



## The influence of rating volume in the effects of expert versus patient online ratings

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Gaining access to ratings has become much easier due to the internet and research shows that they are of influence on consumer decision making. At health-care comparison websites, patients are gradually sharing their opinions online whereby the number of ratings can differ significantly per provider. Because patients may lack the necessary skills and information to judge health care quality, some platforms complement patient ratings with an expert rating. It is unclear however which source has the biggest influence on decision making. A previous study found that generally people seem to follow their peers, but only when they are in large numbers. Otherwise, they follow the expert. The present study aims to find out how many peers are necessary to “overrule” the expert. An online experiment is conducted and the results indicate that rating volume does play a role in the effects of patient versus expert ratings. This finding can, for example, support platform providers in understanding how to use online ratings to ensure that patients benefit most of them.

**Keywords:** internet ; patient rating ; healthcare providers.

### INTRODUCTION

The internet provides extensive possibilities for consumers to share online evaluations and experiences about products and services. Amazon.com started this trend in 1995 by offering consumers the

option for posting comments about their purchased products on its website and considers these reviews as one of the most successful functionalities of their website (27). Platforms displaying online reviews are utilized in the medical industry as well. In the Netherlands, online platforms such as “zorgkaart nederland.nl”, “kiesvoorjezorg.nl”, “independ.nl” and “kiesbeter.nl” offer patients the possibility to rank healthcare providers and share their experience. Such websites generally ask for a numerical rating and thereafter report the average score of the individual visitors (3). The number of patient ratings displayed can differ substantially per healthcare provider. Some patient ratings include 10 opinions, while others have more than 300 opinions. In previous studies it has been shown that social groups can be surprisingly knowledgeable when their average evaluations are compared with the judgments of individuals (12). This phenomenon is referred to as

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the “wisdom of crowd effect” which argues for a superiority of collective intelligence (23). As group judgements have been found to be frequently wiser than those of individuals, they should in general be more influential than individual judgments (13). However, it is unclear how many people are needed to form a crowd that affects consumer decision making, especially compared to the opinion of an expert. While patients gradually rate their experiences with hospitals and healthcare providers on the internet (8), bias and a lack of medical expertise of patient reviewers raises concerns (3). For example, negative feedback may concern good medical practice as even the best doctor can induce dissatisfaction with patients by for instance not prescribing certain medication (pain killers, benzodiazepines, etc.) or sick notes (14). But despite resistance from the medical world, online hospital and physician-rating platforms are increasingly growing and provide a fast and efficient way to gain information about quality of care (24). As consumer ratings might be questionable, some platforms complement patient ratings with an expert rating. Consumers find judgments from both experts and other consumers to be helpful in the decision making as the number of choices for products and services can be overwhelming (16,20). Especially when the quality of a product or service is unknown before purchasing, reviews by experts or consumers can play an important role in the decision making process (22). Ratings given by consumers are often perceived to be trustworthy as they tend to provide honest evaluations (7) and people comply with experts because of their perceived expertise (4,11,21). However, there is conflicting literature about the importance of the two dimensions of a source’s credibility; “expertise” and “trustworthiness” (19). Kranzbühler and colleagues (10) found in a medical context that consumers seem to generally prefer patient’s over expert’s advice, but only if the advice stems from a large number of patients (142). In case only 3 individual patient opinions are given, respondents instead were found to follow the expert’s advice. With this background, the aim of this study is to find out how many patient ratings are necessary to outweigh an expert opinion’s impact on the decision making process.

