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Online auctions as a research tool: A field experiment on ethnic discrimination

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It is argued that online auctions offer a promising new platform for conducting field experiments in various areas of psychology. Both advantages and problems associated with the new method are discussed. To demonstrate its feasibility, a field experiment on ethnic discrimination was conducted. In an online auction, user names identified two sellers as being either of German or Turkish origin. Parallel sets of DVD movie discs were offered by both sellers. Contrary to previous research showing considerable discrimination against members of the Turkish minority in everyday situations, seller ethnicity had no effect on sale prices and number of bidders. However, auctions conducted under the German user name received their winning bids earlier than those run under the Turkish user name.

Keywords: Online auction, field experiment, ethnic discrimination, Turkish minority, trust

The active decision to participate in an experiment is a potential source of unmeasurable systematic error. The use of volunteer subjects can therefore have serious biasing effects on experimental results. Moreover, the potential participant's decision to not participate might be a conscious decision to protect themselves against the perceived purposes of the experimenter (Rosenthal & Rosnow, 1975). Conclusions drawn from traditional laboratory or web experiments may therefore apply only to a select subpopulation of people who have some self-interest in a particular research project and accordingly select themselves to participate (Smith & Leigh, 1997). Employing non-reactive and unobtrusive field experiments is arguably the best way to overcome this problem.

The goal of this paper is to introduce online auctions as a new research tool for conducting psychological field experiments. To illustrate the new method, we first outline the typical course of an online auction and explain how experimenters can participate as sellers to use online auctions as a platform for their research. We then demonstrate the feasibility of online auction research by conducting a field experiment on ethnic discrimination. Describing the procedures and results of this field experiment gives us an opportunity to illustrate both advantages and problems associated with the new method.

Online auction platforms have become increasingly popular in recent years, attracting over 40 million participants in some 30 countries by mid-2002. In an online auction, an item is offered at a starting price ("starting bid") defined by the seller. After some participant has declared his or her will to buy the item at this price, any other participant may offer a higher price surpassing the previous bid by some predefined increment. The price is subsequently raised by the participants until no one is willing to offer an even higher bid. The last and highest bidder gets the item ("winning bid"). Adapting the English auction format to the peculiarities of the World Wide Web, online auctions are characterized by some additional features. Firstly, users must register on an online auction platform in order to buy and sell on that platform. Each user

chooses a unique user name by which he or she is identified. Secondly, the seller defines a fixed duration for each auction. Usually, online auctions can last for three, five, seven or ten days. Thirdly, the minimal increment for a higher bid depends on the current bid and is set by the platform. Finally, a proxy bidding system lets bidders set a hidden maximum price they are willing to pay for an item. That price cannot be seen by other bidders until it has been surpassed by another bid. If the bidder wins an auction, he or she only pays the price his/her proxy needed to bid in order to parry other bids – that is, one increment above the second highest bid. The proxy bidding system allows each bidder to define their maximum price well in advance without running the risk of paying more than necessary to win an item.

Importantly, online auction platforms offer the seller and the highest bidder the opportunity to rate each other after the completion of their transaction. Most, but not all transactions are followed by such mutual ratings (Brinkmann & Seifert, 2001). A single transaction rating consists of a judgement of the behavior of the respective auction partner as either positive, neutral, or negative, accompanied by a short comment (such as "fast and reliable" or "didn't answer for two weeks"). All transaction ratings are collected and made visible in each user's profile. The introduction of rating systems has played a significant role in the medium's initial success and served to create and bolster the trust that is generally viewed as a precondition for the success of trade over the Internet (Gefen, 2000). High levels of trust cannot be taken for granted in online auctions where cases of fraud have repeatedly been documented (Roth, 2000).

Brinkmann and Seifert (2001) have observed that positive comments, accounting for 97% of all ratings, are usually general in nature ("No problems") and are therefore less informative than negative comments. Hence, the most interesting comments in a platform's rating system are neutral and negative. Research by Lucking-Reiley, Bryan, Prasad, and Reeves (2000) indicates that maintaining a "perfect record" may indeed give sellers a financial advantage. In an auction of collectable coins, the number of a seller's negative ratings was inversely correlated with the prices they obtained for their products.

