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Displaying Red and Black on a First Date: A Field Study Using the "First Dates" Television Series

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Abstract

Previous research has shown that displaying the color red can increase attractiveness. As a result, women display red more often when expecting to meet more attractive men in a laboratory context. Here, we carried out a field study by analyzing 546 daters from the "First Dates" television series. Each participant was filmed in a pre-date interview and during a real first date, allowing direct comparison of the clothing worn by each person in these two contexts. Analysis of ratings of the amount of red displayed showed that both men and women wore more red clothing during their dates. This pattern was even stronger for black clothing, while the amount of blue clothing did not differ across the two contexts. Our results provide the first real-world demonstration that people display more red and black clothing when meeting a possible mate for the first time, perhaps seeking to increase their attractiveness and/or reveal their intentions to potential partners.

Keywords

red, black, color, clothing, attractiveness, dating

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In recent years, there has been increasing focus on the role that color plays in affect, cognition, and behavior. Color-in-context theory (Elliot & Maier, 2012; for a review, see Elliot & Maier, 2014) provides a framework for this research, suggesting that color–behavior associations are context-dependent. For example, red may activate approach motivations in the context of Valentine's Day lingerie or the red-light district but may warn perceivers to avoid in the case of sirens and stop signals. Within mating contexts, red is associated with sexual fertility (and hence desirability) in nonhuman primates (Caro, 2005; Nunn, 1999), and a growing body of research suggests that people may also show evidence of this red–attractiveness association (also referred to as the "red–sex" link; Elliot & Niesta, 2008). In this study, we consider the use of red clothing in a real-world dating context as an opportunity to increase attractiveness.

Researchers typically find that images of women either wearing red or placed on a red background are perceived as more attractive, more sexually receptive, and as having higher sexual intent (Elliot & Niesta, 2008; Elliot, Tracy, Pazda, & Beall, 2013; Guéguen, 2012; Guéguen & Jacob, 2013; Niesta Kayser, Elliot, & Feltman, 2010; Pazda, Elliot, & Greitemeyer, 2012, 2014; Pazda, Prokop, & Elliot, 2014; Roberts, Owen, & Havlicek, 2010; Young, 2015), although this effect is not always present (Lehmann & Calin-Jageman, 2017; Peperkoorn, Roberts, & Pollet, 2016). There is also more limited evidence demonstrating this relationship for images of men (Elliot et al., 2010; Roberts et al., 2010), again accompanied by failures to support this result (Hesslinger, Goldbach, & Carbon, 2015; Lehmann & Calin-Jageman, 2017).

Evidence also suggests that, at least in women, red clothing is chosen to communicate sexual intent and interest to others (Elliot, Greitemeyer, & Pazda, 2013; Elliot & Pazda, 2012). This may explain why women choose to wear red or pink clothing more often at peak fertility (Beall & Tracy, 2013; Eisenbruch, Simmons, & Roney, 2015; Tracy & Beall, 2014), the point in their cycles at which they should be

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especially motivated to increase their attractiveness in order to obtain high-quality mates. In line with this idea, researchers have shown that wearers indeed perceive themselves to be more attractive when in red (Berthold, Reese, & Martin, 2017).

In the current study, we consider the choice to wear red in a real-world dating context. If both men and women are seen by others as more attractive (Elliot & Niesta, 2008; Elliot et al., 2010) and they rate *themselves* as more attractive (Berthold et al., 2017) when in red clothing, then it follows that red clothing should be more prevalent in situations in which wearers are highly motivated to increase their attractiveness. In line with this idea, studies focusing on imagined situations have shown that women were more likely to choose to wear red (vs. another color) when expecting to interact with attractive men (Elliot, Greitemeyer, et al., 2013) or during scenarios in which the probability of meeting a potential mate was high (vs. low; Prokop & Hromada, 2013).

