**Feedback shapes snap judgments:
Toward a dynamic model of making social judgments**

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Abstract

In two studies, we undermined participants' confidence in snap judgments regarding others' morality based on facial photos by using an interactive computer program in which No, Low, or High Accuracy feedback was given. Study 1 demonstrated that in comparison to a No Feedback condition, Low Accuracy feedback led to increased time spent in generating further snap judgments and undermined beliefs regarding the reliability of one's social judgments. Study 2 replicated the findings of Study 1 and further showed that undermined confidence in snap judgments increased reluctance to make snap judgments about new targets' morality, but had no impact on willingness to make snap judgments about these new targets' other characteristics that were unrelated to morality. These findings demonstrate that making snap judgments is a dynamic process that is continuously shaped by external feedback.

Keywords: snap judgments, undermined confidence, accuracy feedback, first impressions, calibration process

Feedback shapes snap judgments:

Toward a dynamic model of making social judgments

Introduction

People tend to judge others in a snapshot, based on minimal information. A single glance at the face of a stranger is enough to rapidly evaluate whether we like that person (Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015; Willis & Todorov, 2006), and to determine that person's likely intention and ability to cause harm (Oosterhof & Todorov, 2008; Walker & Vetter 2016). Such snap judgments reflect stereotypic beliefs about how aspects of personality are reflected in others' faces and give us a tool for predicting what they may do in the future (Anderson, Wright, & Wheeler, 2011; Funder, 1995). Gradually, however, others' actual characteristics become more evident as we observe parts of their behavior, sometimes leading to completely different judgments of others' personalities, and the necessity to update our preliminary snap judgments (e.g., Cone, Mann & Ferguson, 2017). Most studies on the progress of snap judgments focus on how new information about the target person impacts one's subsequent impression and attitudes towards that person. The current study, however, explores the implications of the perceiver's realization that his/her own preliminary snap judgment, which was based on the other's face alone, appears to be inaccurate.

The process of social judgment

In the process of social judgment, true knowledge about the other person is gained by either observed or directly measurable instances of a given domain (West & Kenny, 2011; Stern, West & Schoenthaler, 2013). For instance, if one sees the results of another person's IQ test and believes that the test is valid, one can confidently state whether the person in question is intelligent. According to the *Realistic Accuracy Model* (RAM; Funder, 1995, 2012), behavioral information serves as the *gold standard* for characterizing the true properties of a given person. This suggests that as the interaction with a given individual unfolds over time, more behavioral information regarding his or her behavior becomes available, and accordingly, accuracy of the

personality judgment increases (Funder & West, 1993; Biesanz, West, & Millevoi, 2007).

Empirical support for this view comes from research (e.g., Blackman & Funder, 1998) which found that after 30 minutes of observing a stranger, perceivers provided personality judgments that were significantly more accurate than after 5 minutes of observation. In addition, Funder and Colvin (1988) found that people who have known each other for years showed higher accuracy in their judgments of each other's personality, in comparison to people who have been acquainted with each other for only a few weeks or months (for similar findings see also: Paulhus & Bruce, 1992; Ames, Kammrath, Suppes, & Bolger, 2010). Thus, gaining more information about another person leads to better accuracy in a current judgment of the person's behavior, as well as a more solid basis for making correct judgments about the person's future behavior (Biesanz, West, & Millevoi, 2007; Carney, Colvin, & Hall, 2007).

Snap judgments, then, can be either confirmed or disconfirmed by the target person's subsequent behavior, and accordingly may be updated. For instance, Ma and colleagues (2012) presented participants with several behavioral descriptions that implied a positive or negative moral trait of a particular target. The last behavioral descriptor provided was either consistent or inconsistent with the previously implied trait. Their findings showed that when the new piece of information was inconsistent (vs. consistent) with the previous one(s), the areas in the brain related to trait attribution (i.e. mPFC) were more activated. Inconsistent information also produced activation in conflict monitoring networks (i.e. pmFC and rPFC) that are responsible for detecting and more deeply resolving contradictions. In another relevant study, Baker, Brinke and Porter (2013) presented faces that had been previously evaluated as neutral on a trustworthiness scale, alongside information describing the target's behavior as criminal, altruistic, or neutral. During a later stage, participants had to classify the target's face when shown a set of faces that varied on trustworthiness. Faces associated with immoral behavior were seen as less trustworthy. Thus, existing studies demonstrate that perceivers both detect inconsistent behavior and utilize more recent behavioral information to change or update their initial snap judgments.

Importantly, though, previous research examined the impact of disconfirmation on judgments about the *same person* regarding whom the snap judgment had previously been made. Less is known about the impact of disconfirmation of one's snap judgments upon the perceiver's way of making snap judgments about *other individuals*, or about further judgments regarding the same individual but in domains in which one's snap judgments were not disconfirmed. We reasoned that disconfirmation of one's snap judgments in a given domain would undermine confidence in one's ability to capture relevant features of that domain in others' faces, and subsequently impact how snap judgments regarding others in that domain are made. To our knowledge, this *dialectic* point of view has not yet been comprehensively studied.

