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The Influence of Stimuli Proximity on Hedonic Context Effects

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Abstract

The context in which stimuli are presented can lead to hedonic judgments moving in two opposing directions. The movement of judgments toward the context is known as assimilation, and the movement of judgments away from the context is called contrast. Some factors that tend to lead to differences in these outcomes include whether the stimuli belong to the same category or not and if similarities or differences are made salient. The Gestalt principle of proximity may have the same effect as other grouping manipulations found in studies of hedonic context effects and cause people to perceive the context and target stimuli as being similar or belonging together. In this study, an average face was presented between two more attractive faces that either appeared directly next to the target (Close group) or with a large space between the context and target (Far group). Although not statistically significant, the target face was rated as less attractive in both the Close and Far groups than when presented alone. Though the findings were not statistically significant, this indicates a trend toward contrast.

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The influence of stimuli proximity on hedonic context effects.

by

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Introduction

Facial attractiveness is influenced by a number of factors. Some researchers have suggested that symmetrical faces are more attractive than asymmetrical faces (Rhodes, Proffitt, Grady, & Sumich, 1998). Others have proposed that average is attractive and that when a number of faces are averaged together they are viewed as being more attractive than the individual faces that comprise the average face (Langlois & Roggman, 1990). Still other studies find that attractiveness may be influenced by the context in which a face is seen (Cogan, Parker, & Zellner, 2013; Geiselman, Haight, & Kimata, 1984; Kenrick & Gutierres, 1980; Walther, Van Der Heide, Kim, Westerman, & Tong, 2008).

The context in which any kind of stimuli are presented and how that context affects the judgments of those stimuli has been demonstrated in a myriad of studies (e.g., Damisch, Mussweiler, & Plessner 2006; Parker, Bascom, Rabinovitz, & Zellner, 2008; Zellner, Allen, Henley, & Parker, 2006). The evidence is mixed, however, as to whether the judgments assimilate to their context stimuli or if contrast effects are obtained. Assimilation is the movement of judgments of target stimuli toward the ratings of the context stimuli. For example, when primed with animals of moderately high levels of ferocity, participants judged fictitious animals as being more ferocious, while primed exemplars of moderately low levels of ferocity led to lower judgments of ferocity in the fictitious animals (Herr, Sherman, & Fazio, 1983). Assimilation effects have also been found with scores of gymnastic performances (Damisch et al., 2006).

Interestingly, there is also much evidence that finds the opposite effect, one of contrast, in which there is movement of judgments of target stimuli away from those of the context stimuli. For example, viewing hedonically negative paintings first, made

subsequent paintings seem more hedonically positive (Dolese, Zellner, Vasserman, & Parker, 2005). Like with assimilation effects, contrast effects have also been shown in judgments of a wide range of stimuli including weights (Sarris, 1967, 1968), and hedonic ratings of buildings (Tousignant & Bodner, 2014), fruit juices (Zellner et al., 2006), and music (Parker et al., 2008).

Hedonic context effects have also been studied specifically in the realm of facial attractiveness, also with competing results of assimilation (Geiselman et al., 1984; Walther et al., 2008) and contrast (Cogan et al., 2013; Kenrick & Gutierres, 1980). For example, Geiselman et al. (1984) presented target faces of average attractiveness in the middle of two context faces of low, average or high attractiveness. The average target faces were rated as more attractive when flanked by attractive faces and less attractive when flanked by unattractive faces compared to when they were surrounded by average faces. Since the judgments of the target stimuli were more similar to judgments of the context stimuli compared to when the targets were presented alone, this demonstrates an assimilation effect.

