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INVESTIGATION OF PSEUDO-MUTUALITY,
DOUBLE BINDING AND SCAPEGOATING
-AN EXPECTATION STATES APPROACH*

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The following is a reformulation of some family processes in terms of small group and social psychological theories. It results in a theory which asserts that ambiguous and contradictory communication between two persons, usually an adult and a child, under certain circumstances can become translated into stereotyped role behaviors between those two persons. Stereotyped role behaviors have been documented in disturbed family functioning labelled as pseudo-mutuality and scapegoating. A preliminary laboratory investigation of the theory confirms the predictions made from it. The implications are that if this theory is tenable, it provides a simple way to integrate the concepts of pseudo-mutuality, double binding and scapegoating and shows how these processes relate to the power positions of family members.

BACKGROUND RESEARCH

This research interest derives from studies of small group and family processes of the last twenty years. Principally, it focuses on reformulating and synthesizing the theory of the double bind proposed by Bateson et al. (2) with ideas of pseudo-mutuality by Wynne et al. (23) and scapegoating by Vogel and Bell (20). Briefly, these arguments have proposed that pathological group processes put pressure on the individual, causing him to behave in a disturbed or symptomatic manner. In the case of the double bind, Bateson et al. proposed that paradoxical communication arising out of intense ambivalence from parent to child, places the child in an untenable situation. Simultaneously, the child is being given two contradictory messages (e.g. 'come close and stay away because I can't tolerate you') so that it is impossible to respond in a manner that is entirely acceptable to his parent. Bateson et al. believed that the child learns over time to respond to paradoxical messages concretely and thus symptomatically in the form of schizophrenic behavior. Perhaps no other concept

in family research has provoked as much interest, controversy and research. It heralded a whole new therapeutic strategy based on therapeutic paradox (21,22). In the case of pseudo-mutuality, Wynne et al. proposed that in some severely disturbed families, very few overt conflicts emerged. Instead there seemed to be a conspiracy of mutuality and total agreement which he termed 'pseudo-mutuality'. They and other clinician-researchers (e.g. Brodey, 6) observed instead of overt conflict, rigid role relationships between family members which appeared to have the effect of divesting the child of individual identity. Thus the child became part of the family edifice which constrained the family 'myth' of mutuality. Related ideas were expressed by Vogel and Bell (20) who noted that in certain family situations, one child appeared to be selected out for special negative attention and became the scapegoat for the group. The other family members appeared to be free to behave more spontaneously compared to the unfortunate child who was labelled and responded to meaningfully only when he was acting in his stereotyped or 'bad' role. Clinical researchers have long been aware that the relative power of family members and coalitions of power play a vital role in determining who is selected for scapegoating and who is manipulated into roles and positions. In each of these situations, the target family member is inducted into a stereotyped or labelled role. How do all these ideas fit together and what precisely is the mechanism for the child being inducted into such a role? This has been unclear in the literature.

Some theories developed in small group and social psychology will be used to integrate these ideas into one simple testable theory. Though the basic concepts are not new, the integration in this form does produce a new perspective and may yield more effective interventions. The reformulation relies on the theoretical contribution of power-dependence theory,

Emerson, (7), expectation states theory, Berger et al., (3,4) and attribution processes, Jones et al., (9); Bem, (5). These ideas are summarized very briefly for the reader not familiar with these literatures.

Emerson's is a very simple but highly general argument peculiarly suited to family situations, which delineates the conditions under which P will exercise power over O (i.e. any two persons in a dyadic relationship). He asserts that the power of P over O is equal to the dependence O has on P. The power of P is defined as the amount of resistance on the part of O which can be potentially overcome by P and dependence of O on P is directly proportional to O's motivated investment in goals mediated by P, and inversely proportional to the availability of those goals to O outside the O-P relationship. Emerson's argument includes the possibility that O may exercise power over P in some other area of interest, producing a mutual interdependence between the two.

Expectation states theories, on the other hand, trace the process by which the behavior of persons in a group in a task situation is a direct function of the expectations that the members have for each others' performance. Though it deals mainly with how status organizes interaction, and shows how status characteristics (e.g. sex, race, age, education) become self-fulfilling prophecies thus maintaining themselves as status characteristics, the theoretical strategy of this research program and the underlying premise that expectations determine behavior and behavior, in turn, confirms and determines expectations, is of central importance to family processes. Not that this is so new. For a long time family therapists have emphasized that family members' behavior is determined by the expectations they have, Laing (11,12) and the shared conception of family goals were seen as central in shaping the behavior of its members, Wynne et al

(23). However, what are precisely the conditions and processes for the path from expectations to behavior is rigorously conceptualized and explained in expectation states theory.

Finally, recent interest in attribution in social psychology motivates the reformulation. Attribution theorists see personality traits and predispositions not as properties of the individual but as constructions of the naive observer whose task it is to determine the causes of behavior, in particular to delineate when behavior is caused by the situation and when it is caused by enduring traits and attributes of persons. Attributional biases and errors are currently of high interest in this field, Ross (16) and even more recently, the behavioral results of attributional biases are seen as having implications for stereotyping, Snyder et al. (18); Snyder and Swan (19).

REFORMULATION OF DOUBLE BINDING, PSEUDO-MUTUALITY AND SCAPEGOATING

Informal Explication

Very briefly, the theory applies to a relationship between two persons where at least one person is dependent upon the other and feels it is vitally important that he discriminate the communicated message of the other person. If he receives an unclear or ambiguous message and if he is unable to meta-communicate (i.e. comment on or question the intended meaning), then he will decipher and act on the message in the following way. He will apply a previously formed belief (or expectation) about the other person, called a personal attribute, and respond to that attribute. Providing that his partner also does not meta-communicate, this person has confirmed and strengthened his belief about that personal attribute and confined his own behavior in a role complementary to that attribute. This, if repeated,

stereotypes the behaviors of both persons in the relationship. We shall attempt to explicate this by appealing to a series of illustrative examples before presenting the formal system of propositions.

We can imagine a situation where a child is either afraid to question an unclear message that his teacher gives him, or does not have the cognitive maturity to ask an appropriate question. This argument asserts that he will respond not to the unclear message but to a previously held belief about his teacher's needs or likes. For example, if he believes that his teacher likes him to write neatly or sit quietly, then when he cannot decipher the teacher's directions, such a child may behave by writing neatly or sitting quietly. If for any reason it is not in the interests of the teacher to meta-communicate about his inappropriate response to her message, then the child's creative responses to his problem are stifled and the child and teacher are caught in the bind of acting towards each other in an 'acceptable' but stereotyped manner that never raises for comment the unclear issues between them. The child is then labelled as a 'good child but not over-bright'.

Another illustration would be the situation known as separation anxiety or 'school phobia'. The child faced with entering school, communicates by his behavior a natural ambivalence about remaining at school and leaving his mother. Where the mother has pre-formed expectations that her child is 'sensitive, afraid and dependent', she will interpret this ambiguous message by behaving towards him with a degree of nurturance and reassurance that quickly reinforces his dependence on her and clarifies his ambivalence in the direction of him believing that he cannot, indeed, be separated from her.

Such processes are most likely to occur in family and group settings.

where there is mutual interdependence and joint performance of tasks. It is commonly known that if a child is believed to be aggressive, then in an unclear situation, he is most likely to be blamed for fighting with his sibling and the belief about his aggressiveness is confirmed. If a father is unsure of how to intervene in a conflictful situation, and if he believes the mother to be 'emotional and irrational', then the father anticipating this behavior in the absence of effective meta-communication, may tend to complement her by becoming increasingly 'cold and rational'. This quickly escalates into rigid complementary role relationships. The same processes are implicated in 'boring' marriages where each partner is acting in anticipation of strongly held beliefs about the other, and by so doing confirms these beliefs and fulfills those expectations. It can be seen that pseudo-mutuality and scapegoating are two ways of describing how beliefs about the other person are activated and reinforced when communication is obscure or inadequate to challenge the status quo of a relationship, where the persons in the relationship are dependent upon one another so that leaving is not an option.

Now there are two kinds of beliefs about the enduring traits and personality predispositions which we can hold about other people:- Ones relevant to specific situations ('she likes to sleep late on weekends'; 'he doesn't like to discuss problems until after he has eaten'; 'he is always very angry when his son lies';) and ones that are diffuse and situation non-specific ('she is moody'; 'he is a happy person'; 'he is an angry person'). When there is ambiguity, it is asserted that a person will search for a belief relevant to the specific situation and apply that belief. If such situation-specific beliefs are unavailable, then it is asserted that general, non-specific beliefs are activated to resolve the ambiguity.

Thus, for example, the teenager labelled 'schizophrenic' may be ambivalent and therefore send a contradictory message about wanting to find work and assert his independence. If this message is incomprehensible to his parents in that situation, he may be interpreted as 'crazy again' and measures are taken for his treatment.

Thus to the extent that there is ambiguity in any of these situations it is asserted that stereotyped beliefs or attributes about each other will be used to resolve the unclarity thus reinforcing the stereotypes of both partners in the relationship. Family and group functioning is able to continue without overt conflict, at the expense of over-simplifying the roles of the family/group members. Note that all this occurs in the absence of meta-communication i.e. communication at the level of commenting on and clarifying the relationships between the participants in that situation. It is asserted that it is primarily the fear of losing the relationship or cognitive immaturity that prevents meta-communication on the part of the dependent person. On the part of the more powerful person, it may be a maneuver for personal benefit to not meta-communicate.

Formal Reformulation of the Theory

For the reader who is interested in examining the interrelationships of the propositions, the theory is more rigorously presented in the following manner.

Scope Conditions. A relationship of expected mutuality (Situation S_m) comprise the scope conditions sufficient for the argument. Expected mutuality, or an orientation to mutuality occurs, when any two or more persons are engaged in ongoing interdependent interaction which is goal directed. Goal directed activity includes not only objective task behaviors

(for example, domestic chores, financial planning and management, child discipline) but can also include activities which fulfill each other's emotional and personal needs (for instance, sharing experiences and feelings in conversation and sexual activity in intimate relationships). Now two crucial concepts in this relationship of expected mutuality are firstly, sets of complementary behaviors and secondly, degree of reciprocity.

Sets of Complementary Behaviors. Any goal directed activity engaged in collectively by two or more persons requires co-ordination and co-operation so that the actions of the participants must be complementary to one another. From this we derive the idea that such goal directed activities involve the partition of actions in a given situation between the participants¹ in order to complete the activity. These partitions taken together make up the set of behaviors perceived as necessary to complete the activity. Thus any particular participant in S_m engaging in a behavior immediately defines the behaviors which are complementary to his or hers.

Degree of Reciprocity. Now it is believed that the degree to which the participants are oriented to a relationship of mutuality is directly proportional to the interests they have in the relationship, or the benefits that accrue. In order for any relationship to continue overtime, there needs to be some degree of reciprocity which means here the mutually contingent exchange of benefits between the two or more persons involved. Empirically it is observed that the amount of interest each member has in the relationship may not be equal. In fact we shall make use of Emerson's Power-Dependence argument (7) here to explain the conditions under which

1 Note that the partition is defined on the participants, not on the nature of the activity itself. Thus in terms of activity, two participants may or may not be performing similar behaviors.

one person in the relationship has more power to define the nature of the complementary roles in the relationship than the other.

The primary concern of the theory are the conditions overtime under which the pattern of behaviors between two or more persons in S_m (or the partitions of a set of behaviors) are varied and flexible versus the conditions under which the patterns of behaviors become stereotyped and inflexible. A closely related interest (in fact the other side of the coin) are the conditions under which dispositional attributes are made about the people in these situations, and the process by which such beliefs about causality are self-fulfilling and therefore reinforced.

The theory is p-centric, which means that we are taking the internal perspective of P who is interacting with another O. However, the process must be looked at from both person's (P and O's) point of view. While this formulation deals with only two participants, the idea is generalizable to small groups of more than two. By definition, one cannot NOT communicate. All behaviors, including silence is a form of communication.

Definition 1. Meta-communication. Meta-communication occurs if and only if P and/or O raise questions or make comments about the nature of the set of complementary behaviors between them implied in the communication in S_m . (It is regarded, therefore, as challenging or raising key issues in the relationship between P and O.)

