

Chapter 6

The Group Effect: Social Influences on Risk Identification, Analysis, and Decision Making



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Abstract Both laypeople and professionals are embedded in social contexts when faced with risk-related questions and make risk judgments and decisions in groups rather than alone. There is a rich body of knowledge from psychological research on how social factors in general and group dynamics specifically influence human judgment formation and decision making. This chapter provides an overview of some of the most important insights from group psychology applied to real-world situations in which people seek appropriate risk identification, analysis, judgments, and decisions. We discuss how groups tend to (1) impede individuals from thinking freely on what risks could occur (risk identification), (2) limit themselves to information commonly known by all group members instead of considering all the relevant information available to the group (risk analysis), and (3) agree on relatively extreme risk judgments after discussing risks in a group setting (risk judgments and decisions). We close the chapter with recommendations on how a group's risk identification, judgment formation, and decision making can be improved both by individual group members as well as from an organizational perspective.

Introduction

Should I get vaccinated? What sort of insurance do I need? Is it safe to go swimming today? Should we use condoms? Should I buy that car? What should I invest my money in? Should I go see a doctor? Can I allow my daughter to attend that festival? These questions are samples of the countless risk-related decisions one faces in everyday life. Almost any important decision comes with possible negative consequences and thereby entails risk. Often neither the quality nor likelihood of these possible negative consequences can be known; thus, one must overcome inevitable uncertainty in deciding whether one gets vaccinated, purchases insurance or goes swimming on a particular day.

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Companies and other organizations face comparable risk questions concerning the organization's success: *What could harm our reputation? How can our ongoing production or services be interrupted? What if a key supplier doesn't respect our agreements? How are we exposed to technological change? What new laws could be introduced and how would these affect us? How could a natural catastrophe affect our company? How could we become a victim of acts of fraud such as cyber-attacks or information theft?* Identifying the most important risks at an early stage, gaining an accurate understanding of the risks identified, and responding to potential threats effectively is not only at the core of every professional risk management system but also more generally a very basic precondition for assuring an organization's performance and long-term success.

At the latest since Lewin's (1936) *field theory*, psychologists consider judgments and decisions as determined not only by the decision maker herself but also by her surroundings—especially her social surroundings. People often make important risk decisions embedded in a social context and thereby not alone but rather in groups (De Dreu, Nijstad, & van Knippenberg, 2008; Gardner & Steinberg, 2005; Kerr, MacCoun, & Kramer, 1996). This is true for risk decisions both in one's private and professional life. A reason for the high popularity of having important judgments and decisions made in groups is the high trust people place in group judgments and decisions (Brandstätter, 1997). Psychological research has developed a rich store of knowledge on the social factors of human judgment formation and decision making in the last few decades. In numerous investigations, psychologists have examined the influence of groups on how humans perceive, judge and respond to risks (e.g., see Frey & Greif, 1997; Frey & Irle, 2008 for an overview). We summarize the most important findings that we believe are especially relevant for both private and professional risk judgment formations and decision making. We thereby discuss (1) why humans consider other peoples' behavior and seek exchange with others for their risk evaluations and decisions, (2) what groups struggle with in their identification and analysis of risks, and (3) how a group's judgments and decisions can be biased. Based on a reflection of such psychological knowledge applied to real-world risk problems, we make suggestions on how group risk judgments and decisions can be improved both from the perspective of an individual group member and from an organizational perspective. This chapter can serve as a starting point for improving risk decision making both in a private and a corporate context.

Group Effects: What Happens When One Is Part of a Group

This book is a great illustration of the vulnerability of human risk judgment formation and decision making. It reflects the extensive research on risk psychology, the high complexity of risk perception, judgment formation and decision making, and how difficult it is for laypersons and professionals to come up with adequate risk judgments and decisions. Given the high difficulty of dealing with risk, the question



Fig. 6.1 Asch's (1951) test measures for demonstrating the effect of group conformity

arises as to what strategies people use to nevertheless make important risk judgments and decisions.

Numerous psychological theories provide grounds for assuming that individuals seek social reassurance for their risk judgments. Festinger's (1954) *social comparison theory* suggests that individuals compare their assumptions to those of others as a strategy to validate their judgments. Humans constantly test their hypotheses on their surroundings (Bruner & Postman, 1948) and therefore verify or disprove existing assumptions by consulting the behavior of others (Lilli & Frey, 1993). For example, an individual might have certain assumptions on whether it is safe to go hiking on a certain day. By consulting the behaviors of others (e.g., whether or not others are hiking), the person verifies or disproves these assumptions. The psychological concept of *social proof* describes that people often assume the behavior of others reflect reality and consider the behavior of others to determine appropriate behavior for themselves. Thus, individuals often adopt behaviors of others simply because they assume what others do must be the right behavior (Cialdini, Wosinska, Barrett, Butner, & Gornik-Durose, 1999). For risk judgments, this means that people consider how others evaluate and deal with the risk and adapt their risk judgments accordingly. As an example, showing people that their friends on Facebook use specific security features has been demonstrated to be a particularly effective strategy for raising awareness of security behavior (Das, Kramer, Dabbish, & Hong, 2014).