To our knowledge, only one study has investigated whether people really do wear red more often (rather than simply selecting this color in their experimental responses) in a naturalistic situation where increasing one's attractiveness is desirable. Niesta Kayser, Agthe, and Maner (2016) manipulated whether female participants were expecting to meet an attractive versus unattractive male research assistant upon arrival at the laboratory by e-mailing them one of two photographs in advance. The researchers found that the women expecting to interact with the attractive man were significantly more likely to display red (in their clothes, accessories, and/or makeup) than those who expected to interact with the unattractive man. In addition, both the quantity and the perceived conspicuousness of the red displays were greater in the "attractive man" group. Finally, in comparison with a baseline sample of women observed on campus, female participants expecting to interact with the attractive (unattractive) man displayed red significantly more (less) often. Importantly, participants were arriving for an experiment, and so these results do not inform regarding a dating context. In addition, only red clothing displays were considered, and so it may be that participants displayed more color in general when expecting to meet an attractive experimenter.

Previous research suggests that black clothes are also seen as attractive. Indeed, red and black clothing were perceived to be equally attractive on both men and women (Roberts et al., 2010). However, evidence suggests that these colors may increase attractiveness through different pathways. While red increases the perceived sexual receptivity of its wearers, it appears that black increases their perceived fashionableness (Pazda, Elliot, et al., 2014). Importantly, the red–sex link described above makes no predictions with regard to black clothing, and so as an ancillary consideration, we also explore the use of this color in the present work. As previously mentioned, this allows us to address whether more color in general is displayed on a date or specifically red is worn by daters.

Here, we investigated a real-world situation in which people were motivated to look their most attractive—a first date with a stranger. In this context, daters were free to select clothing from their own wardrobes, and we expected that both men and women would seek to increase their attractiveness because people volunteering to go on a blind date want the other person to find them attractive. Of course, upon meeting their dates and throughout their dinner together, people's motivations may change, but the most logical approach is to "dress to impress" in all cases to allow for those situations in which the other person is judged to be a desirable mate. In order to address the specificity of the red–sex link, we considered the use of color displays for both red and black clothing, while also including blue as a control color, for which we have no a priori reason to predict a change across contexts.

Method

Materials

Data were collected from the British reality television show "First Dates" (2013 to present). The show is filmed at a restaurant in Central London and all participants are on "blind dates" (i.e., first dates with people they have not previously met). Participants are single and hoping to begin some form of dating (as the show does not discriminate based on whether daters are seeking short- or long-term relationships, etc.). Couples are aware that they are being recorded by video cameras that are mounted around the restaurant. We also confirmed with Multitude Media (the public relations company behind the series) that daters were free to wear their own choice of clothing for all appearances on the show (W. Wood, personal communication, September 6, 2017).

The details of the television show changed after the second series. For the first two series only, each participant was shown a photograph of their date prior to filming the show. Previous research suggests that participants may choose whether to display red or not based on their impressions of their date's appearance (Niesta Kayser, Agthe, & Maner, 2016). Given that we could not know whether participants found their upcoming dating partner to be attractive or not, and hence whether they would dress with the goal of attracting that person, we chose to exclude participants in these first two series. In Series 3 onward, no photographs were shown beforehand and participants had no prior knowledge of their upcoming dating partner.

All regular episodes were analyzed from Series 3 to 8, with each one depicting several simultaneous dates. "Special" episodes (themed around Christmas or Valentine's Day, or featuring celebrities) were excluded since these may result in additional influences upon people's clothing choices. This provided an initial sample of 617 participants. In order to avoid potential issues with repeated appearances (occasionally, someone whose date was romantically unsuccessful would reappear in a subsequent show, perhaps feeling the need to wear new clothing, etc.), any appearance after the participant's first was excluded (28 observations).

Participants also appeared (alone) in a pre-date interview, which took place prior to the filming of their actual date. Unfortunately, not all pre-date interviews were televised,

which resulted in the exclusion of 33 additional participants. We also noticed that 10 participants wore identical clothing for both their pre-date interview and actual date. We learned through correspondence with Multitude Media that these participants were reinterviewed on the day of their dates, which meant that they had no opportunity to change their clothes between contexts (W. Wood, personal communication, February 5, 2018). We therefore excluded these participants also. This resulted in a final sample of 546 participants (279 women; age: $M = 33.76$ years, $SD = 13.96$ years; age missing for six participants), with sex, age, and sexuality information (i.e., whether they were on a same- or opposite-sex date) also recorded.

Analysis

Preliminary analysis was carried out using author-coded categorical judgments of the presence/absence of red (see the Online Supplementary Material). Here, we present our main analysis using an unbiased and quantitative approach, which addresses several of the limitations identified in our initial analysis.