The current study focuses on the implications of perceivers' realization that their snap judgments in a specific domain are erroneous upon their future (snap) judgment making. We argue that the implications of disconfirmed judgments about a given (particular) person may go beyond the scope of that given event of social judgment about a specific person, and would shape the perceiver's future social judgments. Disconfirmation impacts the person's confidence in his/her ability to make accurate judgments that are related to the given domain (e.g., judging the morality of others), changes the speed of making further snap judgments about new targets, and results in an emerging reluctance to make snap judgments in the domain in question, as elaborated below.

Speed of Judgments

Longer judgment times may characterize the social judgment process when a person loses confidence in the accuracy of his or her snap judgments. This possibility is based on research on decision-making processes which typically suggests a negative relation between speed of judgment and accuracy, with more careful judgment leading to higher accuracy and fast judgments being associated with reduced accuracy. Hence, a trade-off between speed and accuracy is suggested (e.g., Bogacz, Wagenmakers, Forstmann, & Nieuwenhuis, 2010) in which people tend to prioritize either the speed or the accuracy of their judgments. The perception of slow judgment as reflecting more thoughtful judgment also shapes how researchers understand participants' speed

of judgment. In the context of social judgment processes, response times to completing judgmental tasks serve as an indirect measure of how much mental effort is put into attempting to perform the judgment accurately, with more time indicating more effort expended (e.g. Eyal, Steffel, & Epley, 2018; Schumann, Zaki, & Dweck, 2014) and fast judgments being attributed to heavy reliance on prior knowledge and beliefs (e.g. Satpute & Lieberman, 2006; Keysers & Gazzola, 2007; Spunt, Satpute, & Lieberman, 2011; Epley, Keysar, Van Boven & Gilovich, 2004). Taken together, it is reasonable to assume that a slow (vs. fast) judgment process indicates greater effort to accurately judge another person, by careful (vs. minimal) consideration of prior stereotypic beliefs and their relevance to the particular target (cf. Pachella, 1973; Sauer, 2012).

Reluctance to make snap judgments

A reluctance to rely on prior knowledge may characterize the social judgment process when one is not confident in the accuracy of his or her judgment regarding the target. This possibility is anchored in several existing theoretical notions. Historically, Husserl (1913/1983), the founder of phenomenological philosophy, used the ancient Greek concept of "epoché" (bracketing or suspension) to suggest that sometimes a person would suspend making a judgment in order to further examine a phenomenon. In this state of consciousness, people bracket conclusions and contemplate the issue at hand with a measure of doubt and curiosity (Christensen & Brumfield, 2010). Another related notion, of reluctance, is a feature of Kruglanski's Lay Epistemic Theory (1990, 2012). According to Lay Epistemic Theory, there are two opposing motivational forces that impact how individuals use knowledge. One motivational force, *urgency* motivation, drives the individual to reach cognitive closure, thereby increasing the likelihood of the use of heuristics; the other motivational force, *permanence* motivation, drives the individual to ensure having stable and valid knowledge so as to minimize the potential risk of invalidity (Kruglanski, & Webster, 1996). Kruglanski advocates that the balance between these drives defines a person's motivation with respect to information processing and judgment, later referred to as *the need for closure*. Notably, while originally the need for closure was articulated as a stable

individual characteristic, more recent studies demonstrated that situational factors also shape the need for closure, such as an increased concern with invalidity (Roets, Van Hiel, Cornelis & Soetens, 2008). Hence, if validity concerns motivate people to ensure they have valid knowledge, it may well be that concerns about the validity of social judgments would lead people to be more reluctant to make snap judgments, and to reconsider the value (i.e., validity) of snap judgments.

Toward a Dynamic process of making Social Judgment

These theoretical notions, which fit well with the Realistic Accuracy Model (RAM; Funder, 1995, 2012), enable a preliminary description of a dialectical (i.e., dynamic) process of social judgment. Namely, it seems plausible to suggest that a person would stick to using a certain knowledge base as long as the validity of that base is not questioned. However, a confrontation with disconfirming information would lead the person to (a) invest more time in making subsequent judgments, b) be less confident in his or her ability to make judgments within the domain in question, c) be more reluctant to make snap judgments in the domain in question. It is further assumed that these outcomes would only be evident in the domain of the disconfirmed judgments and would not impact the person's willingness to make snap judgments regarding unrelated domains.

Support for these hypotheses would present the social judgment process as a more dynamic and dialectical process than is currently implied in literature. Disconfirmation of snap judgments is suggested to have an impact on a person's own perceptions of him/herself as an able person to make snap judgments in similar future social interactions. Notably, the suggested predictions of the current *dynamic social judgment* process are different from those suggested by common approaches to describe a person's reaction to disconfirming information, as usually such a reaction is described as essentially motivated to integrate the disconfirming information into one's comprehension of the situation or of the other person (e.g., Bargh, 2018). Alternatively, while the current approach suggests that not only will the person be motivated to integrate the

new information into the existing judgments s/he has already made, but that he/she will also reconsider his/her own competence as an efficient maker of snap judgments in the given domain.