To demonstrate how fundamentally our everyday judgments and decisions are based on what others do and say, we want to ask you for a very easy judgment. Please take a look at Fig. 6.1: Which of the three lines on the right is the same length as the line on the left? The answer is very clear: no doubt the correct answer is B. Everybody can see that the line on the left has the same length as line B.

You now find yourself in a very similar situation as the participants of a classic psychological experiment conducted by Asch (1951). For the experiment,

participants in groups of nine persons were asked one after another to give answers to easy tasks such as the one illustrated above. Whereas the correct answer (which is, admittedly, A in the task illustrated above) was very clear for the participants, all of the other eight group members (which were in fact not participants but actors) consistently stated a wrong answer such as B in our example. When all other group members consistently stated a wrong answer, a third of Asch's participants indicated obviously wrong judgments in 50% or more of the tasks. Across all participants in that experimental condition, these social pressures led to obviously wrong judgments for 32% of the questions. A large number of Asch's participants thus adapted their judgments to the obviously wrong judgments of their peers and stated the same wrong result as everybody else. They either assumed that what everybody else perceived must be right, or that not being different than everybody else in the group was more important than making a valid judgment. When participants were asked to make their judgments in written form (and there was therefore no more social pressure), there were almost no wrong judgments made (Prose, 1997).

Asch's experiment is one of many psychological experiments demonstrating the phenomenon of group conformity (Erb, Bohner, Rank, & Einwiller, 2002). People are generally willing to behave in a way that is consistent with the behavior of others and thereby adapt to group norms. Asch found that a majority's influence on one's judgment (i.e., the willingness to adapt to obviously wrong judgments) is higher the less clearly the task is defined (Asch, 1951). In a similar study, participants showed a higher tendency to adapt their judgments to the wrong judgments of their peers when participants were uncertain about the correctness of their judgment (Deutsch & Gerard, 1995). We claim that correct risk judgments are in most cases not easy to come up with or to recognize and, therefore it is likely that adapting one's judgment to a majority's handling of risk is a particularly widespread strategy when it comes to dealing with risk.

How does social proof and group conformity affect real-life risk decisions? Let's say you decide to start skiing this winter and visit a skiing resort for the first time. We assume that it is very likely that you would decide to wear a helmet. The reason for our assumption is that you would see almost everybody else wearing one: as per the National Ski Areas Association (NSAA, 2014), 73% of all skiers and snowboarders wore a helmet in US ski areas in the 2013/2014 season. In Switzerland, 87% of all skiers and snowboarders wore a helmet in the 2012/2013 season (Beratungsstelle für Unfallverhütung, 2013). As you observe that the broad majority of skiers wear a helmet, you may consider it *normal* and thus *right* to do so as well. The fact that almost every skier wears a helmet may be used as proxy that one ought to wear a helmet. Furthermore, this social proof can lead to the perception that skiing without a helmet is risky. However, your reasoning might have been exactly the opposite only a decade and a half ago: in 2002, only 25% of skiers wore a helmet in the USA (NSAA, 2014) and only 16% in Switzerland (Beratungsstelle für Unfallverhütung, 2013). If you had started skiing in that time, you would very likely not have worn a helmet, simply because it was normal not to do so. The fact that almost no one wore a helmet would probably have been interpreted as a social proof for a lower risk. What has changed in the meantime is the majority's behavior and thereby what is



Fig. 6.2 A person's social identity is based on perceived membership of social groups

seen as appropriate risk behavior within the group of skiers. Research has indicated an effect of social influences on helmet usage in various domains. For example, Wise and Scott (2012) explain the increasing use of helmets in the National Hockey League (NHL) in the 1960s by the process of emerging norms in a social group. As per the authors, player usage decisions were partly influenced by their immediate social network. Comparably, social influence has been demonstrated to be a critical factor predicting the use of protective gear among in-line skaters (De Nooijer, De Wit, & Steenhuis, 2004).

