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THE EFFECTS OF COLOR HARMONY ON PERSON PERCEPTION

By

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ABSTRACT

THE EFFECTS OF COLOR HARMONY
ON PERSON PERCEPTION

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The hypothesis that stimulus targets who are garbed in colors that harmonize with their own personal coloring (skin, hair and eye pigmentation) would be evaluated in a more positive manner than when they are garbed in colors that do not harmonize with their personal coloring was tested. Two studies were conducted due to some technical difficulties in Study 1. In Study 1, results were obtained from 117 subjects evaluating one male and one female stimulus target. In Study 2, there were 154 subjects evaluating two female and two male stimulus targets. Subjects evaluated slides of each stimulus target portrayed in "right" (harmonious) colors and "wrong" (disharmonious) colors on a 25-item semantic differential scale. A factor analysis was performed and six subscales were compiled. Planned comparisons were analyzed and d values computed. The hypothesis was supported for female stimulus targets in both Study 1 and 2. However, the results were contradictory for the male stimulus targets. In Study 1, there was a weak trend which supported the hypothesis. In Study 2, subjects

evaluated both male stimulus targets more positively when in their "wrong" colors. The specific colors used may have been responsible for these findings rather than a true gender effect. In addition, possible procedural and technical difficulties as well as confounding variables may have contributed to these contradictory findings.

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TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

While there has been much research on attractiveness in the field of person perception, there has been little research to assess if color can be used to increase one's perceived attractiveness and thereby affect other's perceptions. A current trend in fashion is the use of "color analysis" which uses color theory art principles to harmonize the color of an individual's clothing with his or her personal coloring. The present study examines the effects of color harmony on the evaluative impressions of strangers.

Benefits of Attractiveness

It can be argued that clothing and fashion are a form of communication. Gibbins (1969) has shown that people do make judgements about others on the basis of their clothes. Artifacts such as wearing lipstick (McKeachie, 1952) also affect how one is perceived. Wenburg and Wilmot (1973) observe that:

> Research indicates that attractiveness does influence perception of credibility. Although a communicator has no immediate control over his physical stature, he can change his appearance and thereby increase his attractiveness. (p. 153)

Waters (1984) has found that cosmetics and hairstyle can increase women's marketability when pursuing

employment. An important aspect of the Waters study was that it was not the base level of the women's attractiveness that was used to measure their marketability, but rather it was how they presented themselves through the use of cosmetics and hairstyle. "Before" pictures were taken of eight women as they normally presented themselves. Simple cosmetic and hairstyle changes were made to make the women look more "polished", and then the "after" picture was taken. These pictures were then sent out with a standard resume to male and female personnel interviewers. Invariably, lower incomes went to women in the "before" photos. Waters suggests that the personnel interviewers were using clues from clothing, makeup, hairstyle, and general appearance in their impressions of the alleged applicants with respect to self-image, confidence and competency.

Is it possible that color harmony could be another artifact that could influence the impression one makes on others? Abramov (1985) observes that:

> Within the last ten years, various systems for determining the colors that best suit an individual have emerged. Large numbers of people are now concerned about the choices of colors in the clothes they wear and in the places in which they live and work. To find out what colors they should wear, many people spend considerable sums for personal color analysis. Even more buy books on the topic and try to analyze themselves. One of the best known of these self-help books is Color Me Beautiful by Carol Jackson; a recent article in the New York Times informed us that almost 3 million copies have been sold. (p. 211)

The proponents of color analysis claim that the use of

color harmony between one's own personal coloring and the colors with which they adorn themselves in clothing and/or cosmetics can enhance one's appearance (Jackson, 1980; Nethery & Smith, 1984). If this is true, this would be a great benefit to an individual, for there are many positive qualities associatied with attractiveness. For example, there is evidence that physically attractive men and women are more positively evaluated than their less attractive peers (Berscheid and Walster, 1974). Dion, Berscheid, and Walster (1972), found that physically attractive stimulus persons, both male and female, are perceived to be more likely to possess socially desirable personality traits and to lead more successful lives than are unattractive persons. For example, physically attractive people were perceived to be more likely to be warm and responsive, sensitive, kind, interesting, strong, poised, modest, sociable, and outgoing than persons of lesser physical attractiveness. They were also seen more likely to be "exciting dates", to be "nurturant" individuals, and to have "better character" than persons of lesser attractiveness. Subjects also predicted that physically attractive individuals would be more prestigious, more competent as husbands and wives, have happier marriages, have better prospects for happy social and professional lives and were expected to lead more fulfilling lives in general than were the unattractive. Similar results were found in a study conducted by Miller (1970) in which he asked subjects to

record their impressions of people to be of high, medium, or low physical attractiveness on the Jackson and Minton (1963) Adjective Preference Scale which consists of 17 different dimensions (e.g. passive versus active, rigid versus flexible). Miller found significant effects for physical attractiveness on 15 of the 17 dimensions for both male and female judges. Miller concluded that "a consistent pattern emerges, that of the unattractive person being associated with the negative or undesirable pole of the adjective scales and the highly attractive person being judged significantly more positively." (p. 242)

Physically attractive people are also expected to receive preferential treatment. Dion (1972) found that the physical attractiveness of children who commit a transgression influences adults' evaluations of him or her. Adults even view the transgression itself as being more undesirable when the child is less physically attractive than when the child is more physically attractive.

There are additional studies which show that attractive individuals are attributed with more desirable traits than are less attractive individuals. Attractive individuals are seen as more responsible for good deeds and less responsible for bad ones (Seligman, Paschall, & Takata, 1974; Sigall & Ostrove, 1975). Attractive individual's evaluations of others have more potent impact (Sigall & Aronson, 1969) and their performances are upgraded (Landy & Sigall, 1974). Other studies show that people are more

socially responsive to attractive individuals (Barocas & Karoly, 1972), are more likely to provide them with help (Benson & Karabenick, 1976), and more willing to work hard to please them (Sigall, Page, & Brown, 1971). Furthermore, the physically attractive tend to be the recipients of more self-disclosure from others (Brundage, Derlega, and Cash, 1977), which could have implications for clinical therapeutic interventions.

Attractiveness has also been shown to be related to a positive self-concept (Lerner & Karabeneck, 1974) and with good mental health (Adams, 1981). Attractive individuals also appear to be more assertive and self-confident than unattractive individuals (Dion & Stein, 1978; Jackson & Huston, 1975). Schneider (1974) found that well-dressed subjects presented themselves more positively than poorly-dressed subjects, and there was some indirect evidence that subjects actually felt more self-confident when well dressed. Thus, it would seem that being able to increase one's attractiveness can lead to a better self-image. In a recent article, Dr. Joyce Brothers (1988) states that . . .

> We groom ourselves carefully for important occasions, such as job interviews and first dates, not only because we want to make a good impression but because looking our best gives us confidence. a sense of control. Although we may not be consciously aware of it, that confidence enables us to relax and be more open and friendly. This positive behavior encourages others to act warmly toward us in return--and a warm response from the people we care about makes us feel even more attractive

> and appealing. So, looking good sets off an upward "spiral of success"--a powerfully positive cycle in which the good feelings we start out with are continuously reinforced by the people around us.

She goes on to report a recent experiment involving two groups of men and women who were invited for job interviews.

> Before the interviews, one group was made up to look as if each member had an obvious, disfiguring scar. Observers found that "scarred" individuals were much less assured in interview situations. These subjects were also more likely to report that interviewers were distant and unfriendly.
>
> The fascinating thing is that none of the subjects went into the interviews disfigured in fact: "Scars" were removed beforehand under the pretense of "touching up" their makeup. Still, people who felt "ugly" acted "ugly" and got a hostile response. Their negative feelings about themselves became a self-fulfilling prophecy. (p 48-50)

Theory of Color Analysis

Color analysts claim that color harmony is one component that can affect how others perceive an individual. Proponents of color theory claim that color harmony is pleasing to the eye whereas the absence of color harmony is harsh and discordant (Nethery & Smith, 1984). Thus by using color harmony, an individual can enhance his or her appearance. The technique whereby one's individual coloring is determined is popularly known as color analysis. According to the promoters of color analysis (Jackson, 1980: Nethery & Smith, 1984), each person has colors in which he or she looks their best because these colors harmonize with his or her skin, hair

and eye pigmentation. According to color theory, there are different hues of color, some being "cool" (meaning they have more blue undertones) and some being "warm" (meaning they have more yellow undertones). There are also different intensities of color, some being "bright and clear" and some being "muted and dusty" colors. The majority of color analysis systems use an interaction of the hue of the color and the intensity of the color to create four classifications. There are cool brights (also known as "Winters"), cool muteds (also known as "Summers"), warm brights (also known as "Springs"), and warm muteds (also known as "Autumns"). Cool brights would include colors such as hot pink, royal blue, primary red and green. Cool muteds would include colors such as soft, grayed-white, dusty blue and rose, pastel pinks, rosey browns. Warm brights would include colors such as ivory, peach, coral, bright yellows and aquas. Warm muteds would include such colors as golden yellows, rust, olive green, and teal.