Kenrick and Gutierres (1980), however, found a contrast effect in a study in which college males rated an average female face as less attractive after viewing very attractive females on a popular TV show, *Charlie's Angels,* compared to those watching another program or no program. Cogan et al. (2013) similarly found that showing moderately unattractive faces after showing moderately attractive faces made the unattractive faces more unattractive. The effect was the same when the order was reversed, in which moderately attractive faces were seen as more attractive when presented after moderately unattractive faces. This contrast effect also held true for in-

person situations in which a target was rated more positively in the presence of an unattractive same-sex other (Kernis & Wheeler, 1981) as well as for both male and female non-westerners (Kowner & Ogawa, 1993).

Since both contrast and assimilation effects have been established using diverse context and target stimuli, it is of interest to identify what factors lead to these two opposing effects. Mussweiler (2007) suggests that in order for context effects to be seen, regardless of the direction, the stimuli need to invite some comparison in judgment. Comparisons, he says, are often made spontaneously and without prompting. In assuming that comparison forces are necessary for context effects to occur, it is necessary to explore under what conditions people will engage in various modes of comparison.

According to social cognition research, one does not draw on all available information to make a judgment, but rather what is most accessible (Mussweiler, 2003). This can help explain why one target stimulus can be judged differently when judged in the context of other stimuli or even how the same target and context stimuli can produce opposing context effects. In the selective accessibility model, judges first decide whether the target is similar to the context. If it is similar, they engage in similarity testing, which selectively draws on information that supports the hypothesis that the target is similar to the standard, leading to an assimilation effect. If the target and standard are judged as dissimilar, then one may engage in dissimilarity testing, which tends to yield a contrast effect because it makes dissimilarities between the target and standard more accessible in one's mind (Mussweiler, 2003).

Stapel, Koomen and Velthuijsen (1998) also argue that the type of information that is accessed can lead to the diverging results of assimilation or contrast. For example,

if the information is distinct and comparison relevant, such as the names of casual or elegant restaurants, participants use these exemplars as standards to compare a new target restaurant, which leads to contrast effects. When the accessible information is abstract and less distinct though, such as stating the product attributes elegant or casual, participants are more likely to use this as an interpretation framework instead of a standard of comparison, and assimilation is likely to result. Within this framework, differing cognitive processes are activated that lead to the biased selection of information from the target and context stimuli, producing the opposing effects of assimilation or contrast.

The effect of category membership on context has also been explored in numerous studies that have collectively found inconsistent outcomes. Cogan et al. (2013) found contrast effects of facial attractiveness were dependent on participants being told that faces belonged to the same category. They found a contrast effect when the association between the target and context faces was manipulated by telling people that they all belonged to the same group, the Montana State University choir. When participants were not told this, there was no context effect with very hedonically different faces. Another study also showed contrast effects were reduced when participants were instructed to think that two sets of beverages in one experiment and two sets of birds in another experiment belonged to different categories (Zellner, Rohm, Bassetti, & Parker, 2003). Thus, when viewing stimuli as coming from distinct categories, people may be less likely to compare them to one another, leading to no context effect. If they are induced to think that they are from the same category however, it is more likely that they will be compared against each other, thus producing contrast (Cogan et al., 2013). This is

consistent with Mussweiler's view that one first assesses the relationship between target and context stimuli, and only if they invite some comparison, can the judgment of the context stimuli affect the judgment of the target stimuli.

Damisch et al. (2006) also suggest that category membership can affect judgments by leading to opposing outcomes of assimilation or contrast, but contradictory to Cogan et al. (2013), they found that when stimuli shared category membership, this led to assimilation rather than contrast. Damisch et al. (2006) showed that when the nationalities of Olympic gymnasts were made salient, sequential performance judgments of gymnastics routines were influenced in an assimilative way when the athletes were thought to be the same nationality. However, when the athletes were thought to be of different nationalities, performance judgments were influenced by previously judged routines in a contrastive way. Thus, opposing effects were demonstrated when people grouped the gymnasts together (assimilation) or not (contrast). Relatedly, in a study on facial attractiveness, Kernis and Wheeler (1981) found that a target was rated more positively when merely in the presence of, but not associated with, an unattractive other (contrast). However, when there was an association of friendship, the target was rated more positively when seen with an attractive other (assimilation). Like with the contrast effects found by Cogan et al. (2013), these results can also be explained by Mussweiler's (2003) idea of similarity versus dissimilarity testing in that the different nationalities or non-associated peers led to dissimilarity testing and thus a contrast effect, while athletes of the same nationality or peers associated by friendship led to similarity testing and subsequently an assimilation effect.

