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THE RELATIONSHIPS AMONG CONFORMITY, LOCUS OF CONTROL
AND IDEATIONAL FLUENCY IN THE PRESCHOOL CHILD

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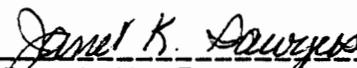
Janice Loffert Fisher

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APPROVED:



Janet K. Sawyers, Chairman



Shirley C. Farrier



Victoria R. Fu

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Committee Chairman: Janet K. Sawyers
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(ABSTRACT)

The primary purpose of this study was to explore the relationships among ideational fluency, conformity, and locus of control in preschool children. Forty-five children (50 to 61 months) from three child care centers were administered the conformity task, the Preschool and Primary Nowicki-Strickland Internal-External Scale (PPNS-IE), the Multidimensional Stimulus Fluency Measure (MSFM), and the Information and Picture Completion subtests of the WPPSI.

The findings from this study were mixed in their support of previous research. Results indicated that children with an internal locus of control were more often males and gave fewer original responses than children with an external locus of control. Children with high IQ's gave a greater frequency of popular and total responses on the MSFM and were less

conforming than children scoring low on IQ. No significant relationships existed among the other variables, and no significant interaction was shown to exist between conformity and locus of control as they affected ideational fluency.

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CHAPTER 1

Introduction

In the study of creativity, original problem solving has been shown to be a crucial skill used by creative individuals in their creation of unique products (Amabile, 1983). An essential element in original problem solving is the ability to generate a number of potential solutions, termed ideational fluency in the creativity literature, to a particular problem (Guilford, 1956, 1967; Mednick, 1962; Wallach & Kogan, 1964). Ideational fluency has been described as an individual's ability to generate ideas in response to a divergent thinking task (Torrance, 1974; Wallach & Kogan, 1965). Original problem solving skills are then assessed by considering both the quantity of responses produced and the quality of these responses (Guilford, 1967).

Theoretically, a negative relationship between creativity and conformity has been suggested (Amabile, 1983), but there have been few empirical tests of this relationship in preschoolers. A study by Sawyers (1987) explored the possible relationship between creativity and conformity. In an effort to measure

conformity in a way that would be age appropriate for preschoolers, Sawyers developed a test for conformity which used four 3-dimensional styrofoam objects to elicit responses from children. In the conformity test, the child was given one styrofoam object to hold and told that other boys and girls had been shown the object too. Two responses given by other children were mentioned. The child was then asked "what do you think it looks like? a _____, _____, or something else?". Possible responses to the question were one of the two responses given by other children, or the response the child gave. The test continued this way for all four styrofoam objects.

Results from Sawyers's (1987) study showed a non-significant negative relationship between conformity and ideational fluency, and a negative relationship between conformity and IQ also appeared, $r = -.32, p < .06$. A possible order effect in the presentation of the MSFM and the conformity task in Sawyers's study seemed likely. By giving the MSFM before the conformity task, it appeared that the MSFM, which elicits numerous responses, prompted the child to give an alternative answer to the two suggested from other children in the conformity task, thereby

biasing the test toward a lower conformity score. Because of these results, the conformity task was administered before the MSFM in this study.

In the conformity literature, conforming and nonconforming behaviors have been described as being either intrinsically or extrinsically motivated, thereby giving two possible behavioral responses to conformity pressure with each of these possible responses having either intrinsic or extrinsic motives. Because the internal or external orientation of the individual has also been linked to ideational fluency (Cohen & Oden, 1974), locus of control was measured in this study using the Nowicki-Strickland locus of control scale for children (Nowicki & Duke, 1974).

The possible interactions among ideational fluency, conformity, and locus of control has strong theoretical support (Amabile, 1983; Crutchfield, 1962; Sawyers, Moran & Tegano, 1987) with little empirical evidence. As reviewed, previous literature suggests that all these variables are somehow related but no study has empirically investigated their effect on the creative process.

As an extension of Sawyers's original study of

creativity and conformity, and of ongoing creativity research at VPI & SU, it was the primary purpose of this study to explore the relationships between and among the variables of ideational fluency, conformity, IQ and locus of control. A secondary purpose was to investigate the role of conformity and locus of control in the creative process.

CHAPTER 2

Review of the Literature

Theoretical Models of Creativity

The theoretical frameworks on which this study was based, were developed by Amabile (1983) and the Developmental/ecological model of Sawyers, Moran, and Tegano (1987). Both of these models focus on various components thought to contribute to creativity. These componential frameworks conceptualize creativity as a process that occurs in many different domains: art, science, literature, etc., and yet is controlled and determined by a specific set of components common to all creative functioning. The three major components which serve as the basis of Amabile's explanation of creativity are domain-relevant skills, creativity-relevant skills, and task motivation.

Domain-relevant skills (Amabile, 1983) are the foundation for creative functioning in a given domain and are dependent on an individual's specific factual knowledge, relevant technical skills, and "talent". These skills are referred to in the Developmental/Ecological model (Sawyers, et al, 1987) as "expertise".

Creativity-relevant skills are applicable to any domain in that they include an individual's cognitive style, working style, and "application of heuristics for the exploration of new cognitive pathways" (Amabile, 1983, p. 67). Heuristic tasks are those without a clearly defined goal, or procedure for a solution. The Developmental/Ecological model targeted this specific area for measuring the potential creativity in preschoolers, since expertise has not yet been developed in most children this young. The generation of ideas in preschoolers, or ideational fluency, has been used to assess their creative potential.

Amabile (1983) identified task motivation factors as those specific to a particular domain of interest. These motivational factors are an individual's attitude and motivation toward a specific task.

In applying these major components to problem solving, Amabile takes an information-processing approach. She has described the task motivation of an individual as serving to both initiate the problem solving process and to sustain interest in the task. Domain-relevant skills are the skills and resource materials which the individual uses in generating

potential solutions to problems. They also include the skills used to evaluate the proposed solutions. Creativity-relevant skills govern the generation of potential solutions in that they comprise the approach process an individual takes in problem solving. According to Amabile these components work together to influence the various steps in the problem solving process (see Figure 1).

Drawing on Amabile's model, this study investigated ideational fluency and conformity as creativity-relevant skills. Locus of control was included in this study as a task motivation variable (Amabile, 1983). Support for the theoretical framework of this study was drawn from the review of the literature for each of the variables which follows.

Ideational Fluency in the Creative Process

Theoretical considerations. The Developmental/Ecological model (Sawyers, et al, 1987) is based on the work of Guilford (1956,1967,1968) and Wallach and Kogan (1965). Within this framework an essential element in original problem solving is the ability to generate a number of potential solutions to a particular problem (Guilford, 1956, 1967; Mednick,

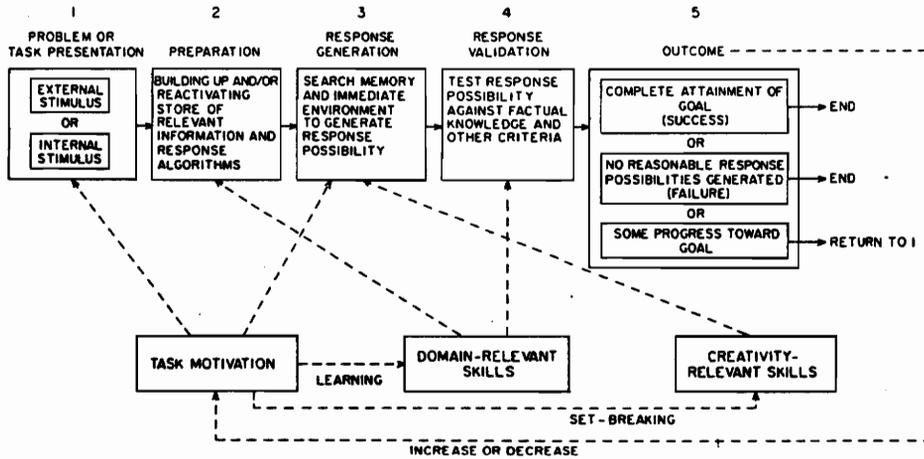


Figure 1: Components of Problem Solving From "The Social Psychology of Creativity" (pg. 78) by T. M. Amabile, 1983. New York, NY: Springer-Verlag New York Inc.