Assumption 1. The likelihood of O meta-communicating in any given situation is a) directly proportional to O's cognitive maturity and ability to meta-communicate. b) directly proportional to the expected benefits accruing from that

meta-communication. c) inversely proportional to the expected costs of that meta-communication.

The double bind will be redefined to describe a process (described below in assumptions 2-5) whereby ambiguous communication leads to a pattern of stereotyped role behaviors between P and O in S_m . It is asserted that, to the extent that P and O do not meta-communicate following ambiguous communication, then the more P and O are likely to be subject to the process of the double bind.

Definition 2. Specific Personal Attribute. A specific personal attribute is any predisposition of O which is ascribed to him by P if and only if a) the states of these predispositions are qualitatively distinctive b) to each state of these predispositions there corresponds a distinct expectation state as to O's preferred actions in a specific situation.

Definition 3. General Personal Attribute. A general personal attribute is any predisposition of O which is ascribed to him by P if and only if a) the states of these predispositions are qualitatively distinctive b) to each state of these predispositions there corresponds a distinct expectation state as to O's preferred actions across many different situations.

Assumption 2. The Principle of Personal Identification of Interaction. a) The more frequently any particular set of complementary behaviors is enacted by P and O in a given situation, the more such behaviors will tend to be assigned by P (or O) as specific personal attributes to O (or P). b) The more frequently any particular set of complementary behaviors is enacted by P and O across many different

situations, the more such behaviors will tend to be assigned by P (or O) as general personal attributes to O (or P).

Definition 4. Ambiguous Communication. A communication of P to O is ambiguous if and only if a) P gives insufficient information or b) P gives contradictory information or c) P gives disordered information about preferred actions for self (P) or other (O) in a given situation.

Assumption 3. In S_m , if P communicates an ambiguous message to O and if O does not meta-communicate, then O will tend to assign a meaning to the communication which is consistent with an assigned specific personal attribute of P relevant to that specific situation.

Assumption 4. In S_m , if P communicates an ambiguous message to O and if O does not meta-communicate, and if there is no available specific attribute of P relevant to that situation, then O will tend to assign a meaning to that communication which is consistent with a general personal attribute.

Assumption 5. In S_m , if O assigns a meaning to the communication from P which is consistent with an assigned specific or general personal attribute of P, then O will behave in a manner complementary to that assigned personal attribute.

Assumption 6. In S_m , if O behaves in a manner complementary to an assigned personal attribute of P, and if P does not meta-communicate, then P will behave in a manner congruent

with that assigned personal attribute.

This completes the main body of the argument in its present stage of development. In summary, it asserts that when P and O do not meta-communicate, ambiguous communication between them leads to the enactment of one particular partition of a set of complementary behaviors (which will then become stereotyped role responses to each other). Furthermore, the more often they perform these stereotyped responses to each other, the stronger are the beliefs that these responses reflect enduring traits or attributes about each other.

One obvious indeterminacy of the theory is under what conditions, or for what reasons might P communicate ambiguously to O? Three possibilities come to mind. Firstly, the most simple and obvious case is where ambiguity is unintentional and the sender is unaware the message is confusing. The most likely response in this case would be meta-communication - i.e. simply a request for clarification from the receiver. This may not occur, however, if there is a perceived power-dependence relationship between P and O. Secondly, to the extent that P expects or fears challenge to a status quo which is of benefit to him and the greater he perceives O's interest in maintaining the relationship, the more P may intentionally distort or disorder the communication. In this case P expects that O will not meta-communicate (or P may deliver a further injunction prohibiting meta-communication). Consequently P expects, without asserting his will overtly, that O will assign a meaning to the ambiguous message which is consistent with a previously assigned specific or general personal attribute and act in a manner complementary to that, thus preserving the status quo. Thirdly, it is suggested that

ambiguous communication may arise out of internal conflict and ambivalence of P towards O. If P is ambivalent, he will tend to communicate a contradictory or paradoxical message. This idea is probably most closely in line with the original formulation of the double bind which was seen as arising out of intense ambivalence. Certainly in clinical situations it has been very frequently observed that conflict rapidly escalates into a pattern of stereotyped role behaviors between the participants and consequently to reinforcement of stereotypic beliefs in assigned personal attributes. Meta-communication is particularly difficult when ambivalence is intense because there is seldom any satisfactory resolution of contradiction possible.

Diagram 1 summarizes the causal paths from ambiguous communication to stereotyping argued in this paper.

Diagram 1 near here

EMPIRICAL TEST OF THE THEORY

The strategy used to test an argument like the one above is to operationalize first the most central part of the process in a controlled laboratory study where the independent variables can be clearly manipulated. The central assumptions of this argument are 3, 4 and 5 which, in sum, state that in a situation of expected mutuality, if P communicates an ambiguous message to O, and if O does not meta-communicate, then O will use previous beliefs about P's personal attributes to help him resolve the ambiguity. Having used these beliefs, P will have confirmed and strengthened his belief about this personal attribute (Assumption 2).

The subjects comprise 106 women, aged 17 through 28 years, recruited from Junior colleges in California. These women were working in varied occupations (e.g. technicians, clerical workers, housewives, mothers, teachers, nurses and waitresses) as well as being part-time students.

The subjects were scheduled one at a time at the laboratory and placed in individual rooms, with video monitors, cameras and microphones for communication with their partner who was supposedly in an adjacent identical room. Their partner was, in every case, the same male experimental confederate, aged 24 years and also a part-time student. The subject was informed by a host experimenter (actually on video tape), that this was a study about communication and we were interested in finding how sensitively and accurately they could understand each others' meaning. She was told that communication problems were at the base of most unhappy marriages and family relationships. On the other hand, close friends frequently develop a very personal style of communication with each other, sometimes with very little overt information passing between them. She was told further that though we had selected them as partners because they did not yet know each other, we believed we could study how effective communication evolves and develops between them.

A tray of 30 different colors arranged across the color spectra, each in ten different geometrical shapes was placed beside the subject. She was told to use this colored paper to complete five abstract designs, following as closely as possible the verbal directions of her partner (the confederate). She believed her partner was imagining these designs in his head and after he had described them verbally, he would also put together what he had described, so that afterwards we could compare both designs, his

and hers, to see how well she understood her partner's meaning. In order for the experience to be conceived as mutual, the subject was led to believe that her partner would reciprocate by completing the same task for her in the second phase of the study. However, the experiment was ceased after the first phase.

Now in actuality, her partner was reading a script which comprised ambiguous or clear messages, depending upon the experimental condition the subject was in. Not only was her partner a confederate, but he was actually pre-recorded on video tape so that each subject heard identical ambiguous messages (thus intonation, speed and patterns of speech were completely standardized across conditions). Since the subject 'met' and chatted with her partner over the close circuit T.V. in controlled interaction, the situation was highly believable. The confederate, an amateur actor, talked in a warm and engaging manner. During the actual design completion, subjects could not meta-communicate i.e. comment on or question the intended meaning of their partner.

Before the confederate began to describe his five designs, the host experimenter asked him to talk generally about his artistic preferences. The confederate answered that he was really quite average in artistic ability, but that he did know what he liked. Depending upon the experimental condition, subjects heard him say he liked mostly cool colors - greens, blues and pale lemons (Conditions 1 and 2) or warm colors - reds, browns, oranges and deep golds (Conditions 4, 5, and 6). This was the experimental manipulation which was aimed at having the subject hold a belief about their partner's preference (a personal attribute) and expect that he would tend to choose these colors in the designs. In order that the responses to color be veridical, a color wheel, labelled warm and cool, was placed on the table

in front of the subject.

Table 1 near here

There were six experimental conditions, (summarized in Table 1). In all conditions, the spatial positioning and shapes were explicitly communicated. The designs described were actually very simple in terms of shapes and positioning. However, communication about colors was either ambiguous or clear. In condition 1, subjects were lead to believe their partner liked cool colors, but when he described the five designs, he 'forgot' to mention colors altogether. In conditions 2, 3 and 4, subjects heard continuous contradictions about colors to complete the designs. Their partner asked for cool and warm colors simultaneously (as if he was ambivalent or was still thinking about the design) but he never told them which ones finally to use. He sent additional messages which made the contradictions truly paradoxical (e.g. "I would like the triangles in perhaps greens, blues - perhaps oranges, reds... but I don't like cool and warm colors mixed together" and "the colors should give a feeling of coolness and airiness but a sense of hotness and intenseness".) In condition 2, the subjects held a belief he liked cool colors, in condition 4, they believed he liked warm colors and in condition 3, they did not hear him express any preference for colors (that part of the tape was skipped). In both conditions 5 and 6, the partner was clear in his communication, requesting unambiguously warm colors to complete the designs. However, in condition 5, the subjects were lead to believe he liked cool colors best (blues and greens) while in condition 6, they believed he did indeed like best the warm colors (reds, browns etc.) that he subsequently chose.

Finally, in all conditions where colors were mentioned (Conditions 2 - 6) there was a further distinction between specific and general communication. In design Nos. 1, 3 and 4, the confederate-partner specifically stated the names of colors (e.g. "I want green/red") and in design Nos. 2 and 5, he asked for general categories of colors (e.g. "I want warm/cool"). A general class of colors 'warm' is seen as being more ambiguous than the specific members of that class 'red, brown'.

In summary, we were studying the resolution of three different kinds of ambiguous verbal communication: a. Absence of information (Condition 1), b. Contradictory or paradoxical information (Conditions 2, 3 and 4) and c. Generality of information (vs specificity) (Conditions 2 - 6).

The predictions made from the theory are that to the extent there is ambiguity, the previously held beliefs about their partner's color preferences would be activated and used to resolve the ambiguity (Conditions 1, 2 and 4). When communication is clear, however, the response should be to the content of the actual message, independent of the previously held beliefs and expectations for color preference (Conditions 5 and 6). When subjects hold no prior beliefs about preferences (Condition 3), the content of the message should also determine their responses. Thus the dependent measure of interest is the proportion of warm and cool colors in the designs completed by the subjects in each condition.¹

Following the completion of the five designs, the subjects were interviewed to establish various subjective measures e.g. their degree of involvement in the task, their awareness of any ambiguity, awareness

1 Certain colors that cannot be clearly classified as either warm or cool were scored as 'neutral' (grey, black, white, purple and mid yellow.)

of the ways they resolved ambiguity, satisfaction with their understanding of their partner and the degree of certainty that their partner liked the colors he had originally specified as his preferences. At this point also, subjects were carefully screened for suspicions of deception and for violation of the scope conditions of the theory. Finally subjects were completely debriefed as to the deceptions involved and the reasons for employing them. They were paid for their participation.

RESULTS

Of the 106 subjects who participated, 16 were excluded from the analysis on predetermined criteria. Of these 16, five were suspicious of deception, two did not have a veridical response to cool and warm colors, four did not remember their partner's color preferences and five others did not correctly understand the experimental task. This left 90 subjects, 15 in each condition.

Figure 1 near here

Figure 1 graphically illustrates the pattern of results for aggregate scores in each condition. In all conditions, the proportion of 'neutral' colors used was approximately the same (5-10%). Subjects in Condition 1 used 79% cool colors when their partner failed to give any information on colors in the actual descriptions of the designs but did lead them to believe he generally liked cool colors best.

In conditions 2, 3 and 4 where all subjects heard the identical tape recorded contradictory messages, there is a shift from use of

predominantly cool colors when they believed he liked cool (Condition 2), to use of predominantly warm colors when they believed he liked warm (Condition 4) with Condition 3, where subjects were given no prior indication of their partner's preferences, falling midway between the two conditions. It will be noted that there is a slight tendency in the pattern of these three conditions towards cool. It should be noted that in a survey of subject's own color preferences, twice as many cool colors were mentioned compared to warm, uniformly across all conditions.

In conditions 5 and 6 where subjects heard identical tape recorded messages requesting clearly warm colors, there was almost the same response, with predominant use of warm (78% vs 84%), even though in Condition 5 they were lead to believe he liked cool and in Condition 6 they believed he liked warm.