In addition to category membership, another major difference in many context effect studies that has also led to the divergent effects of assimilation and contrast is the methodology used to present stimuli, specifically whether the target and context stimuli are presented sequentially or simultaneously. Traditionally, most studies that use a sequential format produce contrast effects, (Cogan et al., 2013; Damisch et al., 2006; Kenrick & Gutierres, 1980; Tousignant & Bodner, 2014; Zellner et al., 2003; Zellner et al., 2006) whereas studies that present objects simultaneously often yield assimilation effects (Geiselman et al., 1984; Kernis and Wheeler, 1981; Walther et al., 2008). This particular aspect has been tested empirically by Geiselman et al. (1984), who found assimilation effects when face stimuli were presented side by side in four different experiments, but found contrast effects with the same face stimuli when they were presented successively. One explanation is that people may be less able to separate the judgments of stimuli within the same set in a simultaneous presentation which can lead to an averaging of stimuli and thus an assimilation effect (Geiselman et al. 1984). However, others have found that contrast can still occur with simultaneous presentation (Calderon, Zellner, Cobuzzi, & Parker, 2013).

Gestalt Principles of Grouping and Context Effects

Mussweiler (2003) argues that in deciding if the target and context stimuli are similar or dissimilar, judges first evaluate whether the target and context stimuli go together in some way. That is, they decide whether or not they can even be considered together, and only in deciding that they can, may a judgment involving both the target and context stimuli be made. This is also reflected in what Fechner argued, according to Beebe-Center (1932/1965), about hedonic contrast effects. He said that in order to find

hedonic contrast "the two factors had to bear a certain resemblance to each other (p. 222-223). There are various methods and manipulations, however, which can lead people to group things together or perceive some level of resemblance between stimuli or not. One cognitive grouping strategy involves people being told that stimuli belong to the same category (Cogan et al., 2013, Study 3; Zellner et al., 2003) or share an association, such as that of friendship (Geiselman et al., 1984; Kernis & Wheeler, 1981). People may also perceive stimuli as belonging together (or not) if they share a certain degree of physical similarity such as levels of attractiveness (Cogan et al., 2013, Study 2), nationality (Damisch et al., 2006), or heaviness (Sarris, 1967, 1968). Consequently, when stimuli are perceived as too different from one another, context effects may be lost. For example, Sarris (1967, 1968) found a contrast effect such that target weights were judged as heavier after lifting a lighter anchor and lighter after lifting a heavier anchor compared to when the targets were lifted without the anchors. However, anchor effectiveness was lost when extreme anchors were used. Sarris (1967, 1968) argued this was because people may have perceived the target weights as belonging to a different class or category when extreme anchors were used and thus were not similar enough to the target weights.

Grouping, or deciding what belongs with what, and the mechanism by which this influences perception is a core idea of Gestalt psychology. The Gestalt rules of perceptual grouping, such as proximity, similarity, and closure, have been well known in psychology for decades, and their application is widespread and enduring (Koffka, 1935; Wertheimer, 1938). Commonly, all of the Gestalt laws lead people to see stimuli as similar or belonging with each other in some way, which subsequently influences one's perception

of the stimuli (Chang, Nesbitt, & Wilkins, 2007; Gallace & Spence, 2011; Quinlan & Wilton, 1998).

