Social Media Interaction with Peers and Experts:

Effects on Risk Perception and Sense-making of Organic Food

Femke Hilverda & Margôt Kuttschreuter

2017

University of Twente
Department Psychology Conflict, Risk and Safety

Abstract

With the increased popularity of organic food production, new information about the risks attached to food products has become available. Consumers need to make sense of this information, interpret the information in terms of risks and benefits, and consequently choose whether to buy these products or not. In this study, we examined how social interaction with another person impacts risk perception and sense-making regarding eating organic food. Specifically, we investigated how risk perception and sense-making are influenced by the specific viewpoint, the perceived similarity and expertise of the interaction partner, the identity of the interaction partner, and the initial attitude of individuals. An online interaction experiment, including a simulated chat in which we manipulated the interaction partner (expert vs peer vs anonymous) and the viewpoint of this partner (positive vs negative vs uncertain) was conducted using a representative sample of Dutch internet users (n=310). Results showed that chatting with partners who were perceived to be expert was associated with lower levels of risk perception, while chatting with partners who were perceived to be similar was associated with lower levels of information need, intention to take notice, and search for and share information. Results also showed that initial attitude had a strong effect. The more positive consumers were about eating organic food, the lower their risk perception and the higher their need for information, intention to take notice of, search for and share information following the chat. Implications for authorities communicating on food (risks) are discussed.

Keywords: Organic food; social media; online interaction; risk perception; sense-making

1. Introduction

Food products, varying from organic vegetables to vegan hamburgers, and lactose-free milk enter the market on a daily basis. The introduction of new products is usually accompanied by information about the risks and benefits of these products, and consumers are, directly or indirectly via journalists and the media, exposed to the views from a variety of sources. If this information contains elements of both risks and benefits, feelings of confusion and uncertainty about the health consequences involved may arise (Nagler, 2014). These feelings might increase risk perception and stimulate a need to make sense of the information (Wilson & Wilson, 2013). In the case of organic food products, this means, for example, that consumers would have to come to terms with the facts that organic products are pesticide-free, but that this very absence implies an increased risk of bacterial contamination.

The Internet is one of the main sources currently used by consumers to search for information about food (Jacob, Mathiasen, & Powell, 2010; Kuttschreuter et al., 2014; Redmond & Griffith, 2006; Tian & Robinson, 2008). When surfing the Internet, consumers may end up on social media sites where they can find the opinions of others; in many cases these are peers or experts. A broad range of research shows that, generally speaking, both the opinions of peers and experts influence the individuals' attitudes and behaviour (Andsager, Bemker, Choi, & Torwel, 2006; Griskevicius, Cialdini, & Goldstein, 2008; Pornpitakp, 2004). However, previous research has mainly focused on face-to-face or non-interactive online communication. Furthermore, especially on the Internet, the opinions found are often from anonymous authors. The current importance of online media and the development of social media raise the important question: *to what extent does the exchange of opinions during online chats with peers, experts and anonymous authors influence consumers' risk perception and sense-making and, subsequently, food purchasing decisions?*

This experimental study was set up to increase our understanding of the way consumers respond to and make sense of risk and benefit information transmitted via social media. We focused on organic foods, in view of their increasing popularity and availability (Giraud, 2002; Hughner, McDonagh, Prothero, Shultz, & Stanton, 2007).

This study is particularly relevant in the context of facilitating consumer informed decision making. To make well-informed decisions regarding food intake, consumers have to make sense of the information they encounter on risks and benefits (Van Dijk, Fischer & Frewer, 2011). This study adds to the existing literature by examining the effects of providing consumers with risk and benefit information regarding a *positively* evaluated food topic in a *social media* context. Social media enables an altered interaction compared to traditional media and face-to-face communication (Dellarocas, 2003), and offers new possibilities for information transfer (Rutsaert et al., 2013a; Veil, Buehner, & Palenchar, 2011). Interaction via online social media has different characteristics compared to face-to-face communication. On social media, an individual can, for example, more easily be deceived, because users are essentially anonymous and can pretend to be someone other than who they really are (Dellarocas, 2003; Rutsaert et al., 2013a).

This study provides practical knowledge about the way the social environment influences consumers' processing of food-related information. This knowledge may enable food communicators to adapt their information supply to empower consumers to make well-informed choices. Knowledge of consumer information processing is also very important for food producers, as this knowledge facilitates understanding of consumer preferences and purchasing behaviour.

1.1 Risk perception, information processing and sense-making

Social psychological research has convincingly demonstrated the importance of opinions of others on consumer thoughts, feelings and behaviour (Cialdini, 2001). Consumers use information about what others think and do, in addition to information about past choices, to develop attitudes and understand events (Salancik & Pfeffer, 1978).

Receiving information about the risks and benefits of particular foods may elicit the need to make sense of and to evaluate these risks and benefits more closely. The active process of seeking, processing and integrating information is labelled "sense-making" (Wilson & Wilson, 2013). This is the process by which individuals give meaning to the world around them, and sense is its outcome. Sense-making involves the need for information, taking notice of information, seeking information, and integrating new information in such a way that the individual perceives no obvious contradiction between this information and the individual's own original opinions and beliefs (Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005; Wilson & Wilson, 2013). It takes place at both an individual and a collective level (Caughron et al., 2013; Miranda & Saunders, 2003).

Another means to sense-making is information sharing. Information sharing is related to sense-making in two ways. Firstly, the interaction and exchange of information between the consumer and other individuals or organisations is a means to collective sense-making (Caughron et al., 2013; Miranda & Saunders, 2003). Secondly, information sharing is a behavioural outcome of sense-making. After sense-making, the individual can decide to share information with others (Yang, Kahlor, & Griffin, 2013).

1.2 Perceptions and sense-making regarding organic foods

Research shows that consumers generally hold positive attitudes towards eating organic foods, focus on organic food's benefits (Magnusson et al., 2001; Saba & Messina, 2003), and associate organic food with naturalness (Shafie & Rennie, 2012). They consider

the microbiological risks and those of natural toxins to be small compared to the risks of pesticides (Williams & Hammitt, 2001), and perceive organic foods to be less risky than conventional foods (Hammitt, 1990). Consumers who are more positive about organic products tend to have less positive attitudes towards pesticide use (Dickson-Spillmann, Siegrist, & Keller, 2011; Saba & Messina, 2003) as in their perception, there are fewer benefits and more risks attached to the pesticide use (Saba & Messina, 2003). Such perceptions and attitudes are the main determinant of a preference for organic foods (Aertsens, Verbeke, Mondelaers, & Van Huylenbroeck, 2009; Hughner et al., 2007; Padel & Foster, 2005; Saba & Messina, 2003), however, this preference does not directly translate into actual purchasing behaviour; characteristics like taste and price play a role as well (Lee & Yun, 2015).

Many studies on food communication and sense-making focus on topics where consumers had ambivalent or negative attitudes, such as red meat (Regan et al., 2014; Rutsaert et al., 2015), or nanotechnology in foods (Frewer et al., 2014; Siegrist, Cousin, Kastenholz, & Wiek, 2007; Siegrist, Stampfli, Kastenholz, & Keller, 2008). How risk and benefit information affects the risk perception and sense-making of food products considered to be *favourable*, is still unclear.

1.3 Framing of the viewpoint

An online source can *frame* his/her viewpoint by emphasising specific information. This may have an impact on consumers' reactions. Framing can be defined as the way in which information is presented (Chong & Druckman, 2007). *Emphasis frames* (Chong & Druckman, 2007) are characterised by focusing the attention on certain aspects of a topic (e.g. positive versus negative). Emphasis frames may contain the same information, while putting the focus on different aspects or on different parts of the information.

An important question is whether it makes a difference with respect to consumers' risk perception and sense-making if the viewpoint of the interaction partner is framed in a negative (e.g. emphasis on risks) or in a positive way (e.g. emphasis on benefits). Evidence for a differential effect was reported in a recent study by Yan (2015), who showed that negative health frames induced higher levels of cognitive elaboration with respect to eating junk food compared to positive ones. In real-life situations, however, there often is no clear emphasis on one of the two, and consumers are left uncertain whether the risks outweigh the benefits or vice versa.