1962; Wallach & Kogan, 1965). Ideational fluency has been described as an individual's ability to generate ideas in response to a divergent thinking task (Torrance, 1974; Wallach & Kogan, 1965). Original problem solving skills are assessed by considering the quality of these responses (Guilford, 1967).

In a widely used scoring method for ideational fluency measures, popular responses are those given by 5% or more of the sample while original responses are those given by less than 5% of the sample. A positive relationship between the quantity and the quality of the responses generated has been established, with a high quantity of responses typically containing more original responses than a low quantity of responses (Kogan, 1983). Findings reported in the ideational fluency literature from studies with subjects ranging in age from four to adulthood have indicated that popular responses are typically given early in the response set, while original responses are typically given later (Mednick, 1962; Moran, Milgram, Sawyers & Fu, 1983a). In the Developmental/Ecological model ideational fluency is considered the best single measure of original problem solving abilities in preschoolers.

Empirical considerations. Prior to 1980 research on original problem solving using ideational fluency measures was limited to elementary school age and older subjects (Arasteh & Arasteh, 1976; Wallach, 1970). A series of studies were conducted which led to the development of the Multidimensional Stimulus Fluency Measure (MSFM) for the purpose of measuring ideational fluency in preschoolers (Fu, Kelso, & Moran, 1984; Moran, Milgram, Sawyers, & Fu, 1983a & b; Moran, Sawyers, Fu, & Milgram, in press; Sawyers, Moran, Fu, & Milgram, 1983).

The validity of the MSFM has been established through further studies. Scoring reliability and consistency were investigated (Godwin & Moran, 1983) and the measure was shown to have reasonable test-retest reliability over a two- to three-year period (Moore & Sawyers, 1987). Further original responses to the subtests of the MSFM have been found to be intercorrelated and unrelated to IQ and age (Tegano, Moran, & Godwin, 1986). These researchers have concluded that when care is taken to ensure that stimuli are appropriate for preschool children it is possible to measure creativity at this age.

Conformity in the Creative Process

Theoretical considerations. Independence, defined as "an absence of conformity in thinking and dependence on social approval" (Amabile, 1983, p. 74), has consistently been reported as being negatively related to creativity. Amabile cited studies of personality traits of creative individuals, in which independence has appeared consistently as a trait of these individuals. These findings led Amabile to propose that a high level of conformity would "reduce children's willingness to take risks in exploring new paths to solutions" (Amabile, 1983, p. 160). Therefore, in her model conformity affects original problem solving by hindering the generation of unusual ideas.

Similarly Crutchfield (1962) suggested that the compulsion to conform arouses extrinsic motives such as acceptance, reward, avoidance of rejection, which placed the task of problem solving as a secondary objective to the task of finding a solution which would bring acceptance and reward to the individual. An extrinsically motivated individual is thought to limit the generation of possible solutions and become less flexible in the evaluation of possible solutions. In this way, conformity hinders original problem

solving by reducing the quantity and thus the quality of potential solutions generated.

Empirical considerations. The theoretical literature makes a strong argument for a negative relationship between creativity and conformity. Findings from empirical studies tend to support the theoretical relationship. Many of the studies that have looked at the relationship between conformity and creativity have been with older subjects (Crutchfield 1955, 1962; Davis & Rimm, 1977; Golann, 1963). Much of the pioneering work in this area has been done by Crutchfield (1955, 1962) using an instrument which he developed to measure conformity.

In Crutchfield's conformity test subjects were tested in groups of five and were to respond through an electric signal network to the stimuli which the experimenter presented to them. Sitting side by side in partially closed booths, the subjects (adults) viewed slides which presented stimuli to be judged. Subjects were given a particular order in which they were to respond and could view the answers of the other subjects on their electric signal board. The experimenter manipulated the boards of the subjects so that they viewed not each other's answers but

contrived answers of the experimenter. The experimenter then could create conformity pressure for the subjects and measure their degree of conformity. Crutchfield's findings indicated a negative relationship between creativity and conformity.

Other studies which suggested a negative relationship between creativity and conformity were personality studies of creative individuals (Davis & Rimm, 1977; Golann, 1963). These studies found independence of thought to be a trait of creative individuals.

Two other studies addressed the relationship between creativity and conformity. Students were labeled as nonconformists if they had a record of school related behavior problems (Kaltsounis & Higdon, 1977; Rosenthal & Conway, 1980). In Rosenthal and Conway's study 57 adolescents in 10th grade were divided into one of three groups based on homeroom teacher's decisions: (a) behavior problems with unstable family background (b) behavior problems with stable family background (c) well adjusted in school. Creativity was measured by Torrance's verbal Unusual Uses and Non-verbal Circles test, and conformity was measured by the Minnesota Counseling Inventory. These

researchers found a significant positive relationship between nonconformity and behavior problems in school. No relationship was found between behavior problems in school and high creativity levels. In Kaltsounis and Higdon's (1977) study junior high students were divided into conforming and nonconforming groups based on the number of reprimands given by the principal for behavior problems at school. Creativity, assessed by Torrance Tests of Creativity, was not found to be related to conformity.

A possible negative relationship between conformity and creativity was reported in a longitudinal study by Torrance (1968). In his study Torrance noted a significant drop in creativity scores at around the fourth grade. Torrance considered this drop to be related to a fourth grader's closer association with peers, resulting in conforming more with peers. Torrance's results indicated a negative relationship between creativity and conformity.

Several researchers have explored the relationship between creativity and conformity in young children. A study by Starkweather (1971) focused on the relationship between originality and conformity in kindergarten girls. Starkweather

developed two tests to measure conformity: the Starkweather Originality Test for Impersonal Conformity and the Color Preference Test for Social Conformity. Originality was measured in her study with the Starkweather Originality Test.

Starkweather's impersonal conformity task was comprised of four form boards which pictured familiar scenes for young children and corresponding picture pieces for the child to use in creating a picture. A black and white picture behind the board suggested an arrangement of the pieces for the child. The child was free to complete the picture however desired: to replicate the black and white picture (conform) or create one of his or her own (nonconformity).

Starkweather developed a color preference test to measure social conformity. A pretest was used to determine children's personal color preferences prior to the administration of the conformity task. Conformity was assessed by using various colored pieces of paper with pictures glued on to them. The child was presented with colored pictures for parents or friends which were the same color (ex. a cow on red paper) then the child was asked to choose between two different colored pictures for herself (ex. a cow on

red paper or a cow on blue). The child was considered to conform with parents or friends if she chose the same color of picture for herself. In kindergarten girls a high originality score was related to a freedom in selecting conforming or nonconforming responses. Those scoring low in originality did not show this freedom with conforming responses.