Table 2 near here

Table 2 shows the results from the Mann-Whitney U Test on scores for warm colors with significant differences between conditions at high levels of confidence to the effect that Condition 1 < Condition 2 < Condition 3 < Condition 4 < Condition 5. Conditions 5 and 6, predicted to be the same, showed a significant difference at .05 level also. However, this difference is further explored in Figure 2 which shows the comparison between the designs when specific information was given on colors and designs where general information is given. Note that the difference between Conditions 5 and 6 is non-significant when information on colors is specific (from Tables 3 and 4 Mann-Whitney U Test), whereas the difference is borderline significant at .05 when the

information on colors is general. This is congruent with predictions based on the assertion that general category information is more ambiguous than specific information.

Figure 2 and Tables 3 and 4 near here

Comparing the histograms for specific and general in Figure 2 shows the same pattern of results as the aggregate scores in Figure 1. However, the data for general information on colors is more neatly hierarchical than that for specific. In fact, two results in the specific information scores do not fit the hypothesis well. In Condition 3, where subjects held no prior beliefs about their partner's preferences, they interpreted the specific contradictory communication in almost the same manner as those who held a belief that he liked cool colors. Furthermore, those who heard specific contradiction and believed he liked warm colors (Condition 4) produced the same proportion of cool and warm colors in the designs, even though this was significantly less than the proportion of cool used in Condition 2, where they believed he liked cool.

Table 5 near here

Table 5 gives results from the post-experimental interview with subjects. Note that a very high degree of involvement in the experimental situation was reported by subjects uniformly across all conditions. There is a slight tendency (significant just at .05 level of confidence) for the subjects to assign more proportion of the blame for ambiguity to themselves in the contradictory Conditions 2 and 4 where they held beliefs about their

partner's preferences, compared to Condition 3, where they had no prior beliefs. In all cases (except Condition 5 where they heard clear communication opposite to the previously formed beliefs), most subjects were aware that they were using previous beliefs about their partner's preferences to resolve ambiguity. It should be noted, however, that this admission was gained only after extensive probing with most subjects. It was foremost only in the minds of subjects in Condition 1 who received no directions on colors.

The most notable result statistically was the degree of certainty of belief subjects held about their partner's color preference. In all conditions classified as ambiguous, where they heard him express a preference (Conditions 1, 2 and 4), subjects were 71-73% sure that he liked the colors he originally specified. This was surpassed only by Condition 6 where color choice for the designs was completely congruent with stated preferences (94% sure). Contrast this with 33% certainty for subjects who heard communication opposite to stated preference. This 'certainty of belief' was the operational measure of the strength of the assigned personal attribute (or degree of stereotyping).

DISCUSSION

The results clearly demonstrate that the more ambiguous the communication, the more predetermined beliefs about the other person are used to resolve unclarity in an interdependent dyad, when meta-communication is not permitted. Ambiguity arising out of insufficient information produces this effect most consistently. The extent to which a message is specific vs. general is also a measure of the amount of information in that message. When we consider open interaction in families and observe

the degree to which communicated messages are short-hand, vague and generally unspecific, and when we consider that expressions of feeling and emotions are frequently nebulous, then it would seem that this kind of ambiguity is a powerful and extremely general process that acts towards stereotyping behaviors of family members.

The results also support the contention that contradiction (or paradox as it is generally known in the literature) is also a dimension of ambiguity, with the effects being also to produce resolution in terms of previously formed beliefs. Thus we arrive at the interesting possibility that the double bind situation as proposed by Bateson et al. (2) actually produces states of pseudo-mutuality proposed by Wynne et al. (23). It has been argued on the other hand, that paradox is also a stimulus to novelty, change and creativity, Kafka (10). From this view point, to the extent that there is meta-communication, then this may be so. Also to the extent that an astutely formed therapeutic paradox, for instance, activates a different attribute or belief, then change is possible. While this study dealt only with explicit verbal contradiction (because this is the most simple to manipulate conclusively in the laboratory), interest in the literature is centered mostly around paradoxical communication arising out of contradiction at different levels - verbal and non-verbal, elements and the class of elements. The theory proposed here is asserted to apply to these forms of ambiguity also and future tests will extend to this more subtle form of contradiction.

The anomalies in the data are mostly in the specific contradictory scores (Figure 2). Where subjects were given no indication of their partner's preferences (Condition 3), they acted as if they had a belief that he liked cool colors best and indeed voiced this opinion frequently

in the post-study interview. Berger et al.'s (3,4) expectation states studies show that such a situation (termed 'no-expectation states') are unstable and that subjects will search for minimal cues to give them some data for resolution of ambiguity, so that they enter expectation states quite rapidly. Actually in Condition 3, the first 10 of the 15 subjects completed a practice design where their partner specified clearly cool colors before the five contradictory experimental designs, and it could be asserted that this minimal information was being used to deduce his preferences. To test this, the last five subjects were explicitly instructed by their partner to complete the practice design in warm colors. When the two subgroups were examined, we found that the first group of ten produced designs in 59% cool, 36% warm and 5% neutral; the second group of five, 51% cool, 40% warm and 9% neutral. This is some support for the hypothesis that subjects scan the cues in a very sensitive manner to pick up information that will help them resolve ambiguity.

It also has been noted that subjects themselves generally like more cool colors than warm so that their own preferences undoubtedly played some role in resolution of the contradictions. This could be interpreted as the mechanism of projection, long held to be an important factor in interpersonal relationships. The most interesting point was, however, that in the post study interviews, subjects were extremely aware of projecting their own preferences into completing the designs for their partner. They were far more conscious of doing this to resolve the ambiguity than they were conscious that they were using the beliefs that they had about their partner's preferences. The results clearly indicate that the latter was the main effect in the resolution process and projection only a subsidiary effect.

Differences between contradictory communication at the general level and contradictory at the specific level need to be examined more closely. If we consider that the continuum of general to specific is descriptive of the amount of information in a message, then we should anticipate that explicit contradictions that are specific in content should result in more extreme resolution in terms of the previous beliefs or attributes about their partner than do contradictions that are general in content. Looked at in another way, it is not possible to produce contradiction to the extent that one is vague, general or indefinite. The results here are not supportive of this deduction. (See Figure 2).

However, we are not implying that merely an increase in the amount and specificity of information is always able to diminish ambiguity. One can think of many situations where an increase in information produces an overload which becomes confusing, so that there is some kind of curvilinear relationship between the amount and specificity of information and degree of clarity. Furthermore, the concepts of 'personal attribute' and 'clarity of communication' are somewhat relative ideas that relate to one another. They are not in any sense meant to be absolutes. We can imagine that a certain belief about another person can be so strongly held that it would take a great deal of sustained, clear communication at the meta-level to begin to change that belief. Compare this with more tentative beliefs that can easily be swayed by counter-evidence. This relativity in no way negates the generality of the process as asserted in the theory. Rather it indicates that there may be a lot of difficulty in demonstrating or testing theories about communication ambiguity in natural family settings. The problem of determining what really is the personal attribute or belief held and what is ambiguous communication

in a family situation is monumental. Judged from the perspective of an outside observer, a perfectly clear statement from one family member to another may be perfectly obscure to the family member and a seemingly ambiguous statement may be quite clear. This leads to the rationale for the research strategy used in this study.

Theoretical and Research Strategy.

The research strategy in the family therapy field has been, with few exceptions, a holistic one. The sixties saw a tremendous optimism for a strategy that examined the family in its own right and saw individuals as process in and product of interactions among its members. This departure from traditional individualistic psychology constituted a paradigm shift in the field. Consequently, a great deal of research within the last fifteen years has been directed at delineating the interaction patterns of 'pathological' and 'healthy' family functioning; See Risken and Faunce's comprehensive review (15). In particular, special interest and empirical effort has focussed on the double bind; See Olson's review (13); and pseudo-mutuality helped motivate the testing of family consensual experiences and individual thinking by Reiss (e.g. 14).

While this approach has produced insights that may never have otherwise been achieved, it has at least two inherent problems which may retard cumulative growth of theoretical knowledge in the field. Firstly, the units of analysis have been natural families and attempts have been made to delineate between family types on the grounds of individual symptomatology or disturbance (i.e. 'the family of the delinquent', 'the family of the schizophrenic'). In practice, researchers have found it difficult to categorize into family types using this kind of criteria. They have been uncomfortably aware that labelled disorders are a gross aggregation

of diverse psychological, cultural, biological and even political issues and that to compare families between different diagnostic criteria is to confound and to ignore important processes that are occurring across categories.

The second problem is that as family therapists, we are primarily clinicians who are focussing on a dichotomy of health and pathology, despite the long since rejection of the 'medical model' of mental illness. We are continually forced to make value judgements in clinical practice as to the functional/dysfunctional nature of various processes. The above two problems would appear to have prevented us from exploring abstractly for general processes in human perception and interaction which may or may not lead to clinical problems. In clinical practice, we frequently see the extreme end of the spectra and tend to set this apart from 'normal functioning' as belonging to a qualitatively different order of existence. Hence we tend to interpret pseudo-mutuality and double binding as essential elements of the schizophrenic process. But these same elements should be found in any human relationship where certain scope conditions are met. For this reason, we believe it is not only legitimate but essential to try to unravel these processes in controlled settings where the independent variables can be clearly manipulated. This is in no way a return to individualistic psychology. Rather, group or dyadic experimental situations can be constructed like the one report above which simulate adequately the scope conditions for a process like double binding.

It is recognized that the same controlled experimental conditions that produce such clear results in this study confine its usefulness as a piece of evidence for more complex natural family

settings. To its defense, it should be reported that the study was involving and meaningful for the subjects. They reported 'hanging on every word' their partner said, they tried to interpret his personality and preferences, responded warmly to his warmth, rationalized and excused his contradictory messages, and were quite disoriented when they were eventually told that he was not live, merely on videotape. The study is conceived as a first step in a cumulative research program which will successively develop conceptually each part of the theoretical argument and test it by increasing the complexity of the experimental situation until it approaches or is applicable to natural family settings. Some of these projected developments are outlined below.

An important part of the theory as outlined is the power-dependence relationship which implies when people will or will not meta-communicate. To the extent that they expect benefits from raising issues and questioning the meaning, they will do so. To the extent they fear losing the relationship or precipitating negative consequences, they will not meta-communicate. The idea of raising or not raising critical issues has been provoked by community power theories where investigation of non-decision making as a power tactic is currently in vogue, Bachrach and Baratz (1). A second area for investigation not dealt with here is the distinction between specific and general personal attributes and the conditions for their respective activation and reinforcement. This argument asserts that if there is no belief specific to the situation which will help decipher an unclear message, or perhaps to the extent such specific beliefs are unhelpful, then he/she will resort to more global attributional beliefs. Both these above ideas could be tested in a controlled interaction setting.

There is some evidence to support the notion that interdependent tasks involve complementary roles by participants and that these social roles tend to become beliefs about the enduring characteristics of the performers of these roles; see Ross et al. (17) and also the expectation states studies with regard to status characteristics, Berger et al. (3). This idea needs to be explored further. Finally, it was not logistically possible to test the effect using both sexes in this study but certainly the next study will use male rather than female subjects. It is hypothesized that there will be no difference in the way the sexes deal with ambiguity.

CONCLUSIONS

This paper reports a theoretical reformulation of some family processes in terms of small group and social psychological theories. The result is a theory that asserts that unclear or ambiguous communication, given that the dependent person in the relationship cannot meta-communicate (question the meaning of the communication), leads to stereotyped role behaviors i.e. to either pseudo-mutuality or scapegoating. Thus both persons are double bound in the stereotyped relationship because their subsequent behaviors reinforce each other's beliefs about each other. It is believed that these processes are highly general ones and most apt to occur in relationships of high dependency and insecurity e.g. in families, classrooms and small group settings. The laboratory test produced clear evidence that ambiguous communication is resolved in terms of previous beliefs or attributes about the other person in an interdependent dyad and that subsequent beliefs are a function of the behavioral resolution of the ambiguity. Further development and testing of the theory is discussed.

