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Dyadic analysis of a speed-dating format between farmers and citizens: Impacts of conversations' and participants' characteristics on outcome indicators after four months

by Jessica Berkes, Iris Schröter, and Marcus Mergenthaler

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ABSTRACT

Alienation between farmers and citizens has increased with agriculture's specialization and intensification while societal values have been changing in industrialized countries. More direct dialogue formats are called to increase mutual understanding and trust. Our research aims to analyze impacts of speed-dating conversations' and participants' characteristics on outcome indicators four months after. In a speed-dating format 24 farmers and 22 citizens were organized to have short conversations of 10-15 minutes. Each person had 3-5 individual conversations summing to a total of 110 individual conversations. Four months after the speed-dating, impacts were measured in a follow-up survey by different outcome variables. For 84 person-constellations complete data were available to be analyzed by hierarchical regression analyses. Participants were mostly satisfied with the dialogue format and gained new factual and personal information. Outcomes were weaker for intentions to change behavior and to seek more personal contact in the future. Results indicate stronger impacts of socio-demographic characteristics and personality traits than characteristics of the conversations themselves. Constellations with male citizens, female farmers, more educated farmers, extroverted participants, emotionally stable farmers and more open participants tended to have higher dyadic outcome variable values. Our results might be used to improve the design of farmer-citizen dialogue formats.

Keywords: speed-dating, farmer-citizen-dialogue, outcomes, Big-Five personality, dyadic communication

JEL classification: Q10, Q13, Q19

1 Introduction

Alienation between farmers and citizens has increased amid complex developments of agriculture's intensification, urbanization processes, demographic change and specialization in food supply-chains (Behrendt, 2010; Williams et al., 2011). In the last decades, farmers felt the need to focus their work on efficiency and profitability (Meerburg et al., 2009), while neglecting communication efforts with society (Albersmeier, 2010). With advancing knowledge in biological, ecological and earth sciences, society's values towards animals and the environment have become more important and have changed in a way that animal welfare and environmental sustainability have become a much higher priority (Helmle, 2009). As a consequence, attitudes about intensive farming practices diverge between farmers and citizens and the intensive farming sector's social licence to operate is at stake in industrialized countries (Williams et al, 2011). Depending on the specific issues, different and sometimes confrontational attitudes appear (Rovers et al, 2017).

More dialogue oriented communication strategies can potentially rebuild trust between citizens and farmers (e.g. Spiller et al., 2016; Berkes et al., 2020) as it has been demonstrated in other industries (e.g. Zöller, 2005; Mercer-Mapstone et al., 2018). Direct forms of communication that appeal to the breadth of society and agriculture offer the potential, in theory, to sustain agriculture's social licence to operate and give farmers more insights into the reasoning of critical citizens (cf. Benard et al., 2013). For the farming sector it holds the potential for better marketing of its products. Whereas for citizens direct encounters with farmers might strengthen their appreciation and raise awareness of food production. To date, there has been no systematic investigation of how the attitudes of citizens and farmers are portrayed when the anonymity of social discourse or protection of peer groups in homogenous social contexts including social media is broken through an organized and prepared personal encounter. For this study, one-to-one conversations were arranged in order to make a personal exchange on agriculture and social expectations possible. Thereby our research aims to analyze impacts of speed-dating conversations' and participants' characteristics on outcome indicators four months after the conversations.

2 Literature review

Despite the overall positive attitude of society towards farmers themselves (Zander et al., 2013; Helmle, 2011), the agricultural sector faces persistent critical generalizations and polarizing media portrayals (Ermann et al., 2016; Kothe et al., 2020), indicating dwindling trust among citizens in agricultural production and further alienation between the two groups. Although media reports on agriculture show very diverse images and attitudes towards agricultural production systems (e.g. Wolfram et al., 2021), especially the critiques and negative images are manifested in people's minds (Rozin and Royzman, 2001). This might be the reason for ongoing, partly harsh critiques in social media discussions (Dürnberger, 2019). The criticism relates, for example, to residues in food, farm size structures, monocultures, pesticide use, animal husbandry practices, genetic modification, or the distribution of farm premiums (Rovers et al, 2017b; 2019). Critics are usually shared of social groups who position themselves as representatives of a broader social movement and who achieve a great external impact. Wolfram et al., (2021) have shown in their media content analysis that social actors and interest groups have their say especially in media frames that emphasize negative sides of animal husbandry and make increased demands on the agricultural sector as a

consequence. Employing certain media frames might attract specific recipients and could thereby explain why media coverage is sometimes perceived as one-sided.

The growing necessity to put public attention on the agricultural sector - since it has been avoided for a long time-, and a growing number of supporters in critical stakeholder groups now confronts the agricultural sector of finding ways to tackle this criticism. Thus, farmers are asked to channel the criticism and - in addition to the knowledge transfer that is considered important - engage with the concerns of the population in open discussions and dialogues (Albersmeier, 2010; Ermann, 2018). Production processes and the products themselves have become in need of explanation (Frick et al., 1995). In order to sustainably improve acceptance and image as well as to achieve more appreciation, it seems important against this background to sustainably build trust. Personal contacts and the recommendations of opinion leaders can increase the willingness to trust (Lazaroiu et al., 2019). In addition, it is advisable to consider aspects such as credibility and competence more strongly in communication strategies (Chess, 1988; Hunecke et al., 2020).