Research by Sawyers (1987) explored the possible relationship between conformity and creativity in four-year-olds. In an effort to measure conformity in a way that would be age appropriate for preschoolers, Sawyers developed a test for conformity which used four 3-dimensional styrofoam objects to elicit responses from children. In the conformity test, the child was given a styrofoam object to hold and told that other boys and girls had been shown the object too. Two responses given by other children were mentioned and then the child was asked "what do you think it looks like? a _____, _____, or something else?". Thus, possible responses to the question were one of the two responses given by other children, or "something else" which the child gave a response for. The test continued this way for all four styrofoam objects. Responses were given a score of four points

if the child chose a popular response (based on established norms) of another child, three points if the child chose an unusual response (based on established norms) of another child, two points if the child gave a popular response of his/her own, and one point if the child gave a unique response of his/her own. A total conformity score for the conformity task was the sum of the child's response points with a high score indicating high conformity.

Sawyers' (1987) scoring system was based first on whether the child conformed to the responses of other children (four or three points), or gave their own responses (two or one points), and secondarily on whether these responses were classified popular (four or two points) or original (three or one points) based on the 5% scoring system and previous norms. No significant relationship was found between conformity and ideational fluency in Sawyers' study.

Locus of Control in the Creative Process.

Theoretical considerations. Cohen and Oden (1974) among others have argued that the behavioral characteristics necessary for creative functioning are also associated with an internal locus of control. Within the Developmental/Ecological model (Sawyers et

al., 1987), locus of control is seen to influence the creative process through the behavioral characteristic of the individual. According to Amabile's (1983) theoretical framework, task motivation influences an individual's attitude and motivation toward a particular task. The external or internal orientation of the individual influences task motivation and thereby influences original problem solving.

Locus of control is a description of a person's perception of control over an event or action. As described by Rotter (1966), an individual with an internal locus of control views events as being a result of their own behavior, while an individual with an external locus of control views events as being controlled by others, fate, or luck. In the course of development, locus of control is thought to evolve from an external orientation towards a more internal orientation. Lefcourt (1976) suggests that with maturation, children gain a recognition of their own effect on the environment and come to understand the influence of their own actions in daily events.

Further, Crutchfield's (1955, 1966) theoretical model of conformity suggested that motives for conforming behaviors were significant in their

influence on the creative process. The internal and external motives for conforming and nonconforming behaviors influenced the level of creativity of the individual. Although a distinction can easily be made between the observable behaviors of conformity and nonconformity, the distinction between internal and external motives for conformity and nonconformity are not as easily identified. An individual who interprets events or actions as being a result of his own behavior would have an internal locus of control and be internally motivated, while an individual who interpreted events or actions as being a result of others or luck, would have an external locus of control and be externally motivated.

Empirical considerations. While Crutchfield (1962) has suggested that motivational factors influence conformity, Guilford (1968) has suggested that they are also influential on creativity. In a study on the relationship between ideational fluency and locus of control in kindergarten and second grade children a positive relationship was found for second graders but not for kindergarteners (Cohen & Oden, 1974). Ideational fluency was measured with Ward's (1968, 1969) modified version of the Uses and

Instances task developed by Wallach and Kogan (1965). Locus of control was measured with a scale developed by Bialer (1961).

In a study by Sawyers and Moran (1984), the relationship between ideational fluency and locus of control in preschoolers was examined. In their study ideational fluency was measured by the MSFM and locus of control was measured with the Preschool and Primary form of the Nowicki-Strickland Scale (Nowicki & Duke, 1974). Although Cohen and Oden (1974) found no relationship between ideational fluency and locus of control for the kindergarteners in their study, Sawyers and Moran found a positive relationship between original responses on the MSFM and locus of control ($r = .55$, $p < .03$) in children 47 to 57 months.

In a study by Groves (1984) the relationship between rewards, locus of control and ideational fluency in preschool children was explored. In her study, locus of control was also measured by the PPNS-IE (Nowicki & Duke, 1974) and ideational fluency was measured with the MSFM. The predicted positive relationship between 4- and 5-year-old children's original scores and internal locus of control was not supported by the findings.

The Interrelationships Between Ideational Fluency,
Conformity, and Locus of Control

Theoretical considerations. Another supporting theoretical framework for this study was developed by Crutchfield (1962). Although most of the creativity literature related to personality traits suggested a negative relationship between creativity and conformity (Davis & Rimm, 1977; Golann, 1963), few studies exploring this link have taken into account the different types of conformity that are possible; there is then, a broad label of "conformity" placed on differing behaviors within the creativity literature.

Crutchfield (1962) identified four types of responses to conformity pressure within a group setting. In his framework the first type, "conformity", occurs when "the person is brought to comply with the group through a weakened conviction about his own judgment, a readiness to assume that the group is right and he is wrong" (Crutchfield, 1962, p. 126). The second type, "expedient conformity" occurs when "the person chooses deliberately to express outward agreement with the group even though his inner judgement remains uninfluenced" (Crutchfield, 1962, p. 126). "True independence", the

third type, occurs when "the person is, through strong inner conviction and self-confidence, capable of holding to and expressing his own independent judgments unimpaired by the opposition of the group opinion" (Crutchfield, 1962, p. 126). The final type "counterformity" occurs when "the person is actually influenced by the group pressure, but in a contrary direction" (Crutchfield, 1962, p. 126).

While behaviorists have argued that conformity is simply a behavior which can be manipulated by a stimulus or need (Walker & Heyns, 1962), Crutchfield contended that some individuals had greater tendencies to conform. As a supporter of conformity as a personality trait, Crutchfield has described individuals who have tendencies toward one of his four responses to conformity pressure: the conformist, the expedient conformist, the counterformist, and the independent thinker.

Underlying these personality types, Crutchfield has described motives which compel the individual to behave in a certain way. What Amabile (1983) termed extrinsic motives, Crutchfield described as ego-involved motives, and Amabile's intrinsic motives are what Crutchfield referred to as task-involved

motives. Crutchfield argued that the key to original problem solving was being able to break free of habit and stereotyped responses and being allowed to bring in new and original ideas to the problem at hand.

Intrinsic task-involved motives would promote this free thinking while extrinsic ego-involved motives would hinder it.

According to Crutchfield, conformity pressures would arouse ego-involved motives in an individual thereby distracting the individual's cognitive processes from problem solving and directing them to producing a solution in order to reach an ulterior goal - group acceptance, higher status, avoiding rejection. The "conformist" would be influenced by external as well as internal pressures to conform, thereby arousing ego-involved motives. The "expedient conformist" however, would not alter personal internal convictions but would maintain task-involved motives while externally conforming. The "counterformist" in seeking to be free from group rule and to hold fast to an individual identity, would evoke ego-involved motives. The "independent thinker" would respect both personal thoughts and opinions as well as the thoughts and opinions of others, without relying too heavily on

either; the thinkers' motives would be intrinsic, task-involved motives which would capture the individual in the search for a solution to the proposed problem.