We therefore tested whether framing the viewpoint of the interaction partner (positive, negative, uncertainty) had an effect on risk perception and sense-making. We hypothesised that:

- *The framing of the viewpoint of the interaction partner affects risk perception (H1a) and sense-making (H2a). A negative viewpoint is related to higher levels of risk perception and sense-making compared to a positive or uncertain viewpoint.*

1.4 Interaction partner, perceived similarity and perceived expertise

The author of a message and the way this person is perceived in terms of similarity and expertise have been found to influence consumers' information processing behaviour (Paek, Hove, Juong, & Kim, 2011; Wilson & Sherrell, 1993). In the context of *online* interaction on organic food, the differential impact of three interaction partners seems most relevant to study: that of peers, experts and anonymous authors. In the past, consumers often relied on expert information (Lord, 2002). Nowadays, however, consumers mostly use the Internet to find the information they need. They often end up at user-generated webpages (Laurent & Vickers, 2009) containing information spread by other consumers (Helm, 2000). In an online context, peers are thus becoming increasingly important as information sources.

Their contribution is not restricted to factual information, but also includes user experiences which have been shown to affect attitudes and behaviour (Vermeulen & Seegers, 2009; Winterbottom, Bekker, Conner & Mooney, 2008; Zhu & Huberman, 2014). It is yet unclear whether consumers rely more on opinions posted online by their peers or still follow professional advice (Dellarocas, 2003). A distinctive feature of the Internet is that the source of the information might be unknown. As a great deal of Internet information has no clear author, a third category of particular interest is that of the anonymous authors.

Peers have been found to be especially influential because individuals are likely to follow the lead of others, when the *perceived similarity* between the individual and the other is high (Festinger, 1954; Platow et al., 2005). This phenomenon is called social proof (Cialdini, 2001; Griskevicius et al., 2008). The more similar the other person is perceived to be, the more relevant the opinion of this person is for the individual's behaviour, attitudes and beliefs (Festinger, 1954; Pornpitakp, 2004; Salancik & Pfeffer, 1978). Perceived similarity seems to be a powerful mechanism, as minor shared characteristics are sufficient to create a feeling of similarity (The Minimal Group Paradigm; see Diehl, 1990 for review). Perceived similarity is also associated with attractiveness and a higher level of certainty regarding the opinion of the person (Faraji-rad, Samuelsen, & Warlop, 2015). A review study examining the impact of social modelling showed that perceived similarity between model figures and consumers is important for consumption and purchasing behaviour (Cruwys, Bevelander, & Hermans, 2015). Peer feedback has also been found to be influential in the context of social media (Verroen, Gutteling, & De Vries, 2013).

A second influential feature of an online author is the author's perceived expertise, an important source of authority (Ayeh, 2015; Cialdini & Goldstein, 2004). This so-called authority principle states that depending on an expert mostly leads to appropriate actions, and that individuals might therefore use experts' opinions and behaviour as a shortcut to decision

making (Cialdini, 2001). There is evidence that consumers use the perceived expertise of food communicators as a heuristic to determine the accuracy of a message (Verbeke, 2005).

The mechanisms of perceived similarity and perceived expertise may explain why peers and experts affect consumer responses to information. On social media, it is often uncertain who posted the information, and information about similarity and expertise is also missing. Anonymous authors are considered less credible and the impact of their message is smaller (Rains & Scott, 2007; Rains, 2007). Thus with regard to organic foods, consumers may be less likely to appreciate the opinions of anonymous authors compared to those of experts or peers. Research suggests that the effect on risk perception also depends on message characteristics (Frewer, Howard, Hedderley, & Shepherd, 1999).

With respect to sense-making, we expect that individuals experience a feeling of uncertainty when receiving information from an anonymous author (Rains & Scott, 2007). Because sense-making is especially relevant in uncertain situations (Weick, 1995; Weick et al., 2005), a higher level of sense-making might be expected when communicating with an anonymous author compared to with a peer or an expert, with the exception of information sharing. A *lower* level of information sharing and risk perception seems plausible, because individuals might be less convinced of the validity of the information received from an anonymous author. This would mean that the effect of the viewpoint of the interaction partner is also dependent on the interaction partner. Regarding the interaction partner it is predicted that:

- *The interaction partner affects risk perception (H1b) and sense-making (H2b). Interacting with a peer or an expert compared to with an anonymous author reduces information need and taking notice of and searching for more information, and increases risk perception and information sharing.*

- *The effect of the viewpoint of the partner is dependent upon the interaction partner for both risk perception (H1c) and sense-making (H2c).*

1.5 Initial attitude

According to cognitive dissonance theory (Festinger, 1957), individuals are likely to stick to their opinion, which may impact how they search for and process new information. There is evidence that individuals seek information that is in line with their current worldview and avoid information that may cause unpleasant feelings or thoughts (Gaspar et al., 2015; Narayan, Case, & Edwards, 2011). In an experimental study, Van Dijk, Fischer, De Jonge, Rowe, & Frewer (2012) found that, following information provision, positive initial attitudes were associated with lower levels of risk perception and higher levels of benefit perception. Initial attitude might also be a proxy for involvement. Research shows that highly involved individuals process information more systematically (Petty, Cacioppo, & Schumann, 1983). This implies that positive initial attitudes may increase sense-making when compared to less-favourable attitudes. Initial attitudes may thus be an important determinant of consumers' risk perception and sense-making in the context of communicating risk and benefit information on organic foods.

The effect of initial attitudes on risk perception and sense-making may depend on the viewpoint expressed in the message (Pornpitakp, 2004). Initial attitudes are especially important when the information voices uncertainty. Providing information on both the benefits and the risks of eating organic food, without emphasising one or the other, might induce a feeling of uncertainty, as no straightforward conclusion can be drawn. Uncertainty may induce individuals to use their initial attitude as a heuristic to evaluate the information they receive (Kuhn, 2000). When the interaction partner is uncertain about how to weigh the

advantages and disadvantages of eating organic food, initial attitudes may thus be an important determinant of risk perception and sense-making. We therefore hypothesized that:

- *The more positive the initial attitude towards eating organic food, the lower the risk perception (H1d) and the higher the sense-making (H2d).*
- *The effect of the viewpoint of the interaction partner is on risk perception (H1e), and sense-making (H2e) is dependent on the initial attitude towards eating organic food.*

2. Method

2.1 Design and Manipulations

An experiment was run to investigate to what extent the type of *interaction partner* and the *viewpoint of the partner* influenced risk perception and sense-making of organic food information. We used a 3 (*interaction partner*: peer vs expert vs anonymous) × 3 (*viewpoint of the partner*: positive vs negative vs uncertain) design. Participants were randomly assigned to one of the nine conditions.

The main part of the experiment consisted of a simulated chat. Participants were told that we were interested in their opinion about eating organic food and that they would discuss the topic beforehand with another participant to help them form an opinion. In reality, there was no interaction partner; participants received pre-programmed messages instead. The first message was aimed at manipulating the *interaction partner*. In the *peer condition*, the participants read that their interaction partner was from the same 'blue group' (see 2.4.2), and in the *expert condition*, that the interaction partner was an expert from the Netherlands Nutrition Centre. In the *anonymous condition*, no additional information about the interaction partner was given, except that (s)he was participating in the experiment.

The second message contained the *viewpoint of the partner*. The arguments provided in the message (i.e. the risks and benefits mentioned) were the same across conditions, but the

emphasis varied. In the *positive condition,* the interaction partner was convinced that the benefits outweighed the risks. In the *negative condition,* the interaction partner was convinced that the risks outweighed the benefits. In the *uncertain condition,* the interaction partner had doubts about whether the benefits outweighed the risks or vice versa.

Data collection took place in two waves.

2.2 Participants

Participants were recruited by an internationally well-known market research agency meeting the ICC/ESOMAR International Code on Market and Social Research. Participants were asked to complete a two-wave online questionnaire which would take them about 30 minutes in total. To ensure representativeness of the Dutch internet users with respect to gender and age, the sample was stratified according to gender and age-groups. Individuals aged under 18 were excluded. In the first wave, the participants' initial attitude towards eating organic food was measured. The second wave formed the main part of the study: the chat.