People tend to conform to groups by behaving according to the group's norms and expectations because they want to be (seen as) a valuable part of the group. Tajfel and Turner's (1979) *social identity theory*, people identify themselves not only as individuals but also as group members. A person's social identity is his or her self-concept based on perceived membership of social groups. For example, your social identity might be based on which town you are from, which university you went to, which company and department you work for, which sports team you are a fan of, which political party or religion you belong to or feel close to, or whether you are a skier or not (Ellemers & Haslam, 2012; see Fig. 6.2).

Humans are very sensitive to what is desired and expected within a group and willing to behave accordingly. As one feels part of a group, characteristics of the group become characteristics of the individual. Thus, what is considered *normal behavior* or *typical views* within the group becomes what an individual considers *normal behavior* or *typical views* of herself. Because the other group members are perceived as similar to oneself, an individual tends to believe that she *ought* to have similar views as the other group members and *ought* to behave in a similar way. In groups, one feels a certain pressure to conform to the group's norms and thereby to

what is perceived as normal behavior in that particular group (Turner & Reynolds, 2011). Going back to our skiing example, when starting skiing you would very likely adapt to the existing norms on whether to wear a helmet simply because you want to feel and also be perceived as a normal member of the group of skiers. While the general group of skiers did not perceive wearing a helmet as necessary a decade and a half ago, a subgroup composed of “free riders” had already adopted the norm of helmet use. Those who wanted to be perceived as a part of such a particular subgroup might have felt compelled to wear helmets at that time.

Groups Are Less Creative than Individuals in Their Risk Identification

Before a risk can be analyzed and evaluated, it is first necessary to have the risk identified and thereby be aware of the risk. In a corporate context, this is often conducted very explicitly: companies try to gain a holistic picture of their risk situation by systematically identifying as many potential risks as possible in a first step. Only after this can the identified risks be analyzed. Risk identification is therefore a necessary condition for accurate risk judgments and adequate risk management (Lermer, Streicher, Eller, & Sachs, 2014).

Since many persons can contribute more perspectives and have more knowledge available than a single person, it might appear obvious to involve as many persons as possible in the identification of risks and therefore brainstorm about potential risks in groups. It is a common approach in organizations that a number of colleagues or experts sit together and gather what risks might be relevant and worth having a closer look at, for example when setting up a new project. Such brainstorming is a popular method of idea generation that was originated by Alex F. Osborn in 1939 (as cited in Taylor, Berry, Block, & Block, 1958). Following the principle of *quantity generates quality*, the aim of brainstorming is to collect as many ideas as possible. Individuals are encouraged to express any idea that comes to mind and to avoid any form of judgment or criticism regarding both one’s own ideas and the ideas of others. Every idea that comes to mind shall be captured, regardless of how wild it may be (Diehl & Stroebe, 1987). Whereas brainstorming was introduced and is mostly used as a method for general idea generation, it is indeed often specifically used for the generation of risk ideas and thus risk identification.

The introduction and widespread adoption of brainstorming suggests that individuals are generally more productive in their idea generation when collecting ideas in a group rather than alone (Osborn, 1957, as cited in Mullen, Johnson, & Salas, 1991). Indeed, individuals often believe that they are more creative and thus able to generate more ideas in groups (Pauhus, Dzindolet, Poletes, & Camach, 1993). The question of whether groups enhance or rather inhibit creativity has been investigated by numerous psychological experiments (for reviews, see Lamm & Trommsdorff,

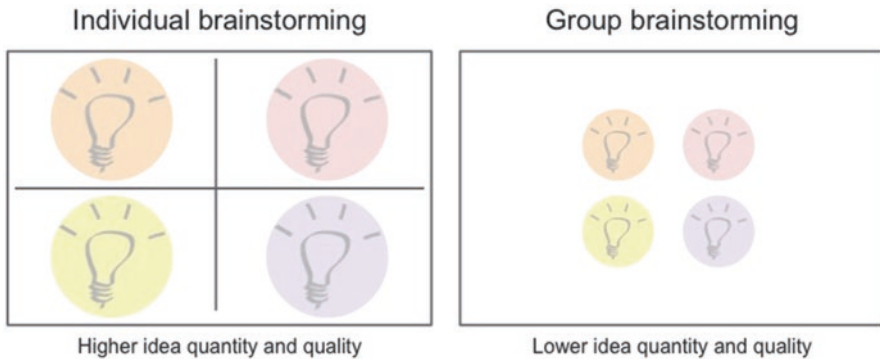


Fig. 6.3 Individual brainstorming is more effective than group brainstorming

1973; Mullen et al., 1991). Thereby it has been indicated that brainstorming in groups is generally less productive, both in quality and quantity, than when the same set of individuals work independently without interaction (see Fig. 6.3). People likely generate more and better ideas for potential risks when working independently than when working in a group. The loss of productivity increases with the size of the group (i.e., the larger the group, the worse the individual performance) and when an authoritative person is present (Diehl & Stroebe, 1987; Mullen et al., 1991).