In the meantime, studies show that image problems, e.g. of the meat industry, are inherently linked to consumer's behavior (Cordt et al., 2013; Guenther et al., 2005). For example, the better respondents evaluate their own knowledge about nutrition and animal husbandry, the less meat they consume (Cordts et al., 2013). Corresponding change processes proceed relatively slow, but offer starting points for new marketing and communication concepts (Cordts et al., 2013). Up to now, farmers have mainly come into direct contact with consumers in a professional context, especially in regional and direct marketing concepts (Kreutzberger, 2017). According to previous findings, personal contact between farmers and consumers can help to build trust and thus increase appreciation and mutual benefits (Kayser et al., 2012; Brinson et al., 2011). This direct contact with the producer is associated on the part of consumers with high-quality products and represents a counterpart to anonymous mass production and mass consumption (Greibitus et al., 2017; Yue and Tong, 2017). For consumers, trust provides relief in purchase decisions (Lazaroiu et al., 2019). However, the esteem and trust shown to direct marketers and other farmers who are in close personal contact with consumers and social groups is not enough to regain more general trust in agricultural production as a whole (Starr et al., 2003). To strengthen the reputation and acceptance of the entire industry and the agricultural products produced, different and new communication approaches and tools are required.

Classical public relation strategies from the farming sector aim to convince the public by unidirectional communication and education (Ermann, 2018). Dialogue oriented communication formats constitute attempts for more integral agricultural public relation strategies. These communication formats aim to equalize constellations of experts and laypersons and to build trust (Matoba & Scheible, 2007). Still, most farmer-driven initiatives employ such formats aiming to achieve a change in citizens' attitudes and to gain population's approval of current farming practices. However, effective communication strategies that deal with the actual concerns of the public are not sufficiently addressed (Albersmeier, 2010).

Open, face-to-face encounters at eye level hold the potential to promote mutual understanding and acceptance (Finkel & Eastwick, 2008). Although speed-dating formats were originally introduced for romantic purposes, their possibilities for implementation have been broadened to several different application contexts. Examples include technology transfer in fragmented regional innovation systems (Kadlec, 2019), student-driven feedback and engagement (Moussawi et al., 2020), conveying science from scientists to journalists (Dybas, 2006), a tool for building research culture (Muurlink et al., 2020) customer-to-customer

interactions (Baron et al., 2007) and others. The advantage of these one-to-one encounters is that the dialogue partners can better assess the level of knowledge of their respective counterpart and respond to it, thus preventing intimidation of the partner due to knowledge differences (Clarke 2003). Direct contacts between producers and consumers lead to greater knowledge of the production context and an appreciation of agricultural production (Kreutzberger, 2017).

3 Data and methods

3.1 General concept and data collection

In a speed-dating format between farmers and citizens short conversations were organized. The speed-datings took place at a neutral venue, not open to the public, without spectators and anonymous without revealing full names in June and July 2019 in four different locations in the state of North Rhine-Westphalia (NRW) in western Germany. Participants were recruited via a commercial market research company according to the following criteria: age, sex, education, nutritional habits, and work (yes/no) in the agricultural sector or animal husbandry (cow, pig, poultry, horses/arable farming) respectively for citizens or farmers. Participants were between 22-68 years old. All participants received a financial compensation.

In five rounds of conversations, one topic from agriculture and nutrition was discussed per round. Table 1 indicates how the conversations were arranged in each of the four locations between farmers (F) and citizens (C). The participants sat at a table directly facing each other. Each conversation lasted 14 minutes on average. Each participant moved to a next table according to the seating plan and his or her numbering. In this way, double constellations were prevented. In order to avoid perceived home field advantage each participant had to change her or his seat after each conversation. All conversations were audio-recorded and transcribed.

Table 1. Empirical strategy to arrange individual speed-dating conversations between farmers (F) and citizens (C) about different topics sitting at different tables

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
Table 1	C1+F1	C2+F3	C3+F5	C4+F2	C5+F4
Table 2	C2+F2	C3+F4	C4+F6	C5+F3	C6+F5
Table 3	C3+F3	C4+F5	C5+F1	C6+F4	C1+F6
Table 4	C4+F4	C5+F6	C6+F2	C1+F5	C2+F1
Table 5	C5+F5	C6+F1	C1+F3	C2+F6	C3+F2
Table 6	C6+F6	C1+F2	C2+F4	C3+F1	C4+F3

The topics covered livestock husbandry and animal welfare, agricultural technology, environmental protection in agriculture, agricultural policy and society's esteem for food. The topics were chosen and respective general guiding questions were developed based on existing literature (cf. table 2). The guiding questions were meant to stimulate individual conversations and were written on small cards that were placed on the tables. Individual conversations were not moderated individually. After a starting signal, conversations developed according to participants' initiatives. After 12 minutes, participants were requested

to end their respective conversation. After short breaks of 2-4 minutes, participants sat at another table with the new conversation partner and the next topic.