Clothing and cosmetic colors that have warm undertones would harmonize best with skin and hair pigmentation that have yellow undertones, while clothing and cosmetic colors that have cool undertones would harmonize best with skin and hair pigmentation that have blue undertones. The idea is that when in the "right" colors, a person's natural features are enhanced and therefore they are more attractive.

While the claim that certain colors enhance one's

appearance is being used in the color analysis business, there has been insufficient empirical research to support this claim. In fact, Abramov (1985) argues that the major contribution of color analysis may be merely the clients' "belief that they are now putting their best faces toward the world" and any difference they perceive after a color analysis may have little to do with the actual colors they are wearing.

Research by Mahannah (1968) found a relationship between hair color and clothing color which indicates that these are important determinants of first impressions. There are two studies on color analysis by Francis and Evans (1987, 1988) using the same methodology. Unfortunately the authors misused MANOVA in the same way in each study. As a result, they did not report the means needed to test color analysis and their published MANOVA F tables do not do this either. Because of the faulty analysis, it is not possible to tell if the data are consistent with their conclusions. So while these studies are cited here, the results can not be taken as conclusive.

Francis and Evans (1987) evaluated the effects of hue (color name), value (lightness/darkness), garment style (tailored/feminine), personal coloring (blonde, brunette), and color harmony (based on professional color analysis recommendations) on person perception. Two female stimulus targets were used. One was a "spring" blonde and the other a "winter" brunette. Fabric in two values of "spring" red

(light apricot, dark orange-red) and two values of "winter" green (light icy aqua, dark pine green) were constructed into tailored and feminine blouses. Photographs of the two stimulus targets in the various conditions (hue x color x garment style were taken and each female subject viewed one photograph and completed a questionnaire containing 27 adjective pairs. The questionnaire included the following factors: Emotional, Sociable, Adaptable, Scientific, Typical and Excitable. Surprisingly, the 2 stimulus targets were generally perceived more positively on the Sociability factor when not wearing the recommended colors than when wearing the recommended colors. In addition, stimulus targets were perceived more positively when garbed in the high value (light) clothing than in the low value (dark) clothing. There were many significant interactions in this study which suggests that "in studies of physical appearance, the influence of individual variables declines when combined with others. (p.390)

In a subsequent study, Francis and Evans (1988) investigated the effects of clothing hue, clothing value, and style of garment on college recruiters' assessments of employment potential. Unlike their previous study cited above, this study did provide partial support for the theory that color harmony increases one's attractiveness. This particular study used only one female stimulus target, who was professionally classified to be a "spring". She was garbed in four different colors (two "spring" and two

"winter" colors): an apricot (warm, bright, high value), orange-red (warm, bright, low value), icy aqua (cool, bright, high value), and pine green (cool, bright, low value). The color analysis professionals recommended that the "spring" stimulus target should have looked best in the two warm bright colors (apricot and orange-red). The results supported the color harmony theory in all conditions except the orange-red blouse. One possible explanation for this finding is that the employment recruiters found the orange-red color too "loud and flashy" to be considered appropriate attire for business-related employment. Thus the appropriateness and the emotional stimulus of a particular color, even though it harmonizes with the wearer, may interfere with how the wearer is evaluated.

Furthermore, results of this study "suggest that the effect of dress on assessments of employment potential may be limited to judgements of affective concepts dealing with interpersonal relationships, such as the Compatibility factor, rather than assessments of other personal traits or competencies such as the Leadership factor which was generated in the present study." (p. 91-92).

Radeloff (1990), in a very straight-forward design, used twelve photographs of six stimulus targets (five female and one male), each wearing a polo shirt in a color that harmonized with their personal coloring and a polo shirt that did not harmonize with their personal coloring (as recommended by professional color analysts). Various colors

were used (plum, scarlet, bright and dull greens, warm and cool greens, navy, baby blue, lavender, red-orange and tan.) A neutral gray background was used for the photographs. Subjects were shown the six sets of photographs and asked to indicate whether the person looked best in photo "A" or photo "B". Subjects were also asked to check the reason they chose each photograph ("smile or facial expression", "style of the shirt", "color of shirt", or "other reasons"). Subjects significantly concurred with the professional color analysts' recommendations in five out of the six sets of photographs. Furthermore, subjects responded that they used color significantly more than style of clothing or facial expressions. These findings certainly support the theory that color harmony increases one's attractiveness.

Sex of Stimulus Target

Another aspect to consider is the sex of the stimulus target. In the above studies involving color harmony, only one out of nine stimulus targets was a male. There is some evidence that may suggest that an attractiveness stereotype may be stronger for female targets than for male targets. Attractiveness has been shown to be more central to the gender role of women than of men as well as to women's personal identity, self-esteem and interpersonal outcomes (Bar-Tal & Saxe, 1976; Rodin, Silberstein, & Striegel-Moore, 1985). In addition, the media more often portray women than men as decorative and sexual objects (Courtney & Whipple, 1983; Roberts, 1982). Women have also rated physical

attractiveness as more important to them and report engaging in more behaviors to improve their looks than do men (Jackson, Sullivan, and Rostker, 1988). These findings suggest that physical atrractiveness may be more important in perceiving women than in perceiving men.

Proposed Hypothesis

The present study examines the proposition that when people are in their "right colors" (colors that harmonize with their own natural coloring), they are not only considered more attractive, but they are also evaluated in a more postive manner on other characteristics than when they are in their "wrong" colors (colors that do not harmonize with their own natural coloring).

Subjects were shown slides of two female and two male targets portrayed in either "right" or "wrong" colors. Subjects indicated how they perceived these four targets on a 25-item, 7-point semantic differential scale, labeled the Evaluative Impression Rating Scale. It included social, personality, status, competency, and attractiveness items. It was hypothesized that subjects would rate targets adorned in "right" colors more positively on the scale than targets adorned in "wrong" colors. Gender effects of subject and stimulus target were also explored.

Method

As the data was being collected, the experimenter noticed some technical difficulties in the lighting of some of the slides. Therefore, only half the data was salvageable from the first study and the experiment was repeated with improved slides.

STUDY 1

Subjects

Subjects were 60 male and 57 female undergraduates in introductory psychology classes at Michigan State University who agreed to participate in research experiments in exchange for extra credits in their classes. Subjects were randomly assigned to one of eight different treatment groups.

Apparatus

Stimulus Materials

The stimulus targets consisted of eight head and shoulder slides depicting two males and two females who had received a professional color analysis to determine which colors harmonized with their own personal coloring. Male Stimulus Target 1 and Female Stimulus Target 2 were classified as "winters" based on Jacksons's (1980) system (cool blue undertones in the skin color). The male had dark ash brown hair, the female had gray/white hair. Male

Stimlus Target 2 and Female Stimulus Target 1 were classified as "springs" (ivory skin color with yellow undertones). Both had golden, brownish-blond hair. The stimulus targets were photographed using slide film in a 35mm camera with attached flash. Each stimulis target was portrayed in two slides, one in colors that harmonized with their personal coloring and one in colors that did not harmonize with their personal coloring. For example, in the "right" color slide, if the facial features had yellow undertones, then the clothing and/or cosmetics had yellow undertones; if the facial features had blue undertones, then the clothing and/or cosmetics had blue undertones.

The female stimulus targets wore either a black (winter) or peach (spring) semi-dressy polyester blouse with slightly puffed inset sleeves, a high collar and vertical tucks down the front. The male stimulus targets wore either a black suit (winter) or a camel-beige suit (spring). Female Stimulus Target 1 was in her mid-30's, Female Stimulus Target 2 was in her early 60's. Both male stimulus targets were in their mid-30's. An attempt was made to assure that the slides were as accurate as possible in color, in facial expression, in size, and in clothing style. The stimulus targets were instructed to maintain a blank stare with eyes directed one foot to the right of the camera. The backgrounds behind the head and shoulders of the targets were neutral colors which harmonized with the clothing that the target was wearing (pure white or ivory).