The research sample of the first wave consisted of a representative sample of the online Dutch population of online media users, n=998. We excluded 7 speeders who completed the questionnaire in less than 1/3 of the median duration. Two days after they completed the first wave, the remaining participants were invited to participate in the second wave.

The second wave was completed by 514 participants. Participants who stopped after the manipulation and continued later (n=40) were excluded from the analysis, as were those whose responses in the chat session indicated that they did not take the investigation seriously (n=9), leaving a sample of 465.

A manipulation check was conducted [1]. Participants who incorrectly remembered their interaction partner (4% in the peer condition; 31% in the expert condition, and 21% in the anonymous condition) or his/her viewpoint, were also excluded from further analyses (8% in the positive condition, 21% in both the negative condition and in the uncertain condition).

This resulted in a final sample of 310 participants. There were no significant differences in initial attitude, $F(1, 989)=2.55$, $p=.11$, gender, $\chi^2=1.75$, $p=.19$, and age-group, $\chi^2=3.14$, $p=.08$, between the final sample and drop-outs. Please see Table 1 for the distribution of participants per condition, age category and gender.

A randomisation check showed that there were no differences between conditions with respect to gender, age, education, online media use, and initial attitude towards eating organic food. Additionally, the overall evaluation of the conversation did not depend on the interaction partner with whom the participants chatted, $F(2, 305)=1.26$, $p=.29$, nor on the viewpoint of this partner, $F(2, 305)=.16$, $p=.85$.

*** Here table 1 ***

2.3 Instruments

2.3.1 Dependent variables

Risk perception and sense-making (information need, taking notice, searching, sharing) were measured. Scales were mostly adapted from previous research and partly newly developed. *Information need* and *taking notice of information* were adapted from

[1] To ensure that the participants understood the manipulations correctly, three questions were asked. To measure the *perceived interaction partner*, participants answered the following two questions: "Participant 23 is... a) a member of the research panel, b) a food expert, c) did not tell me whether he/she was a member of the research panel or a food expert, or d) I don't know anymore" and the question "In which group was participant 23 placed? a) yellow, b) blue, c) red, d) green, e) participant 23 did not tell me in which group he/she was placed, or f) I don't know anymore. To measure the *viewpoint of the partner*, participants answered the question: "Participant 23 a) thinks that there were more advantages than disadvantages, b) thinks that there were more disadvantages than advantages, or c) doubts whether the advantages outweigh the disadvantages."

306 Kuttschreuter et al. (2014). With respect to taking notice, participants could indicate that they
307 did not use one of the channels and pick the option "*not applicable*". The mean score was
308 based on at least three pertinent responses[2]. Items regarding *searching for information* were
309 adapted from measures developed during the European 'FoodRisC'-project (Barnett et al.,
310 2011). Items for *sharing of risk information* and *risk perception* were inspired by other risk
311 related instruments. Items were all measured on a 7-point Likert-scale, except for risk
312 perception, which was measured on a 7-point bipolar scale. Reliability was good. Table 2
313 presents the formulation of the items, the scales and the reliability of the constructs.
314
315 *2.3.2 Covariates and additional measures*
316 There were three newly developed covariates: *initial attitude, perceived similarity,* and
317 *perceived expertise.* Additional measures included *reasons to share and search, evaluation of*
318 *the conversation, certainty of opinion of the partner,* and *online media use*. Items were all
319 measured on a 7-point scale. Reliability was good (Table 2).
320
321 *** Here table 2 ***
322
323 *2.4 Procedure*
324 *2.4.1 First wave*
325 In the first wave, the participants were unaware of the subject of the investigation
326 until opening the link provided in the invitation. They were instructed that, based on their
327 responses to the first wave, a topic for the second wave of the study would be chosen and that
328 they would discuss this topic with another participant. The main purpose of the first wave was
329 to measure the initial attitude towards eating organic food. To conceal this purpose, the

[2] Only one participant picked the "not applicable" option more than three times and was excluded from the analysis.

participants were asked to evaluate three other food related topics (nanotechnology in foods, genetically modified foods, and food supplements) besides organic food, and they were asked to answer questions about their eating habits and leisure activities.

2.4.2. Second wave: experiment

The participants received the link to the second part of the study two days after completing the first part. Participants were told that participants in the study included both participants from the research panel as well as employees of the Netherlands Nutrition Centre. A screenshot from the Bionext[3] website was presented to introduce the subject of organic food.

Participants answered questions giving background information about themselves and their household. They were told that, based on this information, all participants would be placed in groups, with each group given a colour. In fact, all participants were placed in the "blue group". This classification was needed for the similarity manipulation.

After the system allegedly searched for available interaction partners, participants received the first message containing the manipulation of the *interaction partner*. The interaction partner was subsequently rated on perceived expertise and similarity. The participants then received a second message containing the *viewpoint of the partner* on the topic. They were then asked to send a response with their own opinion. To make the interaction more realistic, elements of an online conversation were added, such as loading icons and typing errors. The texts can be found in Appendix A.

Next, participants evaluated their interaction partner on certainty of opinion, filled out manipulation check questions, and rated the conversation. They then answered questions to measure the dependent variables. Finally, their socio-demographics and online media use

[3] Bionext is concerned with the collective interests in the organic sector in the Netherlands and in Brussels via the IFOAM EU Group. It was founded by farmers, trading bodies and retail associations.

were measured. Participants were then redirected back to the research agency to receive their reward.

2.4 Analysis

Analysis of variance was applied to test the hypotheses on risk perception (ANCOVA) and sense-making (MANCOVA).

3. Results

3.1 Means

Risk perception was quite low (M=2.94). Sense-making varied between M=4.18 for information need, M=3.83 for searching, M=3.73 for taking notice, and M=3.58 for information sharing. These means make floor and ceiling effects unlikely. Overall, risk perception was negatively related to sense-making. Table 3 presents the means, standard deviations, and the correlations among the constructs.

*** Here table 3 ***

3.2 Perceived similarity and expertise of the interaction partner

Consistent with the manipulation of the interaction partner, there were significant differences between the conditions in both perceived similarity, $F(2,307)=25.22$, $p<0.001$, and expertise, $F(2,307)=92.89$, $p<0.001$. The perceived similarity was rated significantly higher in the peer condition compared to the expert condition, but not compared to the anonymous condition (M_{peer}4.00; $M_{expert=}$2.85; $M_{anonymous}$= 3.98, $p<0.001$). Analogously, participants in the expert condition rated the expertise of their partner significantly higher compared to participants in the peer ($M_{expert=}$5.66; M_{peer}= 3.52, $p<0.001$) and anonymous condition

($M_{anonymous}$= 3.51, p<0.001), while the difference between the peer and anonymous condition was insignificant.

These results suggest that participants in the anonymous condition attributed characteristics to their interaction partner. No information about their interaction partner was provided, yet the evaluation of the partner in terms of perceived similarity and expertise was comparable with evaluations in the peer condition and different compared to the expert condition. This suggests that participants in the anonymous condition perceived their partner as a peer rather than an expert.

The differences found between the conditions in perceived similarity and perceived expertise suggest that these variables could have a moderating role in the relationship between the viewpoint of the interaction partner and risk perception and sense-making.

3.3 Perceived certainty of the interaction partner

The expert (M=4.67) was perceived to be significantly more certain of his/her opinion compared to the peer (M=3.98, p=.01), and marginally more certain compared to the anonymous interaction partner (M=4.12, p=.052), applying the Bonferroni adjustment.

3.4 Hypotheses testing

Analysis of variance was applied. The effects on risk perception were evaluated by performing an ANCOVA. Next, a MANCOVA was conducted predicting information need, taking notice of and searching for additional information as dependent variables. As the hypotheses for information sharing differed from those of the three other elements of sense-making, a separate ANCOVA was conducted for information sharing.

The model included main effects for the interaction partner, viewpoint of the partner, initial attitude, perceived similarity, and perceived expertise. Interaction effects of the

viewpoint of the partner on the one hand, and the interaction partner, the initial attitude, perceived similarity and perceived expertise on the other were also included in the model[4]. Table 4 shows the adjusted means of the constructs per condition.