Proximity in particular may have the same effect as other grouping manipulations found in studies of hedonic context effects and cause people to perceive the context and target stimuli as belonging together (Koffka, 1935; Quinlan & Wilton, 1998; Wertheimer, 1938). In the law of proximity, which was the first grouping principle discussed by Wertheimer (1938), objects that are physically close together in the visual field tend to be perceived as belonging to the same group. For example, when dots were equally spaced they were not grouped together, while dots that were closer to one another were grouped together (Coren & Girgus, 1980; Wagemans et al., 2012). The law of proximity has also been extended to studies on other sensory modalities including audition (Bregman, 1994) and haptic perception (Chang et al., 2007). Furthermore, it has been proposed that the law of proximity is the most fundamental and thus may be stronger than other grouping rules (Kubovy, Holcombe, & Wagemans, 1998; Quinlan & Wilton, 1998).

If stimuli are grouped together and perceived as a complete whole, as outlined by the Gestalt principles, this may lead to assimilation (King, 1988). For example, Coren and Girgus (1980) found that the two lines in the Muller-Lyer illusion are perceived as being more similar when they are part of the same rectangular figure and two connected halves of a circle look like a more similar shade of gray compared to when they are disconnected. According to King (1988), if one perceived whole leads to assimilation then two perceived wholes were more likely to result in contrast. Unless, however, they are sufficiently different, such as presenting a house together with a slanted line, in which case they might not be compared and no contrast would occur (King, 1988). This is in

line with Mussweiler's (2003) basic premise that stimuli must be perceived as being similar enough in order for them to be compared at all. It is reasonable to conclude, then, that if stimuli are too far apart in terms of physical distance, they may not be perceived as belonging to the same group and therefore may not be compared, resulting in neither assimilation or contrast.

The well-founded Gestalt principle of proximity suggests that people perceive objects as being part of the same group when they are physically close to one another. What is less clear is what type of context effect will result when stimuli are grouped together. While some studies find contrast when stimuli are categorized together or seen as similar (Calderon et al., 2013; Cogan et al., 2013; Parducci, 1995), others find an assimilation effect (Damisch et al., 2006; Geiselman et al., 1984; Mussweiler, 2003). Furthermore, if stimuli are too different and not categorized together, this could erode any context effect (King, 1988; Zellner et al., 2003).

Current Experiment

Though the notion of similarity is well established both in Gestalt psychology and the study of context effects, the law of proximity has not yet been applied to studies of hedonic context effects. It is clear that the proximity of stimuli to one another affects how one perceives such stimuli (King, 1988; Koffka, 1935; Quinlan & Wilton, 1998; Wertheimer, 1938). It has also been demonstrated that whether the context and target are grouped together can determine if context effects result at all (Cogan et al. 2013; King, 1988; Mussweiler, 2007). Taken together, these studies indicate that there are a multitude of factors that contribute to the effects of context stimuli on target stimuli. Specifically, how one groups and categorizes stimuli can have significant consequences for judgments

of those stimuli. Thus, this experiment attempts to determine if the physical distance between the context and target stimuli lead to differences in judgments of how stimuli are grouped and subsequently compared to each other. It is predicted that if stimuli are presented in close proximity to one another, this will lead to a context effect (either assimilation or contrast). Mussweiler (2003) would predict an assimilation effect such that if faces are seen together in close physical proximity, this may induce a similarity mindset. In other words, people may be more likely to assume there is a reason they appear together, and engage in similarity testing, rather than thinking about how faces that appear together, and thus may be grouped together, are different. However, if stimuli are physically farther apart, this could lead to them being judged as separate and thus compared to each other, resulting in contrast. It is also possible that if the stimuli are seen as separate, and thus different from one another, they will not be compared, which would negate any context effects.

Method

Participants. 52 (37 female and 15 male; age range 18-28; *M* (SD) age = 20 (2.33) years) participants were recruited from the Montclair State University Psychology department subject pool as well as through an in-person plea made to students on campus. Only 48 (33 females and 15 males) were used in the study. Four participants were excluded for a failure to follow directions and the misuse of the rating scale. The study was approved by the university's IRB.