## METHOD

An experimental study with a hypothetical health care rating platform containing both an expert and patient rating is conducted to test the hypotheses. Data are collected through a Web-based survey. To determine what is considered as low, medium and high patient rating volume, a pre-test is conducted. A sample of 107 participants is asked how many patient ratings they would like to review before making a decision about a hospital. The results provide a mean value of 13,5 with a big variety (SD 22), indicating that people have very different opinions about the number of ratings they like to review before making a decision about a healthcare provider. Based on these outcomes, five different quantities are utilized in the experiment: 1, 7, 14, 36 and 58. For the experiment, a  $5 \times 2$  factorial design is employed. Rating volume (very low = 1, low = 7, moderate = 14, high = 36 and very high = 58) is manipulated. Because ratings coming from expert and patient sources can be conflicting, the valence is also manipulated. The valence manipulation provides a positive rating for one source and the rating of the other source is consequently negative (negative = 1 star, versus positive = 4 stars). Participants are recruited via social media (Facebook & Linked-In) and by e-mail. To join the experiment, participants receive a link to the experimental website. By following this link, they are randomly assigned to one of ten experimental conditions. People are asked to imagine that they are going to an “ear, nose and throat” (ENT) doctor. Including the type of treatment primes respondents for a similar setting. The treatment is kept general to ensure all participants are able to understand it. Next, the participants access a fictive rating platform showing a fictive hospital. No additional information about the hospital is given (e.g. location of the hospital). On the following page, respondents are asked about their purchase intention/hospital choice ( $\alpha = 0.941$  (5)), attitude towards the hospital ( $\alpha = 0.931$  (1)), perception of expert expertise ( $\alpha = 0.946$  (1st scale item was removed for the questionnaire as it is redundant: “not an expert/expert”) (18)), patient expertise ( $\alpha = 0.839$  (after deleting one item) (18)), expert trustworthiness ( $\alpha = 0.797$  (after deleting one item) (17)) and patient trustworthiness ( $\alpha = 0.729$  (17)). The questions are measured on a five-point Likert scale. In total 483 questionnaires were started of which 279 were completed (drop-out rate of 42%). All analyses were performed using SPSS 22 (IBM, Armonk, NY).

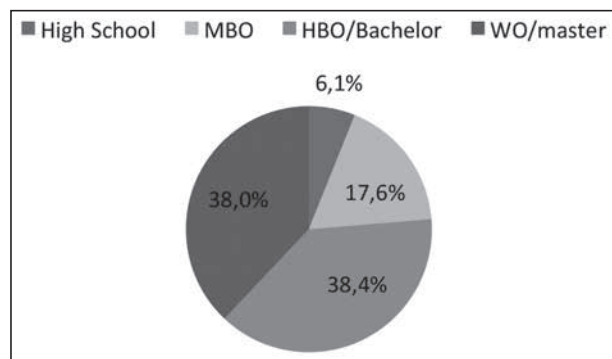


Fig. 1. — Level of education

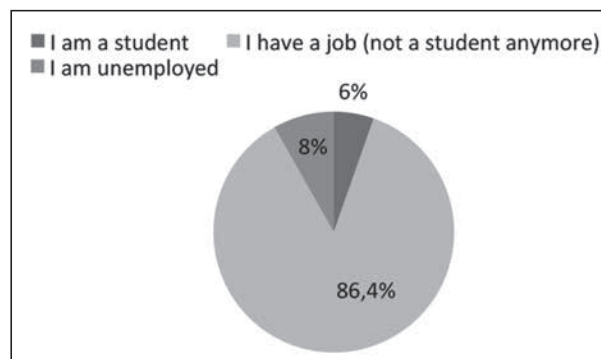


Fig. 2. — Employment status

## RESULTS

The age of the respondents varies from 17 years to 67, with a mean age of 41 years. Most respondents hold a Master or Bachelor degree (both 38%) as can be seen in figure 1, and are currently employed (86,4%) – figure 2.

First, we wanted to test if our hypotheses about expert ratings being perceived as higher in expertise than patient ratings (H1), and patient ratings being perceived as more trustworthy than expert ratings (H2) are true. A paired-samples t-test was conducted to compare the expertise and trustworthiness in expert and patient ratings. To test the third hypotheses about the expertise of a source being more influential than its trustworthiness, a linear regression analyses is performed (one for Dependent Variable (DV) ‘healthcare choice’ and one for DV ‘attitude’). Finally, we wanted to understand if patient ratings have a stronger effect on attitude formation and healthcare choice than an expert rating when the volume of patient ratings is high, but a weaker effect when the volume of patient ratings is low (H4). To test hypothesis 4 we used five separate t-tests (per level of rating volume) on the variables healthcare choice and attitude.