In the interest of full disclosure, no further analysis strategies were used but not reported, no other conditions or variables were coded, and no other data sets were analyzed for a similar research question.

Raters

We recruited four independent raters (three women; age range: 18–31) who were blind to the study's hypothesis. All raters provided written informed consent and were given both verbal and written debriefings at the end of the study. The University of Lincoln's School of Psychology ethics committee approved this study (PSY171818), which was carried out in accordance with the provisions of the World Medical Association Declaration of Helsinki.

Procedure

Each rater spent 1.5 hr coding images (both the pre-date interview and the date itself for each participant), requiring four raters in total to complete the 546-participant data set. For each participant and context, raters coded the amount of red displayed by the person: 0 = *none*, 1 = *a small amount*, 2 = *a medium amount*, 3 = *a large amount/the majority*, and 4 = *all their clothing*. Only clothing and accessories were included (with definitions given). We accepted a range of reddish hues (pink, red, and scarlet), while excluding atypical shades of red such as orange, maroon, or purple (Niesta Kayser et al., 2016). Raters also coded the amount of blue clothing and black clothing displayed using the above scale. Blue is another primary color commonly featured on clothing, while black is seen as an attractive color and therefore represents a useful comparison with red (Roberts et al., 2010). For blue, we accepted a range of bluish hues (blue, light blue, navy, and dark blue) but excluded atypical shades such as teal, cyan, and purple. For black, we accepted only black, while excluding shades of gray.

Pre-date interview images depicted participants front-on (talking directly into the camera) and always featured the same interview room background, while images showing the date itself were taken within the restaurant using cameras placed at a variety of angles. As such, we were unable to remove cues to the images' context when collecting coders' ratings. Importantly, coders were unaware of the study's hypothesis regarding clothing colors in these two contexts.

Results

Although raters coded different subsets of participant images simply due to the large number collected, we also asked all four raters to code the first 10 participants. This allowed us to quantify the agreement between raters. For these 60 ratings (10 participants × 2 contexts × 3 colors), we found a Cronbach's α of .96 and an average correlation between raters of .87, which we considered to be acceptable levels of agreement.

We analyzed the full set of ratings using a 2 (Dating Context: interview, date) × 3 (Clothing Color: red, blue, black) × 2 (Sex: male, female) mixed analysis of variance (ANOVA), where Sex varied between participants and the remaining factors varied within participants. We found significant main effects of Dating Context, $F(1, 544) = 59.62$, $p < .001$, $\eta_p^2 = .099$, and Clothing Color, $F(2, 1088) = 237.89$, $p < .001$, $\eta_p^2 = .304$, but not of Sex, $F(1, 544) = 0.10$, $p = .756$, $\eta_p^2 < .001$. However, these were qualified by several significant two-way interactions.

We found a significant Sex × Dating Context interaction, $F(1, 544) = 7.76$, $p = .006$, $\eta_p^2 = .014$. We therefore considered the simple main effects of Dating Context at each level of Sex. These simple main effects were significant for both women, $F(1, 544) = 56.43$, $p < .001$, $\eta_p^2 = .094$, and men, $F(1, 544) = 11.92$, $p = .001$, $\eta_p^2 = .021$. As such, both women and men displayed more red/blue/black clothing (this effect does not differentiate between the three colors) on a date in comparison with a pre-date interview, and the size of this effect was larger for women.

We also found a significant Sex × Clothing Color interaction, $F(2, 1088) = 33.10$, $p < .001$, $\eta_p^2 = .057$. Again, we considered the simple main effects of Clothing Color at each level of Sex. These simple main effects were significant for both women, $F(2, 1088) = 165.02$, $p < .001$, $\eta_p^2 = .233$, and men, $F(2, 1088) = 107.24$, $p < .001$, $\eta_p^2 = .165$. Pairwise comparisons (Dunn–Šidák corrected) showed that, for both women and men, more black clothing was displayed than both blue and red clothing (all ps < .006). For men, more blue clothing was displayed than red clothing ($p < .001$) but this difference was not significant for women ($p = .092$).