The current research explores the validity of the suggested *dynamic social judgment* approach. Two studies were conducted to examine the impact of feedback that undermines one's confidence regarding snap judgments on how further snap judgments about new targets are made, both with regard to a similar domain, as well as with regard to different domains.

Study 1

Detecting people's morality is a basic aspect of social perception, with people spontaneously inferring others' morality at exposure times of even less than a second in response to photographs of others' faces (e.g., Todorov, Pakrashi, & Oosterhof, 2009). We hypothesized that low accuracy feedback regarding one's snap judgments would impact the process of making snap judgments in several ways. First, low accuracy feedback would be expected to impact the speed of making snap judgments such that participants would spend *more* time examining facial photographs before making snap judgments about others' morality. Second, low accuracy feedback would be expected to reduce participants' confidence as to the validity of their social judgments. Critically, although the low accuracy feedback is provided regarding specific targets, it is the snap judgment process itself that is impacted by this low accuracy feedback; that is, the process of making snap judgments about individuals other than the one about whom one's snap judgments were undermined is altered as a consequence of low accuracy feedback.

To examine these hypotheses, in Study 1, participants viewed a series of faces and we manipulated the perceived accuracy of their snap judgments as to others' morality by supplying different feedback regarding the morality of the persons whose faces were viewed. Subsequently, we examined of the impact of the various accuracy feedback levels on: (1) the time spent generating snap judgments (Hypothesis 1), and (2) participants' confidence as to the ability to generate such judgments (Hypothesis 2).

Method

Participants

Participants were 89 university students, 18-35 years old, who were in the university Library of Social Science and agreed to participate in a study. Recruitment of participants was random and took place at various hours of the day. After introducing himself as a psychology student, the experimenter invited each participant to complete a two minute survey that deals with 'first impressions'. About 60% of those approached refused to participate. Recruitment of participants stopped after reaching n of 25 in each one of the experimental condition. Informed consent was obtained from all the participants. We did not exclude any participants from any analyses.

Materials and Procedure

The study was conducted using a laptop with a 15.4 " monitor screen. Each participant sat in front of a table facing the wall and completed the tasks individually, using the same laptop. Participants were randomly assigned to one of three accuracy feedback conditions:

Manipulation of Accuracy Feedback – a between-subjects variable was manipulated by using an interactive computer program. Participants were shown a series of photographed faces (of 5 men and 5 women). After viewing each face, the participant was asked: "How would you judge the morality of this person?". A dichotomous response scale, with the choices being "a positive person" or "a negative person" was used. Each photographed face was presented without time restriction while the participant's response time was measured. After each judgment, the participant received a piece of information regarding the target; with this information being either **Positive** (e.g. "This person helped his brother stop abusing drugs") or **Negative** (e.g. "This person made his brother into a drug abuser"). Thus, following this manipulation, the accuracy of one's judgments regarding other people's morality was expected to either **increase** – i.e., when the information provided was judgment-confirming - or **decrease** – i.e., when the information provided was judgment-disconfirming. Importantly, the information regarding the targets was

randomly and automatically assigned by the computer, to represent either **High Accuracy**, with judgment-confirming information being provided on 7 out of 10 photos (judgment-disconfirming information appeared for photos #2, 5, & 7) or **Low Accuracy**, with judgment-confirming information being provided on 3 out of 10 photos (judgment-confirming information appeared for photos #2, 5, & 7). In other words, participants in the Low Accuracy group received feedback indicating they were wrong 70% of the time, participants in the High Accuracy group received feedback indicating they were correct 70 % of the time, and the No Feedback condition did not receive any feedback and continued making sequential judgments about all 10 photos. Before starting the manipulation phase, each participant was shown two photos of faces and judged their morality without information feedback. All participants indicated they understood the procedure and started the study by pressing a button marked as "I understand the task, let me start". This procedure was approved by the Ethics Committee of Tel Aviv University and is in full accordance with the ethical guidelines of the American Psychological Association.

Dependent Measures

Time spent judging target morality – while participants were judging the morality of the ten targets, a script in the software recorded the total number of seconds they spent doing so. A reliability test confirmed that judgment times can be represented by a common construct (Cronbach alpha = .79) and consequently, the average time per judgment was used as the measure of accuracy motivation; the more time participants spent judging the targets, the greater their presumed motivation to judge the targets accurately (e.g. Eyal, Steffel, & Epley, 2018).

Perceived ability to judge others – After completing their judgments of all 10 facial photos, and either receiving or not receiving accuracy feedback, participants were asked: "To what extent do you think people's first impression of others is reliable?". A 5-point scale (1 = *not at all*, 5 = *very much*) was used and these responses served as the measure of participants' perceived ability to judge others.