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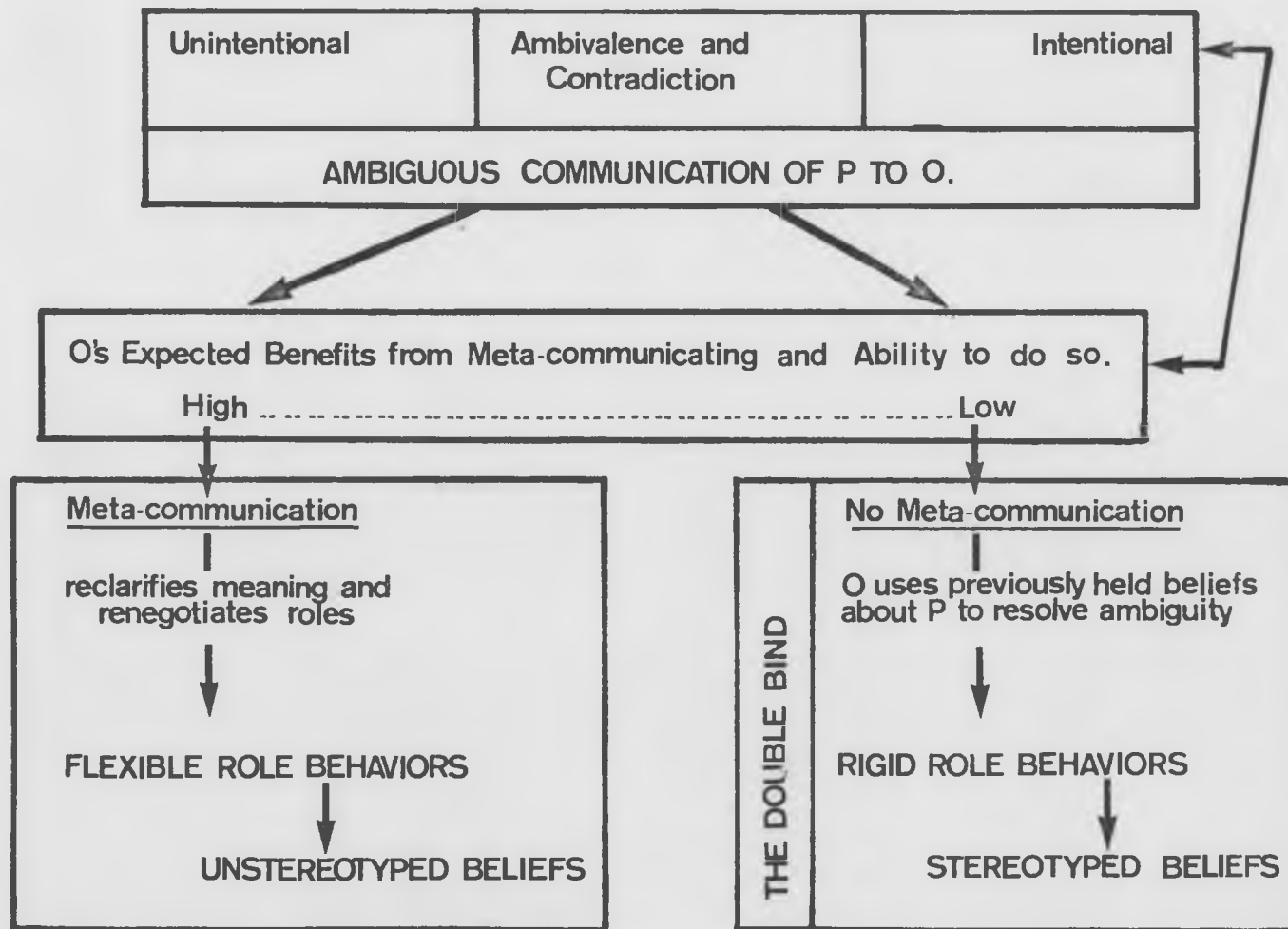
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DIAGRAM 1.

PATHS TO STEREOTYPING THROUGH AMBIGUOUS COMMUNICATION



Arrows mark hypothesized causal paths

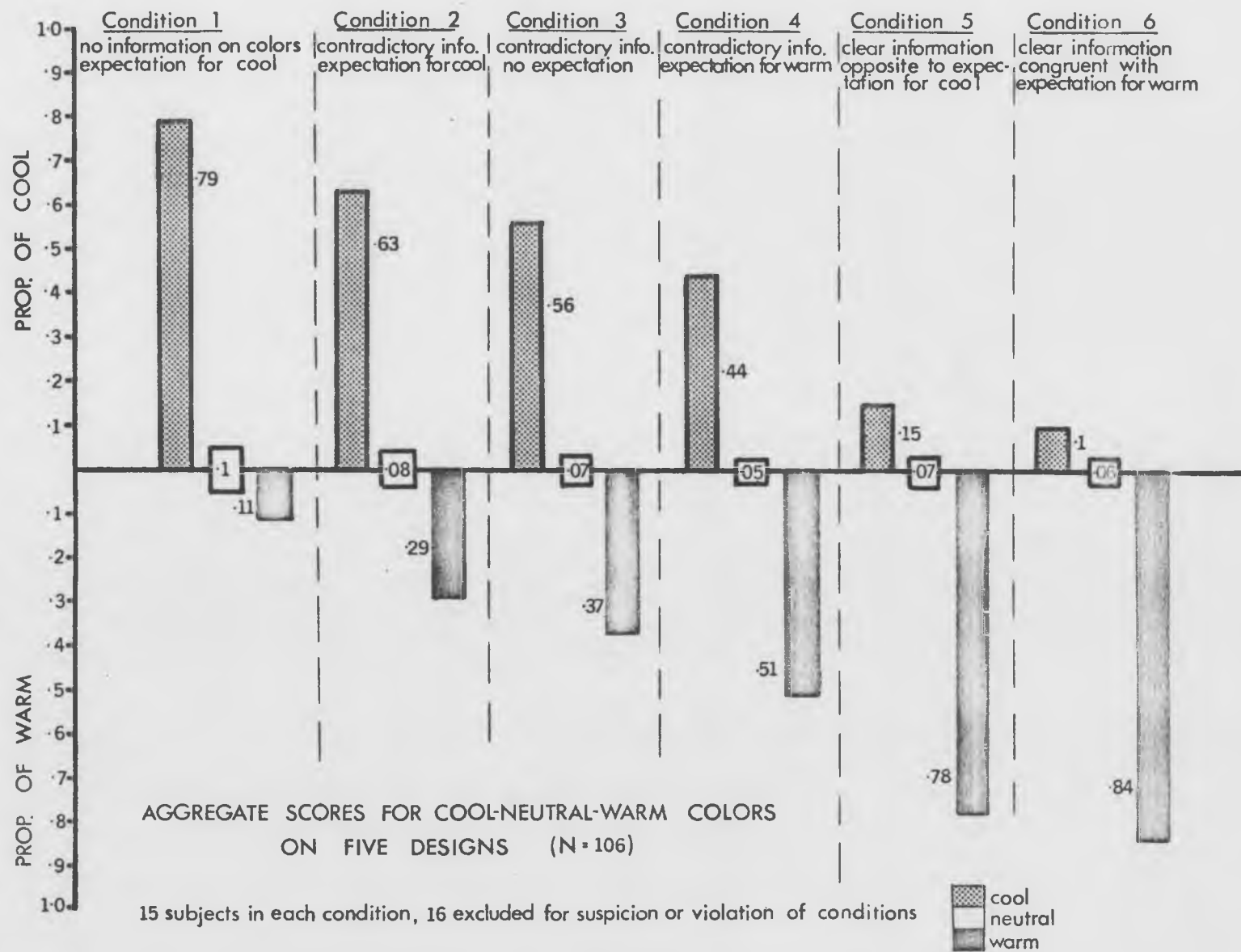


FIGURE 1.

COMPARISON OF DESIGNS WHERE SPECIFIC INFORMATION IS GIVEN ON
COLORS AND DESIGNS WHERE GENERAL INFORMATION IS GIVEN

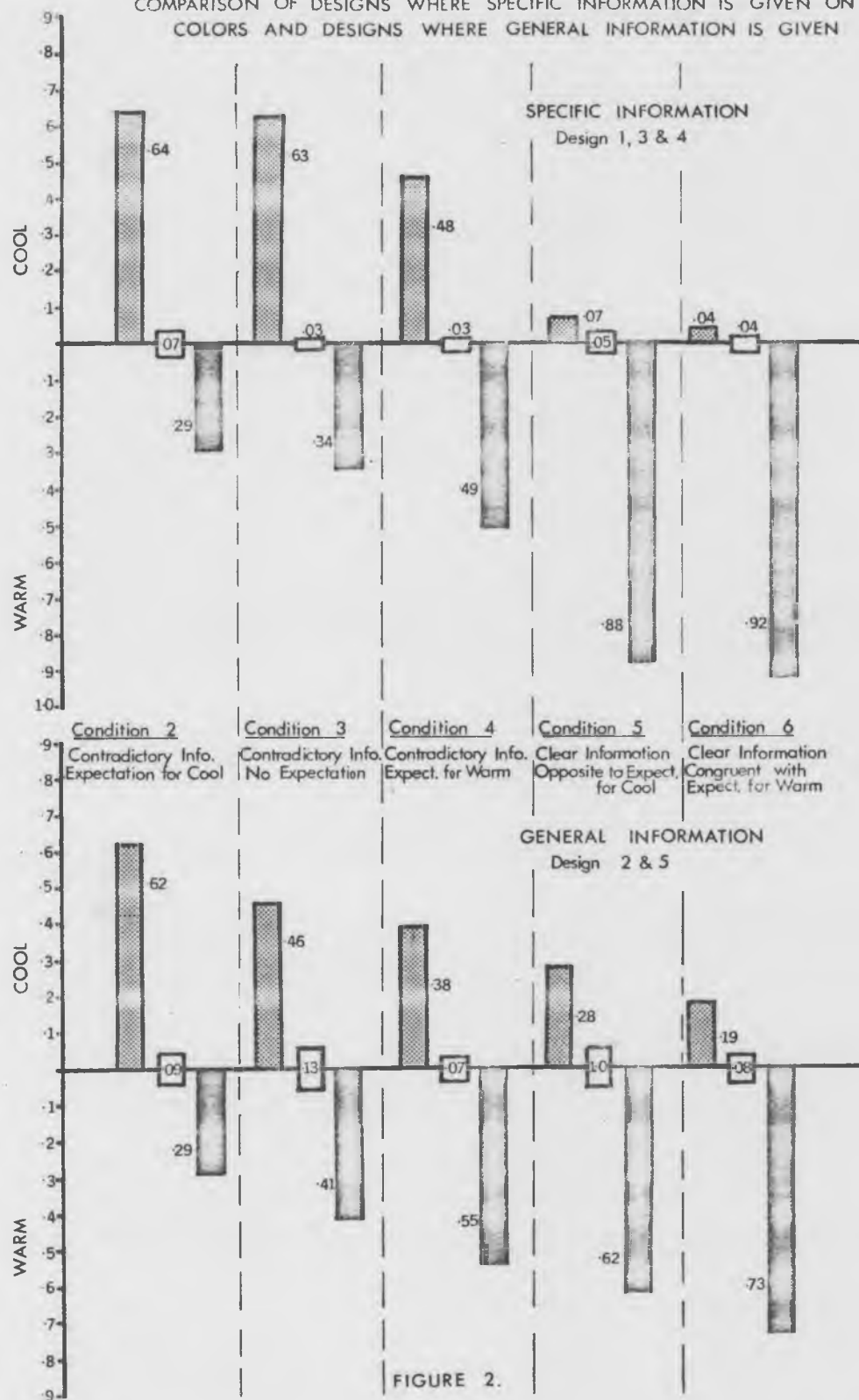


TABLE 1.

SUMMARY OF EXPERIMENTAL CONDITIONS

Condition Number	Prior Belief about Partner's Preferences i.e. 'Attribute'	Kind of Communication about Colors
1	Cool Colors	<u>Ambiguous.</u> Partner gives no information on colors to complete the designs.
2	Cool Colors	<u>Ambiguous.*</u> Partner gives contradictory instructions for warm/cool colors.
3	None	<u>Ambiguous.*</u> Partner gives contradictory instructions for warm/cool colors.
4	Warm Colors	<u>Ambiguous.*</u> Partner gives contradictory instructions for warm/cool colors.
5	Cool Colors	<u>Clear.*</u> Partner asks explicitly for warm colors to complete the designs.
6	Warm Colors	<u>Clear.*</u> Partner asks explicitly for warm colors to complete the designs.

* Of the total of five designs to be completed by each subject, specific information on colors was given on 3 designs i.e. the colors were named - 'blue, brown etc.' and general information on colors was given on two designs i.e. the class of colors was named - 'cool, warm.'