From an individual's behavior it often can be judged whether they are a conformist or a nonconformist. One would also need to know if an individual's motives were internal or external in order to distinguish between the "conformist" and the "expedient conformist", between the "independent thinker" and the "counterformist". Thus information regarding a subject's locus of control orientation and their level of conformity, would be helpful in determining the interrelationships of these variables with creativity.

Empirical considerations: conformity and locus of control. The early research on locus of control used an instrument developed by Rotter (1966) which employed a forced-choice format to a questionnaire. Once this "I-E" scale was developed a number of behaviors thought to be related to locus of control were explored. Conformity emerged as the most popular target of early locus of control researchers.

The studies that have looked at the relationship

between locus of control and conformity have involved older subjects (Crowne & Liverant, 1963; Davis & Davis, 1972; Phares, Wilson, & Klyner, 1971; Ryckman, Rodda, & Sherman, 1972; Singh, 1984; Strickland, 1970). In general results from these studies suggest a negative relationship between high conformity and an internal locus of control. No study was found which explored this relationship in preschoolers.

In a summary of the literature, Strickland (1977) described the relationship between locus of control and conformity as being "clearly related to conforming and compliant behavior" (p. 232). Strickland describes internally oriented individuals as being "more likely to maintain their own individual judgements in the face of contrasting evidence from external sources that call their perceptions and/or behaviors into question. Externals, on the other hand, succumb to pressure from others particularly when the outside source is seen as prestigious or an expert" (p. 232).

Empirical considerations: ideational fluency, conformity, and locus of control

Crutchfield's framework provides a detailed description of a significant interaction among the

variables of ideational fluency, conformity, and locus of control. Amabile's and the Developmental/Ecological model provide further theoretical support for the interrelatedness of these three variables. No known study has investigated the effect of conformity and locus of control on the creative process.

Summary

Although both the creativity and conformity literature contain theoretical frameworks suggesting a negative relationship between creativity and conformity, the empirical support is limited. There is a need for more empirical studies exploring the role conformity plays in the creative process. The motives for conforming or nonconforming behaviors have not been taken into account in many of the creativity studies. The literature also seems to be limited to the study of the role of conformity on the creative process in adults and adolescents. There is still a large gap in the conformity research for subjects who are in the preschool or elementary school age range. Studies investigating internal locus of control and conformity provide fairly strong evidence of a negative relationship between the two variables, but

again these studies have not included preschool age subjects.

Based on Crutchfield's theory of how conformity influences creative thinking, there appears to be a link between intrinsic or extrinsic motives and an individual's level of conformity, as related to the creative process. No study has been found which has measured an individual's motives for conforming or nonconforming behavior, but through measurement of locus of control an individual's internal or external orientation can be assessed.

CHAPTER 3
Methodology

Hypotheses

The primary purpose of this study was to explore the relationships among the variables of ideational fluency, conformity, locus of control, and intelligence. A secondary purpose of this study was to investigate a proposed interaction between conformity and locus of control as it affects ideational fluency.

Based on Sawyers' (1987) study of ideational fluency and conformity, and the literature reviewed, it was hypothesized that a negative relationship would be found between original responses on the MSFM and conformity.

From Sawyers and Moran's study (1984) which found a positive relationship between original responses and locus of control, it was hypothesized that children with internal locus of control would score significantly higher on original responses to the MSFM than children with external locus of control.

Based on Strickland's review of past research (1977) and a recent study by Singh (1984) which showed

a negative relationship between conformity and internal locus of control, it was hypothesized that children with an external locus of control would score significantly higher on the conformity task than children with an internal locus of control.

Hypothesis four was based on Crutchfield's theoretical model of conformity which proposed that simple behavioral conformity or nonconformity is not enough to distinguish between high and low creative individuals. Intrinsic and extrinsic motives for conforming or nonconforming behaviors together with the behavioral response to conformity pressure, interact to distinguish the highly creative from the lesser. It was hypothesized that children classified as independent thinkers (low conformity; internal locus of control) would score significantly higher on original responses to ideational fluency tasks than children classified as conformists (high conformity; external locus of control), counterformists (low conformity; external locus of control), or expedient conformists (high conformity; internal locus of control).

Subjects

The sample consisted of 45 four-year-olds from

three child care centers in a Southwest Virginia city. Parental notification and consent was obtained prior to testing of the children (Appendix A).

Variables

Ideational Fluency

Creativity was measured by the Multidimensional Stimulus Fluency Measure (MSFM) which has been used in a number of studies with preschool children (Groves, 1984; Moran, Milgram, Sawyers, & Fu, 1983a & b; Sawyers & Moran, 1984; Spector, 1984). The MSFM (Appendix B) consists of three subtests (uses, instances, and pattern meanings) with two tasks in each test. The uses subtest requires the child to name as many uses as they can think of for a box and for paper. The subject names red things and round things in the instances task. In the pattern meanings subtest, two 3-dimensional styrofoam shapes were used to elicit responses of what these shapes could be. For all three subtests there was no time limit and the child was encouraged to give as many responses as possible. The responses were scored as popular (given by 5% or more of the sample) or original (given by less than 5% of the sample). Popular and original responses were summed to obtain a total ideational

fluency score. Construct validity and an interscorer reliability of .98 using standard scoring instructions and cumulative scoring protocols have been reported by Godwin (1984).

Conformity

An instrument developed by Sawyers (1987) was used to measure levels of conformity in four-year-olds. The conformity task (Appendix C) used four 3-dimensional styrofoam objects to elicit responses from the child for what the objects could be. In the conformity test, the child was given a styrofoam object to hold and told that other boys and girls had been shown the object too. Two responses (one popular, one original based on norms) given by other children were suggested. The child was then asked "what do you think it looks like? a _____, _____, or something else?". Thus possible responses to the question were one of the two responses given by other children, or "something else" given by the subject. The test continued this way for all four styrofoam objects. Responses were given a score of four points if the child chose a popular response (based on norms) of another child, three points if the child chose an unusual response of another child, two

points if the child gave a popular response of his/her own, and one point if the child gave a unique response of his/her own. The conformity score was calculated as the sum of the child's responses. The range of possible scores was from four to sixteen with a high score indicating high conformity.

Sawyers' (1987) scoring system was based first on whether the child conformed to the responses of other children (four or three points), and secondarily on whether these responses were popular or original with original responses being given a lower score.

Locus of control

Locus of control was assessed using the Preschool and Primary Nowicki-Strickland Internal-External Scale (PPNS-IE). The PPNS-IE (Appendix D) is comprised of 26 cartoon pictures depicting verbal interactions between two children: a cartoon child asks another cartoon child a "yes" or "no" question, to which the subject responds. Male and female forms were used so that the responding cartoon child was the same sex as the subject. Responses are scored for externality with answers ranging from internal orientation (score 0) to external orientation (score 26).

Intelligence

Two WPPSI subscales, Information and Picture Completion, were used to measure intelligence. The Information subscale consisted of 23 questions of general information. The questions were asked in sequence and were discontinued after 5 consecutive failures. The Picture Completion subscale was administered through use of a book with 23 different pictures, 1 on each page. Each picture had a missing part which the child was asked to identify. The pictures were presented in sequence and the task was discontinued after 5 consecutive failures.

Administration and scoring for both subscales followed the instructions given in the test manual (Wechsler, 1974). Consistent with previous research, (Moran et al, 1983a) a formula was used to extrapolate the IQ score from the Information and Picture Completion WPPSI subtests (Tellegen & Briggs, 1967).