In the present paper, we argue that online auction platforms as described above offer a promising platform for conducting psychological field experiments. What makes online auctions appropriate for this purpose is that experimental psychologists covertly acting as sellers can easily manipulate variables according to their research interests. Item description, seller characteristics, the possible inclusion of pictures, starting price, and auction duration are all determined by the seller. Thus, important variables in an auction can be manipulated effectively. Further, the written form of online auctions makes experimental manipulations more transparent and objective than they typically are in more traditional field research settings involving face-to-face or telephone contacts. Finally, auction platforms provide researchers with detailed records of each auction. The amount and exact time of every bid is listed next to the user name and email address of the bidder. A counter monitoring the number of visitors to the auction page may also be installed. If the collected data is viewed in a special area accessible only to the seller, visitor counting is not affected by ongoing research activities.

To demonstrate the feasibility of using online auctions as a research tool in social psychology, we investigated whether members of the Turkish minority are subject to discrimination in online auctions conducted on a German auction marketplace.

An online auction field experiment on ethnic discrimination

Stereotyping, prejudice, and discrimination against Turkish immigrants, the largest and least popular ethnic minority in Germany, is well documented (Fischer, 1992; Lederer, 1997). Kahraman and Knoblich (2000) showed in a priming paradigm that stereotypes of Turks are activated quickly and automatically. Using the bogus-pipeline paradigm to overcome social desirability bias, Mummendey, Bolten, and Isermann-Gerke (1982) showed that German students are prejudiced against Turks. In a series of field experiments, Klink and Wagner (1999) documented the sometimes serious behavioral consequences of prejudice against Turks prevailing in Germany, where discrimination against members of the Turkish minority occurred in various everyday situations.

Research on ethnic discrimination indicates significantly stronger discrimination in remote contact situations in which there is no direct encounter with a member of the ethnic minority (Crosby, Bromley, & Saxe, 1980; Klink & Wagner, 1999). In online auctions, people communicate by electronic means only. The resulting lack of physical contact allows people to remain anonymous and invisible, and the low likelihood of unpleasant reactions might encourage discriminatory behavior in such situations.

As outlined above, trust between the seller and the buyer is essential in online auctions (Brinkmann & Seifert, 2001). This is because the buyer always runs the risk of paying the winning bid without receiving the desired item, while the seller runs the risk of not getting rid of his product if the highest bidder does not fulfill his buying obligation. The aforementioned study by Mummendey et al. (1982)

revealed that as part of their stereotype, Turks are considered less trustworthy than Germans. This might put members of the Turkish minority at a serious disadvantage in online auctions. A study by Fershtman and Gneezy (2001) demonstrated that stereotype-based mistrust has serious behavioral consequences under conditions of mutual dependence and dissection of place and time similar to those found in electronic auctions. In a "trust game", Israeli students were asked to temporarily transfer one part or all of their money to another student, of whom they only knew the first and last name. However, the name identified them as being male or female Jews of either Eastern or European origin. The amount of money transferred was heavily influenced by the stereotype that male Jews of Eastern origin are less trustworthy than those of European origin. This result led us to suspect that because they are stereotypically seen as less trustworthy than Germans, members of the Turkish minority might suffer from similar discrimination in the context of online auctions conducted on a German auction platform.

To test this prediction, we used nicknames to identify two sellers as unequivocally being either of German or Turkish origin. Keeping all other characteristics of the auctioned items equal, we expected that less bidders would be willing to participate in the auction of a seller with a Turkish as compared to a German user name. Following Bajari and Hortacsu's (2000) finding that a lower interest in an auction leads to a lower highest bid, we also expected a Turkish seller to obtain lower prices than a German seller.