The results indicate that expert ratings are perceived as higher in expertise ( $M_{expert} = 3.91$ ,  $SD = .83$ ;  $M_{patient} = 2.69$ ,  $SD = .80$ ;  $t(278) = 16.40$ ,  $p < .010$ ) and trustworthiness ( $M_{expert} = 3.28$ ,  $SD = .71$ ;  $M_{patient} = 3.08$ ,  $SD = .57$ ;  $t(278) = -3.30$ ,  $p < .001$ ) than patient ratings. Furthermore, the outcomes show that the trustworthiness of a source has a significant positive impact on forming an attitude

towards and making a decision about the healthcare provider and that expertise does not play a role (Healthcare choice: expert expertise ( $b = -0.89$ ,  $t = -1.26$ ,  $p = .269$ ), patient expertise ( $b = -1.06$ ,  $t = -1.44$ ,  $p = .172$ ), expert trustworthiness ( $b = 0.62$ ,  $t = 7.40$ ,  $p = .001$ ) and patient trustworthiness ( $b = 3.47$ ,  $t = 3.40$ ,  $p = .003$ ). Attitude: expert expertise ( $b = 1.03$ ,  $t = 1.57$ ,  $p = .183$ ), patient expertise ( $b = -0.22$ ,  $t = -0.32$ ,  $p = .769$ ), expert trustworthiness ( $b = 0.55$ ,  $t = 7.10$ ,  $p = .001$ ) and patient trustworthiness ( $b = -4.00$ ,  $t = -4.22$ ,  $p = .001$ )). Thus, the trustworthiness of a source is more important than its expertise. Finally, the tests show that when 1 patient rating is presented next to an expert rating, there is a significant difference between the expert positive and patient positive condition (Healthcare choice:  $M_{expertpositive} = 3.13$ ,  $M_{patientpositive} = 2.04$ ,  $f = 18.33$ ,  $p < .001$ ; Attitude:  $M_{expertpositive} = 3.02$ ,  $M_{patientpositive} = 2.27$ ,  $f = 9.26$ ,  $p = .004$ ). Specifically, this means that the hospital is evaluated more positively when the expert rating is positive and the patient rating negative compared to when the expert rating is negative and the patient rating positive. No significant results are found for the other quantities, which means that both sources seem to be equally important when forming an attitude and behavioural intentions towards the healthcare provider.

## DISCUSSION

Online ratings, which are commonly used in the consumer goods industry, are now utilized in the healthcare industry as well and thereby providers

are more frequently judged by both experts and patients than they were in the past. This study sheds light on the role of rating volume in the effects of patient versus expert ratings on attitude formation and healthcare choices. Results indicate that patient ratings have a weaker effect on attitude formation and healthcare choice than an expert rating when the volume of patient ratings is very low (1 patient rating). Thus, an expert rating induces more favorable behavioral intentions and attitude toward a healthcare provider than one patient rating. For the other rating volumes that are tested in this study (7, 14, 36 and 58 ratings) no differences are seen. However, an interesting finding is that consumers, when confronted with more than one patient rating, seem to balance both the expert and patient opinions. They are not clearly following one or the other. As both sources probably base their ratings on very different features (e.g. the experts more on quality outcomes and patients more on their very own and subjective experience, such as hospitality), they complement each other nicely. If people balance both input in their judgment it means that they take into account both the cure and the care aspects, which are both important in health care. The finding that patient ratings do not have a stronger effect on healthcare choice and attitude formation when its volume increases goes against earlier findings of Mannes (13) and Do-Hyung (7). Although crowds have been recognized as an alternative to experts for providing valid evaluations (9), the volume effect of reducing uncomfortable feelings of risk exposure (6) does not seem to hold in healthcare related evaluations. Possibly the type of product (healthcare provider) plays a role in this, as previous studies focused on commercial consumer goods instead of life-enhancing services. However, whether the type of product plays a role needs to be explored. Secondly, contrarily to the expectation and prior findings that patients are perceived as more trustworthy than expert ratings (7,15), this study found a significant support for the opposite. Surprisingly, experts seem to be perceived as more trustworthy than patients in online healthcare related ratings. The finding potentially indicates that experts providing online ratings in healthcare are not considered biased and that people trust them for giving