Stimuli. Twenty-seven color photos of individual female faces were collected from a Google image search using phrases like "female headshots." These photos were pilot tested to find the faces that were the most attractive and the most average. A 201-

point bipolar scale was used and participants moved a bar on a computer screen to make their ratings. A total of 6 faces, 2 that were rated the most average, and 4 that were rated the most, attractive were selected for inclusion in the experiment. All pictures were of Caucasian women, though aspects such as hair and eye color, clothing, whether they were smiling or not, the angle of the photo, and quality of the photo varied randomly.

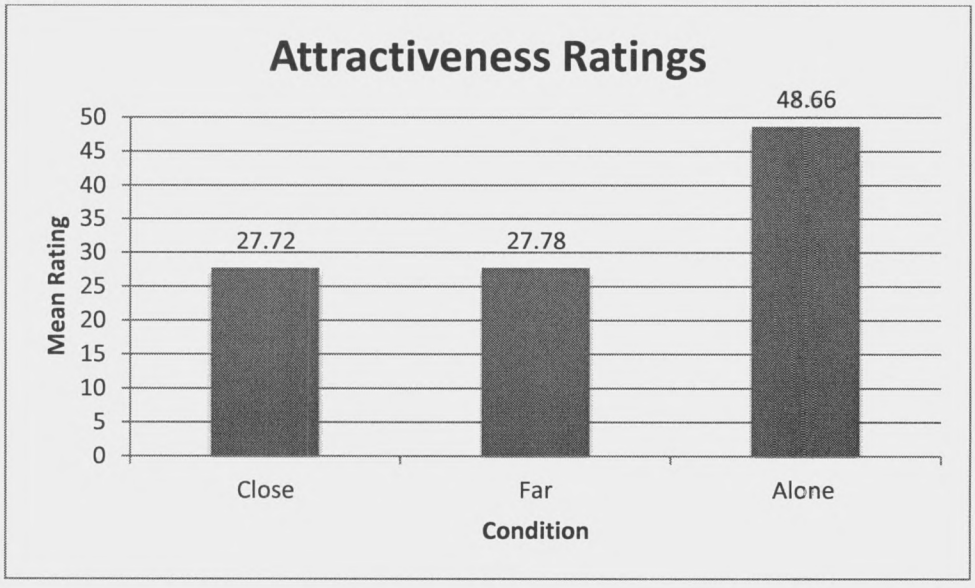
Design. The experimental design is a between groups design with 3 groups (Alone, Close, Far). In the Alone group, the 2 target average faces were presented one at a time in the center of the screen. In the Close group, the 2 average target faces were presented individually with two different sets of attractive faces flanking the target face, with a small (approximately 2 cm) space between the target and context faces. The attractive context faces were presented as a set pair, but the average context faces were counterbalanced with each set, as was the position (right or left flank) of each context face. In the Far group, the procedure was the same as the Close group except with a larger (approximately 7.6 cm) space between the target and context faces.

Procedure. Participants were randomly assigned to one of the three groups (N=16 in each group). Face stimuli were approximately 4.45 cm. tall by 4.09 cm wide. They were shown to participants on a 22" monitor with a 1080 X 760 resolution using Powerpoint. Participants were seated 55.88 cm from the screen. Participants were shown the three faces simultaneously against a black background in a horizontal view or one face by itself (target Alone group). They were asked to rate each face individually, starting with the center, (target), followed by the left and then the right context face. The order of presentation of the two target faces was counterbalanced in all conditions. They rated each face on paper using a 201-point bipolar hedonic scale in which +100 is the

most attractive imaginable, -100 is the most unattractive imaginable, and 0 is neither attractive nor unattractive.