Conducting field experiments on online auction platforms involves monitoring users' behavior without their knowledge or consent. Ethical considerations must therefore be taken seriously. To guarantee participants' privacy – one of the most important aspects of online research (Döring, 1999) – we hid the user profiles created for the present experiment after all auctions had ended using the platform's "make profile private" feature. Thus, the user names of the winning bidders participating in our auctions can no longer be traced. We also decided to conduct our experiment completely within the regulations and boundaries of the used platform to avoid adverse reactions from participants or platform authorities. In particular, we decided not to survey the bidders during or after the auctions, despite the restrictions this imposed on the design of the experiment. We also chose not to obtain informed consent and not to debrief participants, contrary to the recommendations and ethical guidelines of various psychological associations. However, in this respect the procedure of our study is typical of many non-reactive forms of online data collection (Döring, 1999), and we argue that it is defensible in view of the methodological dilemma posed by the conflicting needs of observing uninfluenced behavior and informing participants of the purpose of a study in which they participate. We did our utmost not to harm participants by considering fair starting prices, good quality items, and honest item descriptions as mandatory for our online auction experiment. We wanted every buyer to be satisfied with the trade and took great care that business was carried out quickly and correctly. It is our feeling that the sole registration of prices in auctions that otherwise take place completely within the boundary conditions of traditional online auction procedures constitutes a very low level of intrusiveness. It can therefore be ethically justified, provided that the anonymity of all participants is guaranteed (see Dzeyk, 2001, for a further discussion of ethical issues in online research). In our opinion, online auction research must never violate the terms of service or the user agreement of a given platform, and neither of these was affected by the present procedure.

Method

DVD movies were auctioned on the German auction site www.eBay.de. The DVD market is a very active segment of this auction platform, even surpassing in popularity the markets for books, VHS movies, and music CDs. At the time of research, over 20 000 movie DVDs were being auctioned simultaneously. This active market virtually guaranteed that none of the DVDs remained unsold, which in our opinion is a necessary condition to avoid problems in the interpretation of auction data.

To conduct the field experiment, we registered two new users. We used "mehmet.orgum" as a Turkish user name. In Kahraman and Knoblich's (2000) study, Mehmet was one of the ten most recognized Turkish names. Moreover, unlike other names such as Abdullah, Yusuf, or Mustafa, Mehmet is a uniquely Turkish name, uncommon in Arabic and Persian. It can therefore be assumed that most participants recognized this name as implying a Turkish seller. We used the surname Orgum because hardly any results could be found for the name "Mehmet Orgum" in an Internet search at the time of the experiment. As a German user name, we registered "michael.ottersbach". Apart from having the same initials as the Turkish name, michael.ottersbach had the advantage of being easily identifiable as German and producing no results in a simple Internet search.

Both being newbies, mehmet.orgum and michael.ottersbach initially had no ratings in their user profiles which, as intended, also remained empty until after the last auction ended. Thus, the two users differed only with respect to their user names indicating their alleged Turkish or German origin. Email accounts were created for each user under the addresses "michael_ottersbach@ya-

hoo.de" and "mehmet_orgum@yahoo.de". All correspondence with winning bidders and inquiring visitors was carried out from these two email accounts. Auction partners were thus led to believe that sellers were using their real names as user names. In the course of the experiment, nine inquiries regarding transaction procedures and the content of the auctioned DVDs were answered in a short and standardized fashion.

The auctioned DVDs consisted of popular movies such as Braveheart, Chicken Run, Pulp Fiction, and Die Hard. We separately sold thirty different DVDs, once under the user name mehmet.orgum, and once under the user name michael.ottersbach. Thus, we conducted $2 \times 30 = 60$ different three-day auctions.

The auctioning of the 60 DVDs required careful planning in order to secure smooth transactions. First, we ordered all DVD movies from an online shop at a total price of DM 2269 (approx. 1164 Euro, amounting to an average price of a new DVD of approximately DM 38 or 19 Euro). We then started all online auctions on one of two Tuesday evenings in May 2001 and ended them on Friday evening of the same week. So as to avoid suspicion, the same DVD was never sold by both users simultaneously. Rather, Mehmet auctioned one randomly chosen half of the 30 movies (set A) in the first week and the other half of the movies (set B) in the second week, whereas Michael auctioned the 15 DVDs of set B in the first week and the 15 DVDs of set A in the second week.

In order to create sufficient interest in the auctions, we fixed the starting price for each DVD at DM 1 (approx. 50 EuroCent). Item descriptions were kept uniform for all DVDs and consisted of standard details, such as movie length in minutes, director, and main actors. Auctions of both sellers were identical in content and appearance, differing only with regard to implied seller ethnicity. To determine the number of interested bidders, we installed a counter on each auction page.

Immediately after each auction, we contacted the winning bidder by email and arranged the shipment of the movie. Each DVD was sent to its buyer on the same day the respective payment was received. However, we decided not to send any DVDs before the end of the second week to prevent buyer's ratings of the seller from appearing before the end of the last auction. We thus successfully kept the user profiles of Mehmet and Michael empty, which was necessary to maintain comparability of the two experimental conditions throughout the experiment.

