The Effects of Baker-Miller Pink on Biological, Physical and Cognitive Behaviour

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Abstract

Studies and reports examining the influence of the colour Baker-Miller pink on behaviour have yielded conflicting results. In this study, 54 subjects were exposed to two experimental conditions with different visual stimuli — white and Baker-Miller pink. Group One was exposed to the white condition followed by the pink condition. Group Two was exposed initially to the pink condition followed by the white condition. Blood pressure, pulse rate, grip strength, and performance on the Digit-Symbol subtest of the WAIS-R were monitored under both experimental conditions. Significant differences were found only on the Digit-Symbol measure, and this was attributed to possible practice effects.

The Effects of Baker-Miller Pink on Physiological and Perceptual Motor Behaviour

Can the hue of a visual stimulus influence behaviour? In recent years the effect of the colour Baker-Miller Pink on human behaviour has been a topic of discussion in the popular and professional literature (Schauss, 1979; Pellegrini, Schauss, and Birk, 1980; Snyder, 1981; and Pellegrini, Schauss, Kerr, and Ah You, 1981). Although several studies affirm its influence on behaviour (Pellegrini et al, 1980; Pellegrini and Schauss, 1980; Schauss, 1979), others do not (Pellegrini et al, 1981; Schwartz, Harrop, Loves, Marchand and Read, 1983).

Baker-Miller pink, named for two U.S. Naval Officers who first tested the effects of the colour in a Naval Correctional facility, is produced by mixing one pint of outdoor semi-gloss red trim paint and one gallon of pure white indoor latex paint (Schauss, 1981). The effect of exposure to Baker-Miller pink is purported to reduce aggressive and violent behaviour (Schauss, 1981; Snyder, 1981), reduce strength (Pellegrini et al, 1980; Pellegrini and Schauss, 1980), and lower blood pressure and pulse rate (Schauss, 1981). These reported effects were achieved by exposing individuals to a variety of visual stimuli that were painted Baker-Miller pink (Schauss, 1980). The length of exposure to the colour is reported to be relevant with optimal effects being achieved within fifteen minutes of initial exposure (Schauss, 1980; Wilson, 1985). Currently, a study carrel painted Baker-Miller pink is being marketed for use by educators. The distributor suggests it is an effective tool for relaxing and calming aggressive or anxious students and improving attention span and distractibility (Wilson, 1985).

While the described effects of Baker-Miller pink are impressive, the scientific research to support them is limited. Many of the studies published to date appear to suffer from inadequate research design, confounding variables, lack of specificity in describing the methods and procedures utilized, and/or questionable data recording practices. Furthermore, conflicting results have been reported (Pellegrini et al, 1981; Schwartz et al, 1983).

The objective of this study was to compare the effects of two visual stimuli, one Baker-Miller pink and the other white, on four variables: blood pressure, pulse rate, grip strength, and performance on the Digit Symbol subtest of the Wechsler Adult Intelligence Scales-Revised (WAIS-R) (Wechsler, 1981). The first three dependent variables have been used in prior research to study the effects of Baker-Miller pink. The fourth, coding ability under time limits is used in the WAIS-R and is reported to be influenced by anxiety, attention, and distractibility (Wechsler, 1981). Coding ability was used in this study to substantiate Wilson's (1985) claims that Baker-Miller pink relaxes and calms students, helps reduce tension and anxiety,

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and improves short attention span and distractibility. Analysis of the effects of Baker-Miller pink on these four identified variables can provide additional data for evaluation of the purported effects of this colour on human behaviour.

Methods

Subjects

The volunteer subjects were 54 adults. Thirty four were graduate or undergraduate students at The University of Texas at Austin. The remainder of the subjects (20) were employed in various occupations in the Austin, Texas area. The subjects were divided into two groups. Group One was composed of 27 subjects; nineteen females and eight males with an average age of 28.8 years. Group Two also consisted of 27 subjects; twenty females and seven males with an average age of 33.3 years. All subjects reported to be in good physical health and unaware of any physical or health problems.