How can the loss of productivity be explained? There are generally three main reasons discussed for the phenomenon of groups impeding their members' creativity (cf. Diehl & Stroebe, 1987; Mullen et al., 1991):

1. The group setting blocks the productivity of the individual since only one idea can be expressed at a time. This can prohibit individual group members from expressing their ideas while listening to other group members, until they finally forget the idea or suppress it because it seems no longer relevant.
2. The presence of others creates a certain social inhibition. Being in a group with other persons increases an individuals' self-consciousness and excitement level. In a sense, being in a group distracts the individual members from the actual task at hand. Individuals anticipate the other group members' reactions before expressing an idea (*Does the idea make me appear clever? Will someone laugh about my idea?*). Such thoughts demand cognitive resources that are no longer available for the task of risk identification. Also, individuals might consciously come to the conclusion of not expressing an idea because they fear negative evaluation by their peers. The inhibiting effect on idea generation is especially high when other group members are perceived as experts on the particular issue. Additionally, team members will hesitate to express ideas that are expected not to be in the interest of a present manager or other authority.
3. Individuals give less effort in groups than when they work on their own. It is a well-known psychological effect that individuals tend to decrease their level of performance when being part of a group and performance of the whole group is

measured rather than individual performance. The phenomenon is described as *social loafing* or the *Ringelmann effect* (Karau & Williams, 1993; Latané, Williams, & Harkins, 1979) and has been demonstrated for physical endeavors such as tugs-of-war (individuals pull stronger when competing alone than as part of a group) but also for intellectual tasks such as idea generation. Social loafing is high when group members do not feel personally responsible for the group's success or failure. Thus, it can be an effective strategy for the improvement of risk identification in groups to make individuals feel responsible for the group risk identification process and to stress how important individual performance is for the group result.

When groups impede individuals in generating ideas for potential risks, one might ask how one can still benefit from the large amount of information and the many perspectives that several rather than only one person can contribute to risk identification. A straightforward solution is to simply ask several persons for their ideas individually. Accordingly, a method that can reduce the negative effects of groups on individuals' idea generation is *brainwriting*: every person writes down as many ideas as possible, usually without any direct interaction (Heslin, 2009; Paulus & Yang, 2000). When you set up your next project at work and want your colleagues to come up with ideas for potential risks, asking your friends or colleagues individually will probably give you more and better ideas than asking them to brainstorm in a group setting. If already in a group setting, it helps to make everybody *brainwrite* individually first and then discuss the ideas in a second step (and then again think about it individually and so forth). Generally, such combinations of collecting and working on ideas both individually and in a group can help to combine the best of both worlds: using the efficiency of individual brainwriting without missing the inspiration, fun, motivation, and legitimation and acceptance one can get from groups.

Groups Have More Information but Fail at Using It

Risks are often not easy to understand and evaluate. One often feels that she has insufficient information to understand or judge a particular risk. A reason why it is very popular to discuss risks in groups is the widely shared notion that groups simply know more than individuals and therefore must be able to make better risk judgments than a single person. Indeed, groups would be predestined to make good judgments and decisions if they were able to exchange the large amount of information that is distributed among the group members, each with different knowledge, perspectives, experiences, and opinions, and then base their judgments and decisions on the entirety of knowledge available. For groups making high-quality judgments and decisions, it is a crucial precondition that they share information and thus inform each other about information they did not have before (Valacich, Sarker, Pratt, & Groomer, 2009; Wittenbaum, Hollingshead, & Botero, 2004).

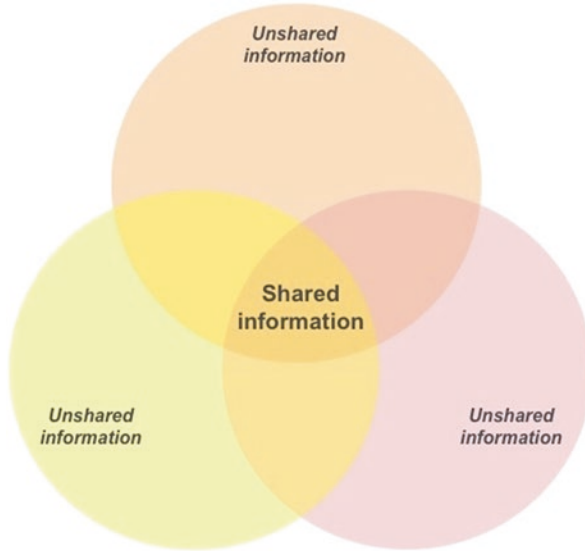


Fig. 6.4 Groups generally fail at exchanging unshared information and mainly discuss shared information in group discussions