TABLE 2.

Mann-Whitney U Test for Differences between Conditions on
Aggregate Scores for Warm Colors *

<u>Predicted Differences</u>	<u>U Score</u>	<u>Z Score</u>	<u>Significance (1tailed)</u>
Condition 1 < Condition 2	31	3.38	Sig. < .001
Condition 2 < Condition 2	63.5	2.03	Sig. < .025
Condition 3 < Condition 4	34	3.26	Sig. < .001
Condition 4 < Condition 5	5	4.46	Sig. < .001
Condition 5 = Condition 6	71.5	1.70	Sig. at .05

* Based on total of five designs for each subject, 15 subjects in each condition.

TABLE 3.

Mann-Whitney U Test for Differences Between Conditions on
Specific Information Scores for Warm Colors *

<u>Predicted Differences</u>	<u>U Score</u>	<u>Z Score</u>	<u>Significance (1 tail)</u>
Condition 2 < Condition 3	79	1.39	N.S.
Condition 3 < Condition 4	38.5	3.07	Sig. < .001
Condition 4 < Condition 5	0	4.67	Sig. < .001
Condition 5 = Condition 6	86.5	1.08	N.S.

* Based on three designs for each subject, 15 subjects in each condition.

TABLE 4.

Mann-Whitney U Test for Differences between Conditions on General
Information Scores for Warm Colors *

<u>Predicted Differences</u>	<u>U Score</u>	<u>Z Score</u>	<u>Significance (1 tail)</u>
Condition 2 < Condition 3	65	1.97	Sig. < .05
Condition 3 < Condition 4	46	2.76	Sig. < .01
Condition 4 < Condition 5	77.5	1.45	N.S.
Condition 5 < Condition 6	74	1.6	Sig. almost at .05*)

* Based on 2 designs for each subject, 15 subjects in each condition.

** A U Score of 72 is significant at .05.

TABLE 5.

ANALYSIS OF VARIANCE BETWEEN CONDITIONS FOR
SUBJECTIVE EVALUATIONS BY PARTICIPANTS

	CONDITION						F value	d.f.
	1	2	3	4	5	6		
1. Degree of Involvement in Task	.85	.88	.87	.89	.84	.92	.74	5,84
2. Partner's Score for Clarity	.59	.61	.52	.6	.74	.67	1.95	5,84
3. Self Score for Sensitive Interpretation	.5	.57	.59	.63	.73	.62	2.41	5,84
4. Degree of Certainty that partner likes cool/warm colors as he specified	.71	.73	-	.72	.33	.94	17.57	4,70

5. Assigned Portion of the Responsibility for Ambiguity								
Partner	.52	.41	.49	.37	.47	.42	1.88	5,84
Task	.19	.22	.24	.26	.20	.18		
Self	.28	.37	.27	.37	.33	.40	2.64*	5,84
6. Verbal Awareness of Resolution of ambiguity in favor of Expectation for cool/warm colors with probing. (Actual Number of Subjects)								
Yes	13	12	-	10	3	13		
Uncertain	1	2	-	3	0	2		
No	1	1	-	2	12	0		

*** Significant at .001

* Significant at .05

Summary of Experimental Conditions

1. No information re colors, expectation that partner likes cool.
2. Contradictory information re colors, expectation that partner likes cool.
3. Contradictory information re colors, no expectation for partner's preferences.
4. Contradictory information re colors, expectation that partner likes warm.
5. Clear information for warm colors, opposite to expectation that partner likes cool.
6. Clear information for warm colors, congruent with expectation that partner likes warm.

APPENDIX

Communication Study No. 1.

PROCEDURES

ALL CONDITIONS (1,2,3,4,5 and 6)

Dr. Davids: Are we all ready now.....OK

Hello. My name is Dr. Davids. Welcome to the Laboratory for Social Research. Please make yourselves comfortable. Before we start this study, I would like you to become familiar with the equipment and materials in your rooms.

Today we will be making extensive use of the video intercom system over which I am talking to you now. When I talk, you can both hear me and by switching, I can allow you to talk to each other. I'll let you see how this works by having you introduce yourselves to each other. When you see yourself on the monitor, will you please introduce yourself by giving your name, age and occupation. This is the same information you have written on the sheet in front of you. Let's start with the person in Room No. 1. When you see yourself on the monitor, please introduce yourself.

Confederate: Hi, my name is Felix Winters. I'm 24 years old and a student. That's my occupation.

Subject:

Dr. Davids: Thank you.

Now this is a study on how two people communicate important things to each other. The task is actually very simple. Essentially you will be creating abstract designs from the materials in front of you. You will describe these designs to your partner and your partner will, to the best of his/her understanding, reproduce the design you describe. I will go over

the instructions on how you will do this very carefully. If you have any questions that I don't answer, then press the call button on the desk next to you and one of my assistants will come in to help you.

However, before I give you more details about the task, I would like to tell you more about the purpose of the study. For a long time, social scientists have been interested in how people communicate with each other and how they come to understand each other accurately. It is known that in personal relationships, by sharing and communicating our ideas, our feelings and our preferences, we come to a fuller appreciation of ourselves and of the other person. It is a breakdown in this ability to communicate with each other which is the basis of most unhappy personal and family relationships, and the cause of most divorces. More than anything else, it is vitally important that we discriminate correctly and understand what our partners, or our friends, really mean when they communicate with us.

Good communication between two people is most interesting to observe but difficult to understand. Take for instance, the case of two good friends. It has been noticed that good friends frequently develop a very personal style of communicating with each other - a form of communication that is understood only by them. An outside observer will be puzzled at the way in which two close friends are able to tell each other very important things and understand each other perfectly, sometimes with very little overt information passing between them. The process is obviously very subtle, discriminating and sensitive.

So today we want to study an aspect of how two persons communicate with and understand each other correctly. Now, we chose the two of you for this study because you did not know each other previously. Since you do not know each other, we can then see how a successful communication system is

built up between two people i.e. how it evolves and develops. So we are going to study how you come to understand each other.

Now let me describe the task more fully to you. In principle, many different tasks could be chosen for this study. There are many things that two people can do together which are meaningful to them, whether seemingly trivial or of great life importance. The task today represents a class of tasks and was chosen because it meets the requirements of a laboratory and is relatively simple. We would like to ask you to act as if this were a vitally important and meaningful task for you.

On the table next to you both is an identical box of geometrical shapes - circles, squares, triangles and cones of all colors, shades and sizes. Please examine these carefully....(pause).....For your information there is also a color wheel displaying the range of colors, most of which are available for you to use. (pause) The large squares on the right are background paper for the design.

The study will have two parts. In the first part, you, No. 1, must examine the circles, squares, cones and triangular pieces carefully without touching them and then imagine a simple abstract design made up from them. Try to imagine a design that you would find very pleasing. When you have a good idea of what you would like (i.e. a fairly good image of the design in your head), you must describe the design in detail to your partner in Room No. 2, piece by piece. Now, No. 2, while the design is being described to you, you must select the appropriate background paper and the appropriate geometrical shapes and colors from the material in front of you and you must put the design together, following as closely as possible No. 1's descriptions. Remember that you are not making something that you like, rather you are trying to reproduce something that your partner in

Room No. 1 likes.

After you have described the design, No. 1, you should also complete the design you had in mind. Afterwards we can compare how closely the designs resemble each other. In this way, No. 2, we can determine how accurately and sensitively you understood your partner. The designs will be compared on two aspects: Firstly, how similar they are in spatial positioning; secondly, how similar they are in colors.

The second part of the study is just like the first except that you will reverse positions. It will be your turn, No. 2, to imagine an abstract design that you find most pleasing and to describe this to your partner in Room No. 1. Your partner will attempt to reproduce precisely what you describe. Then, of course, No.2, you too will put together the design you had in mind so that afterwards we can compare the two designs and assess whether No. 1 understood your wishes. However, and this is important, at no time during the task can the person who is actually completing the design, communicate, question or comment on the design to their partner. You will only be able to hear what your partner tells you. You cannot be heard if you try to speak back. You must use whatever information is given to you by your partner to the best of your understanding.

Let's have a brief practice trial. The person in Room No. 1, when you see yourself on the monitor, imagine just two geometric pieces arranged on a sheet of background paper. Try to imagine a design that you find pleasing. When you are ready, describe this arrangement to your partner in Room No. 2, who will select the pieces and paste them on the appropriate sheet of background paper. Only after you have described the design, may you put it together for yourself, No. 1. No. 2, it is your job to try to replicate precisely what No. 1 has in mind.

Confederate: Hello over there. Hell, this system is like something out of the future. However, let's beat the technology and get on the same wave length. O.K. I'd better make this simple the first time around (pause) Let's see. Just two pieces eh? (pause) Take a white (black) sheet of paper as background. Now take a large lime green circle (deep red square) and place it in the bottom left-hand corner of the paper. Then put a dark blue square (an orange triangle) (a middle size square) (triangle) right in the center of the page.* O.K. that will be it. (Pause long enough to complete).

Dr. Davids: O.K. You should be about finished with that by now. Now, the person in Room No. 2, when you see yourself on the monitor, imagine an arrangement of two pieces and describe this to your partner in Room No. 1, who will put it together for you. Remember, do not complete the design yourself until after you have described it to your partner.

Subject: (Turn off video tape until subject has finished this.)

(INSERTION ON PAGE 6 FOR CONDITIONS 1,2,4,5 and 6)

Dr. Davids: What you have done in the practice trial you will be repeating five times. i.e. No. 1 will describe five different designs in the first part of the study. Then No. 2 will describe five designs in the second part of the study.

Now let me briefly review your task before you begin.

Starting with the person in Room No. 1, you are to imagine one by one a series of five abstract designs. Try to create designs that you find most pleasing and enjoyable to you. You will describe these to your partner in Room No. 2, who will complete them, following as closely as possible your wishes. Only after you have described them to your partner can you complete

* Parenthesis description for warm colors expectation.

the design you had in mind yourself, which will later be used for comparison with your partner's.

The most important thing to keep in mind is that the person who is listening to the instructions must accurately discriminate and sensitively interpret what their partner is trying to tell them. It is not always easy to do this, but if you are very attentive and use the best of your understanding, you can do it.

You will have only four minutes to complete each design, so you must work quickly. Don't bother glueing thoroughly - just a dab of glue to make the pieces stay in place is sufficient. When you hear the first bell, you will know you have only one minute more to complete the design. At the second bell, you must stop what you are doing and start the next design. However, try to complete the whole design in that four minutes because it is important that it is complete as well as accurate. Remember the designs will be compared on both spatial positioning and on color.

So as to avoid distraction, I will blank out the monitor and ask you to use the headphones at your side. Would you please put on the headphones now, then you may begin.

(Turn video monitor off and begin tape recording for appropriate experimental condition).

Insertion for Conditions

Dr. Davids: Now before we begin the first part of the study, I am going to give you No. 1, an opportunity to say a little about your artistic preferences. This may or may not help your partner.

For Conditions 1 and 2

Confederate: 1. Well....un....(pause)....I guess I'm not really what you would call an 'artistic' person. I guess I have pretty much average

ability in that regard. But I do know what I like. I do happen to like abstract art and have several pieces in my room at home. I guess most of all I like cool colors in all their various hues - you know- the blues and greens of all shades and depths - and pale lemons. Cool colors give me a feeling of tranquility. I like a design to stand out from the background too. You know....I guess that means I like soft, muted backgrounds. It's kind of hard to explain. Mostly, you just know what you like. You just get a feel for something or you don't.

OR

For Conditions 4,5, and 6

Confederate: 2. Well.....un.....(pause).....I guess I'm not really what you would call an 'artistic' person. I guess I have pretty much average ability in that regard. But I do know what I like. I do happen to like abstract art and have several pieces in my room at home. I guess most of all I like warm colors in all their various hues - you know - the reds and browns of all shades and depths - and deep golds. Warm colors give me a feeling of tumultuousness. I like a design to merge with the background too. You know....I guess that means I like bold, strong backgrounds. It's kind of hard to explain. Mostly, you just know what you like. You just get a feel for something or you don't.

CONDITION 1.

Instruction for Completion of Designs

Design 1.