The cosmetics used for the female targets also harmonized with their clothing colors. The slides were arranged into eight treatment groups with the sequence of presentation balanced to control for possible order effects. Each group was composed of four slides: one male stimulus target in harmonious coloring ("right color"), another male stimulus target in disharmonious coloring ("wrong color"), one female stimulus target in harmonious coloring ("right color"), another female stimulus target in disharmonious coloring ("wrong color").

Evaluative Impression Ratings Scale

A 25-item, 7-point semantic differential scale was used to record subjects' perceptions of the stimulus targets. It included items dealing with physical attractiveness, interpersonal and intrapsychic adjustment, friendliness, satisfaction with life, success/status, and health. These items were gathered from characteristics that have been associated with attractiveness in previous research and from some of the claims of color analysts. The adjective pairs were randomly sequenced on the questionnaire. In addition, the presentation of the order of the positive vs. negative adjective was randomized. (See Appendix A)

Procedure

Subjects entered a room in groups of twelve to seventeen. They were seated and given a questionnaire containing four Evaluative Impression Ratings Scales. The female experimenter explained that this study was examining

the accuracy of people's perception of others, and the focus was not on the subjects' tact, politeness, or other factors usually important in social situations. The importance of the subject rating the stimulus persons frankly was stressed. They were asked to rate four people, presented to them one at a time on slides, on a set of characteristics. Instructions for using the rating scales were given. (See Appendix B for verbatim instructions given to subjects, Appendix C for Subject Consent Form, and Appendix D for Subject Debriefing Form.) The room was dimly-lit to enable subjects to fill out their scoring sheets while the slide remained on the screen. Subjects were given five minutes to complete each scoring sheet.

After the data had been gathered, it was noted that the lighting on the slide for two of the stimulus targets (Female Stimulus Target 1 and Male Stimulus Target 2) was substantially darker than for the remaining two stimulus targets. The inadequate lighting made the color differences less visible. Therefore, another set of slides was taken and the experiment repeated. Alterations in procedures for Study 2 are given below.

STUDY 2

Subjects

In Study 2, 74 male and 80 female additional subjects were recruited. These subjects met the same requirements as outlined in Study 1.

Apparatus

Stimulus Materials

The same four stimulus targets were used in Study 2. Additional lighting was provided through the use of two photographer's lights at the time the photographs were retaken.

An alteration in the male stimulus targets' clothing was also undertaken. In Study 1, a black and a camel-beige suit were used. Upon reflection, these particular color choices, while adhering to the tenants of color theory, may have introduced a confounding variable into the experimental design. Even though the style of garment was a tailored suit in both cases, the black suit, because it is more typically chosen as attire for professional/managerial job-levels, may have given a different connotation than the camel-beige suit, which could be perceived as more casual because of its color, not it's style. Thus there is the possibility that not only may a particular color harmonize with an indivudal's personal coloring, but different colors may inherently carry different connotations with them. Subjects may perceive certain colors as more appropriate in certain situations than in others.

Therefore, the male stimulus targets in Study 2 wore either a pure white (winter) or ivory (spring) dress shirt with the top botton unbuttoned. All other details of apparatus were identical to Study 1.

Procedure

Subjects entered a room in groups of fifteen to twenty-three. The procedure outlined in Study 1 was also used for Study 2 with the following exception. To ensure that the slides would be viewed with maximum clarity, all lights were turned off while the slide remained on the screen for 30 seconds. The slide projector was then turned off, the room lights were turned on, and subjects were given five minutes to complete each scoring sheet. This procedure was repeated for each slide.

RESULTS

Confirmatory Factor Analysis

A confirmatory factor analysis was performed to verify sub-scales of the 25-item Evaluative Impression Ratings Scale (see Appendix E). The a priori sub-scales consisted of many items that could conceivably cross boundaries to other sub-classifications. The factor analysis results suggested only a small amount of adjustment. The following model was found to fit the data (see Table 1) and the items were highly correlated with each other (see Table 2).

Table 1

Items in Subscales.

SCALE	ADJECTIVE PAIRS
1. Attractiveness	appealing/unappealing attractive/unattractive good-looking/not good-looking
2. Friendliness	friendly/unfriendly kind/unkind warm/cold likeable/unlikeable agreeable/disagreeable approachable/not approachable
3. Adjustment	confident/insecure popular/unpopular socially adept/socially inadept high self-esteem/low self-esteem outgoing/reserved
4. Satisfaction with Life	satisfied with life/dissatisfied with life happy/sad
5. Success/Status	prestigious job/unskilled worker competent/incompetent intelligent/not intelligent high socio-economic status/low socio-economic status highly educated/poorly educated important/insignificant successful/a failure
6. Health	full of energy/worn out healthy/poor health

Table 2

Correlations for Subscales.

Subscale*	1	2	3	4	5	6
1	100	.66	.68	.63	.69	.77
2	.66	100	.72	.80	.57	.71
3	.68	.72	100	.97	.87	.93
4	.63	.80	.97	100	.75	.92
5	.69	.57	.87	.75	100	.85
6	.77	.71	.93	.92	.85	100

*See Table 1 for name of subscales.

Table 3

Reliability of Subscales.

Subscale	Number of Items	Reliability*
Attractiveness	3	.91
Friendliness	6	.91
Adjustment	5	.84
Satisfaction with Life	2	.78
Success/Status	7	.92
Health	2	.60
Total Score	25	.96

* standard score coefficient alphas

Planned Comparisons

The d statistic was used to determine the effect of color harmony on subjects' perceptions of the stimulus targets. For each d value, the standard error (SE) and the 95% confidence interval were computed (WC = "worst case", BC = "best case").

There were no consistent trends for sex of subject. Therefore, only the results that are combined across both sexes will be presented in the following tables. Results showing the breakdown for sex of subject is given in Appendix F.

For Study 1, only the results for the two stimulus targets that were portrayed in adequate lighting are reported. Table 4 presents the differences between the means for the "right" color vs. "wrong" color and the d value for the two stimulus targets. Since there is no consistent pattern across all subscales, the key results are represented by the total scores.

Table 5 presents the differences between the means for the "right" color vs. "wrong" color for the four stimulus targets in Study 2. Again, there is no consistent pattern across all subscales. Thus the key results are represented by the total scores. The results were similar for the two male stimulus targets (d = −.37, SE = .16, WC = −.69, BC = −.05; d = −.57, SE = .17, WC = −.90, BC = −.25). Thus a combined d value was computed for the two male stimulus targets (d = −.47, SE = .12, WC = −70, BC = −.24).

Likewise, the two female stimulus targets were virtually identical (d = .37, SE = .16, WC = .05, BC = .69; d = .35, SE = .16, WC = .03, BC = .67). Thus a combined d value was computed for the two female stimulus targets as well (d = .36, SE = .11, WC = .14, BC = .58)

Table 4

Study 1. Means and d values.

Stimulus Target: Male 1 N=117*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	4.08	3.99	.09	.12	.19	-.25	.48
Attractiveness	3.40	3.19	.21	.19	.19	-.18	.55
Friendliness	4.15	4.51	-.36	-.34	.19	-.71	.03
Adjustment	3.99	3.76	.23	.24	.19	-.13	.61
Satisfaction with life	3.77	4.12	-.35	-.31	.19	-.68	.06
Success	4.37	3.96	.41	.43	.19	.06	.80
Health	4.39	4.16	.23	.21	.19	-.15	.58

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case

Table 4 (cont'd)

Stimulus Target: Female 2 N=117*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	4.57	4.42	.15	.19	.19	-.18	.56
Attractiveness	3.58	3.58	.00	.00	.19	-.36	.37
Friendliness	4.57	4.39	.18	.16	.19	-.21	.52
Adjustment	4.73	4.65	.08	.09	.19	-.27	.46
Satisfaction with life	4.66	4.36	.30	.26	.19	-.11	.62
Success	4.96	4.77	.19	.22	.19	-.15	.58
Health	4.15	4.07	.08	.08	.19	-.29	.44

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case

Table 5

Study 2. Means and d values.