Unfortunately, research has consistently indicated that groups fail at sharing information that is known only by individual group members. How individuals share information within groups can be measured with the so-called *hidden profile paradigm* (Stasser & Titus, 1985, 2003). The paradigm is characterized by an asymmetrical distribution of information among all group members: some of the available information is shared and thereby known to all group members before the discussion, whereas other information is unshared and thereby known only by one group member and unknown by the rest of the group (see Fig. 6.4). Hidden profile tasks require the exchange of unshared information to allow the group to make an appropriate judgment or decision. If the group is not able to exchange unique information, the resulting judgment or decision is poor. Imagine you are in a group deciding between two options A and B: if the arguments for the better solution A are unshared (i.e., individual group members have unique knowledge about one or several arguments) but the arguments for the worse solution B are shared (i.e., all group members know all of the arguments), the group will only recognize the superiority of solution A if able to exchange the unshared information (Greitemeyer & Schulz-Hardt, 2003; Mennecke, Hoffer, & Valacich, 1995). The hidden profile paradigm thereby reflects the challenge for groups to talk about what only single-group members know. Only if groups are able to exchange such information can they benefit from the advantage of having more information available than a single person.

The consistent finding of hidden profile experiments is that groups generally fail at uncovering hidden profiles: groups mostly discuss what everybody already knew before the discussion. Considering all information available to a group, information

known by many group members has a higher statistical likelihood of being mentioned in a group discussion than information only known by individual group members. However, this purely statistical advantage cannot entirely explain the findings that groups tend to focus on information widely known in the group and neglect information only known by individual group members. Additionally, information that was already known by all group members before the discussion is more often repeated and responded to in group discussions than information that is new to most of the group members (Greitemeyer & Schulz-Hardt, 2003; Lightle, Kagel, & Arkes, 2009; Paulus, 1998; Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006; Stasser & Stewart, 1992; Stasser & Titus, 1985, 2003).

Why do groups struggle with sharing information that is only known by individual group members? We have already discussed the concept of social proof above: people tend to assume that what others do reflects reality, relevance or simply appropriate behavior (Cialdini et al., 1999). Social proof thereby has an effect on group discussions. As an example, think of a company that considers investing in alternative energy technologies. An expert roundtable is convened to discuss potential risks related to an offshore wind farm investment option. The individual experts would probably be uncertain which facts and arguments should be shared with the group. And this is where they might start watching out for a social proof: as soon as another person in the group expresses an argument or fact that a particular expert also had in mind, this can be taken as evidence (i.e., social proof) that this piece of information must be a relevant one. As a result, this particular expert would probably express agreement, and the discussion would continue on this particular piece of information, increasing its perceived relevance within the group as a whole. The piece of information might then be repeated throughout the discussion and, thus, have a disproportionately high impact on the group judgment or decision. On the other hand, it is quite unlikely that an individual would express a thought that is exclusively known by that person, simply because there would be no social evidence that this thought is relevant to the group discussion (Greitemeyer & Schulz-Hardt, 2003).

A second explanation for a group's tendency to mostly talk about what everybody already knew before the discussion relates to the concept of *impression management*. Being part of the roundtable discussion on alternative energy technologies, it would certainly be important for you to make a valid judgment in the best interest of the group or company. However, you would probably also have other more personal concerns, such as whether the group would perceive you as a valuable (e.g., competent, knowledgeable, interesting, likeable, etc.) group member. Group members evaluate one another more positively when expressing shared rather than unshared information (Wittenbaum, Hubbell, & Zuckerman, 1999). Thus, a group member is perceived as a more valuable member by her peers when expressing what others already knew than when expressing new and thereby potentially irritating information. Experiencing such social consequences of expressing shared as opposed to unshared information can cause group members not to express unshared information, simply to enhance their impression on other group members.

Both social proof and impression management lead to the same result: groups failing to share information that is only known by individual group members. Considering the prevalence of group discussions for risk analysis and risk decision making, that finding is particularly problematic. A main reason for the implementation of think tanks, roundtables, and other discussion groups for risk analysis is that the evaluation of risks often requires a broad range of information. Teaming a number of experts with different backgrounds, perspectives, and information is a popular strategy to satisfy the described need for diverse information. However, research around the hidden profile paradigm suggests that these experts tend not to make judgments and decisions based on all available information but rather simply on their common knowledge. In the worst case, this means that the individual experts' expertise is excluded from the judgment formation or decision making process. Interestingly, the tendency to talk about shared information rather than information only known by individual group members is particularly high when the group believes it does not have sufficient information to solve the problem anyway (Stasser & Stewart, 1992): groups struggle with sharing information, especially when the task is to make an estimation or judgment rather than to solve a problem. Since it is in the very nature of risk analysis that one does not have all the information, risk issues are judged rather than "solved." Therefore, groups discussing risk are particularly prone to the tendency to discuss shared rather than unshared information.