*** Here table 4 ***

3.4.1 Risk Perception

There was no significant main effect of the viewpoint of the interaction partner on risk perception, $p > .05$, implying that risk perception following the chat was not dependent on the viewpoint of the partner. This means that H1a stating that the viewpoint of the partner had an impact on risk perception, was rejected.

There was a significant main effect of interaction partner, $F(2,295)=5.43$, $p=.005$, partial $\eta^2=.04$. This means that, after all effects had been included in the analysis, risk perception was significantly higher in the expert condition (M=3.03) compared to the peer (M=2.88) and anonymous condition (M=2.94). The difference between the peer and anonymous condition, however, was not significant. H1b was thus partially confirmed.

The interaction between the viewpoint of the partner and the interaction partner was insignificant $p>.05$. Hypothesis 1c was therefore rejected.

There was a significant main effect of *perceived expertise* on risk perception, $F(1, 295)=13.94$, $p<.001$, partial $\eta^2=.05$. The results showed that, after all effects had been included in the analysis, higher levels of perceived expertise were associated with lower risk perception. There was no significant interaction effect of perceived expertise and the viewpoint of the partner. Figure 1 visualises the significant main effects for the perceived expertise and the interaction partner.

[4] The attitude towards eating organic food, perceived similarity and perceived expertise were centred around the mean.

The main effect of *perceived similarity* was insignificant, as was the interaction effect of perceived similarity and the viewpoint of the partner.

There was a statistically significant main effect of initial attitude, F (1, 295)=45.12, p<.001, partial η^2=.13: the more positive the initial attitude, the lower the risk perception following the chat. Our results confirmed H1d. The interaction between the initial attitude and the viewpoint of the partner was insignificant. H1e was therefore rejected.

*** Here Figure 1 ***

3.4.2 Sense-making

There were no significant main effects of the viewpoint of the interaction partner on any of the sense-making variables, all p's>.05, implying that sense-making following the chat was not dependent on the viewpoint of the partner. H2a stating that the viewpoint of the partner affected sense-making, was therefore rejected.

There were no significant main effects of interaction partner on sense-making, all p's>.05. Hypothesis 2b was also rejected.

The interaction between the viewpoint of the partner and the interaction partner was found to be insignificant for all dependent variables, all p's>.05. H2c was therefore rejected.

There was a statistically significant multivariate main effect of perceived similarity on sense-making, F(3, 289)=3.67, p=.01; Wilk's λ=0.96, partial η^2=.04. Univariate analysis showed that this effect held for information need, F(1,291)=8.49, p=.004, partial η^2=.03, taking notice of information, F(1,291)=7.28, p=.007, partial η^2=.02, and searching for additional information, F(1,291)=7.08, p=.008, partial η^2=.02. In the separate ANCOVA for information sharing, this main effect was also significant, F(1,292)=7.11, p=.008, partial η^2=.02. These results indicate that the higher the perceived similarity of the interaction

partner, the more the participants engaged in sense-making. The interactions between the perceived similarity and the viewpoint of the partner were not significant for any of the sense-making variables.

There was no significant main effect of perceived expertise on sense-making, nor were there significant interaction effects of perceived expertise and the viewpoint of the partner.

There was a statistically significant multivariate main effect of initial attitude, F (3, 289)=18.68, p<.001; Wilk's λ=0.84, partial η^2=.16. Subsequent univariate analyses showed that this main effect held for information need, F(1,291)=37.92, p<.001, partial η^2=.12, taking notice of information, F(1,291)=44.39, p<.001, partial η^2=.13, and searching for additional information, F(1,291)=24.40, p<.001, partial η^2=.08. In the separate ANCOVA, a statistically significant main effect of initial attitude on information sharing was also found, F(1,292)=45.90, p<.001, partial η^2=.14. Results confirmed H2d: the more positive the initial attitude, the more sense-making.

With respect to the interaction effect of the viewpoint of the partner and initial attitude (H2e), there was a statistically significant multivariate effect, F (6, 580)=2.12, p<.05; Wilk's λ=0.96, partial η^2=.02. Subsequent univariate analyses showed that this effect was significant for information need, F(2,291)=5.00, p=.007, partial η^2=.03, marginally significant for taking notice of information, F(2,291)=2.94, p=.055, partial η^2=.02, and insignificant for information searching, F(2,291)=2.13, p=.12. The interaction means that the effect of initial attitude on information need, and to a lesser extent taking notice of information, was largest when the interaction partner was uncertain. The interaction effect of the viewpoint of the partner and attitude on information sharing was insignificant. H2e was thus partially confirmed.

3.5 Additional analyses

3.5.1 Gender

Additional analyses showed that gender did not affect risk perception, information need, taking notice of information, searching for information, all *p's>.05.* There was a significant effect of gender on information sharing, $F(1, 191)=4.66$, $p=.03$, partial $\eta^2=.02$: women were more inclined to share information than men. Adding gender as a determinant to predict information sharing only changed one of the previously reported results: the interaction between perceived similarity and the viewpoint of the partner was significant, $F(2,291)=3.10$, $p=.047$, partial $\eta^2=.02$. This interaction means that the effect of perceived similarity was most pronounced when the interaction partner was uncertain.

3.5.2 Reasons for searching and sharing

Participants were most inclined to search for information because they wanted to check their own ideas (*M*=4.26) and to learn more about organic food products (*M*=4.24). To a lesser extent they would search to get opinions of others (*M*=3.73), and they were least inclined to search for information to confirm the story of the interaction partner (*M*=3.16). A similar pattern was found for information sharing, though overall, the intentions were lower: participants were most inclined to share in order to learn more about organic food products (*M*=3.97), to check their own ideas (*M*=3.92), and to get opinions of others (*M*=3.80). They were least inclined to share information to confirm the story of the interaction partner (*M*=2.98).

Discussion and conclusion

There is a rapid growth in and demand for organic food products. As a result, organic food production is (re)emerging (Murdoch & Miele, 1999). The food production companies are attempting to optimise organic food production methods to increase the availability of

503 organic food in supermarkets. This in turn has led to an increase in the provision of new
504 information on the risks attached to these food products. This information may elicit feelings
505 of confusion and anxiety, and a need for more information on the risks and benefits of food
506 products so that consumers can weigh the pros and cons and make well informed decisions on
507 their food intake (Van Dijk et al., 2011). Consumers may choose to use the Internet to find
508 additional information (Jacob et al., 2010; Kuttschreuter et al., 2014; Redmond & Griffith,
509 2006; Tian & Robinson, 2008) which they then process and make sense of, in order to decide
510 whether to purchase and eat the particular products.
511 Online social interaction with another person may impact these processes (Chong &
512 Druckman, 2007; Wilson & Sherrell, 1993). An important question is whether this also holds
513 if this communication takes place via social media, given their potential importance in food
514 risk communication (Rutsaert et al., 2013a, 2014).
515 Our experiment investigated whether chatting with an interaction partner (expert, peer,
516 anonymous author) and his/her viewpoint (positive, negative, uncertain) affected risk
517 perception and sense-making with respect to organic foods. Results showed that the viewpoint
518 of the interaction partner had no effect on risk perception, nor did the interaction between the
519 viewpoint and the interaction partner. This means H1a and H1c were rejected. This contrasts
520 with findings by Van Dijk et al. (2011, 2012) who found that information frames affected
521 attitudes. A possible explanation for this difference in results is the different use of frames.
522 We used emphasis frames, while Van Dijk et al. (2011, 2012) varied the content of the
523 provided information. Emphasis frames are a very subtle manipulation, and as many
524 consumers already hold positive attitudes towards organic food, emphasis frames may be too
525 weak to affect risk perception. It is, however, also possible that the findings are the result of
526 our chat procedure. While the viewpoint of the interaction partner was clear and concise, and
527 the viewpoint was mentioned twice, the text disappeared as soon as the participant started

typing his/her response. This may have reduced the exposure to the viewpoint of the interaction partner.