Procedure

Five experimenters were used to collect data. These experimenters were trained in the administration of the four tasks. The examiners established rapport with the child before data collection began. Data were collected through face-to-face lab tasks between

the child and the adult during three, 20 to 25 minute sessions in a room away from other people. No verbal or nonverbal encouragement was given to the child and testing stopped at any time the child desired. During session one, administration of the conformity task was followed by the PPNS-IE. In session two the MSFM was administered. The WPPSI subscales were administered in the final session.

CHAPTER 4

Results

The primary purpose of this study was to explore the relationships among the variables of ideational fluency, conformity, locus of control, and intelligence in preschool children. The findings, regarding these relationships, were mixed in their support of previous research.

To test for possible experimenter, age, sex, and center effects, ANOVAs were run with the independent variables being experimenter, age, sex, and center, and the dependent variables being locus of control, conformity, popular, original, and total fluency responses on the MSFM, and IQ. Experimenter effects were found for total popular responses, $F(4,40) = 4.43$, $p < .005$; and for IQ, $F(3,41) = 4.07$, $p < .01$. Center effects were found for total popular responses, $F(2,42) = 7.69$, $p < .001$; and for total fluency, $F(2,42) = 5.00$, $p < .01$. Sex effects were found with locus of control, $F(1,43) = 7.11$, $p < .01$.

The experimenter effects for IQ were due to one experimenter, experimenter three, who tested at two of the centers in the study. An explanation for the

experimenter effect for IQ was that the experimenter reinforced the subjects for their responses. However, this does not appear to be the case given that no center effect was found for IQ. Since the IQ test was used only to clarify the relationship among the primary variables, the experimenter effects for IQ were not controlled for in further analysis.

Experimenter and center effects for popular responses on the MSFM may have been caused by possible reinforcement by the experimenter or by differences in the testing environments. Experimenter three collected all of the data at the center which differed significantly from the others on popular responses. Because this study was concerned more with original responses, the experimenter and center effects for popular responses were not dealt with. The center effect found for total fluency (popular + original) was due to the overlap of popular and total fluency scores.

The finding of a sex effect for locus of control was consistent with findings reported in the literature which indicate that males are more likely than females to exhibit an internal locus of control. Since with age children have been reported to become

more internally oriented (Lefcourt, 1976), a comparison of male and female ages was made. The results indicated that the males were younger ($M = 55.3$) than the females ($M = 56.2$) and that the difference was not statistically significant.

Pearson product correlations, computed to determine the interrelationships among ideational fluency, locus of control, conformity, and IQ, are presented in Table I. The expected negative relationship between original responses on the MSFM and conformity was not supported by the findings of this study. Although the relationships were in the predicted negative direction, none of the relationships between the conformity and ideational fluency scores (popular, original, and total) were significant.

Further, it was hypothesized that children with an internal locus of control would score significantly higher on original responses on the MSFM than children with an external locus of control. Contrary to expectations, original responses in this study were positively related to locus of control ($r = .24$, $p < .05$) indicating that children with an internal locus of control gave significantly fewer original responses

Table I

Intercorrelations Between Ideational Fluency,
Conformity, Locus of Control, and IQ

Variables	O	P	TF	CONF	LOC	IQ
1. Original Ideational Fluency	-	.54 (.00)	.86 (.00)	-.07 (.32)	.24 (.05)	.15 (.16)
2. Popular Ideational Fluency			.89 (.00)	-.20 (.10)	-.03 (.43)	.40 (.003)
3. Total Fluency				-.16 (.15)	.11 (.23)	.32 (.02)
4. Conformity					-.08 (.29)	-.25 (.05)
5. Locus of Control						-.06 (.34)
6. IQ						- -

*Note. Level of probability given in parentheses.

than children with an external locus of control. Neither popular nor total fluency scores were related to locus of control orientation.

The results of this study did not support the expectation that children with an external locus of control would score high on conformity. As shown in Table I, the results indicated that an external locus of control was not related to conformity ($r = -.08$, $p < .29$).

Intelligence, as measured by the WPPSI, was found to be significantly related to popular scores on ideational fluency ($r = .40$, $p < .003$) and thus to total fluency ($r = .32$, $p < .02$), but not to original scores on the MSFM. Children scoring high on the intelligence measure were found to be less conforming than children with low IQ scores ($r = -.25$, $p < .05$). Locus of control scores were not related to IQ.

Analysis of variance was used to test Crutchfield's theory for a possible interaction among locus of control and conformity as these variables affect ideational fluency. For this analysis the independent variables were internal and external locus of control, and high and low conformity. The dependent variables compared were the MSFM scores for

total fluency, popular, and original responses. No significant effects or interactions were found for original, $F(2,41) = 1.20$, $p < .28$; popular, $F(2,41) = .10$, $p < .76$; or total fluency scores, $F(2,41) = .19$, $p < .66$.

Table II presents the mean scores, standard deviations, and ranges obtained for ideational fluency, IQ, conformity, and locus of control. These results were similar to previous studies of ideational fluency (Groves, 1984; Sawyers, 1987; Sawyers & Moran, 1984) and indicate that the subjects comprised a typical preschool population.

For original ideational fluency responses, the present study had a mean = 17.40 as compared to $M = 11.91$ (Groves, 1984), $M = 16.47$ (Sawyers, 1987), and $M = 13.07$ (Sawyers & Moran, 1984). The standard deviation = 9.63 found in this study was in line with previous research with $SD = 13.09$ (Sawyers, 1987), and $SD = 9.17$ (Sawyers & Moran, 1984). A range of 1-38 was restricted in comparison to the range of 2-66 found in Sawyers (1987) study. 1987). For popular responses the mean = 26.09 was higher than Groves' (1984) $M = 10.48$, Sawyers' (1987) $M = 14.18$, and Sawyers and Moran's (1984) $M = 13.27$. The higher

Table II

Means, Standard Deviations, and Ranges for Ideational Fluency, Conformity, Locus of Control, and IQ

<u>Variables</u>	<u>M</u>	<u>SD</u>	<u>Actual Range</u>	<u>Theoretical Range</u>
Original Ideational Fluency	17.40	9.63	1-38	
Popular Ideational Fluency	26.09	10.96	11-50	
Total Fluency	43.49	18.10	14-84	
Conformity	9.31	3.10	4-15	4-16
Locus of Control	12.56	2.36	7-17	0-26
IQ	117.23	12.06	85-137.7	

number of popular responses could be attributed to the experimenter and center effects found in this study. The standard deviation of 10.96 for the present study is also higher than that of other studies, $SD = 5.21$ (Sawyers, 1987) and $SD = 2.79$ (Sawyers & Moran, 1984). A range of 11-50 was found in this study as compared to a range of 7-26 in Sawyers' (1987) study.

The mean, standard deviation and range of conformity responses were compared to Sawyers' (1987) results and appeared to be in line with her findings. The present study found an $M = 9.31$, $SD = 3.10$ and $R = 4-15$, and Sawyers' study had $M = 11.03$, $SD = 3.40$ and $R = 5-16$.