Results

Hypothesis 1 was that the manipulation of accuracy feedback regarding others' morality would impact the length of time spent generating such judgments. Since these times were not normally distributed (Kolmogorov-Smirnov test = .18, $p < .001$), we used a bootstrap technique (Efron & Tibshirani, 1993) with 5000 samples. A one way analysis of variance with accuracy feedback level as the only factor showed a significant main effect for the average time spent per judgment, $F(2,86) = 7.06$, $p = .001$, $\eta^2 = .14$. Further analyses showed that when no feedback was provided, participants spent significantly less time generating their judgments ($M=2.69_{\text{sec}}$, $SE=0.27_{\text{sec}}$), than in either of the feedback conditions (Low Accuracy: $M=3.87_{\text{sec}}$, $SE=0.27_{\text{sec}}$, $t(57) = 3.72$, $p < .001$, High Accuracy: $M=3.90_{\text{sec}}$, $SE=0.27_{\text{sec}}$, $t(57) = 3.38$, $p = .001$). Unexpectedly, the two accuracy conditions did not differ from each other, $t(58) < 0.5$, *n.s.*

Hypothesis 2 was that accuracy feedback would impact participants' confidence as to the reliability of social judgments. A one way analysis of variance with accuracy feedback level as the only factor showed a significant main effect of accuracy feedback level, $F(2, 86) = 10.24$, $p < .001$, $\eta^2 = .19$. Further analyses showed that participants in the low accuracy feedback condition were less confident as to first impressions ($M=2.07$, $SD=0.74$) than were participants in the high accuracy ($M=3.00$, $SD=0.83$, $t(58) = 4.60$, $p < .001$), and also less than participants in the no feedback condition ($M=2.83$, $SD=0.97$, $t(57) = 3.40$, $p = .001$), which did not differ from each other, $t(57) < 1$, *n.s.*

Finally, we tested the relation between the average time spent per judgment and participants' confidence as to the reliability of social judgments (i.e., the two depended measures) and found no significant association, $r_s(87) = -0.06$, *n.s.*

Discussion

The current study shows that the process of making snap judgments is impacted by accuracy feedback. The main goal of Study 1 was to examine the impact of accuracy feedback on the time spent generating judgments and on participant's beliefs as to the reliability of social

judgments. The results showed that the provision of any accuracy feedback, be it low accuracy or high accuracy, leads to a significant increase in the time spent generating such judgments. Yet despite the fact that the provision of both high and low accuracy feedback has an impact on the time spent generating judgments of others, only those participants who received low accuracy feedback expressed low confidence in the reliability of social judgments.

These findings suggest four important insights. First, subjective confidence in one's social judgment ability is apparently a significant factor in shaping one's manner of making social judgments, such that concern with the accuracy of one's moral judgments can drive observers to devote more time to the task of moral judgment. Second, it seems that by default, people assume that their moral judgments are fairly reliable and that consequently, they do not need to spend much time making such judgments. Third, when one's confidence as to one's ability to generate accurate moral judgments is undermined, this can lead to a reappraisal of the reliability of social judgments. Fourth, spending longer time judging others' *morality* was unrelated to the *overall* confidence in the reliability of social judgment. It appears, therefore, that shaken confidence in the reliability of moral judgments, as reflected in changes in judgment speed, is separate from one's general beliefs in the reliability of social judgments.

One caveat regarding these conclusions is that there may have been a-priori differences between the three accuracy groups in the time they ordinarily devote to making social judgments. Hence, Study 2 was conducted while taking into account baseline differences in the time devoted to snap judgments. A second issue of concern is that accuracy feedback regarding one's judgments of others' morality should impact only one's beliefs regarding the reliability of social judgments in the moral domain but should not impact such beliefs in other domains. Study 2 was conducted to examine this directly.

Study 2

Study 2 further explored the impact of accuracy feedback on social judgments by using several different dependent measures. First, as in Study 1, we assessed the time spent judging

target morality, with the expectation that the provision of low accuracy feedback would undermine participant confidence in the reliability of social judgments, and hence, would increase the time spent generating moral judgments. Second, the study was designed to control for the possibility that the time spent judging the target's morality after the feedback, might have been confounded with individual differences in general motivation to engage in the task (see Carpenter, Green, & Vacharkulksemsuk, 2016), and more particularly, baseline differences in the time devoted by the participant to social judgments. Thus, Study 2 included a measure of the baseline time devoted to making social judgments in the absence of accuracy feedback. We assumed that participants whose preliminary time to generating social judgments in the absence of accuracy feedback was longer - i.e., participants who may be labeled 'highly engaged' - will subsequently spend more time making the required judgments. We were also interested in exploring how these two factors would interact and jointly predict level of accuracy feedback; yet we did not make a-priori predictions about potential interaction effects.

In addition, the current study included an assessment of delay times *after* receiving the accuracy feedback, prior to accessing the subsequent target person. Practically speaking, participants controlled the time of exposure of the next target person via a button press so that their delay times of response, after receiving accuracy feedback, could be assessed. We hypothesized that participants in the low accuracy condition would take longer prior to pressing the button to display the subsequent target. This is because low accuracy feedback needs to be processed more deeply than high accuracy feedback, as expectations were violated (e.g., Jessup, Busemeyer, & Brown, 2010).