honest judgments. The expert shows to be a highly credible source ; a believable source. However, the question 'who is the expert' continues to be a discussion point in the healthcare industry. Researchers argue that a highly credible source activates more favorable behavioral intentions and attitude toward a message, while the opposite hinders any such influence (2). In this study, the results show that an expert does impact behavior intentions and attitude more than one patient. Interestingly, experts do not impact decision making stronger when more than one patient rating is presented, even though experts are perceived as more trustworthy and having more expertise. The finding also suggests that expertise and trustworthiness are possibly not the only influencers of decisions. If this would be the case, then people would have followed the experts throughout, as they perceive them as being more trustworthy and higher in expertise. Thus there seems to be another factor influencing here. A possible factor could be the similarity of a source, which is part a third commonly reported element of a source's credibility "attractiveness". Some studies for example found that similarity is even more important for inducing behavioral change the expertise (19). Patients potentially perceive other patients to be similar to them and find similar aspects of healthcare important. Finally, previous literature suggests that the two-dimensions "expertise" and "trustworthiness" might have different weights (19). This study found that trustworthiness is more influential on attitude formation and healthcare choice than expertise. This finding is in line with earlier results from previous studies (2,15,19). Despite the source (patient(s) or expert), trustworthiness indicates to be more important as it has a significant impact in all the regression models.

Despite there being a lot of research on the influence of online reviews on commercial product decision making (27), limited studies are looking into the influence of online ratings when choosing a health care provider. This study makes a first contribution to help address this gap in the literature by testing the influence of both expert and patient ratings. Moreover, the results of this study enhance the current knowledge on source credibility in an online setting and its influence of the different dimensions.

The influence of credibility on attitude formation and behavioral intention should not be ignored by insurers, government, hospitals and other stakeholders. Encouraging satisfied patients to provide ratings could for example benefit hospitals. Especially when expert and patient ratings are conflicting. When an expert provides a negative rating to a healthcare provider, but the patient ratings (more than one) are positive, the provider might still be considered in the decision making of the consumer.

The study has various limitations. Firstly, this study examines numerical web-based ratings and does not include written comments (reviews). In most cases both are shown on the healthcare comparison website. The influence of written comments together with the numerical ratings should be further studied. Secondly, this study set-up is simplifying the actual situation. According to Victoor *et al* (26), there are many factors influencing a patient's choice for a hospital or specialist. Apart from rating platforms, consumers can also be influenced by recommendations from relatives and their general practitioner, but also their own previous care experience and the distance to the hospital play a role. People also seem to make different decisions in different situations (26). To what extent patients are influenced by online ratings in relation to other sources (e.g. relatives) is too wide for the scope of this study. However, it is important to perform further research to understand the complete process of how a consumer chooses a healthcare provider. Thirdly, review platforms do not just show the ratings of one hospital, as presented in the experiment of this study. When consumers search for a hospital that offers a specific treatment, they often find multiple hospitals in their area that meet their criteria. Most likely there are different judgments given to each of the hospitals. If these different judgments have an impact on the decision making of a consumer needs to be further examined. In conclusion, this study looks at the simultaneous presence of peer and expert ratings showing that the expert rating has a stronger effect on consumers than a single patient opinion, however further research should be performed to understand how web-based patient ratings on their own are used by consumers in making choices about healthcare (8). As seen in other indus-

tries, consumer evaluations have an impact on purchase intentions (7,25). There are also platforms that do not support patient ratings with an expert rating. More research into the influence of patient ratings will further enhance the knowledge on the complex setting of consumer decision making in healthcare.

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