Results

The mean ratings of the two target faces for the three groups, Close, Far, and Alone, were analyzed using a one-way between-group ANOVA. There was no statistically significant difference in the mean target ratings among the three groups [$F(2, 45) = 1.22$, $p = .30$]. While not statistically significant, it should be noted that the target faces were rated as less attractive when surrounded by the attractive context faces [Close condition ($M = 27.72$, $SD = 46.81$); Far condition ($M = 27.78$, $SD = 46.60$)] compared to the Alone condition ($M = 48.66$, $SD = 29.24$). However, there was a great deal of variability in the target ratings. In addition, there was no statistically significant difference in the ratings of the context faces between the Close ($M = 69.47$, $SD = 21.47$) and Far ($M = 72.81$, $SD = 17$) groups; $t(30) = -.49$, $p = .63$.



Discussion

There was no statistically significant difference of mean target face ratings between the three groups, Close, Far, and Alone. However, the target faces were rated as substantially less attractive in both the Close and Far group than in the Alone group,

indicating a trend in the direction of contrast. Therefore, even though the findings were not statistically significant, there is likely some effect of the context faces on the target faces.

Further, the present findings do not support the hypothesis that varying the distance between the context and target stimuli will lead to differences in hedonic judgments of those stimuli. It was predicted that stimuli presented in close proximity to one another (Close group) would lead to a context effect (most likely assimilation) and that moving the stimuli far apart (Far group) would reduce the effect. However, no statistically significant context effects were found in the Close group, nor did the distance manipulation have any statistically significant effect on participants' ratings of the target faces. In fact, the mean target ratings of the Close and Far groups were almost identical to one another, and both were considerably, although not statistically significantly, lower than the Alone group's ratings. There are a variety of factors that could have contributed to the lack of statistically significant findings both for context effects in general and the specific distance manipulation. It is also necessary to explain the possible factors that contributed to the trend toward contrast in both context groups.

Some contributing factors that may have led to the failure to obtain statistically significant results were the high variability in hedonic ratings all three experimental groups and that the study was most likely underpowered. The Close group and Far group had very large, yet similar, standard deviations [Close group (SD = 46.81); Far group (SD = 46.6)]. The Alone group was not quite as large (SD = 29.24), but still large enough to indicate a lot of variability in attractiveness ratings. This variability made it difficult to find a statistically significant effect with the sample size used. However, the mean

attractiveness rating in the Alone group was 21 points higher than the Close and Far group means, which, though not statistically significant, is substantial. Since both the Close and Far groups contained the context faces, and both group means were similar to each other and different from the Alone group, this suggests that the context faces did somehow affect the participants' judgments of the target faces, and in the same way. A power analysis indicated that a sample size of 150 would be needed to achieve a power level of .8, with an effect size of r =.26. Thus, a more highly powered study would have required triple the number of participants than were recruited for the current study. It is possible that a larger N would have sufficient power to result in a statistically significant contrast effect. Thus, it may be worth pursuing this possibility in future research.

Although results were not statistically significant, attractiveness ratings were trending in the direction of contrast effects for both the Close and Far groups. The average target faces were rated as less attractive when surrounded by the attractive context faces compared to when they were presented alone, which suggests a contrastive rather than assimilative effect. This is consistent with other studies of hedonic context effects that have resulted in contrast (Cogan et al., 2013; Kenrick & Gutierres, 1980; and Parker et al., 2008). Mussweiler (2007), along with Brown (1953) and Fechner (as cited in Beebe-Center, 1932/1965) argued that in order for any context effects to be found, there must be some link between the target and context stimuli in order for the context to have some influence on the target. It is suggested that comparisons are one critical process through which a relationship can be established. Further, this tendency to compare is so natural that people often engage in it spontaneously, even if they are not requested or induced to do so. For example, when evaluating themselves, people often

compare themselves to another person, such as a best friend, instinctively and with no prompting (Mussweiler & Ruter, 2003). This tendency to compare is also so robust that even when a comparison standard is seemingly insufficient and provides little information relative to the target, people still engage in comparison processes. In one study, participants compared their task performance with a confederate, even though it was made salient that the confederate had prior training in the task, and thus is not a viable comparison standard (Gilbert, Giesler, and Morris, 1995). These studies highlight how easily comparison judgments are made. In the present study, even though participants were not asked to compare the target to the context faces, it is probable that comparison forces were at work, given that there were differences in target judgments of both groups that contained context faces.