What can be done? First, research has indicated that not agreeing before the discussion (i.e., group dissent) increases the group's ability to exchange unshared information. In an experiment by Schulz-Hardt et al. (2006), different groups of three persons had the task of selecting one out of four fictional job applicants. While one of the four candidates was clearly the best choice based on the total available information, the information was distributed to participants in different ways (i.e., creating a hidden profile or not):

1. *Full information.* Groups in which all participants had all information always chose the best candidate and solved the task (100%). There was no hidden profile in this condition.
2. *No dissent.* Groups in which all group members had information speaking for the same wrong option hardly ever solved the task (7%).
3. *Dissent without best choice.* Groups in which all participants had information speaking for different but wrong options solved the task significantly more often than in the no dissent condition (25%).
4. *Dissent with best choice.* Groups in which all participants had information speaking for different options including one person with information speaking for the best candidate solved the task even more often (59%).

These results indicate that the more different the views are before a group discussion, the more likely it is that groups use their advantage of having lots of information. Thus, the more group members disagree before a discussion, the higher the group's potential of making an accurate risk judgment. Making groups aware of the expertise of each group member helps groups to unveil unshared information (Stasser, Stewart, & Wittenbaum, 1995; Stasser, Vaughan, & Stewart, 2000). Thus,

making the individual group members' backgrounds and professional emphases as visible and clear as possible can help groups to make judgments on the totality of all relevant information that is available to the group. From this perspective, surface-level group diversity (e.g., with regard to personality, race, or gender) can also be seen as beneficial for a group's judgments and decisions, for instance, by fostering the expectancy of information differences (Phillips & Loyd, 2006; Phillips, Northcraft, & Neale, 2006). Finally, a straightforward approach to help groups exchange information is to simply take the particular step of information collection and information sharing out of the group setting. One can ask all group members individually about their knowledge and views on the risk before the group comes together to discuss it. The group discussion can then start with a presentation of all the collected information (Lerner et al., 2014).

Groups Make Extreme Risk Judgments

As we have discussed, it is generally important for people to be accepted and liked by their peers. People are therefore particularly sensitive to what is expected behavior within groups: *How do they usually deal with risk? Who has a say in this group and what is her position? What are the group's values?* People are willing to adapt to these expectations to gain acceptance. In groups, people adopt behaviors and opinions of others because they assume that what others do or say must be right (social proof). Also, people behave in a way that conforms to a group's norms in order to feel and be perceived as a valuable group member and thereby build a positive social identity. In group discussions, group conformity can have the effect that group members share information and state arguments that conform with the group's overall attitude and point of view.

Stoner (1968) asked participants in a study to estimate different kinds of risks individually, then had them discuss and evaluate the risks in groups, and finally asked his participants again individually to reestimate the risks after the discussion. What Stoner found was the first evidence for the phenomenon of *group polarization*: discussing the risks in groups seemed to make his participants more extreme in their risk evaluation. Both the group judgment and the average of all individual judgments after the discussion were riskier than the individual judgments before the discussion. Further experiments demonstrated that the effect works both in the direction of riskier decisions through group discussions but also in the direction of more cautious decisions. In other words, groups are more extreme in their risk judgment than individuals, and this extremity can be manifested both in riskier judgments and decisions (*risky shift*) and in more cautious judgments and decisions (*cautious shift*; Sunstein, 1999). As discovered by Moscovici and Zavalloni (1969), the initial risk judgment among all group members before the group discussion determines whether the group experiences a risky shift or a cautious shift: a risky shift usually happens if the initial tendency is rather risky, whereas a cautious shift usually happens if the initial tendency is rather cautious. Accordingly, the effect of



Fig. 6.5 Illustration of group polarization

group polarization is especially high when the group members already have similar views before the group discussion.