Confederate: Wow, there is quite a selection here...Let me think...(pause)
...O.K., I think I have an idea.

I want to do this design using all squares. Take one piece of paper for the background.

Condition 1. (cont.)

Now, take three large squares, the very largest. (You know, it's really difficult to visualize a design without playing about with the pieces).

Anyway, I want the design to flow diagonally across the page from left to right. So put one square in the top left hand corner, one square in the middle of the page and one square in the bottom right hand corner. These squares should overlap one another. (Pause)

I hope you've got that. Now to finish off, take two tiny squares both the same color and place them in the bottom right hand corner of the large square at the bottom of the page, also overlapping one another.

O.K. That will be all.

Design 2.

Confederate: Now the second one (Pause) Doing this is really something else! Just wait til it's your turn to dream up a design in your head. I'm looking forward to that!

This one I would like in circles of different sizes and it should kind of explode into the distance. These colors are great.

Take four circles (one large circle, two medium circles and one small circle.) First, put the large circle in the top right hand corner, then place the second (a medium size circle) in the middle of the page; then place another medium size circle drifting towards the bottom left hand corner. Finally, place a small circle in the bottom left hand corner. That's it. That should give a feeling of expanding into the distance.

Design 3.

Confederate: O.K. Now what would you say to this one being all triangles? Oops, I forgot, I can't hear you. In this one it will be a series of four triangles.

Condition 1. (cond.)

I'd like three large triangles and one middle size triangle of varying intensity of colors. I forgot to mention the background paper.

Now put one large deep colored triangle in the top left hand corner so that the right angle of the triangle is aligned with the corner of the paper. Let me say that again. Line up the right angle of the large deep colored triangle with the top left hand corner of the background paper. Then place two more of those large triangles and one middle size triangle on the diagonal from top left to bottom right of the page. This should look like steps descending down the page.

O.K. Just those four triangles. That's the whole design. Now, I'll put mine together.

Design 4.

Confederate: This time I want to make a big colored wheel right in the center of the page.

I am going to use the cone shaped pieces. You know, the ones that look like segmented parts of a circle. I want to make a big wheel out of these cone shaped pieces.

The wheel should have four different colors in it, all of which blend together so that if you could spin the wheel, you would have a very attractive effect.

That's it. That should be easy enough to follow.

Design 5.

Confederate: O.K. This last one is going to be a masterpiece!

This time I want to make a mosaic out of the little pieces, the smallest squares and the smallest triangles.

Condition 1. (cont.)

Just take a sheet of background paper. Let me see, what color?....

Anyway, just sprinkle glue all over the paper and then drop lots of those little triangles and squares on top - most of them overlapping so that you get a mosaic of color. The colors should have a haphazard but a pleasing effect.

O.K. That's it. I'm going to make this one up now.

Design 1.

Confederate: Wow, there is quite a selection here....Let me think.....

(pause)..... O.K. I think I have an idea.

I want to do this design using all squares. Take one piece of paper for the background. I'd like perhaps a deep red - perhaps a soft blue.

Now take three large squares, the very largest. The squares could be in cool colors like greens and blues - warm colors like browns and golds. (You know, it's really difficult to visualize a design without playing about with the pieces).

Anyway, I want the design to flow diagonally across the page from left to right. So put one square in the top lefthand corner, one square in the middle of the page and one square in the bottom right hand corner. These squares should overlap one another. (Pause)

I hope you've got that. Now to finish off, take two tiny squares both the same color in a dark brown/dark blue and place them in the bottom right hand corner of the large square at the bottom of the page, also overlapping one another.

O.K. That will be all.

Design 2.

Confederate: Now the second one (pause). Doing this is really something else! Just wait til it's your turn to dream up a design in your head. I'm looking forward to that!

This one I would like in circles of different sizes and it should kind of explode into the distance. These colors are great. By the way,

Conditions 2,3,4 (cont.)

the background could be - um - black or grey.

Take four circles (one large circle, two medium circles and one small circle). I think I'd like colors that give you a sense of coolness and airiness but also a sense of hotness and intenseness.

First, put the large circle in the top right hand corner, then place the second (a medium size circle) in the middle of the page; then place another medium size circle drifting towards the bottom left hand corner. Finally, place a small circle in the bottom left hand corner. That's it! That should give a feeling of expanding into the distance.

Design 3.

Confederate: Now what would you say to this one being all triangles?

Oops, I forgot, I can't hear you. O.K. In this one it will be a series of four triangles.

I'd like three large triangles and 1 middle size triangle of varying intensity of colors. The colors could be greeney blues/orange browns but I don't like cool and hot colors mixed together (pause).

I forgot to mention the background paper. It could be - um - deep orange or pale green. O.K. Now put one large deep colored triangle in the top left hand corner so that the right angle of the triangle is aligned with the corner of the paper. Let me say that again. Line up the right angle of the large deep colored triangle with the top left hand corner of the background paper. Then place two more of those large triangles and one middle size triangle on the diagonal from top left to bottom right of the page. This should look like steps descending down the page.

O.K. Just those four triangles. That's the whole design. Now,

Conditions 2,3,4 (cont)

I'll put mine together.

Design 4.

Confederate: This time I want to make a big colored wheel right in the center of the page. The background paper could be perhaps lemon, perhaps dark brown.

I'm going to use the cone shaped pieces. You know, the ones that look like segmented parts of a circle? I want to make a big wheel out of these cone shaped pieces. I might use reds and golds and browns, I might use greens and blues and lemons.

The wheel should have four different colors in it, all of which blend together so that if you could spin the wheel you would have a very attractive effect.

That's it. That should be easy enough to follow.

Design 5.

Confederate: O.K. This last one is going to be a masterpiece! This time I want to make a mosaic out of the little pieces, the smallest squares and the smallest triangles.

Just take a sheet of background paper. Let me see, what color?um...perhaps just white or that bright pink perhaps.

Anyway, just sprinkle glue all over the paper and then drop lots of those triangles and squares on top - most of them overlapping so that you get a mosaic of color. The colors should have a haphazard but a pleasing effect - like in warm colors - like in cool colors.

O.K. That's it. I'm going to make this one up now.

Design 1.

Confederate: Wow, there is quite a selection here...Let me think....

(pause)...O.K., I think I have an idea.

I want to do this design using all squares. Take one piece of paper for the background. I'd like perhaps a deep red.

Now take three large squares, the very largest. The squares could be in warm colors like browns and golds. (You know, it's really difficult to visualize a design without playing about with the pieces.)

Anyway, I want the design to flow diagonally across the page from left to right. So put one square in the top left hand corner, one square in the middle of the page and one square in the bottom right hand corner. These squares should overlap one another.(pause).

I hope you've got that. Now to finish off, take two tiny squares both the same color in a dark brown and place them in the bottom right hand corner of the large square at the bottom of the page, also overlapping one another.

O.K. That will be all.

Design 2.

Confederate: Now the second one (pause). Doing this is really something else! Just wait til it's your turn to dream up a design in your head. I'm looking forward to that!

This one I would like in circles of different sizes and it should kind of explode in the distance. These colors are great. By the way, the background could be - um - black.

Condition 5a,6a (cont)

Take four circles (one large circle, two medium circles and one small circle). I think I'd like colors that give you a sense of hotness and intenseness.

First, put the large circle in the top right hand corner, then place the second (a medium size circle) in the middle of the page; then place another medium size circle drifting towards the bottom left hand corner. Finally, place a small circle in the bottom left hand corner. That's it. That should give a feeling of expanding into the distance.

Design 3.

Confederate: O.K. Now what would you say to this one being all triangles? Oops, I forgot, I can't hear you. In this one it will be a series of four triangles.

I'd like three large triangles and one middle size triangle of varying intensity of colors. The colors could be orange-browns. I don't like cool and hot colors mixed together (pause).

I forgot to mention the background paper. It could be - um - deep orange. O.K. Now put one large deep colored triangle in the top left hand corner so that the right angle of the triangle is aligned with the corner of the paper. Let me say that again. Line up the right angle of the large deep colored triangle with the top left hand corner of the background paper. Then place two more of those large triangles and one middle-sized triangle on the diagonal from top left to bottom right of the page. This should look like steps descending down the page.

O.K. Just those four triangles. That's the whole design. Now, I'll put mine together.

Condition 5a, 6a (cont)

Design 4.

Confederate: This time I want to make a big colored wheel right in the center of the page. The background paper could be perhaps dark brown.

I'm going to use the cone shaped pieces. You know, the ones that look like segmented parts of a circle. I want to make a big wheel out of these cone shaped pieces. I might use reds and golds and browns.

The wheel should have four different colors in it, all of which blend together so that if you could spin the wheel you would have a very attractive effect.

That's it. That should be easy enough to follow.

Design 5.

Confederate: O.K. This last one is going to be a masterpiece! This time I want to make a mosaic out of the little pieces, the smallest squares and the smallest triangles.

Just take a sheet of background paper. Let me see, what color?... um...that bright pink perhaps.

Anyway, just sprinkle glue all over the paper and then drop lots of those little triangles and squares on top - most of them overlapping so that you get a mosaic of color. The colors should have a haphazard but a pleasing effect - like in warm colors.

O.K. That's it. I'm going to make this one up now.

Design 1.

Confederate: Wow, there is quite a selection here...Let me think...(pause)...

O.K. I think I have an idea.

I want to do this design using all squares. Take one piece of paper for the background. I'd like perhaps a soft blue.

Now take three large squares, the very largest. The squares could be in cool colors like greens and blues. (You know, it's really difficult to visualize a design without playing around with the pieces).

Anyway, I want the design to flow diagonally across the page from left to right. So put one square in the top left hand corner, one square in the middle of the page and one square in the bottom right hand corner. These squares should overlap one another. (Pause).

I hope you've got that. Now to finish off, take two tiny squares both the same color in a dark blue and place them in the bottom right hand corner of the large square at the bottom of the page, also overlapping one another.

O.K. That will be all.

Design 2.

Confederate: Now the second one (pause) Doing this is really something else! Just wait til it's your turn to dream up a design in your head. I'm looking forward to that!

This one I would like in circles of different sizes and it should kind of explode into the distance. These colors are great. By the way, the background could be - um - grey.

Take four circles (one large circle, two medium circles and one

Condition 5b, 6b (cont.)

small circle). I think I'd like colors that give you a sense of coolness and airiness.

First, put the large circle in the top right hand corner, then place the second (a medium size circle) in the middle of the page; then place another medium circle drifting towards the bottom left hand corner. Finally, place a small circle in the bottom left hand corner. That's it! That should give a feeling of expanding into the distance.

Design 3.

Confederate: O.K. Now what would you say to this one being all triangles? Oops, I forgot, I can't hear you. In this one it will be a series of four triangles.

I'd like three large triangles and one middle size triangle of varying intensity of colors. The colors could be greeney blues. I don't like cool and hot colors mixed together (pause).

I forgot to mention the background paper. It could be - um - pale green. O.K. Now put one large deep colored triangle in the top left hand corner so that the right angle of the triangle is aligned with the corner of the paper. Let me say that again. Line up the right angle of the large deep colored triangle with the top left hand corner of the background paper. Then place two more of those large triangles and one middle-sized triangle on the diagonal from top left to bottom right of the page. This should look like steps descending down the page.

O.K. Just those four triangles. That's the whole design. Now, I'll put mine together.

Condition 5b, 6b (cont)

Design 4.

Confederate: This time I want to make a big colored wheel right in the center of the page. The background paper could be perhaps lemon.

I am going to use the cone shaped pieces. You know, the ones that look like segmented parts of a circle. I want to make a big wheel out of these cone shaped pieces. I might use greens and blues and lemons.

The wheel should have four different colors in it, all of which blend together so that if you spin the wheel you would have a very attractive effect.

That's it. That should be easy enough to follow.

Design 5.

Confederate: O.K. This last one is going to be a masterpiece! This time I want to make a mosaic out of the little pieces, the smallest squares and the smallest triangles.

Just take a sheet of background paper. Let me see, what color?... um..perhaps just white.

Anyway, just sprinkle glue all over the paper and then drop lots of those little triangles and squares on top - most of them overlapping so that you get a mosaic of colors. The colros should have a haphazard but a pleasing effect - like in cool colors.

O.K. That's it. I'm going to make this one up now.

Scoring Instructions for Designs in Communication Study No. 1.