Finally, and of most relevance for the current study, we found a significant Dating Context × Clothing Color interaction, $F(2, 1088) = 12.00$, $p < .001$, $\eta_p^2 = .022$ (see Figure 1). We therefore considered the simple main effects of Dating Context at each level of Clothing Color. Cohen's d was

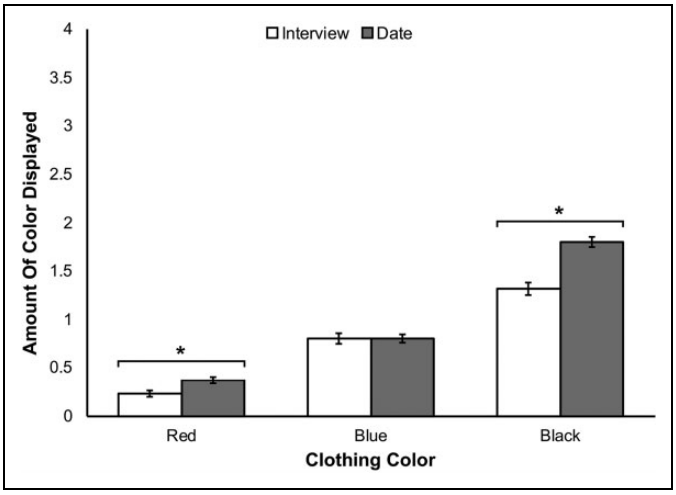

Figure 1. The amount of each clothing color displayed during interviews and dates. Error bars represent the standard error. *$p \leq .001$.

calculated using the pooled estimate of the standard deviation as the standardizer, more easily allowing for comparisons with other studies irrespective of their designs. For red, the simple main effect was significant, $F(1, 545) = 11.40$, $p = .001$, $\eta_p^2 = .020$; $M_{diff} = .15$, 95% confidence interval (CI) [.06, .23]; $d = .19$, 95% CI [.07, .31]. We also found a significant simple main effect for black clothing, $F(1, 545) = 38.55$, $p < .001$, $\eta_p^2 = .066$; $M_{diff} = .49$, 95% CI [.33, .64]; $d = .35$, 95% CI [.23, .47]. However, the simple main effect was not significant for blue clothing, $F(1, 545) = 0.00$, $p = 1.00$, $\eta_p^2 < .001$; $M_{diff} = .00$, 95% CI [−.13, .13]; $d = .00$, 95% CI [−.12, .12]. Therefore, more red and black clothing was displayed on a date in comparison with a pre-date interview. These results were not qualified by a Sex × Dating Context × Clothing Color interaction, $F(2, 1088) = 1.40$, $p = .248$, $\eta_p^2 = .003$.

We also included Type of Date (heterosexual, homosexual) as an additional between-participants factor in the above ANOVA but found no significant main effect or interactions involving this factor (all ps > .323).

Discussion

In a large sample of participants, we investigated whether specific colors of clothing were displayed more on dates in comparison with pre-date interviews, allowing us to contrast these two situations for the same sample of participants. Our results showed that both men and women wore more red and black during their dates in comparison with pre-date interviews, while no difference was found across these two contexts for blue clothing.

Previous research has shown that women chose to display red more frequently in imagined scenarios when expecting to interact with attractive men (Elliot, Greitemeyer, et al., 2013) or where the probability of meeting a potential mate was high (Prokop & Hromada, 2013). Investigating real-world displays of red, Niesta Kayser and colleagues (2016) found that female study participants chose to wear red more often when they expected to meet an attractive (vs. unattractive) male researcher. Our results in the current work support and extend these findings, showing that people wear more red clothing during real-world first dates in comparison with a non-date context. Importantly, the nature of our data set allowed for a within-participants comparison of behaviors, contrasting displays of the same person across two contexts. Although comparing two groups, each observed in a different context, may show differences in red displays (Niesta Kayser et al., 2016), such designs inherently suffer from greater noise (or possible confounds) due to other group differences. Here, we find changes in red displays when participants served as their own matched controls.