An example for a risky shift could be a group of avid kite surfers talking about their sport: as the overall attitude on kite surfing is very positive in this group, it is likely that most statements would highlight its desirability and advantages while devaluing the risks of the sport. Each member of the group would come up with arguments supporting the sport underpinned with various information and personal experiences all casting a positive light on kite surfing. By presenting all these information, views, and arguments supporting the group's overall position, the group convinces itself of a more extreme version of its initial position (see Fig. 6.5). In order to appear as an active group member, it is also an effective strategy to express statements that are similar to those of the other group members, but somewhat more extreme. This results in more extreme group judgments. If there was any doubt about the high desirability of kite surfing in the beginning of the discussion, the group would now, after the discussion, be more certain than ever before: kite surfing is great and the risk is low. On the contrary, a conversation among the worried mothers of these kite surfers would probably develop a totally different dynamic. Generally considering kite surfing to be a very dangerous pastime, each mother would express her concerns about the sport—all casting a damning light on kite surfing. Thus, the mothers group would convince itself of a more and more negative view on kite surfing and agree more than before their conversation that kite surfing is bad and very dangerous. The latter is an example for a cautious shift.

An important conclusion of what is known about group polarization is that initial tendencies play an important role for the outcome of group discussions (which is in many cases simply a more extreme version of the initial tendency; for an overview, see Sunstein, 1999). In our view, this bears the potential for manipulating a group's judgment or decision by influencing the initial tendency of group discussions. As an example, when an authority or thought leader expresses her position right in the beginning of the discussion, it is quite likely that the group will adopt that position, many group members will express further information and arguments speaking for that position, and the group will in the end come to a conclusion that is similar but somehow more extreme than initially suggested by the authority. Accordingly, a team leader of executives who wants his team to come up with an accurate risk judgment (and not simply to confirm his opinion), would not express his view in the beginning of a group discussion.

Minority Influence Can Improve Group Risk Decisions

In the beginning of this chapter, we discussed Salomon Asch's findings on group conformity from one of his classical group experiments: participants were asked to judge the length of different lines in small groups one after another. Apart from one participant per group, all other group members were actors and consistently expressed wrong judgments. Asch (1951) found that his participants adopted and stated the obviously wrong judgments of their peers for 32% of the questions. However, what would have happened if at least one other group member had stated the correct result? Would a person expressing statements in opposition to those of the majority possibly have encouraged participants to express what they knew was correct? Asch's (1951) experiment indeed contained such a condition in which, for some groups, all the "actor" participants consistently gave wrong answers *except for one*. In that condition, the percentage of the "subject" participants' incorrect answers decreased dramatically to 10%. The availability of only one group member that behaved inconsistent to the rest of the group encouraged a considerable proportion of participants to state what they knew was right instead of conforming with the group's majority.

Moscovici's (1980) research on minority influence indicates that not only majorities but also minorities can have significant influence on other group members and thereby even have an impact on a group's majority. Minorities can be especially successful in influencing others when (1) there is high consistency within the minority and (2) the minority expresses its opinion with certainty and conviction. Minorities can thereby stimulate others to question the status quo and to consider alternative options for their judgment formation (Nemeth, 2011; Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994). In 1969, Moscovici and his colleagues conducted one of the best-known experiments demonstrating the influence that highly consistent minorities have on

groups (Moscovici, Lage, & Naffrechoux, 1969) which has many similarities to Asch's (1951) conformity experiment described above: a series of blue slides was presented to groups of six persons, respectively, who were asked one after another to indicate the color of each slide. In the control condition, there were no actors among the group members and the group members repeatedly identified all slides correctly as blue. In the experimental condition, however, there were two actors among the members of each group who consistently identified the color of the presented slides (wrongly) as green. As a result, participants adopted the minority judgment in 8% of their answers (i.e., designating a slide as green). Almost a third (32%) of all participants adopted the minority judgment at least once. It is important to note that such minority influence existed only when the minority consistently indicated that the slides were green in all trials. In another condition, in which the actors designated most but not all slides as green (and were thus inconsistent in their behavior), there was almost no effect on the majority.

Moscovici's research indicates that majority influence (as demonstrated by Asch's experiment) indeed leads to public adaptation in many cases but mostly does not affect individual's private conviction. Thus, people superficially adapt to what is expected by a group's majority but do not change their personal attitude or belief. In contrast, individuals influenced by minorities really change their personal convictions. Minorities thereby influence fewer individuals than majorities but are generally more effective in influencing private convictions rather than only public behavior (Brandstätter, 1997; Erb et al., 2002; Maass, 1997; Moscovici & Lage, 1976; Nemeth, 2011; Nemeth & Wachtler, 1974; Wood et al., 1994).