What was significant were the identity of the interaction partner and the way in which this partner was perceived. As expected (H1b), results showed main effects for the interaction partner and perceived expertise: when both effects were included in the model, risk perception was higher among those participants who chatted with an expert, and among those who perceived their interaction partner to be of lower expertise. Based on eta squared, both effects can be characterised as small to medium-sized (Hedrick, Bickman, & Rog, 1993). This latter finding is consistent with the literature on trust: the lower the perceived expertise of a source, the lower the trust in that source (Eiser, Stafford, Henneberry, & Catney, 2009; Garretson, & Niedrich, 2004), and the lower the trust, the higher the risk perception (Siegrist & Cvetkovich, 2000; Siegrist, 2000; Viklund, 2003). It is also consistent with finding that consumers perceive anonymous online authors as untrustworthy (Rutsaert, Pieniak, Regan, McConnon, & Verbeke, 2013b).

The finding that communicating with an expert is related to a higher level of risk perception is consistent with the literature (Ayeh, 2005; Cialdini, 2001; Verbeke, 2005). It is also challenging to risk communicators; it suggests that it is the *communicator* rather than the message that affects the consumers' risk perception. Perhaps the mere fact that an expert takes the trouble to chat individually signals to consumers that the involved risks are significant. An alternative explanation might be that it is the result of other characteristics than expertise that the participants ascribed to the interaction partner: the experts were perceived to be more certain of their opinion than the peer and the anonymous author. This is consistent with Karmarkar & Tormala (2010), who found that experts who express certainty induced *less positive* attitudes towards a restaurant compared to non-experts. This suggests that experts

552 who are certain are more likely to amplify risk perception compared to peers and anonymous
553 authors.
554 In addition to message and author characteristics, receiver characteristics impacted on
555 consumer responses to food risk information in terms of risk perception. In line with previous
556 findings (Frewer, Howard, & Shepherd, 1998; Van Dijk et al., 2012) and H1d, results showed
557 that the initial attitude of the receiver affected risk perception following the chat: the more
558 positive consumers initially were about eating organic food, the lower their risk perception.
559 This was a large-sized effect (Hedrick et al., 1993). Unexpectedly (H1e), the interaction
560 between the viewpoint of the partner and the initial attitude was not significant (Pornpitakp,
561 2004). There was no evidence that the initial attitudes were more influential when the
562 interaction partner was uncertain.
563 Results on sense-making showed that neither the viewpoint of the interaction partner,
564 nor the identity of the interaction partner, nor the interaction of the viewpoint and the partner
565 affected sense-making (H2a; H2b; H2c). This contrasts with findings by Yan (2015) who
566 found that information frames affected sense-making. As in the case of risk perception, this
567 can be explained by the fact that we used emphasis frames, while Yan (2005) varied the
568 content of the provided information. The literature suggests that the perception of the
569 interaction partner is important (Andsager et al., 2006; Griskevicius et al., 2008; Pornpitakp,
570 2004). Our results showed that chatting with a partner who was perceived to be similar
571 increased sense-making which is in line with the literature (Cruwys et al., 2015; Faraji-rad et
572 al., 2015; Platow et al., 2005; Pornpitakp, 2004). This small to medium-sized positive effect
573 (Hedrick et al., 1993) held for information need, taking notice of information, searching for
574 information, and information sharing. It is therefore possible that consumers consider
575 information more relevant or more valid if it is provided by an author perceived to be similar
576 to themselves, and they are thus more inclined to make sense of it.

Again (H2d), and in line with previous findings (Frewer et al., 1998; Van Dijk et al., 2012), initial attitude affected sense-making: the more positive consumers initially were about eating organic food, the higher their level of sense-making. This was a large-sized effect (Hedrick et al., 1993). Results also showed that the effects of initial attitudes were more prominent in uncertain situations (H2e). These effects were small to medium-sized (Hedrick et al., 1993). This implied that the participants relied more on their own opinion and initial attitude if the interaction partner was uncertain. If substantiated by further research, these finding will have important implications for organisations planning to be transparent when communicating their uncertainty on a risk.

Our research focused on organically produced foods. As consumers generally hold positive attitudes towards organic foods (Magnusson et al., 2001; Saba & Messina, 2003), the question arises to what extent our results are applicable to other food products that are viewed less positively, such as foods produced through nanotechnology, and/or to completely different domains of consumer products. Further research is needed to provide insights into the way online interaction affects risk perception and sense-making with respect to a less positively evaluated consumer product.

Another interesting question that remains unanswered is how risk perception and sense-making are influenced by viewpoints that differ in content. In our study, we used emphasis frames to make a distinction between the three viewpoints (positive vs negative vs uncertain), while the content (organic produce has risks as well as benefits) was identical. Instead of frames, the effects of variations in the content of the message could be studied, such as one-sided (positive or negative aspects) versus two-sided messages (a mixture of positive and negative aspects).

A downside of designs in which prior attitudes are measured is that this measurement could affect the dependent variables. To minimise this, we added a two-day time interval

between the two waves of the study. As a result, our sample size halved between the first and second wave of the study, which is not uncommon: response rates in online experiments usually vary between 40-70% (Göritz, 2007). An explanation might be that the participants' experiences in the second wave did not meet their expectations. They were not made aware that the second wave would only focus on organic products. The duration of the second wave was also considerably longer, and the tasks included a simulated chatting session, which called for a higher level of involvement compared to completing Likert-scale questions. The remaining sample was, however, not selective with respect to initial attitude, gender and age, which suggests that the generalizability of the results is not affected.

In line with common practice, participants who incorrectly filled out the manipulation checks were excluded from analyses. This concerned about one third of the participants. This figure is in line with research that shows that up to 46% of participants fail to follow instructions when participating in experiments (Oppenheimer, Meyvis, & Davidenko, 2009). It thus remains a challenge for researchers to shape the manipulation in such a way that it motivates the subjects to participate.

Taken together, this study shows that online chat sessions informing and discussing food risks with consumers can be an effective tool to affect risk perception and increase sense-making. Our results show that the effect of such sessions depends in particular on the *perception* of the interaction partner: chatting with a partner perceived to have a high level of expertise decreases risk perception, while chatting with a partner perceived to be similar increases sense-making. In situations where it is preferred to facilitate informed risk decision making without prompting a high level of risk perception, this may be a challenge, as this requires the risk communicator to be perceived as having a high level of expertise, and at the same time, be perceived as being similar to the audience. Social media might be a valuable communication channel in this respect. Features of these media are useful in both being

perceived as a peer, for example by using pictures, as well as being perceived as an expert by adding links to scientific information. Being active on social media might thus be productive in facilitating informed decision making.

Acknowledgement

We would like to thank the Netherlands Food and Consumer Product Safety Authority for funding this study.

References

Aertsens, J., Verbeke, W., Mondelaers, K., & Van Huylenbroeck, G. (2009). Personal determinants of organic food consumption: a review. *British Food Journal, 111*(10), 1140-1167. doi: 10.1108/00070700910992961

Andsager, J. L., Bemker, V., Choi, H.-L., & Torwel, V. (2006). Perceived similarity of exemplar traits and behavior effects on message evaluation. *Communication Research, 33*(1), 3-18.

Ayeh, J. K. (2015). Travellers' acceptance of consumer-generated media: An integrated model of technology acceptance and source credibility theories. *Computers in Human Behavior, 48*, 173-180. doi: http://dx.doi.org/10.1016/j.chb.2014.12.049

Barnett, J., McConnon, A., Kennedy, J., Raats, M., Shepherd, R., Verbeke, W., . . . Wills, J. (2011). Development of strategies for effective communication of food risks and benefits across Europe: Design and conceptual framework of the FoodRisC project. *BMC public health, 11*(1), 308.

Caughron, J. J., Antes, A. L., Stenmark, C. K., Thiel, C. E., Wang, X., & Mumford, M. D. (2013). Competition and sensemaking in ethical situations. *Journal of Applied Social Psychology*.

Chong, D., & Druckman, J. N. (2007). Framing theory. *Annu. Rev. Polit. Sci., 10*, 103-126.