Instruments

Blood pressure and pulse rate were obtained on the Astropulse (TM) 77 Digital Electronic Blood Pressure/Pulse Monitor (Marshall Electronics, 1983). The unit is battery operated and readouts are provided on a LCD digital display. There is a measurement range of 0-300 mmHg for pressure and 40-200/minute for pulse with an accuracy/calibration factor of ±3 mmHg.

A dynamometer, manufactured by the Lafayette Instrument Company of Lafayette, Indiana was used to measure grip strength. Grip strength was registered in kilograms.

The Digit Symbol subtest of the WAIS-R was used to measure coding ability. This subtest of the WAIS-R is a performance measure which requires the subject to code simple symbols matched with numerals. The subject is given two minutes to code the 93 items on the test. This subtest has demonstrated reliability and validity as a measure of perceptual-motor ability.

Materials

The materials included the Pink Relaxation Center/Study Carrel available from Human Edge Systems, Gig Harbor, Washington. The back panel of the carrel is 24 inches wide, 16 inches high, and 12 inches deep, with two side panels 12 inches deep and 16 inches high. All panels are Baker-Miller pink on one side and white on the other. A Casio CA-50 alarm chronograph was used in the stopwatch mode to record time. The LCD digital readout recorded time to the hundredth of a second.

Procedures

The subjects were tested individually in an empty office, classroom, or private area free from visual distractions and isolated from personal contact. Subjects were seated facing the panels of the carrel. Group One subjects were exposed initially to the white carrel, while Group Two subjects began with the pink carrel. A short interview was completed to gather demographic and health data. Figure 1 depicts the design of the experiment.

Figure 1.

Condition	Elapsed Time	Measurements
Baseline	0'	blood pressure/pulse grip strength
White-1	5'	blood pressure/pulse grip strength
	7'	Digit Symbol Test
White-2	10'	blood pressure/pulse grip strength
Pink-1	15'	blood pressure/pulse grip strength
	17'	Digit Symbol Test
Pink-2	20'	blood pressure/pulse grip strength

* For Group Two, the conditions were Pink-1, Pink-2, White-1, White-2.

After the stopwatch was started and the subject's blood pressure and pulse were taken, two methods of using the dynamometer were demonstrated. The first was to hold the dynamometer in the strongest hand at shoulder level with a bent elbow and then lower the dynamometer to one's side while squeezing it with maximum force. The second method was to hold the dynamometer straight down at one's side and squeeze with maximum force. Three squeezes on the dynamometer were completed. The subjects were told to try the first method initially, then the second method, and on the third squeeze (and all subsequent ones) to use the method that they felt provided the strongest squeeze. (The average of the scores on the three squeezes was recorded as the strength score.) After five minutes elapsed time, during which the subjects were staring at the white or pink panels, or reading the printed information on the blood pressure unit, the second set of measurements were recorded. These measurements were the same as the baseline measures (blood pressure, pulse rate and three squeezes on the dynamometer). After seven minutes elapsed time, the Digit Symbol Test was administered according to the standard procedures. After ten minutes elapsed time, blood pressure, pulse rate and three squeezes on the dynamometer were again recorded. This provided data for evaluating the effects of the initial colour condition on the dependent variables.

After the last set of measurements in the initial colour condition, the panels of the carrel were dismantled and reassembled so the subjects were exposed to the second colour condition (Group One exposed to Baker-Miller pink; Group Two exposed to white). The subject again stared at the panels or read for five minutes. After 15 minutes elapsed time (from the beginning of the experiment), blood pressure, pulse, and grip strength were measured. After 17 minutes elapsed time, the Digit Symbol Test was given. Because the subjects were aware of the procedure, no practice items were given on the Digit Symbol Test. After 20 minutes total elapsed time, the final blood pressure, pulse, and grip strength measures were taken.