Design 1.

Background .2
Each large square .2
Each small square .1

Design 2. For Conditions 2,3,4,5 and 6.

Large circle .3
Medium circles .25
small circle .2

For condition 1

Background .2
large circle .25
medium circles .2
small circle .15

Design 3.

Background .2
Each of 4 triangles .2

Design 4. Divide the total number of colors in the design into 100 and proportion the number of cool/neutral/warm colors by that.

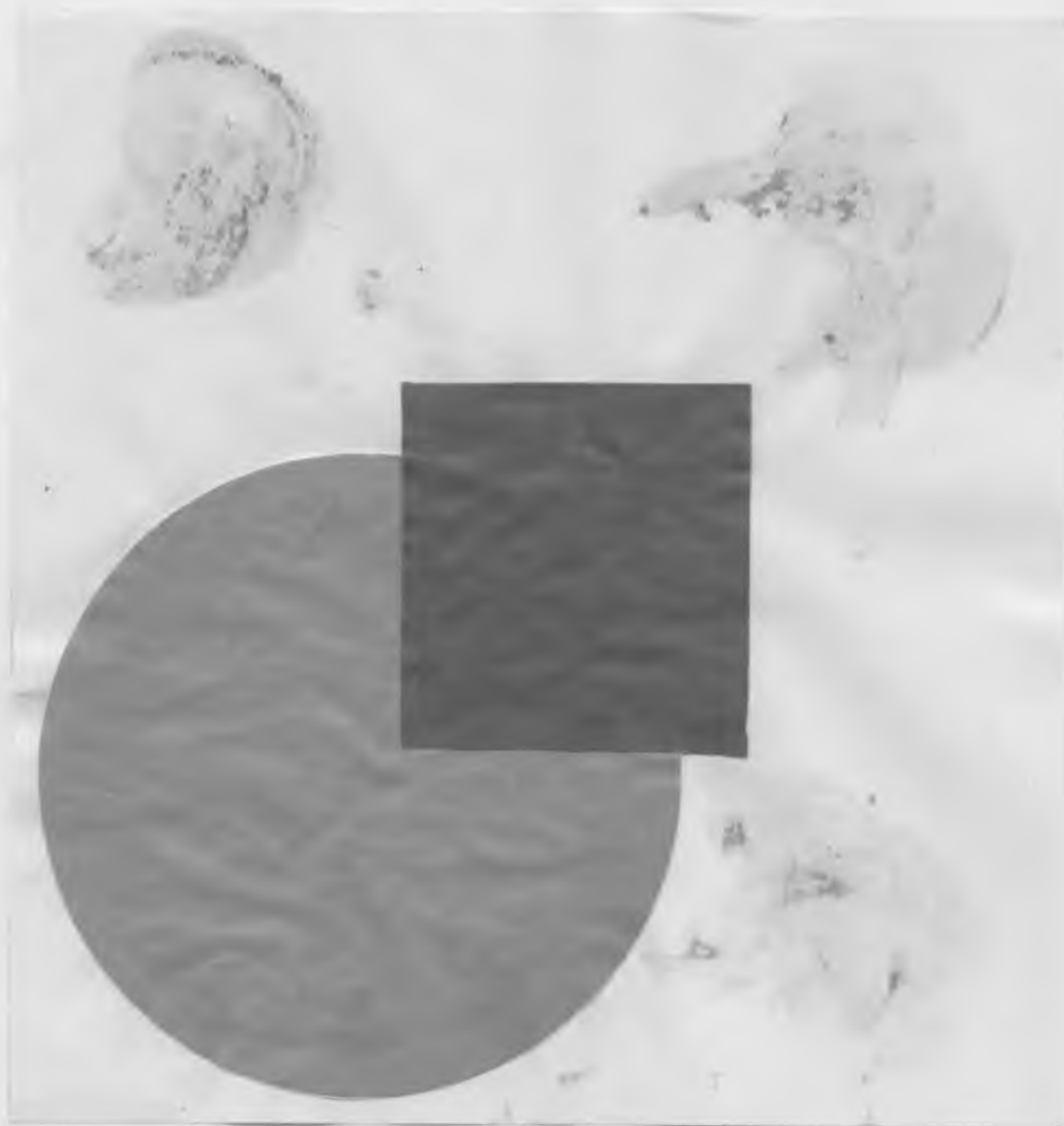
Design 5. Count the background and each small piece as 1. Divide the total number of pieces into 100 and proportion the number of cool/warm and neutral colors by that.

Classification of Colors

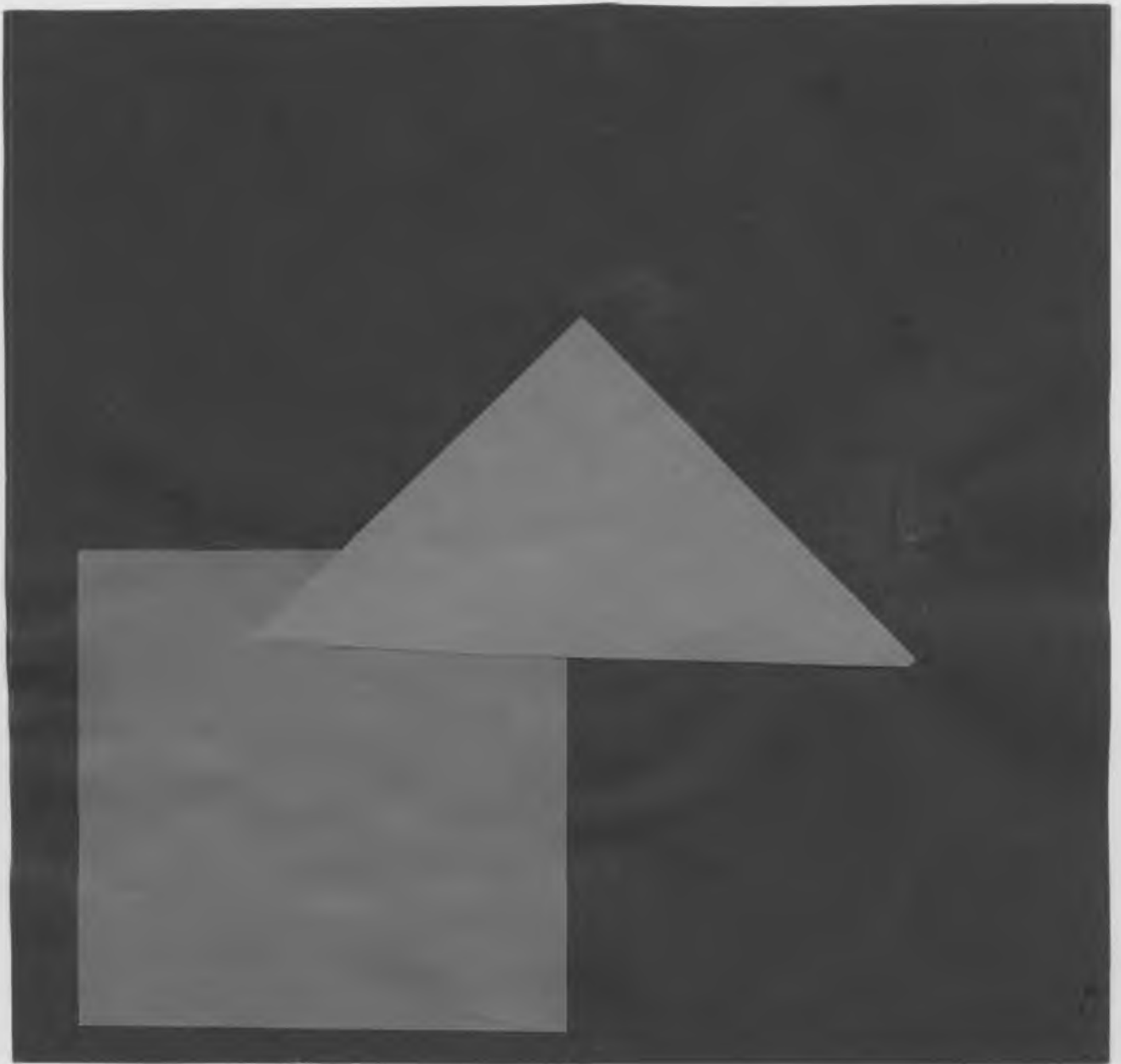
'neutral' colors are mid-yellow, purple, grey, black and white.

warm colors - deep gold, reds, browns oranges, pinks.

cool colors - lemon, blues, greens.