Cialdini, R. B. (2001). Influence: Science and practice. Boston: *Allyn & Bacon.*

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology, 55*, 591-621. doi: 10.1146/annurev.psych.55.090902.142015

Cruwys, T., Bevelander, K. E., & Hermans, R. C. (2015). Social modeling of eating: A review of when and why social influence affects food intake and choice. *Appetite, 86*, 3-18.

Dellarocas, C. (2003). The digitization of word of mouth: Promise and challenges of online feedback mechanisms. *Management science, 49*(10), 1407-1424.

Dickson-Spillmann, M., Siegrist, M., & Keller, C. (2011). Attitudes toward chemicals are associated with preference for natural food. *Food Quality and Preference, 22*(1), 149-156. doi: 10.1016/j.foodqual.2010.09.001

Diehl, M. (1990). The minimal group paradigm: Theoretical explanations and empirical findings. *European review of social psychology, 1*(1), 263-292.

Eiser, J. R., Stafford, T., Henneberry, J., & Catney, P. (2009). "Trust me, I'm a Scientist (Not a Developer)": Perceived Expertise and Motives as Predictors of Trust in Assessment of Risk from Contaminated Land. *Risk Analysis, 29*(2), 288-297.

Faraji-Rad, A., Samuelsen, B. M., & Warlop, L. (2015). On the Persuasiveness of Similar Others: The Role of Mentalizing and the Feeling of Certainty. *Journal of Consumer Research, 42*(3), 458-471. doi: 10.1093/jcr/ucv032

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 114-140

Festinger, L. (1957). A theory of cognitive dissonance. *Evanston, Il: Row, Peterson*.

Frewer, L. J., Gupta, N., George, S., Fischer, A. R. H., Giles, E. L., & Coles, D. (2014). Consumer attitudes towards nanotechnologies applied to food production. *Trends in Food Science & Technology, 40*(2), 211-225. doi: http://dx.doi.org/10.1016/j.tifs.2014.06.005

Frewer, L. J., Howard, C., Hedderley, D., & Shepherd, R. (1999). Reactions to information about genetic engineering: Impact of source characteristics, perceived personal relevance, and persuasiveness. *Public understanding of science, 8*(1), 35-50.

Frewer, L. J., Howard, C., & Shepherd, R. (1998). The influence of initial attitudes on responses to communication about genetic engineering in food production. *Agriculture and Human Values, 15*, 15–30.

Garretson, J. A., & Niedrich, R. W. (2004). Spokes-characters: Creating character trust and positive brand attitudes. *Journal of advertising, 33*(2), 25-36.

Gaspar, R., Luís, S., Seibt, B., Lima, M. L., Marcu, A., Rutsaert, P., . . . Barnett, J. (2015). Consumers' avoidance of information on red meat risks: information exposure effects on attitudes and perceived knowledge. *Journal of Risk Research.* doi: 10.1080/13669877.2014.1003318

Giraud, G. (2002). Organic and origin-labeled food products in Europe: Labels for consumers or from producers. *Ecolabels and the Greening of the Food Market. Tufts University, Boston*, 41-49.

Göritz, A. S. (2007). Using online panels in psychological research. *The Oxford handbook of Internet psychology*, 473-485.

Griskevicius, V., Cialdini, R. B., & Goldstein, N. J. (2008). Applying (and resisting) peer influence. *Mit Sloan Management Review, 49*(2), 84-88.

Hammitt, J. K. (1990). Risk Perceptions and Food Choice: An Exploratory Analysis of Organic-Versus Conventional-Produce Buyers. *Risk analysis, 10*(3), 367-374.

Helm, S. (2000). Viral marketing-establishing customer relationships by 'word-of-mouse'. *Electronic markets*, *10*(3), 158-161.

Hedrick, T. E., Bickman, L., & Rog, D. J. (1993). *Applied research design: A practical guide* (Vol. 32). Sage Publications.

Hughner, R. S., McDonagh, P., Prothero, A., Shultz, C. J., & Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of consumer behaviour, 6*(2-3), 94.

Jacob, C., Mathiasen, L., & Powell, D. (2010). Designing effective messages for microbial food safety hazards. *Food Control, 21*(1), 1-6.

Karmarkar, U. R., & Tormala, Z. L. (2010). Believe me, I have no idea what I'm talking about: The effects of source certainty on consumer involvement and persuasion. *Journal of Consumer Research, 36*(6), 1033-1049.

Kuhn, K. M. (2000). Message format and audience values: Interactive effects of uncertainty information and environmental attitudes on perceived risk. *Journal of Environmental Psychology, 20*(1), 41-51.

Kuttschreuter, M., Rutsaert, P., Hilverda, F., Regan, Á., Barnett, J., & Verbeke, W. (2014). Seeking information about food-related risks: The contribution of social media. *Food Quality and Preference, 37*, 10-18.

Laurent, M. R., & Vickers, T. J. (2009). Seeking health information online: does Wikipedia matter?. *Journal of the American Medical Informatics Association,16*(4), 471-479.

Lee, H.-J., & Yun, Z.-S. (2015). Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food. *Food Quality and Preference, 39*, 259-267. doi: http://dx.doi.org/10.1016/j.foodqual.2014.06.002

Lord, J. T. (2002). Integration is key in consumer-centric approaches. *Managed care interface, 15*(10), 34-37.

Magnusson, M. K., Arvola, A., Koivisto Hursti, U.-K., Åberg, L., & Sjödén, P.-O. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal, 103*(3), 209-227.

Miranda, S. M., & Saunders, C. S. (2003). The social construction of meaning: An alternative perspective on information sharing. *Information Systems Research, 14*(1), 87-106. doi: 10.1287/isre.14.1.87.14765

Murdoch, J., & Miele, M. (1999). 'Back to nature': changing 'worlds of production' in the food sector. *Sociologia ruralis, 39*(4), 465-483.

Nagler, R. H. (2014). Adverse outcomes associated with media exposure to contradictory nutrition messages. *Journal of health communication, 19*(1), 24-40.

Narayan, B., Case, D. O., & Edwards, S. L. (2011). The role of information avoidance in everyday-life information behaviors. *Proceedings of the American Society for Information Science and Technology, 48*(1), 1-9.

Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45*(4), 867-872.

Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal, 107*(8), 606-625. doi: 10.1108/00070700510611002

Paek, H.-J., Hove, T., Jeong, H. J., & Kim, M. (2011). Peer or expert? The persuasive impact of YouTube public service announcement producers. *International Journal of Advertising, 30*(1), 161-188.

Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 135-146.

Platow, M. J., Haslam, S. A., Both, A., Chew, I., Cuddon, M., Goharpey, N., . . . Grace, D. M. (2005). "It's not funny if they're laughing": Self-categorization, social influence, and responses to canned laughter. *Journal of Experimental Social Psychology, 41*(5), 542-550. doi: 10.1016/j.jesp.2004.09.005

Pornpitakp, C. (2004). The Persuasiveness of Source Credibility: A Critical Review of Five Decades' Evidence. *Journal of Applied Social Psychology, 2*, 243-281.

Rains, S. A. (2007). The impact of anonymity on perceptions of source credibility and influence in computer-mediated group communication: A test of two competing hypotheses. *Communication Research, 34*(1), 100-125.

Rains, S. A., & Scott, C. R. (2007). To Identify or Not to Identify: A Theoretical Model of Receiver Responses to Anonymous Communication. *Communication Theory, 17*(1), 61-91. doi: 10.1111/j.1468-2885.2007.00288.x

Redmond, E. C., & Griffith, C. J. (2006). Assessment of consumer food safety education provided by local authorities in the UK. *British Food Journal, 108*(9), 732-752.

Regan, Á., McConnon, Á., Kuttschreuter, M., Rutsaert, P., Shan, L., Pieniak, Z., . . . Wall, P. (2014). The impact of communicating conflicting risk and benefit messages: An experimental study on red meat information. *Food Quality and Preference, 38*, 107-114.