We collected the following data when the auctions expired: bidders' user names and email addresses, time and amount of each bid, and total number of page views. All data were accessed from a separate page provided by the platform to avoid any disturbance of the counter results.

Results

No unusual or unforeseen event occurred in the course of our experiment. There were no indications that participants doubted the authenticity of the auctions or the sellers. All 60 auctions attracted bidders and could thus be included in the following analyses. A fixed α-level of 5% was chosen. Because identical pairs of DVDs were sold during the auction, *t*-tests for dependent samples were used for statistical analyses.

Overall participation rates in the auctions were high. In total, 374 different platform members placed at least one bid, and the 60 DVDs were sold to 58 different buyers; two participants bought two DVDs each. Auctions attracted 35.5 page views on average. The number of page views was dependent on DVD title and therefore varied considerably between auctions (SD = 12.4). Seller ethnicity had no influence on the number of page views per auction (Michael: 35.1 vs. Mehmet: 36.0), $t(29) = .38$, $p = .71$. Of course, this is hardly surprising, considering that participants reached the auction pages from the auction lists on which no seller information was included. An inspection of the names and email addresses of the buyers did not reveal any evidence that people who bought their DVDs from Mehmet were of different ethnicity to those who bought their DVDs from Michael.

The number of bidders correlated strongly with the number of page views per auction, $r = .54$, $p < .01$. The number of bidders also correlated significantly with the amount of the winning bid, $r = .27$, $p = .04$, supporting Bajari and Hortacsu's (2000) observation that a higher number of bidders results in a higher winning bid.

With regard to our main hypothesis, the 30 different DVD titles reached a mean selling price of DM 29.87 (SD = 6.9) when sold by michael.ottersbach, and a mean selling price of DM 29.27 (SD = 7.3) when sold by mehmet.orgum. This small difference was not statistically significant, $t(29) = 0.66$, $p = .25$. A post-hoc power analysis (Cohen, 1988) revealed that this non-significant result was not due to insufficient test power. The statistical power to detect small ($d = .2$, or DM 0.99), medium ($d = .5$, or DM 2.48), and large (d = .8, or DM 3.96) effects of implied seller ethnicity (in a one-tailed test according to the directed nature of the hypothesis) was .47, .99, and 1.00, respectively. A medium-sized or large effect of discrimination against Turks can thus be excluded with very high confidence. However, a small effect cannot be excluded with certainty.

The number of bidders attracted by the auctions of michael.ottersbach and mehmet.orgum was not significantly different either. On average, 7.60 bidders (SD = 2.58) participated in Michael's auctions, whereas 7.77 bidders (SD = 2.22) participated in Mehmet's auctions. This

minimal difference was opposite in direction to our hypothesis and not statistically reliable, $t(29) = -.31$, $p = .38$. The statistical power to detect a small ($d = .2$), medium ($d = .5$) or large ($d = .8$) effect of implied seller ethnicity on the number of bidders was .23, .61, and .92, respectively (in a one-tailed test). A medium-sized or strong discrimination in the form of lower participation rates in the auctions of a Turkish seller would thus have been detected with high probability. It can be concluded that if ethnic discrimination occurred, its effect size was probably small.

Surprisingly, the analysis of a dependent variable not included in our initial hypothesis yielded remarkable results. Observing the timing of the placement of winning bids revealed that auctions conducted under the German name received their winning bid significantly earlier than those run under the Turkish name (417 minutes versus 139 minutes before auctions expired), $t(29) = 1.72$, $p < .05$.

After completion of all auctions, michael.ottersbach received 23 positive ratings, whereas mehmet.orgum received 26 positive ratings. This difference is not statistically significant, $Chi^2(1) = 0.10$, $p = .75$. No neutral or negative ratings were entered in the user profiles of the two users. The 60 auctions resulted in a total revenue of DM 1774 (about 909 Euro), 22% less than the price paid for the unused original DVDs.

Discussion

The goal of the present paper was to introduce online auctions as a promising new way of conducting field research in electronic environments, adding another flower to the already flourishing bouquet of web experimentation methods (Reips, 2000). To demonstrate the feasibility of the proposed new method, we conducted an online auction experiment on ethnic discrimination. In a series of auctions of popular movie DVDs, mixed results were obtained regarding ethnic discrimination against a member of the Turkish minority. Neither obtained prices nor participation rates differed significantly between auctions of a German and a Turkish seller. Additional analyses confirmed that these nonsignificant findings were probably not due to a lack of statistical power. However, the German seller received the winning bids for his auctions significantly earlier than the Turkish seller.