Each of the 46 participants, of which 24 were farmers and 22 were citizens, (3 locations with 12 participants each and 1 location with 10 participants) had 5 conversations with one participant of the other group respectively (5 farmers only had 3-4 conversations due to missing citizens). This resulted in a total of 110 specific topic-person constellations of which 84 constellations could be analyzed finally.

Table 2. Topics with respective guiding questions given to participants in individual conversations

Topic	Guiding questions
livestock husbandry and animal welfare	What is the importance of a farm animal for you? When is the use of medication legitimate for you personally in farm animal husbandry? What does animal welfare mean for you personally?
agricultural technology	What do you think about the use of drones in agricultural production? How important is technology in agricultural production for you? Does better housing technology also mean more animal welfare for you?
environmental protection in agriculture	What does the protection of soil, water, air mean to you? What does genetic engineering mean to you? Who do you think should contribute to the maintenance and preservation of the landscape? Why? How important is the cultivation method (conventional/organic) of agricultural products to you?
agricultural policy	How important is it to you that your interests regarding food/agriculture are represented? What does planning security mean to me? What does the use of agricultural land for renewable energies mean to you?
society's esteem for food	What does food mean to me? How is my importance for food reflected in my shopping behavior? Why? How important is direct marketing for me? How important is contact with the farmer/consumer for me?

3.2 Variables and data analysis

Three groups of independent variables were hypothesized to impact the outcomes of the conversations. They included conversation specific variables, socio-demographics and personality traits of the participants.

Conversations were analyzed based on a qualitative content analysis by identifying the number of factual statements and the number of personal statements made by the interlocutors. In order to make them comparable to each other, statements were counted and summarized per conversation and thus quantified (Mayring, 2001). The statement as such has been identified per thematic aspect discussed in the conversation and not by the time-length or the number of sentences employed. Personal statements were considered emotional or ethical expressions whereas factual statements were identified by an informative or explaining character. Coding was validated by an intra-coder reliability test whereby the same coder re-coded a subsample of conversations after 21 days. This test revealed a correlation with an average value of 0,82

To take socio-demographic characteristics into account, gender (female vs. male), education (having an A-level school leaving certificate vs. lower education) and age (years) were surveyed in the pre-conversation survey.

Personality traits were measured with the help of the Big Five Inventory BFI-10 being a validated item battery of the Big-Five personality model (Rammstedt et al., 2013) in the pre-conversation survey. The BFI-10 was considered suitable for our context since it measures the five dimensions with a total of only ten items and an average processing time of approximately one minute (cf. table 3). In the process of establishing the Big Five personality model, such

short item scales were developed to capture personality traits in contexts outside of psychology in studies where time is lacking for the conventional procedures, i.e. long item scales, for capturing Big Five personality traits (Donnellan et al., 2006).

Table 3. Big-Five personality traits with respective items of the BFI-10

I see myself as someone who... (strongly disagree 1 – strongly agree 5)		
Extraversion	...is outgoing, sociable	
	...is reserved	reversed scaled
Agreeableness	...is generally trusting	
	...tends to find fault with others	reversed scaled
Conscientiousness	...does a thorough job	
	...tends to be lazy	reversed scaled
Neuroticism	...gets nervous easily	
	...is relaxed, handles stress well	reversed scaled
Openness	...has an active imagination	
	...has few artistic interests	reversed scaled

Table 4 shows the descriptive statistics of the independent variables used in the regression analyses differentiating for farmers and citizens. Variables are grouped in the sequence of how they were included in the hierarchical regression analyses.

Table 4. Descriptive statistics of independent variables employed in the hierarchical regression analysis (means and standard deviations)

Group of independent Variables (I)	Individual independent variable (II)	Citizens (n=22) (III)	Farmers (n=24) (IV)
1st step: Conversation	Factual statements (no.)	0,98 ± 1,51	6,19 ± 3,50
	Personal statements (no.)	5,45 ± 3,39	5,63 ± 3,02
2nd step: Socio-demographics	Female (dummy)	0,55	0,26
	Age (decades)	4,04 ± 1,39	4,00 ± 1,24
	High education (dummy)	0,56	0,56
3rd step: Big5 personality	Extraversion (1-5)	4,08 ± 0,71	3,68 ± 0,69
	Agreeableness (1-5)	2,95 ± 0,72	3,11 ± 0,61
	Conscientiousness (1-5)	4,42 ± 0,62	4,09 ± 0,73
	Neuroticism (1-5)	2,52 ± 1,00	2,48 ± 0,76
	Openness (1-5)	3,73 ± 0,95	3,10 ± 0,70

To measure mid-term impacts of the conversations, a follow-up survey was conducted four months after the speed-dating took place. The items in table 5 were surveyed. Answers were recorded on visual analogue scales (VAS) with ranges from 0 to 10. These items referred to the whole dialogue format as it was not considered valid to collect conversation specific outcomes after a period of four months. To generate outcome dyadic variables allowing to infer conversation-specific impact, person-specific outcome variables of a person related to all bilateral dialogues as a whole were calculated. These scores were combined by calculating simple means of a farmer-specific score and a citizen-specific score. In other words, each farmer's dialogue score was combined with the respective citizen's dialog score, resulting in variables that proxy the conversation-specific outcomes of individual conversations between an individual farmer and an individual citizen.