When comparisons are made between target and context stimuli, the likely outcome is one of contrast, which is supported by the present findings. Stapel and Koomen, (2001) suggest that contrast or assimilation may occur depending on whether an interpretation or comparison mindset is activated. If one is looking for understanding or meaning, this interpretative mindset facilitates assimilation. Yet if the goal is of a comparative nature, this is more likely to result in contrast. In the current study three faces were presented together and participants were asked to judge the attractiveness of each face. The faces in the Close group were side by side, which may have prompted participants to compare them against one another. Even though the faces in the Far group were not near each other, they were still presented at the same time and on the same screen. This likely induced a comparison mindset, causing the results to trend toward contrast for both groups.

A multitude of other studies also suggest that contrast is the more likely outcome when making hedonic judgments (Calderon et al., 2013; Cogan et al., 2013; Damisch et al., 2006; Parker et al., 2008; Tousignant & Bodner, 2014; Zellner et al., 2006). Another reason for this is that when people make comparisons, they may look for dissimilarities between stimuli, as indicated by Mussweiler (2003), in his selective accessibility model and Bless and Schwarz (2010), with the inclusion/exclusion model. This paradigm suggests that when people evaluate stimuli, they first decide if the target is similar or different from the context and subsequently engage in similarity or dissimilarity testing. Selectively focusing on the similarities between the target and context may lead to an assimilation effect while attending to differences will lead to a contrast effect. One way to get people to focus on similarities or differences is by presenting stimuli as belonging to the same group or category.

Though some studies have found that sharing category membership and being grouped together produce assimilation (Damisch, 2006; Kernis & Wheeler, 1981) other studies have found the opposite. That is, it is necessary for stimuli to be categorized together in order for contrast to occur (Cogan et al., 2013; Zellner et al., 2003). In this study, a grouping mentality was attempted with the presentation of stimuli in close proximity to one another. Proximity is a basic Gestalt principle of grouping, things that are near each other, in this case faces, may be perceived as belonging together (Koffka, 1935; Wertheimer, 1938). It was predicted, then, that participants in the present study might assume the faces seen in the Close group belonged together because of their close proximity, and thus an assimilation effect would be found. However, the Close group did not produce assimilation, but rather faces were rated in a contrastive way. One

explanation is that participants may not have perceived the faces as truly belonging together. There was a small, but noticeable, space between each face, so they were not touching. It was clear that the faces were not depicting a group of women photographed together in space and time. Had the faces appeared more overtly as a unit, perhaps touching with no space or as a group photo, assimilation may have been more likely.

It was also hypothesized, however, that creating a larger distance between the target and context faces would erode the process of grouping the stimuli together, and diminish any context effects at all. Yet there is no evidence of that occurring in this study. One possibility is that the faces were simply not far apart enough. Logistical limitations regarding size of the screens of the computers available for use in the study meant there was a limit to the space between the face stimuli. No pilot test was done to assess an adequate distance by which participants would view the stimuli as separate groups. Furthermore, there was no empirical basis for the different distances that were used in this study. It is possible that a greater distance between stimuli could eliminate the context effect. It is also possible that the fact that the faces were all presented on the same screen, rather than the distance between them, made them appear to belong together.