Rutsaert, P., Barnett, J., Gaspar, R., Marcu, A., Pieniak, Z., Seibt, B., . . . Verbeke, W. (2015). Beyond information seeking: Consumers' online deliberation about the risks and benefits of red meat. *Food Quality and Preference, 39*, 191-201. doi: http://dx.doi.org/10.1016/j.foodqual.2014.07.011

Rutsaert, P., Pieniak, Z., Regan, Á., McConnon, Á., Kuttschreuter, M., Lores, M., . . . Verbeke, W. (2014). Social media as a useful tool in food risk and benefit communication? A strategic orientation approach. *Food Policy, 46*, 84-93.

Rutsaert, P., Regan, Á., Pieniak, Z., McConnon, Á., Moss, A., Wall, P., & Verbeke, W. (2013a). The use of social media in food risk and benefit communication. *Trends in Food Science & Technology, 30*(1), 84-91.

Rutsaert, P., Pieniak, Z., Regan, Á., McConnon, Á., & Verbeke, W. (2013b). Consumer interest in receiving information through social media about the risks of pesticide residues. *Food Control, 34*(2), 386-392.

Saba, A., & Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference, 14*(8), 637-645. doi: 10.1016/s0950-3293(02)00188-x

Salancik, G. R., & Pfeffer, J. (1978). Social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23*(2), 224-253. doi: 10.2307/2392563

Shafie, F. A., & Rennie, D. (2012). Consumer Perceptions towards Organic Food. In M. Y. Abbas & A. F. I. Bajunid (Eds.), *Proceedings of the 1st National Conference on Environment-Behaviour Studies* (Vol. 49, pp. 360-367). Amsterdam: Elsevier Science Bv.

Siegrist, M. (2000). The influence of trust and perceptions of risks and benefits on the acceptance of gene technology. *Risk Analysis, 20*(2),195-203. doi: 10.1111/0272-4332.202020.

Siegrist, M., Cousin, M.-E., Kastenholz, H., & Wiek, A. (2007). Public acceptance of nanotechnology foods and food packaging: The influence of affect and trust. *Appetite, 49*(2), 459-466. doi: http://dx.doi.org/10.1016/j.appet.2007.03.002

Siegrist, M., & Cvetkovich, G. (2000). Perception of Hazards: The Role of Social Trust and Knowledge. *Risk Analysis, 20*(5), 713-20. doi: 10.1111/0272-4332.205064.

Siegrist, M., Stampfli, N., Kastenholz, H., & Keller, C. (2008). Perceived risks and perceived benefits of different nanotechnology foods and nanotechnology food packaging. *Appetite, 51*(2), 283-290. doi: http://dx.doi.org/10.1016/j.appet.2008.02.020

Tian, Y., & Robinson, J. D. (2008). Media use and health information seeking: An empirical test of complementarity theory. *Health Communication, 23*(2), 184-190.

van Dijk, H., Fischer, A. R., & Frewer, L. J. (2011). Consumer Responses to Integrated Risk-Benefit Information Associated with the Consumption of Food. *Risk Analysis, 31*(3), 429-439. doi: 10.1111/j.1539-6924.2010.01505.x

van Dijk, H., Fischer, A. R., de Jonge, J., Rowe, G., & Frewer, L. J. (2012). The Impact of Balanced Risk–Benefit Information and Initial Attitudes on Post-Information Attitudes. *Journal of Applied Social Psychology, 42*(8), 1958-1983.

Veil, S. R., Buehner, T., & Palenchar, M. J. (2011). A work-in-process literature review: Incorporating social media in risk and crisis communication. *Journal of contingencies and crisis management, 19*(2), 110-122.

Verbeke, W. (2005). Agriculture and the food industry in the information age. *European Review of Agricultural Economics, 32*(3), 347-368.

Vermeulen, I. E., & Seegers, D. (2009). Tried and tested: The impact of online hotel reviews on consumer consideration. *Tourism management, 30*(1), 123-127.

Verroen, S., Gutteling, J. M., & Vries, P. W. (2013). Enhancing Self-Protective Behavior: Efficacy Beliefs and Peer Feedback in Risk Communication. *Risk analysis, 33*(7), 1252-1264.

Viklund, M. J. (2003). Trust and risk perception in Western Europe: A cross-national study. *Risk Analysis, 23*(4):727-38. doi: 10.1111/1539-6924.00351.

Weick, K. E. (1995). *Sensemaking in organizations* (Vol. 3): Sage.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*(4), 409-421. doi: 10.1287/orsc.1050.0133

Williams, P. R. D., & Hammitt, J. K. (2001). Perceived risks of conventional and organic produce: Pesticides, pathogens, and natural toxins. *Risk Analysis, 21*(2), 319-330. doi: 10.1111/0272-4332.212114

Wilson, E. J., & Sherrell, D. L. (1993). Source effects in communication and persuasion research: A meta-analysis of effect size. *Journal of the Academy of Marketing Science, 21*(2), 101-112.

Wilson, M. J., & Wilson, M. L. (2013). A comparison of techniques for measuring sensemaking and learning within participant-generated summaries. *Journal of the*

American Society for Information Science and Technology, 64(2), 291-306. doi: 10.1002/asi.22758

Winterbottom, A., Bekker, H. L., Conner, M., & Mooney, A. (2008). Does narrative information bias individual's decision making? A systematic review.*Social science & medicine, 67*(12), 2079-2088.

Yan, C. (2015). Persuading People to Eat Less Junk Food: A Cognitive Resource Match Between Attitudinal Ambivalence and Health Message Framing. *Health Communication, 30*(3), 251-260.

Yang, Z. J., Kahlor, L. A., & Griffin, D. J. (2013). I Share, Therefore I Am: A U.S.−China. Comparison of College Students' Motivations to Share Information About Climate Change. *Human Communication Research*, n/a-n/a. doi: 10.1111/hcre.12018

Zhu, H., & Huberman, B. A. (2014). To switch or not to switch understanding social influence in online choices. *American Behavioral Scientist*, 0002764214527089.

Appendix A: Manipulation text (translated)

1. Interaction partner

Expert condition:

Hello,
I work as a food consultant and therefore I know a lot about food. Apparently we're going to be discussing organic food products. What do you do, and do you know a lot about food?

Peer condition:

Hello,
I am in the blue group too, as are you. Apparently we're going to be discussing organic food products. What do you do, and do you know a lot about food?

Anonymous condition:

Hello,
I am participant 23 and I am taking part in this study too. Apparently we're going to be discussing organic food products. What do you do, and do you know a lot about food?

2. Viewpoint of the partner

Positive viewpoint:

I think that there are more advantages to organic food than disadvantages. It's surely better for the environment and animals. Oh yes and they're also cultivated without chemical pesticides and fertilizer etc. Even though, there may be more bacteria on vegetables or parasites on animals that make you ill. Still, I believe we shouldn't to worry about this. The advantages are crucial!

What do you think?

Negative viewpoint:

I think that there are more disadvantages to organic food than advantages. It's supposed to be better for the environment and animals. Oh yes and they're also cultivated without chemical pesticides and fertilizer etc. However, there may be more bacteria on vegetables or parasites on animals that make you ill. Therefore, I believe we should worry about this. The disadvantages are crucial!

What do you think?

Uncertain viewpoint:

I think that there are both advantages and disadvantages to organic food. On the one hand it's better for the environment and animals. Oh yes and they're also cultivated without chemical pesticides and fertilizer etc. On the other hand there may be more bacteria on vegetables or parasites on animals that make you ill. I am uncertain whether we should worry about this. There are advantages, but also disadvantages.

What do you think?