Table 5. Items used to measure outcomes of the dialogue formats after four months

Short description and abbreviation	Item	Response 5-point Likert scale
Satisfaction (satis)	When you think back to the event, to what extent were you satisfied with your own way of conducting the conversation?	very satisfied – very unsatisfied
Factual news (fact)	On a factual level, did you gather new facts, information or knowledge for yourself?	yes, very much – no, not at all
Personal news (pers)	On a personal level, did you gain new impressions, experiences or ideas for yourself?	yes, very much – no, not at all
Future behavior (beha)	How likely is it that you will change something about your behavior in the future as a result of the conversations you have had?	Very likely – very unlikely
Future contacts (cont)	How likely is it that you will seek more personal contact with consumers/farmers in the future than you did before the conversations?	Very likely – very unlikely
Overall outcomes (all)	Mean of individual indicators	

To analyze the impact on the outcome dyadic variables derived from the follow-up survey four months after the conversations, hierarchical regressions were estimated by a step-wise inclusion of groups of independent variables collected at the time of the speed-datings. First, individual conversation specific variables were included based on quantitative content analysis of the transcribed conversations. These variables directly refer to the time when the conversations were taking place. They include the number of factual and personal statements employed by each person within a specific conversation. Next basic socio-demographic variables (gender, age, education) were added. In a last step, Big-Five personality traits were included in the estimation. From a total of 110 individual conversations 84 complete datasets were available for the regression analyses.

4 Results

4.1 Descriptive statistics

Figure 1 shows means and standard deviations of the outcome variables differentiating for citizens and farmers. Most outcomes variables have mean values in the upper tercile of possible values between 0 and 10. ‘Factual news’ is rated highest whereas ‘future behavior’ is rated lowest. All outcome variables display considerable standard deviations, indicating that the outcomes of conversation were rated quite differently by different participants. Largest differences between farmers and citizens are found for ‘factual news’ which was rated considerably higher by citizens whereas farmers rated the ‘future contact’ outcome considerably higher. The overall outcome was rated very similarly between farmers and citizens. As these ratings relate to the overall dialogue format and are person-specific but not conversation-specific, conversation-specific outcomes were proxied by calculating means of those two persons who talked to each other in specific conversations as described in the section on data and methods above. These conversation specific outcome variables were employed as dependent variable in the hierarchical regression analyses below.