Table 1.
Mean Score Differences for Group One (n = 27)

Condition	Systolic		Dystolic		Pulse		Strength		D-S Score		Time	
	X	SD	X	SD	X	SD	X	SD	X	SD	X	SD
Baseline	110	16.8	74	11.9	73	13.5	25	11.1				
White-1	109	16.7	74	11.9	75	11.9	27»	12.0	79	14.9	116"	6.7
White-2	110	17.5	75	13.6	75	14.6	26	12.1				
Pink-1	108	13.5	75	11.5	73	12.2	26	11.5	85**	11.1	114"*	8.9
Pink-2	107	18.6	74	11.3	73	13.0	26	12.2				

Mean Score Differences for Group One (n = 27)

Condition	Systolic		Dystolic		Pulse		Strength		D-S Score		Time	
	X	SD	X	SD	X	SD	X	SD	X	SD	X	SD
Baseline	117	16.5	76	11.6	76	17.2	40	15.9				
Pink-1	115	14.8	78	10.6	78	16.0	38**	14.8	75	12.0	119"	4.8
Pink-2	113	14.4	78	12.4	77	15.6	39*	14.4				
White-1	114	15.5	78	12.9	76	17.4	38**	15.1	82**	10.7	116.6*	8.2
White-2	112	13.0	77	9.0	76	18.1	38*	14.8				

*** p < .05** **** p < .01**

Results

Table 1 presents the results. Data were analyzed using a T-Test for matched pairs procedure (Nie, Hull, Jenkins, Steinbren-ner, and Bent, 1975). Each set of measures was contrasted with the corresponding baseline measure.

For Group One subjects the results indicated no significant differences in the dependent variable measures, blood pressure and pulse rate under the two experimental conditions (white visual stimuli and Baker-Miller pink visual stimuli). There were significant differences ($p. < .05$) on the strength scores between the baseline condition and White-1 condition (five minutes of exposure to the white condition), and on the WAIS-R Digit Symbol Test scores ($p. < .01$) undet the two experimental conditions. Scores under the Baker-Miller pink condition were higher than the scores under the white condition. Additionally, subjects took significantly less time ($p. < .05$) to complete the Digit Symbol Test under the pink condition. To assess the saliency of these results, a reversal procedure was utilized with Group Two to see if these results could be replicated.

Group Two subjects experienced the pink visual stimuli first and the white stimuli second with the same amount of exposure time as Group One. They also demonstrated significant differences on the strength scores and the Digit Symbol Test scores under the two conditions. Unlike Group One, all of the strength test scores were significantly different from the baseline condition. There were no significant differences between the scores on the white versus the pink condition, however. Scores on the Digit Symbol test were significant at the .01 level for raw score and .05 for time between the pink versus white conditions.

Discussion

The results of this study are similar to those of Pellegrini, et al (1981) and Schwartz, et al (1983) and do not support the contention of Schauss (1981) that Baker-Miller pink lowers blood pressure, or the contention of Pellegrini, et al (1980) and Pellegrini and Schauss (1980) that it reduces strength. The effects of the pink stimulus on Group One subjects suggested that it affected strength and coding ability. When conditions were reversed (pink condition first, white second) for Group Two subjects, similar results were obtained. Given that the subjects retook the Digit Symbol Test within a short interval of time, it seems reasonable to hypothesize that the improved scores and times were at least in part, due to practice. Strength scores were not significantly different between stimulus conditions for either group. Thus, our conclusion is that the stimulus condition was not proven responsible for the effect.

The results of research on the effects of Baker-Miller pink are conflicting and further research is indicated. However, in search of techniques and materials to utilize in the management of disruptive, disturbing, and violent behaviour, professionals should exercise caution in the adoption of methods and materials based upon the earlier reported positive effects of exposure to the Baker-Miller pink colour.

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