Stimulus Target: Male 1 N=154*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC	BC
Total Score	3.31	3.64	-.33	-.37	.16	-.69	-.05
Attractiveness	2.70	2.82	-.12	-.10	.16	-.42	.22
Friendliness	3.52	4.06	-.54	-.45	.16	-.78	-.13
Adjustment	3.37	3.70	-.33	-.33	.16	-.65	-.01
Satisfaction with life	3.12	3.62	-.50	-.39	.16	-.71	-.07
Success	3.37	3.63	-.26	-.25	.16	-.57	-.07
Health	3.43	3.53	-.10	-.09	.16	-.41	.23

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case

Table 5 (cont'd)

Stimulus Target: Male 2 N=154*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	4.28	4.77	-.49	-.57	.17	-.90	-.25
Attractiveness	3.62	4.16	-.54	-.45	.16	-.77	-.13
Friendliness	4.66	5.23	-.57	-.59	.17	-.91	-.26
Adjustment	4.19	4.70	-.51	-.51	.16	-.84	-.19
Satisfaction with life	4.26	4.73	-.47	-.38	.16	-.70	-.06
Success	4.35	4.78	-.43	-.46	.16	-.78	-.13
Health	4.16	4.53	-.37	-.33	.16	-.65	-.01

Combined Male Stimulus Targets N= 308

	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	3.80	4.20	-.40	-.47	.12	-.70	-.24

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case

Table 5 (cont'd)

Stimulus Target: Female 1 N=154*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	4.29	3.95	.34	.37	.16	.05	.69
Attractiveness	3.75	3.72	.03	.02	.16	-.29	.34
Friendliness	4.76	4.16	.60	.50	.16	.17	.82
Adjustment	4.07	3.73	.34	.33	.16	.01	.65
Satisfaction with life	4.22	3.34	.88	.65	.17	.32	.98
Success	4.34	4.24	.10	.11	.16	-.21	.42
Health	4.13	3.88	.25	.21	.16	-.11	.52

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case

Table 5 (cont'd)

Stimulus Target: Female 2 N=154*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	4.97	4.68	.29	.35	.16	.03	.67
Attractiveness	4.07	3.79	.28	.21	.16	-.11	.53
Friendliness	5.06	4.92	.14	.12	.16	-.20	.43
Adjustment	5.10	4.75	.35	.39	.16	.07	.71
Satisfaction with life	5.04	4.85	.19	.14	.16	-.18	.46
Success	5.26	4.91	.35	.39	.16	.07	.71
Health	4.63	4.14	.49	.41	.16	.09	.73

Combined Female Stimulus Targets N* = 308

	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score	4.63	4.31	.32	.36	.11	.14	.58

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case

Table 6

Summary of Results.

	d	N*	SE*	95% Confidence Interval WC*	BC*
Female Stimulus Targets					
Study 1 (FST* 2)	.19	117	.19	-.18	.56
Study 2	.37	308	.11	.14	.58
FST 1 (OE*)	.37	154	.16	.05	.69
FST 2	.35	154	.16	.03	.67
Male Stimulus Targets					
Study 1 (MST*1)	.12	117	.19	-.25	.48
Study 2	-.47	308	.12	-.70	-.24
MST 1	-.37	154	.16	-.69	-.05
MST 2 (OE*)	-.57	154	.17	-.90	-.25

* N = Number of Observations; SE = Standard Error
WC = Worst Case; BC = Best Case
FST = Female Stimulus Target
MST = Male Stimulus Target
OE = Overexposed Condition

As Table 6 indicates, in Study 1 there was a weak trend in the predicted direction. The trend was slightly stronger for the female stimulus target (d =.19, SE = .19, WC =-.18, BC =.56). The observed value for the male stimulus target was weak (d = .12, SE = .19, WC = -.25, BC = .48) and the confidence interval suggests that there is a chance that the true phenomenon might even be in the unpredicted direction. In Study 2, there was a strong

trend in the predicted direction for the two female stimulus targets (d = .36, SE = .11, WC = .14, BC = .58). However, there was an even stronger trend for subjects to rate both male stimulus targets in the unpredicted direction (d = -.47, SE = .12, WC = -.70, BC = -.24).

DISCUSSION

Female Stimulus Targets

Both Study 1 and Study 2 supported the hypothesis about color harmony for the female stimulus targets. Subjects did evaluate all three of the female stimulus targets more positively when garbed in their "right" colors than when they were garbed in their "wrong" colors. These findings concur with the general trend in the few previous studies conducted on color analysis and would seem to indicate that the claims of color analysts have some validity.

Male Stimulus Targets

However, Study 1 and Study 2 differed greatly with regard to the male stimulus targets. Study 1 offered very weak suppport for the hypothesis and Study 2 indicated that subjects consistently rated both male stimulus targets more positively in the "wrong" color.

This researcher found no theory in the literature which would suggest that there may be a difference in the effect of color harmony for male and female stimulus targets. There is some related evidence that suggests that physical attractiveness may be more important in perceiving women than men (See Introduction pp. 11-12). While this could account for the findings in Study 1 where the trend was

weaker for the male stimulus target than for the female stimulus target, it does not explain why the results in Study 2 were in the opposite direction. Subjects rated both male stimulus targets in Study 2 more positively when garbed in the "wrong" color than when garbed in the "right" color.

There has been little research directly assessing the effects of color harmony and in the few studies available only one male stimulus target was used. This study was conducted by Radeloff (1990). Her experiment found that the claims of color harmony were supported for the male stimulus target as well as for four female stimulus targets. There were also results for one female stimulus target in Radeloff's study that was not evaluated more positively in the "right" vs. "wrong" color. Thus the findings in Study 2 for the male stimulus targets not only appear to contradict the findings in Study 1, they also contradict the one previous research experiment which used a male stimulus target. Three possible explanations for these contradictory findings are discussed below.

Errors in Categorizing Colors

While it may appear that color harmony effects are not consistent for males, a better explanation for the conflicting data may be a result of the specific color combinations used in each study rather than the effects of gender of stimulus target. In the Radeloff study, moderately bright blue green vs. dull green was used for the male stimulus target. In the current experiment, in Study

1, black vs. camel-beige was used and in Study 2, white vs. ivory was used for the male stimulus targets. Perhaps the theory on which color analysts base their claims holds true for certain color combinations (blue green vs. dull green, black vs. camel-beige, etc.) but not for such neutral colors such as white vs. ivory. Furthermore, the fact that the same male stimulus target was used in both Study 1 and Study 2, but with different color choices for the "right" and "wrong" categories gives even more credence to this explanation. Even though this was the same male stimulus target, the results were very different, with a very weak trend in the predicted direction when the black vs. camel-beige combination was used, but a strong trend in the opposite direction when the white vs. ivory combination was used. No female stimulus targets have been tested in the white vs. ivory condition. Color analysts may need to more closely examine the specific colors used for their various categories (winter, spring, summer, fall). A follow up study using a wider variety of color combinations for both male and female stimulus targets would shed more light on this explanation. Portraying female stimulus targets in the white vs. ivory combination would be especially important to study.

Males Look Better in the "Wrong" Color

On the other hand, if there is the real effect that subjects perceive male stimuus targets more positively in the "wrong" color than in the "right" color, what could

explain the contradictory results for male stimulus targets in Study 1 vs. Study 2?

One of the changes made between Study 1 and Study 2 was the style and color that the male stimulus targets wore. It is plausible that there may have been an interaction between color and style of garment in Study 1 which accounts for subjects' positive evaluations of the male stimulus target. In Study 1, the male stimulus target wore a black suit ("right" color) or a camel-beige suit ("wrong" color). Perhaps the male stimulus target was seen more positively in the "right" color, not because of color harmony, but because a black suit may have been associated with a more prestigious status and job level, whereas the camel-beige suit may have been seen as more informal and casual. In fact, Table 4 indicates that the Success subscale is the most positively evaluated factor for the male stimulus target in Study 1. This possible interaction between color and style of garment may have contributed more to the male stimulus target's positive evaluation in the "right" color than did color harmony effects. If this possible confounding variable had been controlled for, the results for the male stimulus target in Study 1 may have been more consistent with those of Study 2, especially considering that the d value in Study 1 was already weak.

There was also one procedural difference between Study 1 and Study 2 that could have affected the results. In Study 1, the slides were left on the screen while the

subjects filled out their Evaluative Impression Ratings Scale. In Study 2, subjects only viewed the slide for 30 seconds before they began their ratings. Perhaps, in Study 1, as the subjects were making their ratings, they encountered difficulty evaluating the stimulus targets based only on appearance. They may have looked back at the picture with a weakened impression. This could have resulted in weaker trends, positive or negative.

This may explain why the female stimulus target in Study 1, who was also used in Study 2, had a weaker trend in Study 1 than in Study 2. The trend in the results for the male stimulus target in Study 1 is already very weak to begin with and since there is a possibility that the true phenomenon might even be in the unpredicted direction, the added considerations of an interaction between garment style and color and a weakened response from subjects makes it very plausible that the real effect may have indeed been in the unpredicted direction. This would then be consistent with the results from Study 2. However, this explanation does not explain the results found by Radeloff for the male stimulus target.