Locus of control results were also compared to previous studies (Groves, 1984; Sawyers & Moran, 1984) and were found comparable. A mean of 12.56 was in line with Groves' (1984) $M = 13.10$ and Sawyers and Moran's $M = 14.13$. From these studies only Sawyers and Moran (1984) gave standard deviation scores (2.77) which are similar to the 2.36 from the present study.

Intelligence scores also appeared to reflect previous results (Sawyers, 1987; Sawyers & Moran, 1984). The present study found $M = 117.23$ with previous studies having $M = 111.76$ (Sawyers, 1987) and

\bar{M} = 124.00 (Sawyers & Moran, 1984). The standard deviation of 12.06 compared with \underline{SD} = 15.66 (Sawyers, 1987) and \underline{SD} = 10.50 (Sawyers & Moran, 1984). The range of 85.5-137.7 was comparable to Sawyers' (1987) range of 78.0-149.0.

CHAPTER 5

Discussion

The findings from this study, regarding the relationships among the variables of conformity, locus of control and ideational fluency, were mixed in their support of previous research. The variables of age, sex and IQ added additional insight into these relationships.

The hypothesized negative relationship between original responses to the MSFM and conformity was not found in this study. A possible explanation for this finding was found in Starkweather's 1972 study. She found that children scoring high on originality were more flexible in their level of conformity than those scoring low on originality.

To test for Starkweather's predicted relationship between variables, a median split of the frequencies of total original responses was made to designate high and low original groupings of subjects. Responses on the conformity task were then grouped as high or low, based on a median split of the theoretical range. The frequency distribution on the conformity scores indicated that in this study high and low originality

subjects did not differ significantly. Ranges and means of the ideational fluency and conformity scores obtained in this study were comparable to those obtained in previous studies and were not restricted. Thus another possible explanation that findings were due to a restricted range is not tenable. Further research with the conformity instrument with other age groups is needed to test for the possibility that the findings with this age group may be due to developmental and/or cognitive factors.

Children with an internal locus of control were expected to score significantly higher on original responses to the MSFM than children with an external locus of control. Results of a Pearson product-moment correlation showed a positive relationship between the two variables ($r = .24$, $p = .05$), indicating that in this study, internal locus of control was related to low originality scores.

This finding adds to the mixed results reported in previous research. Findings reported by Sawyers and Moran (1984) found a positive relationship between internal locus of control and original ideational fluency whereas Cohen and Oden's (1974) study found no relationship between the variables. A possible

explanation for these results might be in the distribution of the locus of control scores. Twenty-six of the forty-five subjects scored between 11 and 14, leaving very little differentiation in scores. A previous study by Groves (1984) had similar distribution problems using the PPNS-IE. Her study was skewed towards a more external locus of control rating. It appears that resolution of the conflicting results appears to be dependent upon a study with a large enough sample to represent the full range of scores on the PPNS-IE

A study by Connell (1985) gave further insight into children's perceptions of control and provided another possible explanation for the results of this present study. While the PPNS-IE forced the child to attribute an external or internal cause for events, the new instrument developed by Connell allowed the child to respond with an unknown cause. Connell's study revealed that during large transitional stages of development children gave greater "unknown" responses, but with adaptation to their new stage, children again began to respond with primarily internal or external attributions for locus of control. Connell's instrument also tapped three

specific domains of a child's development (cognitive, social, and physical) as well as a general category. Although Connell's study was limited to third- through ninth-grade children, his findings suggest that preschoolers might also have difficulty attributing a internal or external causes for an event. In relation to the present findings, the PPNS-IE does not allow for an "unknown" attribution for locus of control, and in this way might have limited the distribution of the scores.

The relationship between high conformity and an external locus of control was hypothesized to be positive. Pearson product-moment correlations showed no significant interrelationship between these variables. This lack of a significant relationship among locus of control and conformity may also be explained by the distribution of scores on the PPNS-IE.

Based on Crutchfield's theoretical model of conformity, the fourth hypothesis predicted an interaction between conformity and locus of control as these variables affect ideational fluency. It was hypothesized that children classified as independent thinkers (low conformity; internal locus of control)

would score significantly higher on original responses to ideational fluency tasks than children classified as conformists (high conformity; external locus of control), counterformists (low conformity; external locus of control) or expedient conformist (high conformity; internal locus of control). Analysis of variance showed no significant mean differences among the groups for the ideational fluency scores.

A possible explanation for the lack of significant results might lie in Crutchfield's definition of conformity and motives. Both Crutchfield and Amabile describe task-involved motives (intrinsic motives) and ego-involved motives (extrinsic motives) as they interact with conformity to influence the creative process. This study attempted to measure the intrinsic or extrinsic orientation of an individual through a locus of control measure and therefore was an indirect measure of the motive for conforming or not conforming. As measured in this study, locus of control orientation and conformity were not related. It is not clear whether this finding was due to the measures used, the sample distribution, or the developmental characteristics of the subjects tested. Validity and reliability studies of the conformity

task with other locus of control measures and age groups are needed to clarify the findings of this study.

Given the exploratory nature of the study, a measure of IQ was included to help interpret the results. Several significant relationships between IQ and the primary variables were identified. The positive interrelationship between popular responses on the MSFM and IQ was consistent with previous creativity research (Sawyers, 1987), as was the lack of a significant relationship between IQ and originality scores (Sawyers, 1987). These results add to the growing body of literature which indicate that original thinking is differentiated from IQ as early as age four.

The relationship found between conformity and IQ in this study was similar to the results of a study by Sawyers. Sawyers' study (1987) revealed a negative relationship between IQ and conformity ($r = -.32, p = .06$) and in the present study a negative correlation was also obtained ($r = -.25, p = .05$).

The negative correlation found between locus of control and sex indicated that males were more internally oriented while females had a more external

locus of control. In a review of current locus of control research, Dyal reported a strong sex effect. He stated that sex differences tend to vary with the particular instrument being used, and the ethnicity and socioeconomic status of the subjects, but generally indicate that males have a more internal locus of control orientation. In a study which used the same instrument for measuring locus of control, and also had preschool age subjects, no sex differences were reported (Groves, 1984).

It is recommended for future research that an alternative instrument be used for measuring locus of control. In light of Connell's (1985) findings, an instrument which provides an "unknown" response category and also measures various behavioral domains seems appropriate. Based on Crutchfield's (1955, 1962) theoretical framework, and specific to this study, is the need to measure conformity in a social setting. Future researchers are cautioned to measure as directly as possible the variables defined in the theoretical framework of their particular study. Using a larger sample size is also advised in order to represent the full range of scores for the various instruments. A final recommendation is for further

research in this area with different age groups to determine possible developmental trends affecting the variables of locus of control, conformity, and ideational fluency.

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APPENDIX A
Informed Consent Letters

VIRGINIA TECH

Department of Family and Child Development
College of Human Resources

Wallace Annex
Blacksburg, Virginia 24061-8299
(703) 961-4794 or 4795

Dear Parent,

In partial fulfillment of the requirements for my Master's degree in Family and Child Development, I am conducting a research project on creativity in the preschool child. This project explores how conformity and locus of control influence the creative process. Each child will be seen individually in a game-like setting for three 20 - 25 minute sessions. All of these sessions will take place at your child's school during regular hours. Your child's name will not be attached to the answer forms to ensure confidentiality. No child will be forced to participate unwillingly, and I respect the right of the parent and of the child to withdraw from the study at any time.