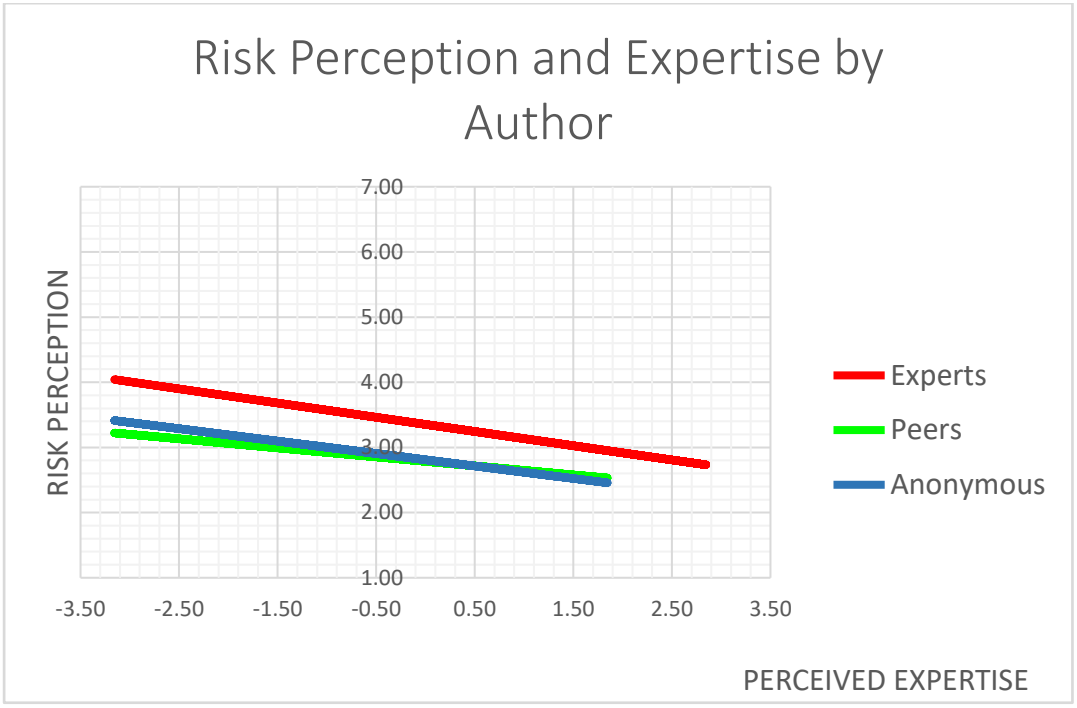

Figure 1: *Relationship between risk perception and perceived expertise by interaction partner, including means and standard deviation on perceived expertise for the interaction partners*

892

Table 1 *Number of participants by experimental condition, age and gender*

Interaction partner		Viewpoint of partner						Total	
		Positive		Uncertain		Negative			
		Male	*Female*	*Male*	*Female*	*Male*	*Female*		
Expert	*18 - 34 years*	7	3	2	3	5	9	29	93
	35 - 49 years	3	7	3	5	7	3	28	
	50 year and older	10	5	3	11	3	4	36	
Peer	*18 - 34 years*	11	10	7	5	5	5	43	118
	35 - 49 years	4	4	4	5	3	5	25	
	50 year and older	3	11	9	10	4	13	50	
Anonymous	*18 - 34 years*	3	8	4	3	6	4	28	99
	35 - 49 years	3	1	6	4	5	4	23	
	50 year and older	10	7	7	10	6	8	48	
		54	56	45	56	44	55		
Total		110		101		99			310

Table 2 *Scales, items and reliabilities of constructs (n=309-310)*

Measures	Characteristics	
	Scale	Reliability
1. *Risk perception* What do you think about the risks of eating organic food? The risks are…. 1. Small – large 2. Not serious – serious 3. Harmless – dangerous 4. Not worrying – worrying	7-point bipolar scale	.97
2. *Information need* Would you like to know more about organic products? 1. I would like to know more about how I can recognise an organic product 2. I would like to learn more about the advantages and disadvantages of eating organic food products 3. I would like to know more about the laws on organic food production 4. I would like to know more about the most important differences between organic and non-organic food	7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*	.92
3. *Taking notice of information* Please indicate how likely you would be to do each of the following things? (If you don't use the media mentioned, choose 'not applicable') 1. Keep an eye out for additional information when watching television 2. Pay attention when I happen to come across a radio broadcast on this topic 3. Keep an eye out for additional information when reading the newspaper 4. Use a search engine like Google to search the internet to find more information about the issue 5. Directly access the internet website of a food communication organisation in my country 6. Visit social media such as Facebook and Twitter to find out more about the issue	7-point Likert scale from 1 = *very unlikely* to 7 = *very likely*	.90

4.	*Searching for information* I'm inclined to search for information about… 1. The disadvantages of organic products 2. The way you prepare organic products to benefit most 3. How to best prepare organic food 4. The way to deal with the possible risks of eating organic food	7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*	.90
5.	*Sharing of risk information* If I encounter an interesting message about eating organic… 1. I'd be inclined to share the information with family and friends 2. I think that I'd talk about organic food in the coming days 3. I'd feel the need to discuss this information with others 4. I'd share the information with individuals who I believe are interested 5. I'd talk about it face-to-face to a friend, relative or acquaintance*	7-point Likert scale from 1 = *very unlikely* to 7 = *very likely*	.94
6.	*Initial attitude* 1. What do you think about eating organic products? Very negative – very positive 2. How important do you believe eating organic food to be? Totally unimportant – very important	7-point bipolar scale	r=.79
7.	*Perceived similarity* The interaction partner… 1. Is comparable to me 2. Is in the same situation as I am	7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*	r=.71
8.	*Perceived expertise* The interaction partner… 1. Knows a lot about the topic 2. Is an expert in the field of food	7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*	r=.92
9.	*Reasons to search and share* If I'm going to search/share information, the reason is … 1. To confirm the interaction partner's story 2. To check my own ideas 3. To find out what other consumers think about eating organic food 4. To find out more about organic food products	7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*	Not applicable
10.	*Evaluation of the conversation* The conversation was.. 1. Easy – difficult 2. Cooperative – competitive 3. Enjoyable – annoying 4. Active – passive 5. Tense – relaxed [recoded] 6. Friendly – hostile 7. Interesting – boring	7-point bipolar scale	.85
11.	*Certainty of opinion of the partner* 1. The interaction partner was certain of his/her opinion	7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*	Not applicable
12.	*Online media use* How frequently do you use the following online media? 1. Email 2. Facebook 3. Twitter 4. Skype 5. Forums or blogs	7-point frequency measure from 1 = *less than once a month* to 7 = *multiple times a day*	Not applicable

Table 3 *Means, standard deviation and reliabilities of constructs (n=309-310)*

Constructs	Mean	sd	Correlations

			1.	2.	3.	4.	5.	6.	7.	8.
1. Risk perception	2.94	1.35	1							
2. Information need	4.18	1.46	-.19**	1						
3. Taking notice of information	3.73	1.46	-.16**	.56**	1					
4. Searching for information	3.83	1.38	-.05	.63**	.65**	1				
5. Sharing of risk information	3.58	1.48	-.20**	.50**	.75**	.54**	1			
6. Initial attitude	4.27	1.37	-.35**	.34**	.38**	.28**	.39**	1		
7. Perceived similarity	3.65	1.39	<-.01	.15**	.15**	.14*	.14*	.03	1	
8. Perceived expertise	4.15	1.60	-.11	.02	.06	-.02	.07	.01	-.07	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4 *Adjusted means and standard errors per condition, controlled for initial attitude, perceived similarity and perceived expertise*

	Expert						Peer						Anonymous					
	positive		*doubt*		*negative*		*positive*		*doubt*		*Negative*		*positive*		*doubt*		*negative*	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Risk perception	3.24	*.26*	3.18	*.32*	3.91	*.30*	2.75	*.20*	2.72	*.22*	2.67	*.23*	2.42	*.24*	2.80	*23*	2.95	*.24*
Information need	4.49	*.28*	4.38	*.35*	4.12	*.33*	3.98	*.22*	3.78	*.24*	4.39	*.24*	4.57	*.25*	4.31	*.24*	3.82	*.26*
Taking notice	4.03	*.28*	3.54	*.34*	3.76	*.32*	3.64	*.22*	3.60	*.23*	4.00	*.24*	3.74	*.25*	3.63	*.24*	3.68	*.25*
Searching	4.17	*.28*	3.70	*.34*	4.20	*.32*	3.63	*.21*	3.73	*.23*	4.00	*.24*	3.86	*.25*	3.55	*.24*	3.77	*.25*
Sharing	3.80	*.28*	3.24	*.37*	3.73	*.32*	3.75	*.22*	3.47	*.24*	3.90	*.24*	3.41	*.25*	3.48	*.24*	3.37	*.26*