Finally, we tested whether the impact of feedback as to one's judgments of others' morality would be restricted to judgments in the moral domain or whether such feedback would also impact social judgments in other domains. We hypothesized that to the extent that low accuracy feedback undermines confidence in one's ability to judge others' morality, it will increase one's reluctance to judge others in the moral domain but not in other social domains.

Method

Participants

Participants were 88 university students, 55% female, aged 18 -35, who were in the university Library of Social Science and voluntarily agreed to complete a two minute survey dealing with 'first impressions'. About 50% of those approached refused to participate. Informed consent was obtained from all the participants. We did not exclude any participants from any analyses.

Procedure

Each participant was seated next to a table, facing the wall, and was asked to complete the tasks individually, using a laptop with a 15.4" screen. The same computer program as that used in Study 1 was used. Participants in Study 2 were asked to view a series of photos of faces, and to (1) judge the person's morality (i.e. moral judgment phase), and (2) judge additional personality characteristics of this person, both before (i.e. baseline phase) and after the manipulation phase. As in Study 1, the moral judgment phase provided participants with accuracy feedback in order to manipulate their accuracy concerns. The personality judgment phase, introduced in Study 2, assessed participants' reluctance to judge others in the moral domain, as elaborated below (see also Figure 1).

Manipulation of Accuracy Feedback – As in Study1, participants made a series of judgments regarding the morality of 10 social targets, followed by either a No feedback, Low accuracy, or High accuracy feedback, right after making judgments about each target. Participants controlled the display of the 10 social targets and we assessed (1) the time spent judging target morality, and (2) the delay time for processing the accuracy feedback prior to displaying the subsequent target. This delay time measure was not used in Study 1.

Target Profile Judgment –we developed a questionnaire to assess participants' general judgment of the psychological characteristics of two target persons whose faces were presented to participants on the computer screen. We used 5 personality characteristics - "To what extent

do you think this person [a] would find it hard to talk in front of the class? [b] worries about getting sick? [c] would risk his life for the sake of a thrill? [d] perceives himself as a sociable person? [e] would lie to get ahead?, similar to those used by Clement and Krueger (2000) in their study of social prediction, with these characteristics being roughly associated with the “Big Five” personality characteristics. Participants evaluated the likelihood of each characteristic being descriptive on a 5-point Likert scale, ranging from (1) "not likely at all" to (5) "very much likely". One target person was evaluated before the manipulation phase and the second target person was evaluated following the manipulation. The personality evaluation before the manipulation was used to obtain a baseline measure of the time participants devote to making judgment of others. The second personality evaluation, which took place after the accuracy feedback manipulation, was used to assess participants' possible reluctance to judge others after their confidence in the accuracy of making judgments has been undermined. The post-manipulation evaluation was conducted while referring to the face of a target that had not been seen in the preliminary phase but that matched the first target in terms of age, skin color, and facial expression.

Study Outline

Task orientation Before starting the experiment, each participant judged the morality of two photographs of faces, without feedback. The faces were shown one at a time and participants judged each face for its morality, using a dichotomous scale (i.e. "a positive person" or "a negative person"). After each judgment, participants who were assigned to receive feedback saw the following prompt: "*information about the person you've just seen will appear on the screen after you provide your judgment*". Participants started the study by pressing a button which said, "I understand the task, let me start".

Experimental phases The experiment consisted of three phases: the first personality evaluation phase (i.e. baseline phase), the accuracy feedback manipulation phase, and the second evaluation phase. Over the three phases, participants were presented with a total of 12 photos of

faces: one of which was used during the first evaluation phase, ten of which were used during the accuracy feedback manipulation phase, and one face was used during the second evaluation phase.

Measures

Dependent Variables:

First Evaluation Phase

Time spent judging the target profile – The time spent judging the first target was used as a baseline to control for possible individual differences in participants' willingness to engage in social perception (cf., Carpenter, Green, & Vacharkulksemsuk, 2016).

Manipulation Phase

Time spent judging target morality – We measured the time participants spent on their judgment of the morality of each of the 10 target faces. A reliability test confirmed that the ten judgment times reflect one common construct (Cronbach alpha = .88), and consequently, the average time spent per moral judgment was used.

Feedback Delay Times – After judging the morality of each face in the accuracy feedback manipulation phase, participants in the two accuracy feedback conditions received a piece of relevant information that either undermined or affirmed their judgment accuracy (as described in Study 1). A script on the software recorded the number of seconds participants delayed prior to displaying the next face. An analysis of the internal consistency of these 10 delay times was high (Cronbach alpha = .94) and hence, the average delay time was used.