Potential Confounding Variables

Overview of Argument. Is it possible that the reverse color harmony effects for the male targets in Study 2 were spurious? This section presents an argument that suggests that the reverse effect for one of the male stimulus targets might have been due to a confounding variable: overexposure

of the "right" color slide for that target. There are two parts to this argument: (a) the assumption that the difference between white and ivory is too small to produce color harmony effects, and (b) the assumption that overexposure produces effects on person evaluation.

If the white vs. ivory contrast produced only trivial color harmony effects, then the observed difference for the two male stimulus targets could have been due to other factors. For one male stimulus target, the confounding factor might have been overexposure. For the other male stimulus target, no confounding factor has yet been identified.

The reader is warned that the following argument is speculative in nature.

Is There a Color Harmony Effect For White Vs. Ivory?

Some color analysts believe that certain colors have stronger color harmony effects than do others. For example, they propose that an aqua color has a weak color harmony effect. Because there is a balance between blue and yellow undertones in this particular color, it is a more neutral color with regard to the degree with which it will affect most individuals, regardless of their season. It is an acceptable color for most color analysis classifications or seasons. On the other hand, black is considered to have a very strong color harmony effect. Only "winters" are advised to wear it and it is considered a very good color choice for them. Other seasons are advised to avoid it.

Therefore, the specific color choices within the "right" and "wrong" categories that an experimenter may choose to use may result in weak or strong color harmony effects. This may also explain some of the contradictory findings in the previous studies on color analysis. The Radeloff study had conclusive results for only five out of six stimulus targets.

The color contrast used for the two male stimulus targets in Study 2 differed from the contrasts used for the male stimulus target in Study 1 and the male target in the Radeloff study (1990). In Study 2, the color contrast for the male stimulus targets was white vs. ivory. For me, there is little difference between white and ivory. Furthermore, it seems to me that the photographic process results in further loss of this difference. If this is true, then it is possible that the white vs. ivory contrast produced little or no color harmony effect. The observed effects for the stimulus targets must then be due to some other confounding variable. The next section considers the argument that the reverse color harmony effect for one of the two male targets might have been due to overexposure of one of the two slides for that target.

Possible Overexposure Effects. One variable that was inadequately controlled for was the lighting and the resulting loss of accuracy in color representation. Inadequate lighting was the reason only two stimulus targets from Study 1 were salvaged. To compensate for this, in

Study 2, stimulus targets were photographed using additional lighting. However, this resulted in two of the eight slides being somewhat overexposed. One was Male Stimulus Target 2 in the "right color" and the other was Female Stimulus Target 1 in the "right" color. The overexposure reduced the amount of color in these two slides, making both the garment colors and facial features paler.

The results show virtually idential d values (FST1: d = .37; FST2: d= .35) for the two female stimulus targets in Study 2, even though the slide for Female Stimulus Target 1 was overexposed in the "right" color. The results for the two male stimulus targets in Study 2 are also very similar (MST1: d = -.37; MST2: d = -.57), even though Male Stimulus Target 2 was overexposed in the "right" color.

One explanation that fits these data is that overexposure did not have any real effect on subjects' evaluations of the stimulus targets. If overexposure did have the effect of decreasing subjects' evaluations of the stimulus targets in the overexposed "right" color, one would expect that the female stimulus target in the overexposed condition would have a significantly lower d value than the female stimulus target in the controlled condition, when in fact they are virtually identical. One would also expect that the male stimulus target in the overexposed condition would have a significantly lower d value than the male stimulus target in the controlled condition. The results do indicate this (overexposed condition: d = -.57; controlled

condition: d = -.37), but the .20 difference is not highly significant.

An alternative explanation is based on the assumption that overexposure may have had a real effect. The paler garment colors and washed-out, paler facial colors in the overexposed "right" condition may have given subjects a more negative impression of these two stimulus targets when they were in their "right" colors. If this were true, the data for these two stimulus targets when in their "right" colors may be biased in the negative direction. If the overexposure had been controlled for, the effect of color harmony in the predicted direction may have been even stronger for Female Stimulus Target 1. For Male Stimulus Target 2, the trend in the unpredicted direction may have approached a d value closer to zero, which would be expected if any true color harmony effects were negligible due to the white vs. ivory color combination.

The difference in the d values for the two male stimulus targets (MST1: d = -.37; overexposed MST2: d = -.57) indicates that overexposure may have had some effect since the trend to evaluate the male stimulus target in the overexposed condition more positively in the "wrong" color vs. the overexposed "right" color, was stronger than for the male stimulus target that had no overexposure.

But what about the two female stimulus targets that had virtually identical d values even though one had been overexposed? There are a number of possible explanations

for this. Perhaps there were overexposure effects for the male stimulus target but not the female stimulus target. Perhaps it is more acceptable for a female to have a paler complexion. This may enhance a delicate feminine appearance and thus overexposure may not affect her attractiveness. However, a male may be seen as less masculine and attractive if his facial features are pale and washed out. Another explanation is that perhaps the similar d values for the two female stimulus targets do not prove that there were no overexposure effects for the female stimulus targets. It is still a reasonable possibility that the female stimulus target in the overexposed "right" condition may have been evaluated even more positively if the overexposure had not been present. The d value 95% confidence interval ranges from .05/.03 to .69/67, respectively for the two female stimulus targets in Study 2, giving a wide range in which the value of the real effect may exist. Color analysts make no claim that color harmony effects are equally strong for all individuals and it is reasonable to expect that d values would not be the same for all stimulus targets. even if the color harmony effect is real. The Radeloff study supports this supposition because it had x^2 values ranging from 23.03 to 36.39.

Still this final interpretation is more speculative because it is based on two assumptions: that color harmony effects were negligible for the white vs. ivory color combination and that there was a real effect for

overexposure.

In addition, this final interpretation still does not explain the results in the unpredicted direction for the other male stimulus target. Even though there was no overexposure and other variables such as facial expression seem to be consistent, there is always the possibility of undetermined confounding variables influencing the data.

When the possibility of a negligible color harmony effect for white vs. ivory contrast and possible confouding variables such as overexposure are taken into consideration, the results from Study 2 may not as strongly indicate that color harmony has opposite effects for male and female stimulus targets. However, to uphold this argument, the assumptions it is based upon would need to be tested.

Future Considerations

Clearly, future research is needed to clarify some of the possible confounding variables that enter into the perception of color harmony. It may be that the effects of color harmony are subtle and easily influenced by other variables. The current study only used four stimulus targets and a limited range of colors, thus limiting it's generalizability. The use of many stimulus targets, both male and female would increase the generalizability of this type of research. Also using a variety of hues, values, chroma, styles of apparel and testing for the emotional impact and the appropriateness of various colors for

particular situations would also help to check for a possible interaction between these characteristics and color harmony.

There are also other avenues of presenting stimulus targets in various colors that could be utilized. One method is to use live models. This would clearly give the most accurate representation of color. However, it would be more difficult to control for factors such as body language, eye contact and facial expression. Another way to more accurately present color differences is to use a professional photographer and light meter, or to use advanced technology and computers to alter photographs with regard to hue, value, chroma and intensity in a much more controlled manner than is possible by using simple photography.

Conclusions

In this study as well as previous ones carried out by other experimenters, there is a consistent trend toward perceiving female stimulus targets more positively when wearing their recommended colors. However, in the few studies using male stimulus targets, subjects showed conflicting trends across studies with regard to color harmony, sometimes evaluating them more positively in the recommended color and sometimes regarding them more positively in the nonrecommended color. Possible inaccuracies in categorizing particular colors, confounding variables and procedural/technical difficulties may have

contributed to these contradicting findings. As more research is done in this area, we may find more information about how color harmony is perceived. As various authors and experimenters have pointed out in the literature, people's attitudes about themselves, their approach to interactions with others, and other's perceptions and treatment of others are influenced by physical appearances. Color harmony may be one aspect people can use to enhance their appearance and increase their feelings of self-esteem and competency.

APPENDICES

APPENDIX A

EVALUATIVE IMPRESSION RATINGS SCALE

APPENDIX A

EVALUATIVE IMPRESSION RATINGS SCALE

Please rate the person portrayed in the slide on the following characteristics. You will be given a few minutes to make your ratings so move quickly through the list.