PRACTICE DESIGN - COOL COLORS



PRACTICE DESIGN - WARM COLORS



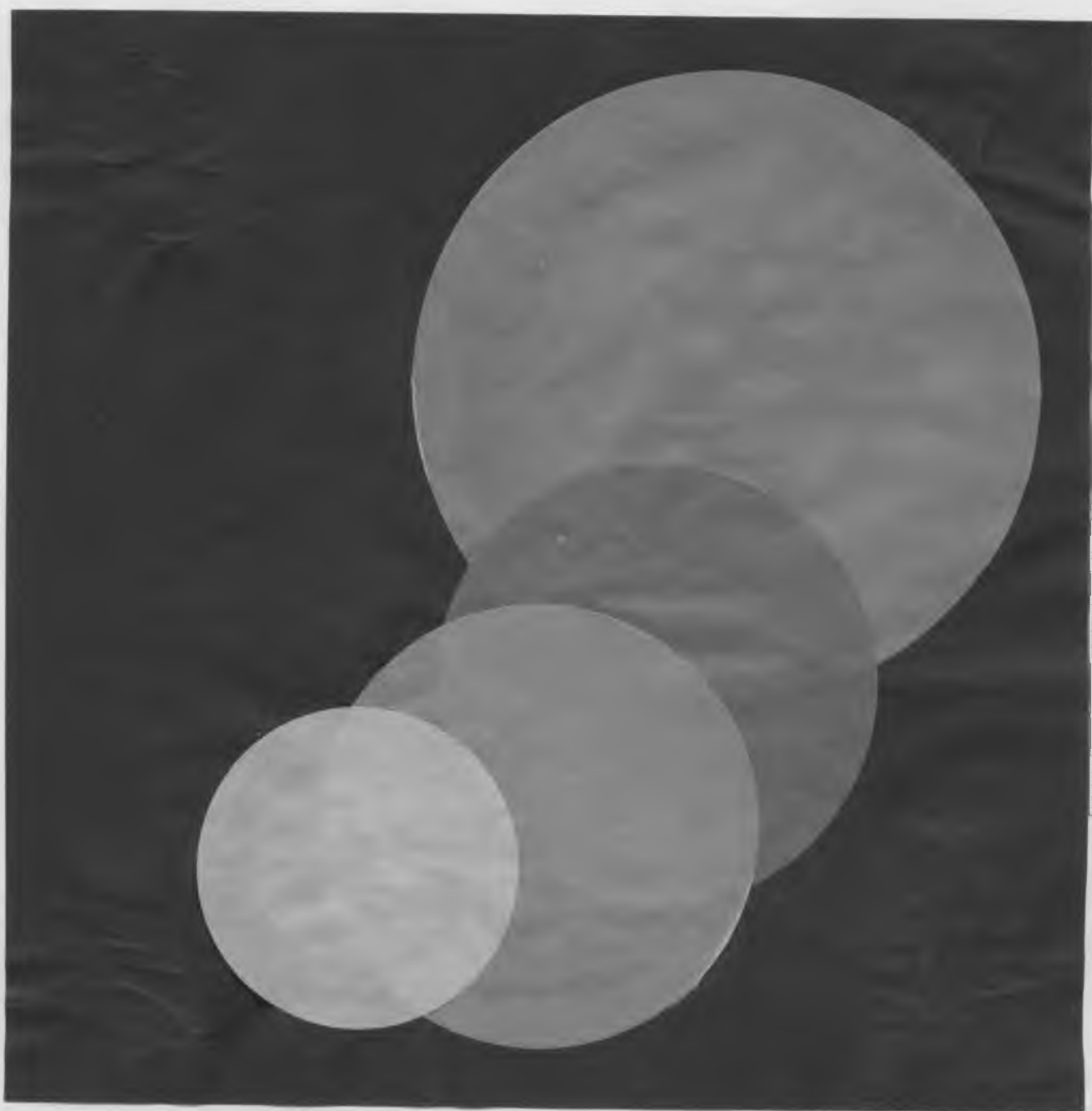
DESIGN NO. I - COOL COLORS



DESIGN NO. 1 - WARM COLORS



DESIGN NO. 2 - COOL COLORS



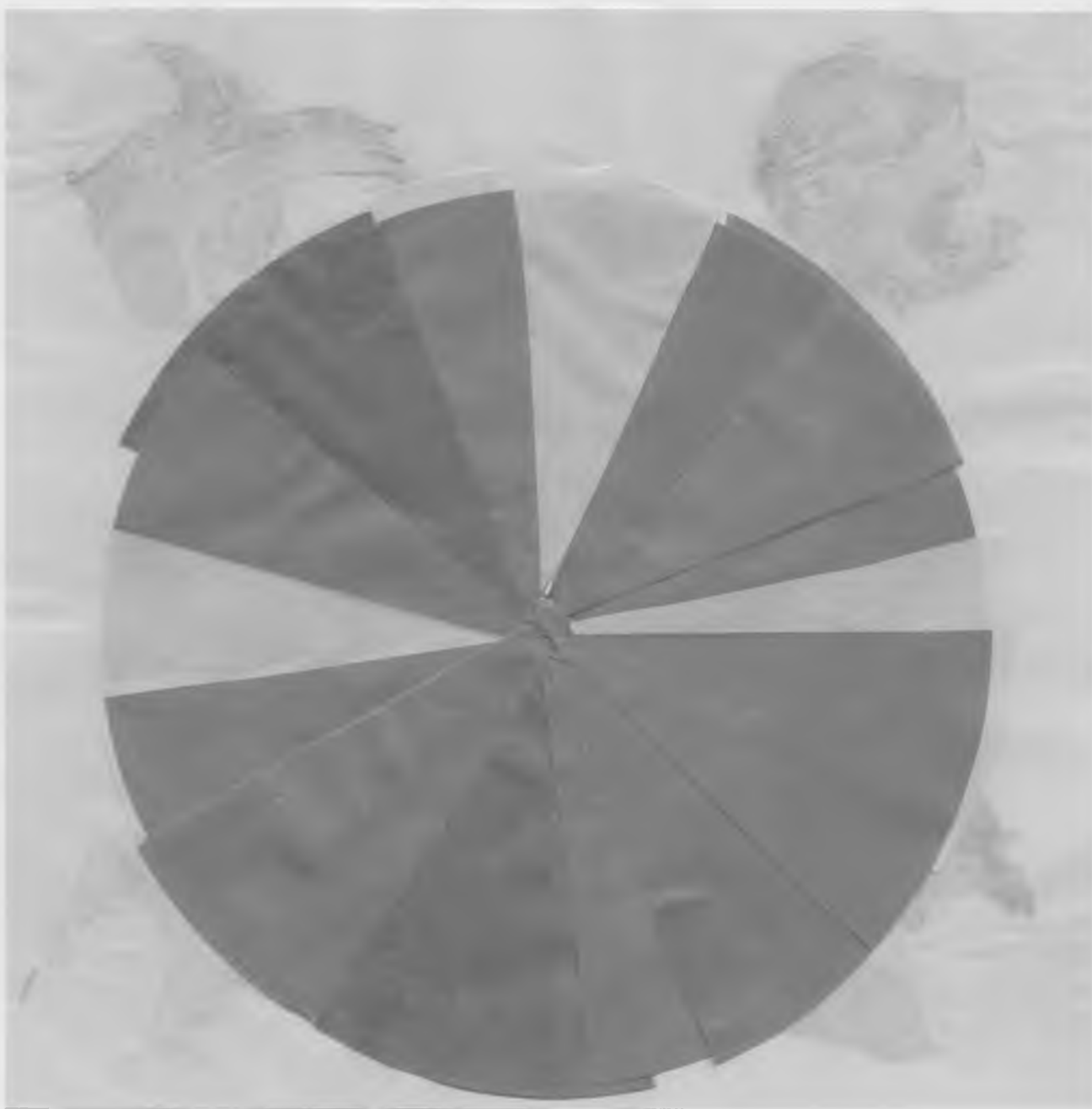
DESIGN NO. 2 - WARM COLORS



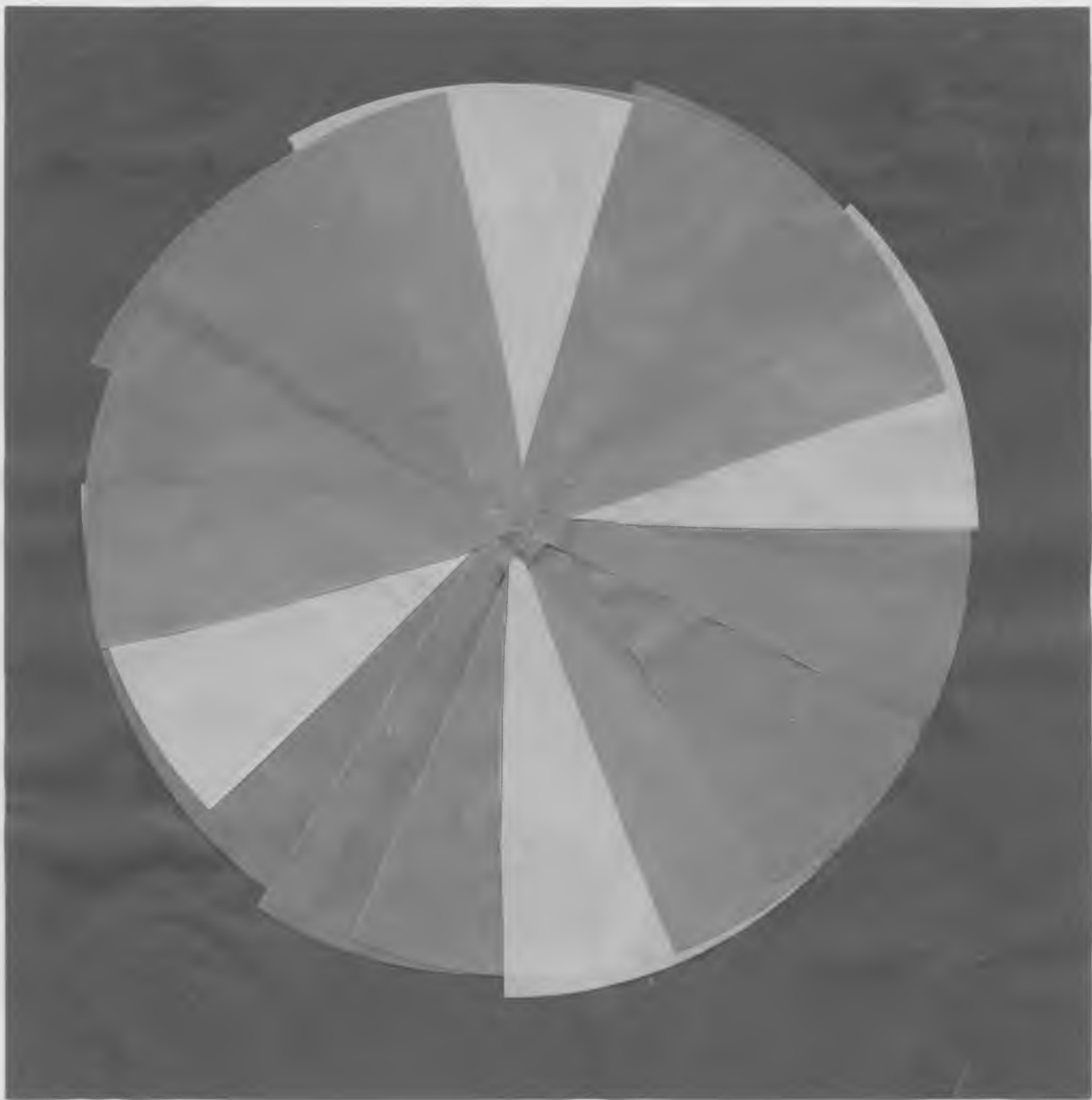
DESIGN NO. 3 - COOL COLORS



DESIGN NO. 3 - WARM COLORS



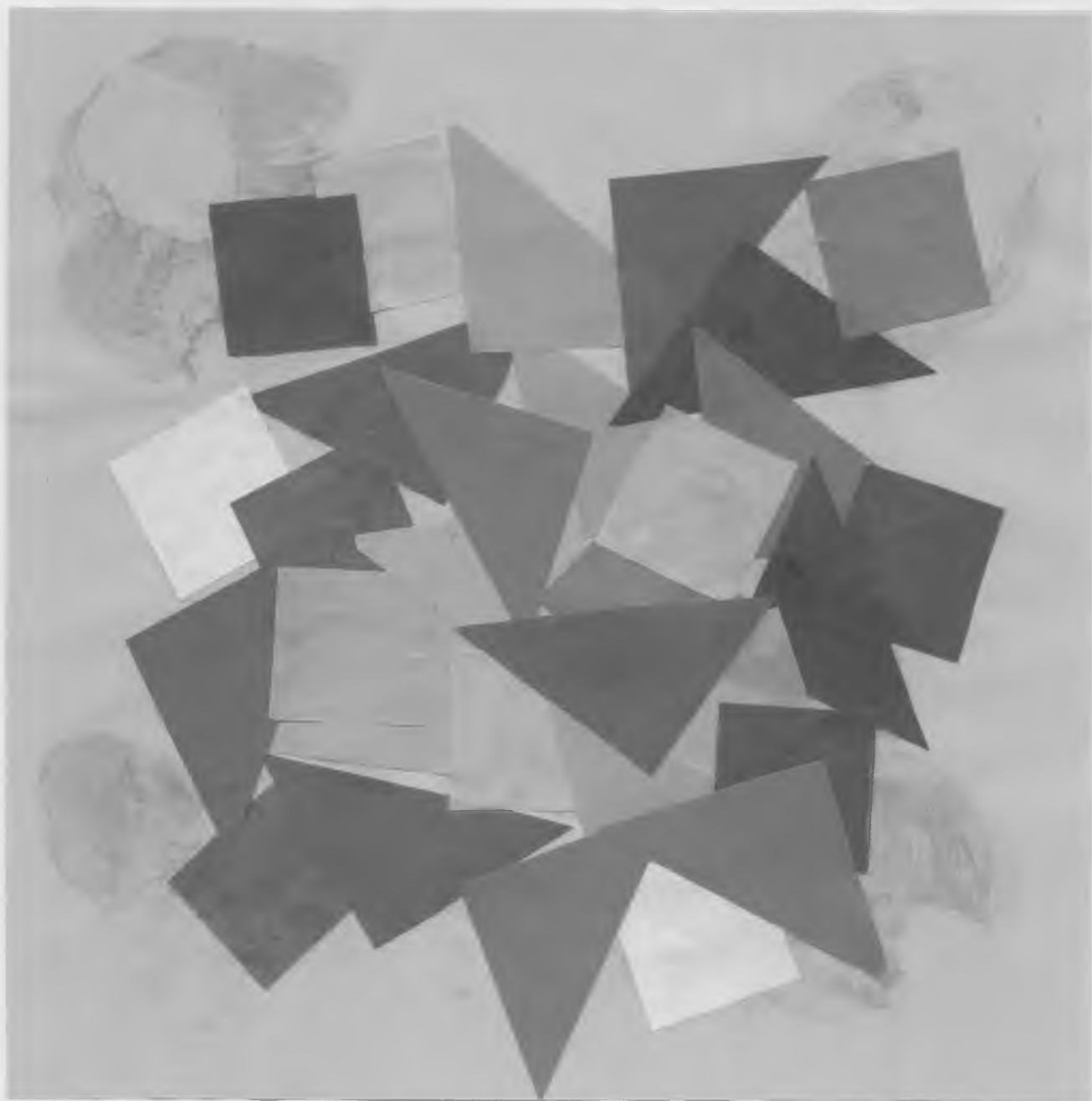
DESIGN NO. 4 - COOL COLORS



DESIGN NO. 4 - WARM COLORS



DESIGN NO. 5 - COOL COLORS



DESIGN NO. 5 - WARM COLORS



ILLUSTRATION OF TASK SET-UP

Tray of colors and geometrical
shapes and color wheel.