Post-manipulation Evaluation Phase

Reluctance to Judge Morality – For judging target personality in the post-manipulation phase, five items were used, one of which concerned the moral domain (i.e., "to what extent do you think this person would lie to get ahead?"), and four items which were unrelated to morality. First, participant's response to the judgment of the moral domain was recoded as follows: if the participant chose the mid-point of the bi-polar scale, this neutral choice was coded as reluctance

to judge ($d = 1$), whereas all other choices were recorded as non-reluctant behavior ($d = 0$). The same coding procedure was used for the other four personality characteristics which were not related to the moral domain. Then, a general score of reluctance to judge other domains was calculated as the average reluctance score for those four morality-unrelated personality judgments.

Time for judging target morality – the time participants devoted to judging target morality, during the post-manipulation phase, was assessed.

Results

As a preliminary analysis, the time spent judging target personality during the first phase (prior to the manipulation) was examined. A one way analysis of variance with accuracy feedback level as the only factor (i.e., No Feedback, Low Accuracy, High Accuracy Feedback) showed no significant difference in the preliminary time for making social judgment, $F(2,85) = 0.29$, *n.s.*. This suggests that the three accuracy groups did not differ in their baseline engagement in making the judgments.

The first hypothesis was that undermining participant confidence regarding their judgment of others' morality would impact the time spent judging target morality; in addition, the possibility that this effect would be more evident among individuals who had spent more time judging targets during the first phase of personality judgment was checked. To examine this hypothesis, using PROCESS procedure Model 1 (Hayes, 2013), we performed a Hierarchical Regression analysis, in which the feedback condition, the baseline judgment time (i.e., time spent judging the target personality profile in the first phase), and the interaction of these variables served as the predictors and judgment time during the manipulation phase was the dependent variable. Because accuracy feedback level is a multicategorical variable, the predictors in the regression model comprised two dummy-coded variables ($f1$, $f2$) created with sequential reference groups (Hayes & Montoya, 2017, i.e., no feedback = 0, 0; high accuracy feedback = 1, 0; low accuracy feedback = 1, 1; *respectively*). This coding strategy allowed us to test ($f1$)

whether the two feedback groups had different judgment times than the no feedback condition, and to test (*f*₂) whether high accuracy feedback impacted judgment times differently than low accuracy feedback. Following the standard procedure to test moderation (e.g. Aiken & West 1991, Hayes, 2013), the dummy-coded accuracy feedback level variables and the baseline judgment time variable were inserted in the regression model during the first step, while in the second step, their interaction components were added. The significance of all effects was assessed by the bootstrap technique with 5000 samples (Efron & Tibshirani, 1993). Following Cook and Weisberg's (1982) suggestion, one influential case (Cook's distance > 3) was removed from the regression model. The results of the regression analysis indicated a significant interaction between feedback group and baseline judgment time, $\beta = .44$, $t(86) = 1.96$, $p = .05$, 95% CI [.00, .88] suggesting that the effect of accuracy feedback on judgment times depends on baseline judgment times. The findings showed that, similar to the results found in Study 1, the provision of any accuracy feedback increased the time spent generating judgments of others' morality; however, in the current study, this pattern was significant, $\beta = .61$, $t(86) = 2.04$, $p < .05$, 95% CI [.01, 1.21], for participants who spent longer times judging (+1SD above Mean) in the initial phase and was not significant, $\beta = -.27$, $t(86) < -1.5$, *n.s.*, for individuals who spent shorter times judging in the first phase (-1SD below Mean) of personality judgments; see Figure 2 for illustration. All other effects were not significant (i.e., baseline judgment time ($\beta = .16$, $t(86) < 1$, *n.s.*), accuracy feedback group (*f*₁: $\beta = .16$, $t(86) < 1.5$ *n.s.*; *f*₂: $\beta = -.01$, $t(86) < 0.5$, *n.s.*), the interaction of baseline judgment time and Accuracy Feedback, $\beta = .08$, $t(86) < 1$, *n.s.*). In sum, the impact of feedback seen in Study 1 was replicated in Study 2, however it was found only for participants who devoted a greater amount of time to judging others in the initial phase.

Next, we examined the time participants delayed before displaying the next target as a function of accuracy feedback they received. One case that scored 6 SDs above the mean delay time was removed before the analysis. To determine whether accuracy feedback impacted delay times, we compared the average delay time in the two groups that received feedback, using an

independent T test. The findings showed that the delay times spent on processing the feedback were not affected by whether high or low accuracy feedback was involved, $t(57) = 1.18$, *n.s.* Participants who received low accuracy feedback ($M = 3.71_{\text{sec}}$, $SD = .97_{\text{sec}}$) delayed the same amount of time as participants in the high accuracy feedback condition ($M = 3.42_{\text{sec}}$, $SD = .89_{\text{sec}}$) prior to displaying the subsequent face.