Circle the number you believe most accurately describes the person in the slide. For example, if you think they are moderately appealing, circle "2". If you think they are moderately unappealing, circle "6".

	very 1	moderately 2	slightly 3	neither 4	slightly 5	moderately 6	very 7	
1.	appealing	1	2	3	4	5	6	7	unappealing
2.	insecure	1	2	3	4	5	6	7	confident
3.	friendly	1	2	3	4	5	6	7	unfriendly
4.	prestigious job	1	2	3	4	5	6	7	unskilled worker
5.	unkind	1	2	3	4	5	6	7	kind
6.	full of energy	1	2	3	4	5	6	7	worn out
7.	incompetent	1	2	3	4	5	6	7	competent
8.	cold	1	2	3	4	5	6	7	warm
9.	attractive	1	2	3	4	5	6	7	unattractive
10.	not intelligent	1	2	3	4	5	6	7	intelligent
11.	satisfied with life	1	2	3	4	5	6	7	dissatisfied with life
12.	not likeable	1	2	3	4	5	6	7	likeable
13.	sad	1	2	3	4	5	6	7	happy
14.	high socio-economic status	1	2	3	4	5	6	7	low socio-economic status
15.	popular	1	2	3	4	5	6	7	unpopular
16.	poorly educated	1	2	3	4	5	6	7	highly educated
17.	not good-looking	1	2	3	4	5	6	7	good-looking
18.	important	1	2	3	4	5	6	7	insignificant
19.	socially inadept	1	2	3	4	5	6	7	socially adept
20.	agreeable	1	2	3	4	5	6	7	disagreeable
21.	low self-esteem	1	2	3	4	5	6	7	high self-esteem
22.	outgoing	1	2	3	4	5	6	7	reserved
23.	successful	1	2	3	4	5	6	7	a failure
24.	poor health	1	2	3	4	5	6	7	healthy
25.	approachable	1	2	3	4	5	6	7	not approachable

APPENDIX B

VERBATIM INSTRUCTIONS FOR SUBJECTS

APPENDIX B

VERBATIM INSTRUCTIONS FOR SUBJECTS

Thank you for your participation in this experiment. Please pay close attention to these instructions. This experiment examines people's ability to infer differences about others based upon subtle cues in their appearances. You will be shown slides of four people, one at a time. Your task is to rate each person on a set of characteristics.

Study 1:

You will be given only a few minutes to rate each person, so take a good look at the person and then begin your ratings. The slide will remain on the screen while you finish your ratings. We will then move on to the next slide.

Study 2:

You will be given thirty seconds to view each slide, so take a good look at the person and then I'll turn on the lights and you may begin your ratings. We will then move on to the next slide. You will be given only a few minutes to rate each person so move quickly through the rating scales.

Your rating sheets are in front of you. There are four identical rating sheets, one for each of the slides you will see. Please make sure you use the first sheet for the first slide, the second sheet for the second slide, and so on. It is important to keep them in order. You are to circle the number you believe most accurately describes the person in the slide. For example, if you think they are moderately appealing, circle "2", if you think they are slightly unappealing, circle "5". Don't spend too long on any one item, but please circle a number for each item.

You may find it difficult to rate these people based solely on their appearances, but what we are examining is a person's ability to infer different things about different people based upon appearance. It is important that you carefully consider each of the slides and each of the adjectives and make the best choices you can. We are interested in the accuracy of your perception, not your tact or politeness.

Are there any questions?

You may discontinue this experiment at any time without penalty. Your responses are anonymous and confidential so please don't write your name on your rating sheet.

APPENDIX C

SUBJECT CONSENT FORM

APPENDIX C

SUBJECT CONSENT FORM

Michigan State University
Department of Psychology
Research Consent Form

1. I understand that I will be viewing a set of slides of people and will be rating these people on various characteristics. This will require about 25 minutes.

2. I freely consent to participate in this research which is being conducted by Melanie St. Bernard under the supervision of Dr. John Hunter.

3. This research has been explained to me and I understand the explanation and what my participation will involve.

4. I understand that I am free to discontinue my participation at any time without penalty.

5. I understand that my participation in this research does not guarantee any beneficial results to me.

6. I understand that my responses are anonymous and confidential.

7. I understand that at my request, I can receive additional information about the research after my participation is completed.

Picture Ratings

Signed_____

Date_____

APPENDIX D

SUBJECT DEBRIEFING FORM

APPENDIX D

SUBJECT DEBRIEFING FORM

Picture Ratings

This experiment was designed to examine people's perceptions of others based upon subtle differences in appearance. Past research has shown that physical attractiveness does influence how one is perceived. It is often believed that more attractive people possess numerous desirable personality traits, are more likely to capture better jobs, to have more successful marriages, and to experience happier and more fulfilling lives than less attractive persons (Dion, Berscheid, and Walster, 1972). A good review of the literature on physical attractiveness is Ellen Berscheid's chapter on "Interpersonal Attraction" in Handbook of Social Psychology (1985).

In the current experiment, I was interested in examining how subtle differences in a person's appearance affected other's perceptions of them. So other subjects were shown slides of the same people you saw, but with subtle differences in appearance. I am attempting to show that it is not only significant how attractive people are to begin with, but also "what they do with what they have".

Please do not discuss this experiment with your fellow students. It is important that future subjects who might participate in this experiment not be biased beforehand as to what this experiment is examining.

Thank you for your participation. If you have any questions, please feel free to contact me.

Melanie St. Bernard
321-1869

REFERENCES:

Dion, K., Berschied, E., and Walster, E. (1972). What is beautiful is good. Journal of Personality and Social Psychology, 24, 285-290.

Lindzey, G., and Aronson, E. (Eds.) (1985). The Handbook of Social Psychology. 3rd ed. Vol. 2. New York: Random House.

APPENDIX E

ITEM AND ITEM BY FACTOR CORRELATIONS FOR THE EVALUATIVE IMPRESSION RATINGS

APPENDIX E

ITEM AND ITEM BY FACTOR CORRELATIONS FOR THE EVALUATIVE IMPRESSION RATINGS

Table 7

Correlations Between the 25 Items.

		1	9	17	3	5	8	12	20	25	15	19	22	2	21
1	Appealing	67	73	75	39	47	48	53	41	49	47	43	34	42	44
9	Attractive	73	80	82	43	47	47	51	41	50	53	44	34	37	43
17	Good looking	75	82	83	40	45	48	54	39	46	51	45	34	40	47
3	Friendly	39	43	40	47	61	55	57	53	56	42	28	37	29	38
5	Kind	47	47	45	61	73	72	75	61	69	47	42	37	38	39
8	Warm	48	47	48	55	72	69	75	61	67	49	42	43	38	42
12	Likable	53	51	54	57	75	75	74	62	71	53	44	41	42	43
20	Agreeable	41	41	39	53	61	61	62	55	64	45	38	39	32	37
25	Approachable	49	50	46	56	69	67	71	64	68	53	45	46	35	46
15	Popular	47	53	51	42	47	49	53	45	53	62	52	55	51	62
19	Soc. Adept	43	44	45	28	42	42	44	38	45	52	39	35	47	51
22	Outgoing	34	34	34	37	37	43	41	39	46	55	35	36	42	49
2	Confident	42	37	40	29	38	38	42	32	35	51	47	42	53	68
21	Self esteem	44	43	47	38	39	42	43	37	46	62	51	49	68	70
11	Satisfied	41	45	44	48	47	50	50	47	51	59	46	49	56	61
13	Happy	45	43	46	50	57	60	59	46	55	61	49	52	60	64
4	Prestige job	50	52	51	40	34	34	40	33	39	52	45	32	53	57
7	Competent	42	39	42	28	39	38	42	29	36	44	46	31	52	54
10	Intelligent	48	46	51	32	41	41	49	33	43	51	51	30	49	58
14	High SES	46	50	50	31	31	32	35	28	35	64	52	39	53	60
16	Educated	50	48	54	32	36	38	43	34	40	56	50	32	49	59
18	Important	49	49	52	33	35	38	40	35	40	56	48	41	49	57
23	Successful	42	43	47	28	30	29	35	30	42	53	52	43	52	59
6	Energy	44	49	47	40	42	41	41	35	39	53	40	51	47	55
24	Healthy	40	41	45	26	33	35	36	33	42	34	38	31	38	48

Table 7 (cont'd)

		11	13	4	7	10	14	16	18	23	6	24
1	Appealing	41	45	50	42	48	46	50	49	42	44	40
9	Attractive	45	43	52	39	46	50	48	49	43	49	41
17	Good looking	44	46	51	42	51	50	54	52	47	47	45
3	Friendly	48	50	40	28	32	31	32	33	28	40	26
5	Kind	47	57	34	39	41	31	36	35	30	42	33
8	Warm	50	60	34	38	41	32	38	38	29	41	35
12	Likable	50	59	40	42	49	35	43	40	35	41	36
20	Agreeable	47	46	33	29	33	28	34	35	30	35	33
25	Approachable	51	55	39	36	43	35	40	40	42	39	42
15	Popular	59	61	52	44	51	64	56	56	53	53	34
19	Soc. Adept	46	49	45	46	51	52	50	48	52	40	38
22	Outgoing	49	52	32	31	30	39	32	41	43	51	31
2	Confident	56	60	53	52	49	53	49	49	52	47	38
21	Self esteem	61	64	57	54	58	60	59	57	59	55	48
11	Satisfied	65	65	50	41	43	53	45	51	54	53	38
13	Happy	65	65	45	44	48	50	47	50	49	59	41
4	Prestige job	50	45	67	52	62	72	71	62	65	47	39
7	Competent	41	44	52	46	67	53	55	51	52	40	45
10	Intelligent	43	48	62	67	67	61	73	59	63	46	45
14	High SES	53	50	72	53	61	67	68	67	63	50	34
16	Educated	45	47	71	55	73	68	70	64	62	48	42
18	Important	51	50	62	51	59	67	64	60	66	47	36
23	Successful	54	49	65	52	63	63	62	66	61	49	44
6	Energy	53	59	47	40	46	50	48	47	49	43	43
24	Healthy	38	41	39	45	45	34	42	36	44	43	43

Table 8

Correlations Between Items and Factors.

