The numbers in bold represent the average variance extracted (AVE).

Correlations were derived from bootstrapping with 500 replications.

Table 3: Structural invariance tests

Hypothesis	Relationship	Ambiguity intolerance			
		Low (N=142)	High (N=142)	$\Delta\chi^2$	p-value
H10a	Knowl/Experience à SII	-.24	-.35	0.33	.566
H10b	Knowl/Experience à SNI	-.09$^{n.s}$	-.23	1.58	.209
H11a	Psycho-social risk à SII	.17	.05$^{n.s.}$	0.72	.395
H11b	Psycho-social risk à SNI	.20	.09$^{n.s}$	1.60	.205
H12a	Social Needs à SII	.35	1.31	4.15	**.042**
H12b	Social Needs à SNI	.28	.92	7.58	**.006**
	Fit indices stacked model	χ^2/df=1.55; GFI=.88; CFI=.94; NNFI=.92, RMSEA=.043			

Notes: Unstandardized structural coefficients are shown. n.s. structural coefficients are not significant different from zero at p=.05 level.

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