I would like to ask your cooperation in permitting to participate in the study. If you do not wish for your child to participate in the study, please return this form with your signature at the bottom of the page to . Any questions or reservations concerning this study can be directed to Jan Fisher or Dr. Sawyers at 961-6148. Results from this study will be available in the later part of this spring upon request.

Thank you for your cooperation,

Jan Fisher

Jan Fisher

Dr. Janet Sawyers

Dr. Janet Sawyers

APPENDIX B
Ideational Fluency Tasks

FCD: Child Development Area

1/84

VPI & SU. Creativity Research

Answer Form

Subject Number: _____

What can you use a BOX for?

Child's Response

FCD: Child Development Area

1/84

VPI & SU: Creativity Research

Answer Form

Subject Number _____

What can you use PAPER for?

Child's Response

Form 1
1/84

FCD: Child Development Area
VPI & SU: Creativity Research

Answer Form

Subject number _____ Time of Task _____

Name all the things you think this could be: 

Child's Response

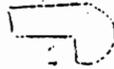
Form 1
1/84

FCD - Child Development Area
VPI & SU. Creativity Research

Answer Form

Subject number _____ Time of Task _____

Name all the things you think this could be:



Child's Response

A large, empty rectangular area for writing the child's response, bounded by a horizontal line at the top and a vertical line on the left side.

DATE _____

Form c

ECN Child Development Area
VPI & SU Creativity Research
Answer Form

Form 4
1/34

Subject Number _____ Time of Task _____

Name all the things you can think of that are RED.

Child's Response: _____

Date _____

Form: a

ECB Child Development Area
VPI & SU Creativity Research
Answer Form

Form: 1
1/84

Subject Number _____ ~~Time of Task~~ _____
Name all the things you can think of that are ROUND:

Child's Response _____

APPENDIX C
Conformity Task

Sawyers
1/21/87Creativity Research Group
Conformity Task

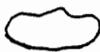
"In this game I'm going to show you some pieces I have shown to other boys and girls (adults) and tell you what they thought the piece could be." "Then I'm going to ask you what you think it is." "Let's try one."

Hand  to child. "One child said they thought this piece looked like a pear, but another child said it looked like spilled milk. What do you think it looks like, a pear, spilled milk, or something else?"

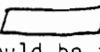
___ pear ___ spilled milk ___ Other (write in) _____
raindrop

"Let's look at another one." Hand  to child. "One child said this was macaroni and another child said it was a rainbow." "What do you think it looks most like, macaroni, rainbow, or something else?"

___ macaroni ___ rainbow ___ Other _____

"Here is another shape  ." "One child said this piece was an ear but another child said it looked like a boat." "What do you think it looks like, an ear or a boat or something else?"

___ ear ___ boat ___ Other _____

"This is the last piece  ." "One child thought it looked like a rectangle, another child said it could be a sidewalk." "What do you think it looks like, a rectangle, a sidewalk or something else?"

___ rectangle ___ sidewalk ___ Other _____

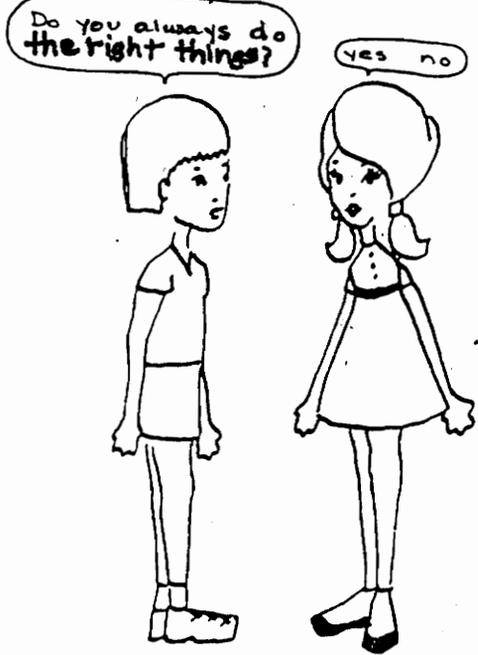
APPENDIX D
Locus of Control Instrument

PPNSIE

for girls

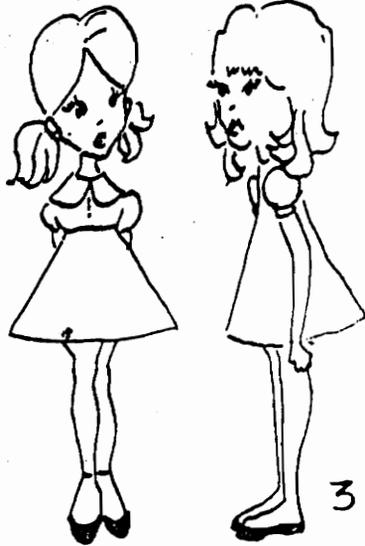
© S. Nowicki / M. Duke 1973

Example



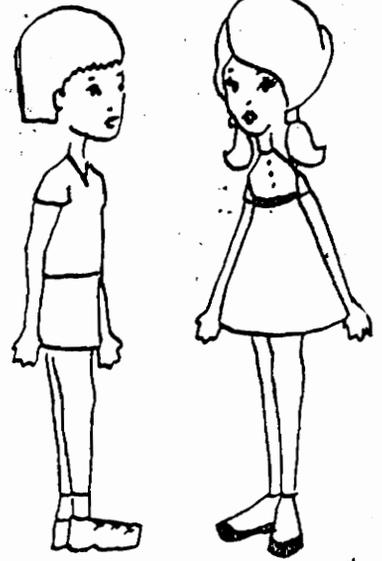
Do you feel that getting the teacher to like you is very important?

yes no



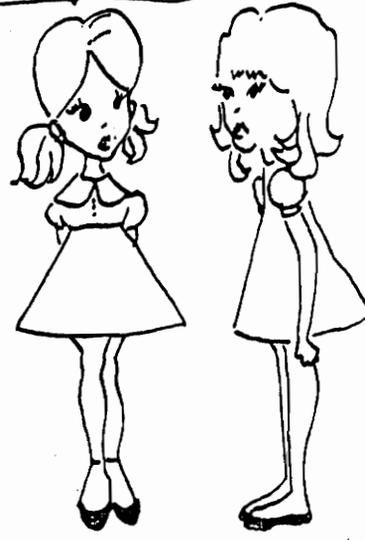
Do you have a good luck charm?

yes no



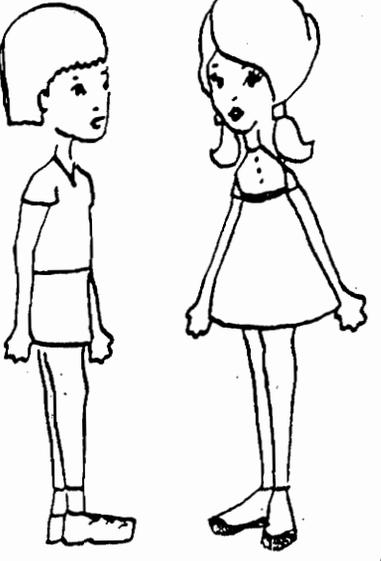
Are you often blamed for things that just aren't your fault?