This manipulation of physical distance can also be likened to the manipulation of distance in the hedonic scale as explored in Cogan et al. (2013). In the aforementioned study, contrast was found when moderately attractive faces were rated as more attractive if preceded by moderately unattractive faces, as well as when the order was reversed. However, when they used very hedonically dissimilar faces (very attractive and very unattractive), no contrast was found. According to Cogan et al. (2013), one explanation for why context effects were lost was that people might have thought that the faces were

too different from one another and thus did not compare them to each other. This also supports the idea by Sarris (1967, 1968), who found contrast effects with moderate weight differences, but no contrast effects when very heavy weights were used. In the current study, it was predicted that when the stimuli were presented farther apart from one another, people would perceive them as not belonging together and thus no context effect would be found. However, the distance manipulation did not seem to diminish the resulting context effects. Instead, results were still trending in the direction of contrast nearly equal to the degree that this was seen in the Close group. One explanation for this finding is that participants saw the faces as dissimilar from one another because they were far apart. With these differences made salient by the greater distance, this could lead to dissimilarity testing, and a contrastive outcome, as suggested by Mussweiler (2003). However, this does not explain the parallel trend of contrast in the Close group. Because the results of both the Close and Far groups were so similar, regardless of the space between the faces, this indicates that proximity does not matter in judgments of target and context stimuli. It is likely that the same forces were at work in both the Close and Far conditions, since the mean attractiveness ratings were incredibly similar. Both groups had the faces presented on the same screen. It is possible, therefore, that the faces in both groups were seen as belonging together. Had the three pictures been presented on three different screens they might have been seen as not belonging together and contrast might have been eliminated in an effect similar to that seen in Cogan et al. (2013) with hedonic distance.

As discussed earlier, one other feature of this study that differs from many studies that have resulted in contrast was the simultaneous presentation of stimuli. Most studies

that use a sequential format produce contrast effects, (Cogan et al., 2013; Damisch et al., 2006; Kenrick & Gutierres, 1980; Tousignant & Bodner, 2014; Zellner et al., 2003; Zellner et al., 2006), whereas studies that present objects simultaneously often yield assimilation effects (Geiselman et al., 1984; Kernis and Wheeler, 1981; Walther et al., 2008). Based on these studies, it would have been expected that the results would trend in the direction of assimilation, since the faces were presented at the same time. However, as Calderon et al. (2013) have found, it is still possible to find contrast effects when a simultaneous presentation is used. The layout and procedure in the current study were highly similar to that of Calderon et al. (2013), which presented a less attractive target stimulus, in this case a picture of a bird, in the center of two more attractive birds. Participants then rated the target stimulus first, followed by the context stimuli, on a 201-point bipolar hedonic scale, which was the same procedure used in the current study. Though the differences in target hedonic rating between the control and context groups was not statistically significant, the current study, does suggest that contrast can occur, and may even be the more likely outcome, even with a simultaneous presentation.

With the widespread use of social media, especially for the purpose of posting photos, surely the owner has taken great care to evaluate those photos and select the ones in which he or she looks best. But as a multitude of studies suggest, what surrounds an object, such as someone else's face, also matters in how that object is perceived. Thus, the perceived attractiveness of a photo of the owner may really depend on who else is in the picture. The current study suggests that where others are positioned or how far away they are relative to the owner may be unimportant factors in affecting attractiveness ratings of the picture owner. At the heart of context effect studies are how stimuli

surrounding an object affect how the target object is judged. Group photos seem to be perfect candidates for studying the topic at hand, yet have not been explored in their true form. Though context effect studies have presented faces in a simultaneous format (Geiselman et al., 1984; Kernis and Wheeler, 1981; Walther et al., 2008), which is comparable to a group photo, there are discrepancies between an original photo of a group of people and showing multiple, but ultimately separate, faces side by side. Even in the present study, there was a small, but visible, space between photos in the Close condition. To my knowledge, no context effect studies have utilized true group photos. With category membership and friendship being manipulations with significant effects on object ratings, it is worth investigating whether and to what degree these factors hold true for a real-life application, such as a group photo.

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