Our results showed that the amount of red displayed by men was higher in the dating context. Although previous research found that men saw themselves as more attractive when wearing red (Berthold et al., 2017), and others also shared this perception of them (Elliot et al., 2010), it may be that displaying red can have additional, and sometimes undesirable, effects. For example, men wearing red were rated as more aggressive, dominant, and angry-looking (Wiedemann, Burt, Hill, & Barton, 2015; cf. Kramer, 2016). Perhaps red displays in men, in comparison with women, show weaker associations with attractiveness and/or stronger associations with aggression. However, further research is needed on this topic.

The results of our analysis found that the amount of both red and black clothing displayed was higher during participants' first dates. Previous research has shown that red and black clothing are perceived to be equally attractive on men and women (Roberts et al., 2010). As such, it is no surprise that more black was also worn in a context in which participants hoped to look their most attractive. This increase in black appears, upon initial consideration, to call into question the specificity of the "red–sex" link (Elliot & Niesta, 2008), which predicts that only red displays should increase in the current context. However, recent evidence has shown that these colors may increase attractiveness through different pathways—red increases the perceived sexual receptivity of its wearers while black increases perceived fashionableness (Pazda, Elliot, et al., 2014). Although distinct mechanisms could explain why we find an increase in the display of both colors in the current work, this account has little to say regarding why black in particular is considered a fashionable color in society.

Here, we found no change in the amount of blue displayed across the two contexts, perhaps because blue may not be displayed to increase attractiveness. Indeed, previous studies found that blue was seen as less attractive than red on men (Elliot et al., 2010) and women (Elliot & Niesta, 2008) and that wearers rated themselves as less attractive when in blue than red (Berthold et al., 2017). That no change was found for blue clothing is an important result, demonstrating that daters did not simply increase the amount of color worn in general. However, as noted above, we find an increase for both red and black in the context of a date. Therefore, while we were unable to consider an unlimited range of additional colors in the present study, it is possible that other colors may also be

displayed more on a date and with varying effects on perceivers' judgments.

Interestingly, significantly more black was worn by participants than red in both contexts (see Figure 1) in line with previous findings (Elliot & Pazda, 2012). We hypothesize that both black and red may increase attractiveness but only the latter is associated with sexual interest/intent (Elliot & Pazda, 2012; Pazda, Elliot, et al., 2014). Therefore, red may be worn more sparingly, given its particular signaling function. Indeed, we found a larger *increase* in the amount of black displayed across the two contexts (0.49) in comparison with the increase in red (0.15). While red may increase perceived attractiveness through evolutionary mechanisms, daters appear to rely more heavily on black in order to attract a potential mate. This suggests that cultural and/or societal influences (e.g., black is seen as fashionable and hence attractive) may play a much larger role in the way people dress than the use of evolutionary signals that have been discussed here. Alternatively, as noted above, daters were unaware of the attractiveness of their dating partners beforehand, and so may have employed a strategy of increasing their own attractiveness (wearing more black) while being more conservative in their signals of interest (wearing more red). From an evolutionary perspective, signaling interest to unattractive (potentially lower quality) partners should lower reproductive fitness (Niesta Kayser & Schwarz, 2017). Further work might address how these different motivations manifest in real-world dating scenarios.

As noted, the average increase in the amount of red displayed in the dating versus interview context was 0.15 on a 0–4 rating scale. Our measure of effect size (Cohen's $d = .19$) confirmed that this should be considered a small effect. While our large sample size and within-subjects design resulted in a statistically significant difference, we question whether this increase is of practical importance. Does such a small increase provide support for the hypothesis that people use red displays in the real world? We acknowledge that our baseline for comparison was given by the clothing worn for a televised interview, and as such, it could be that participants were already using clothing displays to increase their attractiveness. However, even if we used 0 (no red clothing day-to-day) as our baseline, the resulting increase of 0.38 on our scale would still provide only weak evidence that red was being used by our daters.

Interestingly, our effect size appears to be considerably smaller than those reported in previous work. For example, when women expected to interact with an attractive versus unattractive man, Cohen's d was .57 for the quantity of red displayed (Niesta Kayser et al., 2016) and .67 when choosing a red versus green shirt to wear (Elliot, Greitemeyer, et al., 2013). In addition, when presented with scenarios in which there was a high versus low probability of meeting a potential mate, Cohen's d was .71 for women's choices of red versus non-red clothing (Prokop & Hromada, 2013). These medium to large effects resulted from laboratory-based studies, and we argue that our use of a within-subjects design with a large sample in a naturalistic setting represents a more precise estimate of the true effect. Future research might benefit from approaching red effects with the assumption that these are likely to be subtle, at least in real-world contexts, and so larger samples sizes and/or sensitive designs should be employed.