The non-significant findings we obtained are difficult to interpret without additional research. One possible explanation is that bidders in the present DVD auctions were not in a situation of high financial risk. The prejudice that Turks are less trustworthy than Germans might influence obtained prices only in auctions of items that are more expensive than DVDs, or in auctions of items with a higher likelihood of being defective. This reasoning is supported by findings of Lucking-Reiley et al. (2000) showing that when relatively cheap collectable coins were being auctioned, only the number of negative ratings of a seller correlated with the prices he obtained for his products. The fact that retail prices of DVDs may be determined online might also have reduced potential effects of seller's ethnicity. In hindsight, items with unknown retail prices might therefore have been better suited to detect discriminatory behavior.

However, the failure to find evidence for ethnic discrimination in the present online auctions may just as well indicate that contrary to everyday life in Germany, no discrimination takes place on German online auction platforms – and this would be good news, after all. However, it must be noted that there are several remarkable differences between the study of Klink and Wagner (1999), in which considerable discrimination against Turks was observed, and the present experiment. Perhaps most importantly, in the study of Klink and Wagner (1999), Turks asked members of the German majority for a favor, whereas in the present experiment, they offered an item for sale. This procedural difference may be able to account for the different results.

Other alternative explanations for the lack of discrimination in the present study cannot be ruled out either. For example, despite his Turkish user name, the seller might not have been categorized as a Turk, and the Turkish stereotype might not have been activated, thus precluding discriminatory behavior that would otherwise have occurred. Alternatively, presenting item information in an orderly and detailed fashion and in correct language might have contradicted the Turkish stereotype and might have led participants to reverse or modify their initial categorization. Manipulating the content of the item descriptions in addition to the name of the bidder (e.g., by adding spelling errors) might have strengthened the intended manipulation. However, it is also conceivable that in the context of online negotiations, categories other than ethnicity (for example, "we online users") were the most salient ones. Moreover, self-interest goals of the buyers (get this DVD as cheap as possible) may have been stronger than a possible bias against Turkish sellers.

Obviously, the exact reasons for our non-significant findings cannot be determined without additional data. It is important to note, however, that we intentionally decided not to perform manipulation checks because we wanted to conduct our experiment completely within the regulations and boundaries of the used platform. In particular, we decided not to survey bidders during or after the auctions, despite the restrictions this imposed on the design of the experiment. It is our view that this limitation can hardly be overcome without provoking adverse reac-

tions from participants or platform authorities, although other researchers may think or find out otherwise. Supplementary laboratory studies conducted to simulate auctions might be a preferable way of increasing experimental control (Kim, Barua, & Whinston, 2002).

We conclude this article by summarizing the most important advantages and disadvantages of the proposed new method. On the positive side, non-reactive and unobtrusive online auctions can help to overcome several pervasive problems of psychological research. Some of these problems are most prevalent in online experiments (participant self-selection and drop-out), whereas others occur mostly in traditional laboratory research (demand characteristics and experimenter bias). However, there are also some disadvantages associated with the new method. On a pragmatic level, an online auction experiment involves the exchange of physical items and is therefore logistically much more demanding than most other forms of web experimentation. Moreover, as is true for many new experimental paradigms, the exact theoretical status of some of the major dependent variables (obtained prices, number of bidders, timing of bids) has yet to be determined. For example, we are not sure whether the unexpected finding of a different timing of the winning bids may be interpreted as indicating that platform members preferred bidding for an item of Michael over bidding for an item of Mehmet. Possibly, buyers turn to auctions of Turkish sellers only when the same item cannot be bought from a German seller at a favorable price. This would suggest that some kind of indirect discrimination might be going on. Of course, such an interpretation can only be tentative because in our pilot study, the same DVD was never auctioned simultaneously by both a Turkish and a German seller. Similarly, we cannot exclude that by automatically setting their top bids earlier, online participants using the proxy bidding system in fact displayed discriminatory behavior against the Turkish seller which, however, did not translate into different prices. At any rate, based on the present findings, researchers should take the timing of winning and other bids into account when analyzing the results of future online auction experiments.

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