In group discussions, minority dissent (i.e., having at least one group member questioning or disagreeing with the majority's point of view) can positively impact many of the general problems that occur in group discussions that we have discussed in this chapter: in groups, people tend to (1) be less creative, (2) base their judgments on only relatively scarce information (i.e., what every group member already knew before the discussion), and (3) make extreme risk judgments. Several studies have indicated that minority dissent can increase the level of creativity within groups as well as the amount of information considered for a group's judgment formation and can thus improve a group's problem-solving capability (e.g., Nemeth, 2011; Nemeth & Kwan, 1987; Nemeth & Rogers, 1996; Nemeth & Wachtler, 1974). Having a member in a group discussion who questions the status quo and therefore questions the majority's point of view can effectively reduce the effect of group conformity (Janis, 1971). For this purpose, it can be fruitful to intentionally create dissent in group discussions by introducing the role of a *devil's advocate* who has the explicit task to disagree. Whereas the effectiveness of the devil's advocate technique is controversially discussed (for an overview, see Nemeth, 2011), authentic dissent based on the existence of divergent opinions can be considered as generally more effective (i.e., leading to more divergent thinking) than such techniques (Nemeth, Connell, Rogers, & Brown, 2001).

Conclusion and Recommendations

Knowing how and why social factors can influence our everyday and professional risk judgments and decisions is an important step toward a conscious and effective handling of risk. Our aim was to provide a comprehensive overview of the most important findings from social psychology on how social contexts (i.e., groups) influence risk perception, judgment formation and decision making:

1. Group conformity makes people adapt to how majorities perceive and handle risk, which can be explained by the concept of social proof (*everybody says that; therefore it is right*) and social identity theory (*what is right for my group must be right for me*).
2. Groups are less creative in their risk identification both in terms of quality and quantity of the identified risks than if the same persons work individually.
3. In discussions, groups often fail to exchange unshared information and thereby mainly discuss information that was already known by every group member before the discussion.
4. Groups often make relatively extreme risk judgments because they tend to persuade themselves of a more extreme (i.e., riskier or more cautious) version of the group's initial risk judgment or decision in group discussions.

We believe that being aware of how human risk perception, judgment formation, and decision making works—and how they can be biased—is crucial for improving how we deal with risk. However, the value of such theoretical knowledge is limited as long as there are no practical improvement opportunities linked to the theoretical findings. In the previous sections of the present chapter we tried to stress that every group member has an influence on how the group comes to its judgments and decisions. We discussed that by challenging the status quo, everyone can prevent the groups that surround him or her from making poor judgments and decisions. In addition, it matters how risk-related questions are addressed. A group's effectiveness in its judgment formation and decision making seems to depend on whether the group structure matches the task. Organizations can improve risk judgments and decisions by thoughtfully structuring their risk judgment procedures.

In this manner, we suggest that establishing suitable risk judgment processes based on a combination of individual and group performance is an effective approach toward answering complex risk-related questions. There are a number of relatively well-established standard methods based on exactly this principle: the advantages of groups (i.e., wealth of information, perspectives and opinions as well as high legitimation and acceptance of group decisions) shall be maintained by having the social threats related to groups minimized as much as possible. By following such an approach, experts are usually first surveyed individually and the aggregated results are then discussed in a group setting. Examples for such methods are the *Delphi method* and the *nominal group technique* (see Van de Ven & Delbecq, 1974).

We make the following practical recommendations for structured organizational risk judgment procedures based on insights from psychological research:

1. For identifying risks, asking a number of persons individually rather than in a group context is generally more promising. The method of *brainwriting* is therefore recommended over the more conventional brainstorming techniques done in a group setting. It may be constructive to have the identified potential risks discussed and developed in a group setting subsequently (and thus use combinations of individual and group performances). It is thereby crucial to make sure ideas are discussed without consideration of who had the idea, for example by preserving the anonymity of the risk identification step or by having the identified risks evaluated by a different group. Otherwise, knowing that the risk will eventually be evaluated (in step 2) can inhibit individuals in their risk identification (in step 1).
2. For risk analysis, it can be helpful to have selected process steps isolated from group contexts. We have seen that groups fail at exchanging unshared information. Besides making teams aware of the different levels of expertise existent among their peers, a straightforward approach is to exclude the process of information exchange from the group context. Thus, group members can be asked about facts, information, perspectives and opinions they consider important for the risk analysis before the group comes together. The group analysis can then start with a comprehensive summary of all information collected from all group members.
3. When risk judgments and decisions are made in groups, they often tend to be more extreme than when the same persons judge and decide on the risk on their own. Having risks evaluated by a number of persons individually and then aggregate these evaluations in a second step is therefore in most cases more promising than asking the same persons to meet and come to a decision as a group.

We believe that building adequate methods and processes is an important precondition for gaining accurate and reliable risk judgments and decisions. Decision makers need to be aware not only of what organizations deal with but also of how to approach particular topics and questions. We believe taking into account psychological determinants of risk perception and judgment formation is a crucial characteristic of effective corporate risk management systems.

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