Item	Factor*					
	1	2	3	4	5	6
1 Appealing	.82	.58	.59	.54	.59	.65
9 Attractive	.89	.58	.59	.55	.59	.68
17 Good looking	.91	.57	.61	.56	.63	.70
3 Friendly	.46	.68	.49	.61	.40	.50
5 Kind	.53	.86	.57	.65	.45	.58
8 Warm	.55	.83	.60	.68	.45	.58
12 Likable	.60	.86	.62	.68	.51	.59
20 Agreeable	.46	.74	.53	.58	.41	.52
25 Approachable	.55	.82	.63	.66	.50	.62
15 Popular	.58	.60	.79	.74	.68	.67
19 Socially Adept	.50	.50	.62	.59	.62	.59
22 Outgoing	.39	.50	.60	.63	.45	.63
2 Confident	.45	.44	.73	.72	.65	.65
21 Self esteem	.51	.51	.84	.78	.73	.78
11 Satisfied	.49	.61	.76	.80	.61	.70
13 Happy	.51	.68	.80	.80	.60	.77
4 Prestigious Job	.58	.46	.67	.60	.82	.66
7 Competent	.47	.44	.63	.53	.68	.65
10 Intelligent	.55	.50	.67	.57	.82	.70
14 High SES	.56	.40	.75	.64	.82	.65
16 Educated	.58	.47	.69	.57	.84	.69
18 Important	.57	.46	.70	.62	.77	.63
23 Successful	.50	.40	.72	.64	.78	.71
6 Energy	.53	.50	.69	.70	.59	.65
24 Healthy	.48	.43	.53	.50	.51	.65

*Factor Names

1 = Attractiveness
2 = Friendliness
3 = Adjustment
4 = Satisfaction
5 = Success/Status
6 = Health

APPENDIX F

MEANS AND d VALUES WITH BREAKDOWN FOR SEX OF SUBJECT

APPENDIX F

MEANS AND d VALUES WITH BREAKDOWN FOR SEX OF SUBJECT

Table 9

Study 1. Means and d Values with Breakdown for Sex of Subject.

Stimulus Target: Female 2 N*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score							
Female S	4.69	4.52	.17	.20	.27	-.33	.73
Male S	4.46	4.33	.13	.22	.26	-.30	.73
Attractiveness							
Female S	3.90	4.01	-.11	-.08	.27	-.60	.46
Male S	3.30	3.15	.15	.14	.26	-.38	.65
Friendliness							
Female S	4.60	4.62	-.02	-.01	.27	-.54	.52
Male S	4.54	4.15	.39	.37	.26	-.15	.89
Adjustment							
Female S	4.85	4.61	.24	-.27	.27	-.26	.80
Male S	4.63	4.69	-.06	-.09	.26	-.61	.43
Satisfaction with Life							
Female	4.59	4.54	.05	.04	.27	-.49	.57
Male S	4.72	4.18	.54	.54	.27	.02	1.07
Success							
Female S	5.13	4.71	.42	.46	.27	-.07	1.00
Male S	4.80	4.84	-.04	-.04	.26	-.56	.47
Health							
Female S	4.26	4.04	.22	.22	.27	-.31	.75
Male S	4.05	4.11	-.06	-.06	.26	-.58	.45

* Female Subjects: N = Number of Observations = 57
Male Subjects: N = Number of Observations = 60
SE = Standard Error
WC = Worst Case BC = Best Case

Table 9 (cont'd)

Stimulus Target: Male 1 N*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score							
Female S	4.19	4.14	.05	.05	.27	-.48	.58
Male S	3.99	3.80	.19	.29	.26	-.23	.81
Attractiveness							
Female S	3.35	3.41	-.06	-.07	.27	-.60	.46
Male S	3.45	2.92	.53	.43	.27	-.09	.95
Friendliness							
Female S	4.19	4.74	-.55	-.47	.27	-1.01	.06
Male S	4.12	4.25	-.13	-.13	.26	-.65	.38
Adjustment							
Female S	4.13	3.85	.28	.26	.27	-.27	.79
Male S	3.87	3.66	.21	.27	.26	-.24	.79
Satisfaction with Life							
Female S	3.73	4.16	-.43	-.35	.27	-.88	.19
Male S	3.80	4.08	-.28	-.27	.26	-.79	.24
Success							
Female S	4.65	4.13	.52	.54	.27	.00	1.08
Male S	4.14	3.77	.37	.43	.27	-.09	.95
Health							
Female S	4.41	4.26	.15	.14	.27	-.39	.67
Male S	4.37	4.04	.33	.31	.26	-.21	.83

* Female Subjects: N = Number of Observations = 57
Male Subjects: N = Number of Observations = 60
SE = Standard Error
WC = Worst Case
BC = Best Case

Table 10

Study 2. Means and d values with Breakdown for Sex of Subject.

Stimulus Target: Female 1 N*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score							
Female S	4.31	3.85	.46	.54	.23	.09	.99
Male S	4.27	4.06	.21	.21	.24	-.25	.68
Attractiveness							
Female S	3.79	3.71	.08	.07	.23	-.37	.52
Male S	3.70	3.73	-.03	-.02	.24	-.49	.44
Friendliness							
Female S	4.67	4.07	.60	.49	.23	.04	.94
Male S	4.86	4.26	.60	.51	.24	.04	.98
Adjustment							
Female S	4.13	3.55	.58	.61	.23	.16	1.07
Male S	4.01	3.93	.08	.07	.24	-.39	.53
Satisfaction with Life							
Female S	4.26	3.20	1.06	.80	.24	.34	1.26
Male S	4.19	3.49	.70	.50	.24	.03	.97
Success							
Female S	4.40	4.13	.27	.32	.23	-.12	.77
Male	4.27	4.36	-.09	-.08	.24	-.55	.38
Health							
Female S	4.15	3.88	.27	.23	.23	-.22	.67
Male S	4.11	3.88	.23	.19	.24	-.28	.65

* Female Subjects: N = Number of Observations = 80
Male Subjects: N = Number of Observations = 74
SE = Standard Error
WC = Worst Case
BC = Best Case

Table 10 (cont'd)

Stimulus Target: Female 2 N*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score							
Female S	5.07	4.91	.16	.21	.23	-.23	.66
Male S	4.86	4.44	.42	.51	.24	.04	.98
Attractiveness							
Female S	4.48	4.10	.38	.31	.23	-.13	.76
Male S	3.62	3.46	.16	.11	.24	-.35	.58
Friendliness							
Female S	5.24	5.18	.06	.05	.23	-.40	.49
Male S	4.87	4.65	.22	.18	.24	-.28	.64
Adjustment							
Female S	5.12	4.94	.18	.20	.23	-.25	.64
Male S	5.09	4.54	.55	.60	.24	.13	1.07
Satisfaction with Life							
Female S	5.15	5.05	.10	.08	.23	-.37	.52
Male S	4.91	4.63	.28	.20	.24	-.26	.66
Success							
Female S	5.23	5.05	.18	.21	.23	-.24	.65
Male S	5.29	4.77	.52	.59	.24	.12	1.06
Health							
Female S	4.73	4.59	.14	.13	.23	-.32	.57
Male S	4.53	3.66	.87	.69	.24	.22	1.17

* Female Subjects: N = Number of Observations = 80
Male Subjects: N = Number of Observations = 74
SE = Standard Error
WC = Worst Case
BC = Best Case

Table 10 (cont'd)