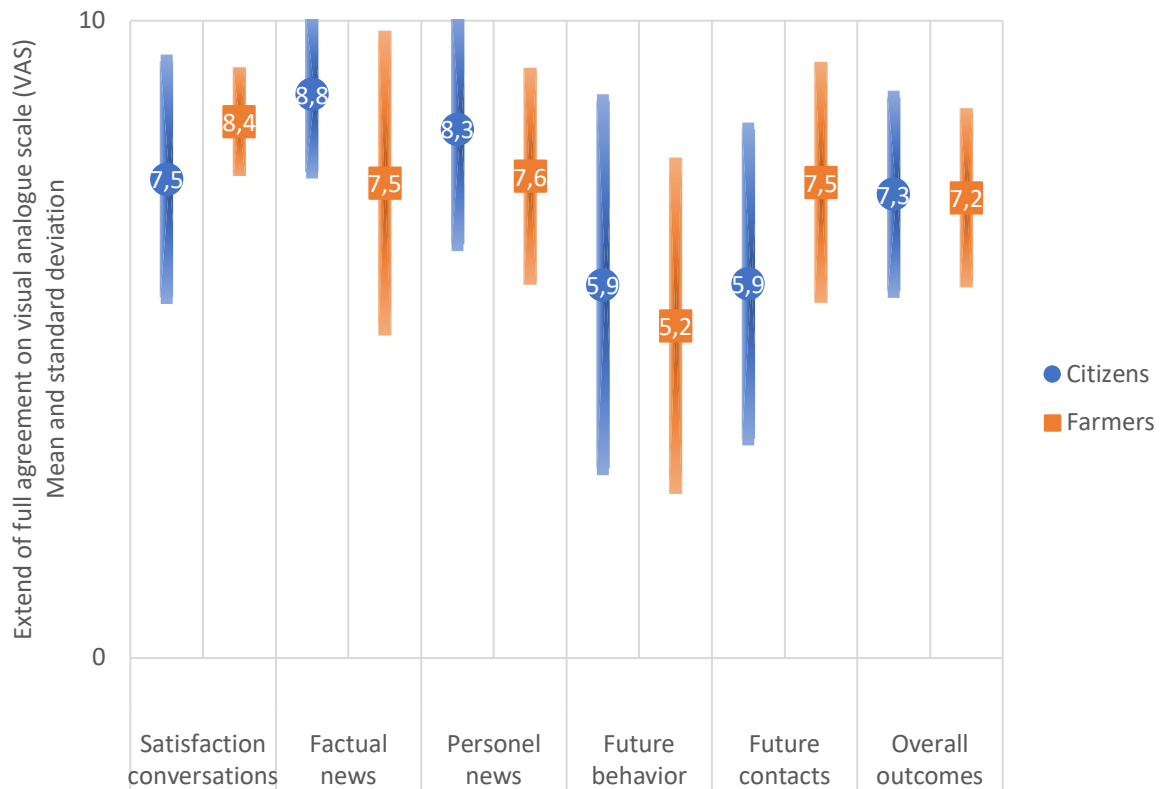


Figure 1. Outcomes of dialogue formats (means and standard deviations) after four months differentiated for farmers (n=24) and citizens (n=22)

4.2 Model summaries

Table 6 summarizes the hierarchical regression models. Employing the conversation variables in the first step gives only few significant model results. Only ‘future contacts’ as an outcome variable can be explained by the conversation variables – with a rather low corrected R-square. If additional socio-demographic variables are included, four of the six models are significant at the 5%-threshold. Values for corrected R-square for these models range between 0,14 and 0,23. If Big-Five personality traits are included, all models become significant at $p < 0,001$. Corrected R-square for the full models with conversation variables, socio-demographics and personality traits range between 0,42 and 0,64.

Table 6. Summary statistics of the hierarchical regressions analyses based on six different dependent outcome variables, explained by three sets of independent variables each

Dependent outcome variables	Sets of independent variables	corrected R-square	change in R-square	change in F	sig. change in F
Satisfaction	Conversation	-0,02	0,03	0,65	0,626
	Socio-demographics	0,14	0,21	3,45	0,005
	Big5 personality	0,55	0,41	7,50	<0,001
Factual news	Conversation	0,00	0,05	0,94	0,447
	Socio-demographics	0,27	0,32	6,00	<0,001
	Big5 personality	0,62	0,35	7,58	<0,001
Personal news	Conversation	0,00	0,05	0,99	0,416
	Socio-demographics	0,03	0,10	1,38	0,236
	Big5 personality	0,42	0,42	5,98	<0,001
Future behavior	Conversation	-0,02	0,03	0,56	0,695
	Socio-demographics	0,17	0,24	3,94	0,002
	Big5 personality	0,58	0,42	8,21	<0,001
Future contacts	Conversation	0,11	0,15	3,50	0,011
	Socio-demographics	0,18	0,13	2,16	0,057
	Big5 personality	0,45	0,30	4,51	<0,001
Overall outcomes	Conversation	0,03	0,07	1,58	0,188
	Socio-demographics	0,23	0,25	4,50	0,001
	Big5 personality	0,64	0,40	9,19	<0,001

4.3 Model coefficients

Figure 2 displays the estimated coefficients including the 95%-confidence intervals of the hierarchical regression analyses of the last step where all groups of independent variables have been included. Our results indicate stronger impacts of socio-demographic characteristics and personality traits than characteristics of the conversations themselves. For the conversation variables, most of the estimated coefficients are not significant as their confidence intervals include the zero-line. Only the number of factual and personal statements employed by farmers has a negative impact on intentions for future contacts. This means, the more statements farmers employed in individual conversation the lower the dyadic outcome variable was rated four months after with respect for a desire to have more contacts with persons from the other side in the future as compared to before the dialogue format.

With respect to socio-demographics, constellations with male citizens, female farmers and more educated farmers tended to achieve higher values for the dyadic outcome variables. If female citizens were part of a specific constellation, the overall dyadic outcome variable value was lower but also for the backward looking satisfaction, for gaining personal news and for future contacts with the respective other side. If a female farmer was part of a specific conversation the specific dyadic outcome variables were higher for gaining factual news, for an intention to change future behavior due the participation and for the overall outcome. For age's impact the pattern is more diverse. Older citizens led to higher dyadic outcome variable values for backward-looking satisfaction and for gain in factual news. Older farmers had a significant positive impact on backward-looking satisfaction and intentions for future behavioral change but a negative impact on the desire for future contacts with the respective other side. Education's impact on the outcome variables was mostly not significant, except for

citizens' education' negative impact on future contacts and farmers' education' positive impact on gaining new factual information.