Hypothesis 2 was that the provision of low accuracy feedback would increase reluctance to judge others on the moral dimension but not on other dimensions. A chi-square test which tested for the association between feedback condition and reluctance to judge on the moral dimension showed that reluctance to judge others' morality was differentially evident in the three feedback groups, $\chi^2(2) = 7.66$, $p < 0.05$, $\phi_c = .30$, with the low Accuracy Feedback group showing the highest reluctance to judge. Reluctance to judge others' morality was higher in the Low Accuracy Feedback group (57%) than in the High Accuracy Feedback group (37%), $\chi^2(1) = 2.41$, $p = .06_{\text{one-tailed}}$, $\phi_c = .20$, and higher than in the No Feedback condition (21%), $\chi^2(1) = 7.52$, $p < .01$, $\phi_c = .36$, but these two groups did not differ significantly from each other, $\chi^2(1) = 1.62$, *n.s.*

Next, we examined whether reluctance to judge was restricted to the moral domain or whether it was evident for other personality domains as well. To do so, we considered domain as a within-participant measure, and a mixed analysis of variance with accuracy feedback condition (3) as the between participants measure was conducted. Accuracy feedback impacted reluctance to judge others, $F(2, 85) = 4$, $p < .05$, $\eta^2 = .09$. However, while the effect of domain was not significant, $F(1, 85) = 0$, *n.s.*, there was a significant interaction between domain and accuracy feedback condition, $F(2, 85) = 2.51$, $p < .05_{\text{one-tailed}}$, $\eta^2 = .06$, such that accuracy feedback increased reluctance to engage in judgments of the moral domain, $F(2, 85) = 4.05$, $p < .05$, $\eta^2 = .09$, but not of other personality domains, $F(2, 85) < 1$, *n.s.* Finally we assessed whether individual differences in willingness to engage in social judgment were relevant here too. The mixed analysis reported above was repeated, using the baseline measure (i.e. time spent on personality

judgments before the manipulation) as a covariate. The pattern of findings remained unchanged, with accuracy feedback impacting the reluctance to judge others, $F(2, 84) = 3.76, p < .05, \eta^2 = .08$. The effect of domain was not significant, $F(1, 84) < 0.5, n.s.$, but the significant interaction between domain and accuracy feedback condition remained significant, $F(2, 84) = 2.35, p < .05_{\text{one-tailed}}, \eta^2 = .05$.

Discussion

The main goal of Study 2 was to further examine the impact of accuracy feedback on the social judgment process. The findings showed that accuracy feedback impacts how individuals subsequently process social information, leading low-accuracy feedback participants to spend more time in making their judgments, possibly in an attempt to make more accurate judgments. As well, low accuracy resulted in participants being relatively reluctant to judge others on the specific domain in which their accuracy concerns were made salient.

Thus, similar to the findings of Study 1, the results of Study 2 showed that the provision of accuracy feedback increases judgment times. However, in Study 2 this pattern was evident primarily for those participants whose initial times for judging others' profiles in the baseline period, were long. This pattern may be due to individual differences in the willingness to engage in social judgment tasks, a possibility that is underlined by the 50 % participation refusal rate in recruiting participants to our study. Among those individuals who agreed to participate in the study, those who devoted less time to judging others during the pre-manipulation phase, appear to be relatively unconcerned with whether or not their judgments are accurate, and are relatively unaffected by accuracy feedback. However, individuals who devoted more time to the judgment task during the same pre-manipulation phase, may be generally more concerned with their ability to generate accurate social judgments. Although we had no preliminary hypothesis regarding such an interaction effect, individual differences in response to feedback have already been documented in the literature. For example, a recent study by Burns and colleagues (2017) showed that feedback describing participants as holding prejudices

against Black peoples leads to an increase in the rejection of racist jokes, but only among participants who were motivated to respond without prejudice (i.e. felt guilt learning they hold prejudice opinion). Thus, preliminary individual differences seem to have an important impact on the effectiveness of feedback procedures, a point we will re-address in the general discussion.

In sum, the findings of Study 2 fine-tuned the results of Study 1 by showing that the impact of accuracy feedback on judgment time may be moderated by individual differences in the baseline time devoted to making social judgments. This suggests that motivation to invest time in making social judgments may be a precondition for feedback monitoring. That is, people's tendency to care about the accuracy of their social judgments may well be a prerequisite for accuracy feedback to have an impact on such judgments, and constrain the way subsequent social judgments are made.

General discussion

The main goal of the current research was to explore how the provision of accuracy feedback might shape the subsequent process of making snap social judgments. Our studies demonstrated that while in general, people assume that their social judgments are accurate, once doubt emerges regarding the accuracy level of their snap judgments individuals spend longer time in making social judgments. Interestingly, our findings indicate that the impact of accuracy feedback on the time spent judging others was the same, irrespective of whether low accuracy or high accuracy feedback was provided. Hence, it is the activation of accuracy concerns that made the difference, rather than their content. This same conclusion is implicated in the finding that both high and low accuracy feedback increased the time spent mulling the feedback prior to displaying the next target to be judged.