Stimulus Target: Male 1 N*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score							
Female S	3.26	3.43	-.17	-.21	.23	-.65	.24
Male S	3.37	3.86	-.49	-.55	.24	-1.02	-.08
Attractiveness							
Female S	2.68	2.66	.02	.02	.23	-.42	.47
Male S	2.72	2.99	-.27	-.24	.24	-.70	.22
Friendliness							
Female S	3.37	3.78	-.41	-.36	.23	-.80	.09
Male S	3.68	4.36	-.68	-.57	.24	-1.04	-.10
Adjustment							
Female S	3.33	3.46	-.13	-.14	.23	-.58	.31
Male S	3.41	3.95	-.54	-.54	.24	-1.01	-.07
Satisfaction with Life							
Female S	3.08	3.45	-.37	-.28	.23	-.73	.17
Male S	3.17	3.81	-.64	-.54	.24	-1.01	-.07
Success							
Female S	3.33	3.46	-.13	-.14	.23	-.58	.31
Male S	3.42	3.81	-.39	-.37	.24	-.83	.10
Health							
Female S	3.51	3.37	.14	.12	.23	-.32	.56
Male S	3.34	3.71	-.37	-.35	.24	-.81	.12

* Female Subjects: N = Number of Observations = 80
Male Subjects: N = Number of Observations = 74
SE = Standard Error
WC = Worst Case
BC = Best Case

Table 10 (cont'd)

Stimulus Target: Male 2 N*

Scale	Right Color	Wrong Color	Difference	d	SE*	95% Confidence Interval WC*	BC*
Total Score							
Female S	4.28	4.76	-.48	-.54	.23	-.99	-.09
Male S	4.29	4.79	-.50	-.62	.24	-1.10	-.15
Attractiveness							
Female S	3.65	4.29	-.64	-.52	.23	-.97	-.07
Male S	3.59	4.01	-.42	-.37	.24	-.83	.10
Friendliness							
Female S	4.68	5.24	-.56	-.56	.23	-1.01	-.10
Male S	4.64	5.21	-.57	-.62	.24	-1.10	-.15
Adjustment							
Female S	4.19	4.67	-.48	-.51	.23	-.96	-.06
Male S	4.18	4.74	-.56	-.52	.24	-.99	-.05
Satisfaction with Life							
Female S	4.39	4.72	-.33	-.28	.23	-.73	.17
Male S	4.12	4.74	-.62	-.48	.24	-.95	-.01
Success							
Female S	4.27	4.71	-.44	-.44	.23	-.89	.01
Male S	4.44	4.86	-.42	-.48	.24	-.95	-.01
Health							
Female S	4.17	4.41	-.24	-.21	.23	-.66	.23
Male S	4.15	4.67	-.52	-.48	.24	-.95	-.01

* Female Subjects: N = Number of Observations = 80
Male Subjects: N = Number of Observations = 74
SE = Standard Error
WC = Worst Case
BC = Best Case

LIST OF REFERENCES

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Abramov, I. (1985). An analysis of personal color analysis. In M. R. Solomon (Ed.), The Psychology of Fashion (pp. 211-223). Lexington, MA: Lexington Books.

Adams, G. R. (1981). The effects of physical attractiveness on the socialization process. In G. W. Lucker, K. A. Ribbens, and J. A. McNamara, Jr., (Eds.), Psychological aspects of facial form. (Monograph #11, Craniofacial Growth Series), Ann Arbor, Mich.: Center for Human Growth and Development.

Bar-Tal, D., and Saxe, L. (1976). Physical attractiveness and its relationship to sex-role stereotyping. Sex Roles, 2, 123-133.

Barocas, R., and Karoly, P. (1972). Effects of physical appearance on social responsiveness. Psychological Reports, 31, 495-500.

Benson, P. L., Karabenick, S. A., and Lerner, R. M. (1976). Pretty pleases: The effects of physical attractiveness, race, and sex on receiving help. Journal of Experimentl Social Psychology, 12, 409-415.

Berscheid, E., and Walster, E. (1974). Physical attractiveness. In L. Berkowitz (Ed.), Advances in experimental social psychology. (Vol. 7). New York: Academic Press.

Brothers, J. (1988). How to feel beautiful. Good Housekeeping, July, 1988. 48-50.

Brundage, L. E., Derlega, V. J., and Cash, T. F. (1977). The effects of physical attractiveness and need for approval on self-disclosure. Personality and Social Psychology Bulletin, 3, 63-66.

Courtney, A. E., and Whipple, T. W. (1983). Sex stereotyping in advertising. Lexington, MA: Lexington Books.

Dion, K. (1972). Physical attractiveness and evaluation of children's transgressions. Journal of Personality and Social Psychology, 24, (2), 207-213.

Dion, K., Berscheid, E., and Walster, E. (1972). What is beautiful is good. Journal of Personality and Social Psychology, 24, (3), 285-290.

Dion, K. K., and Stein, S. (1978). Physical attractiveness and interpersonal influence. Journal of Experimental and Social Psychology, 14, 97-108.

Francis, S. K., and Evans, P. K. (1987). Effects of hue, value, and style of garment and personal coloring of model on person perception. Perceptual and Motor Skills, 64, 383-390.

Francis, S. K., and Evans, P. K. (1988). Effects of hue, value, and garment style on college recruiters' assessments of employment potential. Perceptual and Motor Skills, 67, 87-93.

Gibbins, K. (1969). Communication aspects of women's clothes and their relation to fashionability. British Journal of Social and Clinical Psychology, 8, 301-312.

Jackson, C. (1980). Color me beautiful. Washington, D.C.: Acropolis Books LTD.

Jackson, D. J., and Huston, T. L. (1975). Physical attractiveness and assertiveness. Journal of Social Psychology, 96, 79-84.

Jackson, D. N., and Minton, H. L. (1963). A forced-choice adjective preference scale for personality assessment. Psychological Reports, 12, 515-520.

Jackson, L. A., Sullivan, L. A., and Rostker, R. (1988). Gender, gender role, and body image. Sex Roles, 19, 429-443.

Landy, D., and Sigal, H. (1974). Beauty is talent: Task evaluation as a function of the performer's physical attractiveness. Journal of Personality and Social Psychology, 29, 299-304.

Lerner, R. M., and Karabenick, S. A. (1974). Physical attractiveness, body attitudes, and self-concept in late adolescents. Journal of Youth and Adolescence, 3, 307-316.

Mahannah, L. (1968). Influence of clothing color on the perception of personality. Unpublished Master's thesis. University of Nevada, Reno.

McKeachie, W. J. (1952). Lipstick as a determiner of first impressions of personality: An experiment for the general psychology course. The Journal of Social Psychology, 36, 241-244.

Miller, A. G. (1970). Role of physical attractiveness in impression formation. Psychonomic Science, 19, 241-243.

Nethery, B. and Smith, B. B. (1984). Uniquely you. Wheaton, IL.: Tyndale House Publishers, Inc.

Radeloff, D. (1990). Role of Color in Perception of Attractiveness. Perceptual and Motor Skills, 71, 155-160.

Roberts, E. J. (1982). Television and sexual learning in children. In D. Pearl, L. Bouthilet, and J. Lazar (Eds.), Television and behavior: Ten years of scientific progress and implications for the eighties. (Vol. 2, pp. 209 - 223). Washington, DC: U.S. Government Printing Office.

Rodin, J., Silberstein, L., and Striegel-Moore, R. (1985). Women and weight: A normative discontent. In T. B. Sonderegger and R. A. Dienstbier (Eds.), Nebraska Symposium on Motivation 1984 (Vol. 33, pp. 267-307). Lincoln: Univeristy of Nebraska Press.

Schneider, D. (1974). Effects of dress on self-presentation. Psychological Reports, 35, 167-170.

Seligman, C., Paschall, N., and Takata, G. (1974). Effects of physical attractiveness on attribution of responsibility. Canadian Journal of Behavioral Science, 6, 290-296.

Sigall, H., and Aronson, E. (1969). Liking for an evaluator as a function of her physical attractiveness and the nature of the evaluations. Journal of Experimental Social Psychology, 5, 93-100.

Sigall, H., and Ostrove, N. (1975). Beautiful but dangerous: Effects of offender attractiveness and nature of the crime on juridic judgment. Journal of Personality and Social Psychology, 31, 410-414.

Sigal, H., Page, R., and Brown, A. (1971). The effects of physical attraction and evaluation on effort expenditure and work output. Representative Research in Social Psychology, 2, 19-25.

Waters, Judith. (1984). Reported in Polished Looks Pay 8% in Job Market. American Health, May, 1884, 27.

Wenburg, J. R., and Wilmot, W. W. (1973). The personal communication process. New York: Wiley.