For extroverted participants, emotionally stable farmers and more open participants there was a tendency for higher dyadic outcome variable values. While more extroverted citizens were associated with higher dyadic outcome variable values except for factual news, the impact of extroverted farmers is only significant for change in future behavior, more contacts with the respective other side and the overall outcome. Agreeableness generally has no significant impacts on the dyadic outcome variables, except for farmers where a higher level of agreeableness is associated with significantly lower gain in factual news. Conscientiousness has differential impacts on the dyadic outcome variables. Citizens' conscientiousness has a significant impact on the intention for more contact with the respective other side. Farmers' conscientiousness is associated with higher backward-looking satisfaction and lower outcomes for future behavioral changes, for the desire for more future contacts with the respective other side and for the general dyadic outcome variable. Neuroticism has a significantly positive impact on the intention for future contacts with the respective other side and a negative impact on intentions to change behavior. Farmers' neuroticism has a negative significant impact on all outcome variables except for backward-looking satisfaction. Openness tends to have positive impacts on outcome variables for citizens and farmers. Citizens' openness has positive significant impacts on backward-looking satisfaction, gaining new factual information and gaining new personal information. Farmers' openness positively impacts on intentions for behavioral changes in the future and on the overall dyadic outcome variable.

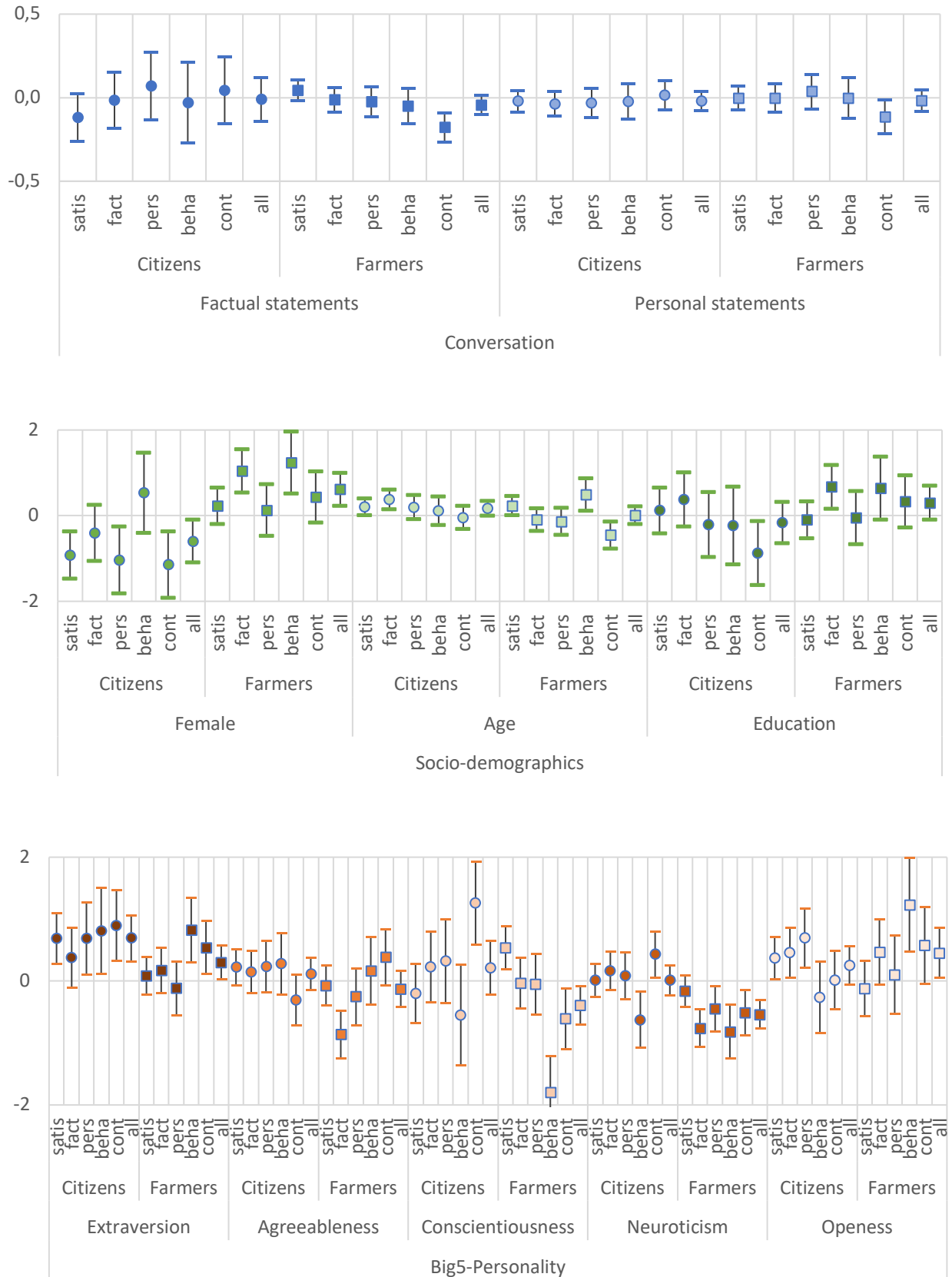


Figure 2. Estimated coefficients with 95%-confidence intervals for the individual variables included in third step of the hierarchical regression analyses on the different outcome variables for conversation variables (upper panel), socio-demographic variables (middle panel) and personality traits (lower panel)

5 Discussion

Our results indicate that participants were mostly satisfied with the dialogue format and gained new factual and personal information. Outcomes were weaker for intentions to change behavior and to seek more personal contact in the future. The results show stronger impacts of socio-demographic characteristics and personality traits than characteristics of the conversations themselves. Constellations with male citizens, female farmers, more educated farmers, extroverted participants, emotionally stable farmers and more open participants tended to have higher dyadic outcome variable values. Thus, mutual understanding and successful exchange in a one-to-one encounter is based on varying factors such as personal or factual exchange, personality traits, education, age and gender. Some of those factors might be considered in future dialogue designs. Based on, i.e., education, age or gender, target groups can be formed in order to adjust the type and format of the communication (Kleinhüchelkotten, 2005). This is how communication might become more effective and outcome-oriented. In this way, our results might be used to improve the design of farmer-citizen dialogue formats according to the following recommendations.