These findings suggest that accuracy feedback, of any kind, changes the way people address subsequent social judgment tasks. In particular, when accuracy concerns become salient, people may become more reluctant to judge others, probably due to their unwillingness to make inaccurate judgments. Yet, such reluctance is restricted to making social judgments in the same

domain/context in which the accuracy concerns were salient but not in other domains. Thus, accuracy feedback apparently invokes two distinct reactions. The first reaction involves spending more time in trying to judge others, before reaching any conclusions about them. The second response involves acting less decisive when making snap judgments about others, in the same related domain. These findings have several implications for extant approaches to social judgment, as described below.

Theoretical implication for Dynamic social judgment framework

Existing literature demonstrates that preliminary judgments regarding social targets might change as a result of subsequent observations of their behaviors. Namely, that when the observed behaviors provide inconsistent information people tend to reconstruct (i.e., update) their initial impression, to reflect the later judgment (e.g. Ma et al., 2012; Baker et al., 2013). Yet, existing literature is still unclear regarding whether and how disconfirmed judgments would shape the person's future judgments of new social targets.

The first contribution of the current research is showing that disconfirmed judgments might have implications that extend beyond the scope of the initial target-eliciting events. Our findings demonstrate that awareness of being inaccurate in judging others had a generalized effect that transferred onto judgments of new individuals in the same domain. We proposed that disconfirmation of one's snap judgments in a given domain undermine confidence in one's ability to capture relevant features of that domain in others' faces and subsequently impacts how snap judgments regarding others in that domain are made.

The current research also demonstrated possible ways by which people respond once their snap judgments are proven to be inaccurate, a topic that is understudied. Practically speaking, the current research demonstrated that accuracy feedback has an impact on both the length of time that is spent on making future social judgments as well as on the readiness (i.e., reluctance) to judge new targets on the same domain. The increased time spent on making snap judgments arguably indicates that people tried harder to be accurate and engaged in a more careful judgment process

(e.g. Uleman, Blader & Todorov, 2005; Eyal, Steffell, & Epley, 2018). The specificity of reluctance to judge others in the same domain alone similarly reflects participants' being conscious of the inaccuracy of their snap judgments in the domain in question.

Taken together, the current research findings suggest that the process of making social judgments is more dynamic (and dialectic) than is usually described. In particular, we suggest that whereas the use of stereotypes is dominant when one is confident in the accuracy of one's judgment, reluctance to rely on stereotypes alone may characterize judgment when one is not confident in the accuracy of his/her judgment in a given same domain.

Limitation and direction for future research

We acknowledge some limitations of the research methodology and findings. First, the importance of accuracy concerns was demonstrated in the context of moral judgments only. Hence, it remains for future research to examine whether social judgment exhibits sensitivity to accuracy feedback for less-important aspect of social life. Furthermore, the findings reported in Study 2 demonstrated that accuracy feedback prolongs judgment times only for those who initially spent longer time in judging others' profiles in the baseline period (for similar pattern see Burns, et al., 2017). Thus, future research should carefully examine the role of individual and situational differences in the willingness to engage in accurate social judgment. Second, accuracy feedback was manipulated by providing participants with unambiguous repetitive feedback that confirmed or disconfirmed their moral judgments. Future research should examine the amount and type of feedback needed to activate accuracy concern, to establish to what extent the current results generalize to, for example, more subtle forms of accuracy feedback, and across various pools of participants and sample of stimuli.

Conclusions

The dynamic nature of human knowledge formation and application had been previously characterized by philosophers and scientists (e.g. Husserl, 1913; Kruglanski, 2012); but until now, these discussions were not translated into an empirical model that adequately represent dynamic process of social judgment. The current research explored the role of disconfirmed judgment in shaping the course of social judgment process. Across two studies, we found that disconfirmed judgments lead people to change the way they engage in subsequent social judgments. This robust finding was evident in two behavioral measures, as participants slowed down the speed of their judgment and acted indecisively in the same domain that their judgments were disconfirmed. Furthermore, participants assigned to low-accuracy feedback also reported afterward having less confidence in the validity of first impressions, suggesting that when one's confidence is shaken people monitor their use of snap social judgments. We interpret these findings as demonstrating that making social judgment is a continuously restructured process. Hence, it is suggested to further conceptualize and study this process from a more dialectical point of view, i.e., while assuming the co-existence of dynamic and adaptive mechanisms that gradually lead to mutual changes in the perceiver's conception of oneself as well as of the other.

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Table 1.

Percentage (and frequency) of subjects' reluctance to judge targets, by accuracy feedback levels

<i>Accuracy feedback</i>	<i>Reluctance</i>	
	Reluctant to judge	Non-reluctant
Low accuracy feedback	57% (17)	43% (13)
High accuracy feedback	37% (11)	63% (19)
No feedback	21% (6)	79% (22)

Example of a trial used to manipulate accuracy concerns in one's ability to make snap judgments

Manipulation of accuracy feedback levels

- Three experimental conditions
1. **High Accuracy Feedback** (with judgment-confirming information appearing 7 times out of 10 trials)
 2. **Low Accuracy Feedback** (with judgment-confirming information appearing 3 times out of 10 trials)
 3. **No Feedback** condition (participants did not receive any feedback information and made 10 sequential judgments)