More common in women than men, the use of cosmetics provides an additional outlet for displaying the color red. Previous work by Niesta Kayser and colleagues (2016) included women's displays of red through makeup in their coding scheme. However, we chose not to code makeup displays in the current study for three reasons. First, we had no control over viewing conditions when observing our participants since we were limited to interactions that had already been filmed, which meant that it was often difficult to accurately determine whether cosmetics had been applied to faces and nails and which colors had been used. Second, shades of pink and red are the most common colors of makeup used by women, especially when applying lipstick, and so coding the presence of red makeup often simplifies to the presence or absence of makeup itself. Given the prevalence of cosmetics use in modern society, we felt that virtually all women would be wearing some form of cosmetics for their television appearances. Third, makeup artists are often employed on set to apply their own products during the filming of television shows (to counter strong lighting, etc.), and since we had no information regarding whether this process took place, we could not be sure if the makeup displayed was chosen by the participants themselves or not. Future studies might consider red displays through cosmetics in a more controlled dating context, where detailed information regarding product use can be collected.

In the current work, we found no effect of the type of date (heterosexual vs. homosexual) that participants were on, suggesting that the increase in red and black clothing in dating contexts applied to all daters. We acknowledge that only 14% of participants in our sample were on same-sex dates (see the Online Supplementary Material), and so these data are only preliminary with respect to homosexual clothing displays, requiring further replication. Interestingly, such evidence of red displays in homosexual dating provides support for a cultural account, whereby red is considered attractive in modern day interactions irrespective of fertility and other biological factors.

In the current study, we were unable to investigate the potential influence of sociosexual orientation, that is, whether daters were more interested in short-term relationships and/or casual sex versus more long-term and/or committed relationships. Research has shown that women displaying red were evaluated as having higher sexual intent (Guéguen, 2012), along with the complimentary finding that women interested in casual sex were more likely to display red (Elliot & Pazda, 2012). If future studies were able to collect information regarding the motivations of the dating participants, we might predict that red displays would be used more frequently by women who were seeking (or at least more open to) casual sex.

Furthermore, our findings are unable to speak to the recent work regarding peak fertility and displays of red. Evidence suggests that women choose to wear red or pink clothing more

often at peak fertility (Beall & Tracy, 2013; Eisenbruch et al., 2015; Tracy & Beall, 2014). The participants in our study provided no information about their menstrual cycles and so we could not investigate whether fertility played a role in red displays here. However, fertility is also a product of age in women. Researchers found that the photograph of an older woman (perceived age of 48) was not rated as more attractive when displayed on a red background (Schwarz & Singer, 2013), suggesting that red displays may only enhance the attractiveness of young (premenopausal) women. In the current data set, for women over 50, there is no difference in ratings for the amount of red displayed in the two contexts, $t(29) = 0.17$, $p = .865$. Although only exploratory and with a limited sample size, this result may provide tentative support for the idea that displaying red to increase attractiveness is only effective for, and hence utilized by, younger women. Further, the current female sample (age $M = 32.49$ years, $SD = 13.80$ years) was somewhat older than previous laboratory-based samples (typically recruiting students in their early twenties), which might contribute to the smaller effect size for red found here. However, as noted, the majority of our sample were premenopausal, and so the red-sex link should still be apparent.

In conclusion, the present research demonstrates that both women and men display more red clothing during a first date in comparison with a non-date context. Our use of a field study to investigate real-world dating behaviors, away from the laboratory, provides the first evidence that people choose to display red when meeting a potential mate for the first time. Importantly, we found this same pattern of behavior for black clothing, and indeed, our results suggested that black may represent a more utilized signal than red in dating contexts. The current work included a large sample with a repeated-measures design, representing a strong demonstration of the use of red and black displays in dating contexts. This research reveals interesting mechanisms through which people may seek to increase their attractiveness and/or reveal their intentions to potential partners.

Declaration of Conflicting Interests

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Supplemental Material

Supplementary material for this article is available online.

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