A high number of factual statements as a knowledge transfer strategy does not lead to higher outcomes in one-to-one encounters according to our results. Knowledge transfer is a topic discussed also in other contexts with conflictive issues (Masser et al., 2018; Kühl et al., 2016) showing that factual information is usually integrated in personal encounters having an especially strong impact on trust building. Since the intensive farming sector in Germany holds the view that public opposition to intensive farming mainly stems from limited knowledge of farming (Berkes et al, 2020). In consequence there is a general perception in the farming sector that more fact-based education campaigns help to spread a more realistic picture of agriculture in public and to regain societal acceptance of their production systems (Starr et al., 2003), i.e. the licence to operate. Thus, farmers might have felt pressured to include many factual statements. However, as indicated, results show that the communication dynamics between citizens and farmers are far more complex than this. Regarding the number of statements used by farmers in the conversation it is advisable that farmers should keep a stronger balance between personal and factual statements meaning that they should reduce the number of factual statements and put more attention to empathetic or emotional topics. This might have a longer-lasting effect on pursuing future contacts.

With regard to the socio-demographics in the selection process for future dialogue formats it might be helpful to focus on gaining more female farmers and more male citizens. These constellations might improve outcomes as they break stereotypical gender constellations. With a male dominated farming sector (Glazebrook et al., 2020; Dehoff et al., 2021), this would require specific efforts to recruit female farmers. Consequently, the results might have been caused by gender-specific communication styles. Authors in the 1990s controversially discuss that women's communication goals focus on gaining trust, developing consensus, and establishing relationships with others, while men's communication tends to be more taskoriented with the goal of winning (Tannen 1990; Troemel-Ploetz 1991). Therefore, it might be helpful to teach male farmers communication strategies that overcome masculinity stereotypical behavior and improve conversations with female citizens. Accordingly, teaching female citizens communication strategies and techniques might help them to improve their conversations with male farmers. The latter might be difficult to implement in broader target groups. Training courses on communication styles could be applicable for representatives of consumer protection organisations and farmers' associations who participate in such communication formats, especially for those in public.

Recruitment strategies for future dialogue formats might have a stronger focus on farmers looking at things in its entirety and having a higher educational background if the outcomes of dialogue formats are to be improved. More educated farmers might be more experienced in discussions of controversial topics and might be more open to accept opposing views and opinions. Also, many farmers are involved in social voluntary services (Lorleberg et al., 2006) which is why it can be assumed they are in closer contact with people outside the agricultural context and thus have more practice in communicating. Yet, it would have to be validated if our results would be confirmed in contexts with longer conversations and with no observation of the conversations. As mentioned before, it might be the case that lower educated farmers might have felt pressured by the specific format applied in this study to include many factual statements in their conversations. Feeling pressured might have compromised the communication atmosphere, which has led to less positive outcomes for less educated farmers. If farmers are to be prepared in future dialogue formats it might be helpful to lower expectation especially towards lower educated farmers not to use too many factual statements.

The influence of personality traits on dialogue outcomes is consistent with previous research. This research shows that people who are more socially outgoing as well as engaging thereby inclined to intellectual and/or imaginative experiences are better able to meet the goals of collaborative interaction (Chen & Caropreso 2004). Still, the conclusions regarding personality traits are more challenging as they can not easily be used in the recruitment process for future dialogue formats. As personality traits are difficult to assess for others, they can less easily be used as quota variables or as segmentation variable in identifying target groups. Targeting persons with specific personality traits might be better achieved by re-designing the conversation format to better suit inherent preferences of certain personality traits. By describing the details of a planned conversation format, more specific self-selection processes could be initiated.

The communication format might be adapted to better take into consideration the desires and wishes of different personalities. While extroverted persons might enjoy coming to know several new persons within in a short period of time, this might be less desirable for introverted persons. For them, less changes of conversation partners and longer conversations that allow for more in-depth exchange might be more advantageous. Since personality traits are difficult to assess in advance, communication formats should allow different options for conversation. For agreeableness no conclusions can be drawn. Regarding conscientiousness citizens' selective positive and farmers' rather negative impacts indicate asymmetric impacts. It might indicate that farmers' should not use such formats for well-structured lectures to teach less knowledgeable citizens. As these conversations rather resemble random everyday small-talks they should be treated as such. It could also be that the negative impact on the dyadic variable was largely due to evaluations by the conscientious farmers who might have perceived conversations were too superficial for them, and so are rated lower in retrospect. Neuroticism's rather negative impacts on the outcomes indicate that a certain emotional stability would be helpful for short conversations. It is open if these results would also hold in longer conversations that would give more time to building-up trust among conversation partners. Also for openness it might be questioned if this positive impact on different outcome variables would also apply in longer conversations.

Low outcomes for the intention for future contacts seems understandable in a first and short encounter of persons unknown to each other within the speed-dating conversation which does not allow for profound trust building (Wüst, 2012). Longer lasting conversations

strengthen a deeper understanding of the “other’s” situation and increase trustworthiness. However, the educational component seems unavoidable in generating trust and convergence (Akitsu & Aminaka, 2012). Surveys in Germany indicate (Forsa, 2018) that the population has interest in more direct contact with farmers. Our dialogue format could be further developed to allow more freedom in the topics to be discussed and to give participants also more time. Also the observational situation might have influenced participants’ communication behavior. Therefore it could be verified in future studies if outcomes can be improved by allowing longer conversation formats without being observed and without being recorded for deeper analyses.

The overall positive attitude towards conversations about critical issues between citizens and farmers might show that there is a future potential to find compromises also between different conflictive stakeholder interests such as environmental sustainability, animal well-being and farm-profitability. At the same time, it might be the case that there are actual incompatible or not compensable conflicts linked to agriculture, which cannot be solved in agricultural practice (Spiller et al., 2015). In these cases efforts should be made to find compromises for trade-offs of those issues with the engagement of the different social groups involved. For this, deep discussions about access and equity might be necessary to understand possible consequences for both groups (Taylor, 2018). Also technical or organizational innovations hold the potential to relax trade-offs and to find solutions for conflicting positions. As our results have shown, dialogue oriented communication formats have the potential to generate these kind of new ideas.

The speed-dating format appears as a feasible and effective instrument for implementing discussions between stakeholders with differing – but not highly contradicting - attitudes and interests. Due to a usually high local and social involvement and engagement of farmers in rural as well as peri-urban and urban areas (Suarsena, 2017; Lorleberg, 2009), such dialogue formats seem to be suitable for exchanging interests and finding ways for joint initiatives. Since cooperation at intercompany level is still weak (Feindt et al., 2019), it is thus recommendable to establish speed-dating formats or alike not only between citizens and farmers, but for actual representatives of those stakeholder groups in order to support the process of building up cooperative structures between farmers, citizens, environmentalists and others.

6 Limitations and outlook

Our study has several limitations: most critically it has to be stressed that we were not able to collect conversation-specific outcome measurement variables in our primary data collection, i.e. in our follow-up survey after four months. The outcome variables surveyed contain impacts of all conversations of one person, i.e. the outcomes of the whole dialogue format. Only by combining farmers’ and citizens’ respective individual outcome ratings, we were able to technically generate constellation specific outcome variables. Although it would be possible to include constellation-specific items in future surveys on outcome measurement, we assume that it would still be difficult to separate effects of individual conversations from the effects of the format in general by the respondents. This problem could be avoided by organizing only one conversation for each person.

Another limitation is that we asked for behavioral intentions as an outcome variable. This leaves open whether actual changes in behavior will take place after participation in the

dialogue format. Therefore, it remains unclear, whether a better understanding of the other side, leads to behavioral changes that might have a broader effect. Further follow-up surveys after longer periods of time might be able to better catch these effects. More qualitative follow-up interviews might generate data with more validity as compared to standardized survey instruments asking for behavior.

It remains further unclear whether the rather positive attitudinal outcomes of the individuals participating in the dialogue format will be passed on e.g. to friends, acquaintances or professional colleagues. Therefore it remains unclear whether the format has broader impacts in farming or general public communities or whether the impacts remain limited to the participants. Network analyses of participants might be an approach to clarify these open questions. It would be particularly interesting to analyze impacts in broader societal groups and to verify if such communication formats impact on the general social licence to operate for the intensive farming sector. An analysis how the encounters impact the farming community would be equally interesting.

Our study is also limited by the possibility of conversations' characteristics possibly being influenced by socio-demographics and personality – a possible endogeneity problem with conversations' characteristics. Therefore, individual conversations' impacts on outcomes might be masked. This might also explain why the conversation specific variables had rather few significant impacts on the outcome variables as they themselves might have been influenced by socio-demographics and personality traits. Further analyses might look at this endogeneity issue. In this respect, also the interaction between fact-based and personal statements could be further analyzed: perhaps fact-based explanations only achieve an effect when one has found a personal approach through personal statements (Fuchs et al., 2016; Chess et al., 1988).

Our ad-hoc sample does not allow any generalization of the results beyond the sample surveyed in our study. Although it is desirable to generate random samples that would allow broader generalizations, this is limited by persons' willingness to participate in such a dialogue format. The generally high values for extraversion in the personality profile might give some indication of inherent biases in such a format. In order to avoid such biases it might be necessary to include personality traits as quota sampling criteria – which would then limit again the possibilities for several statistical procedures.

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