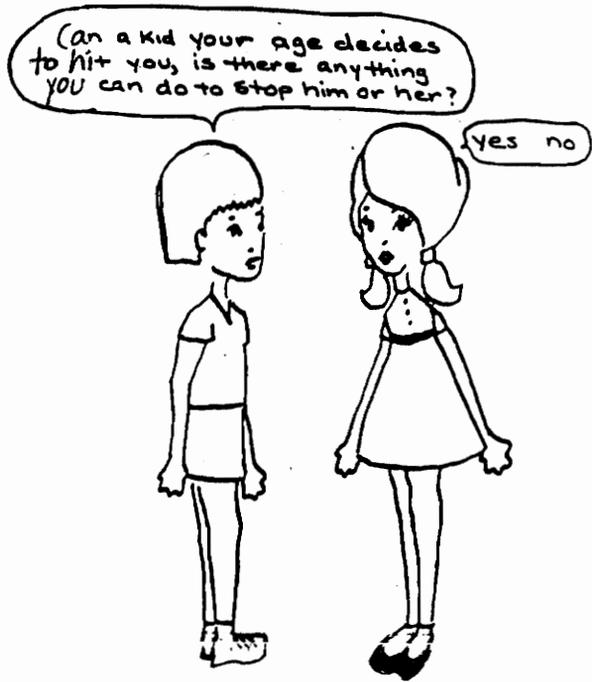
yes no

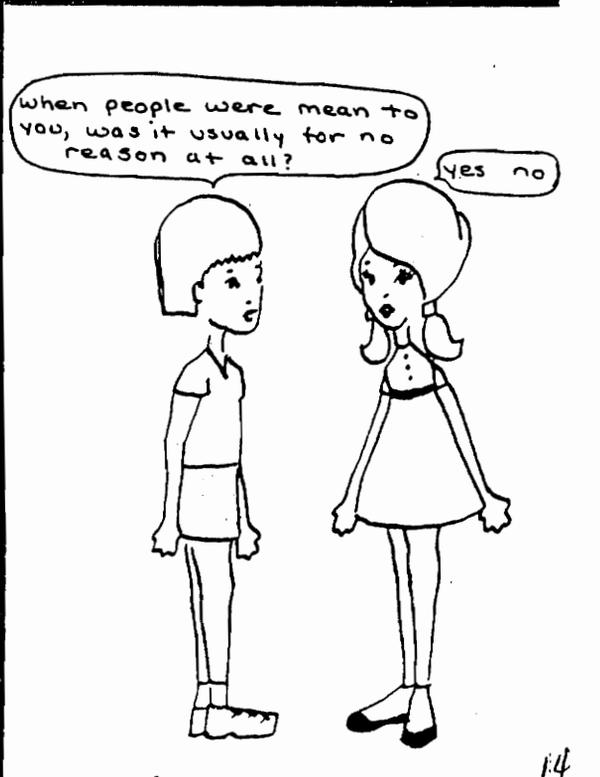
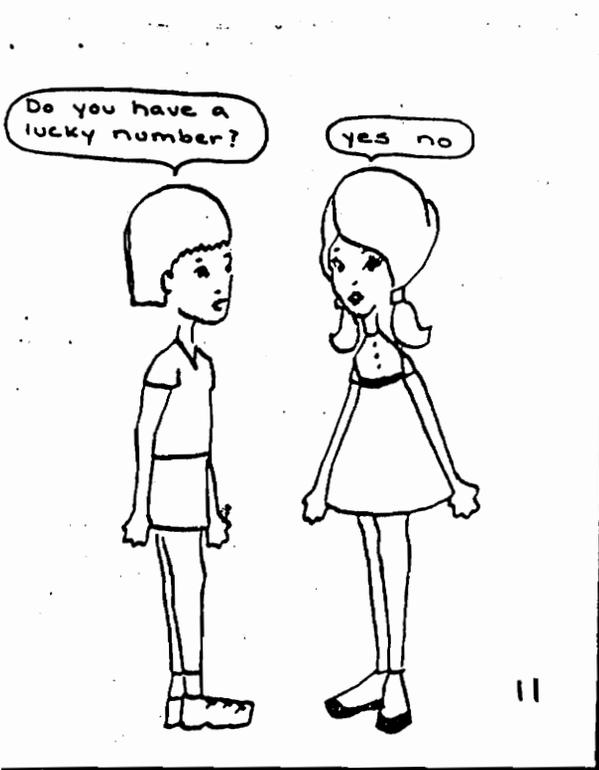


Will people like you no matter how you act?

yes no

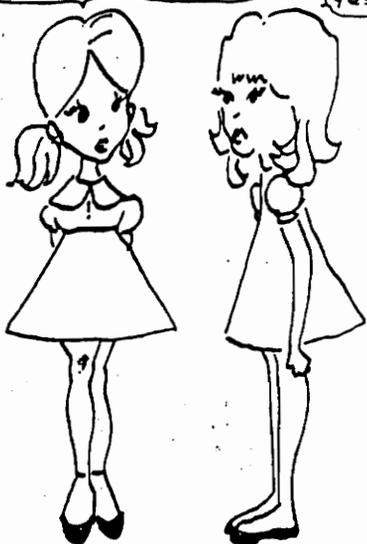






When you do something wrong, is there little you can do to make it right again?

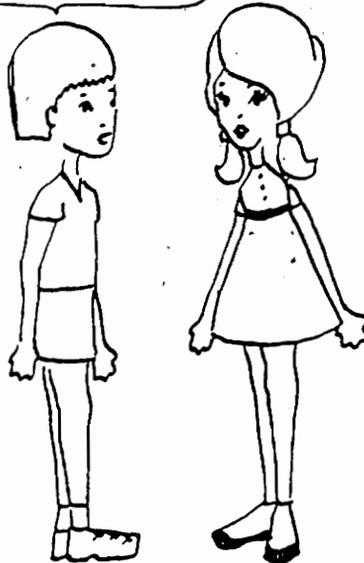
yes no



15

Most of the time do you find it easy to get your own way at home?

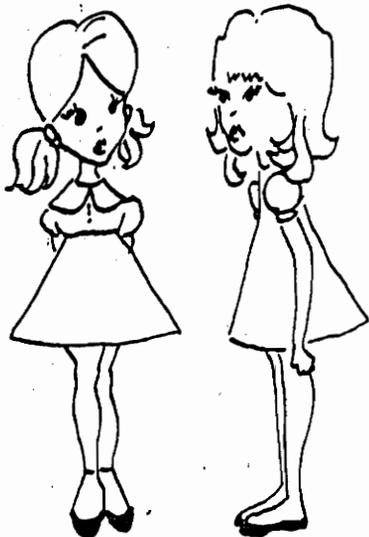
yes no



16

Are most kids just born good at running races?

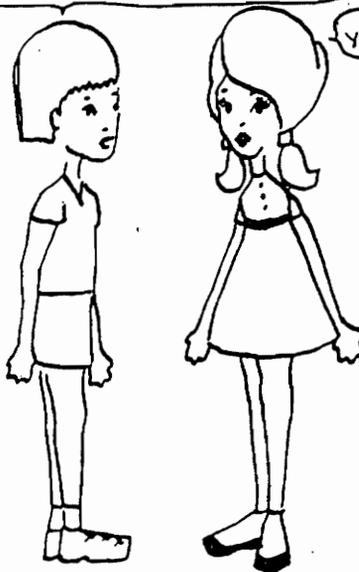
yes no



17

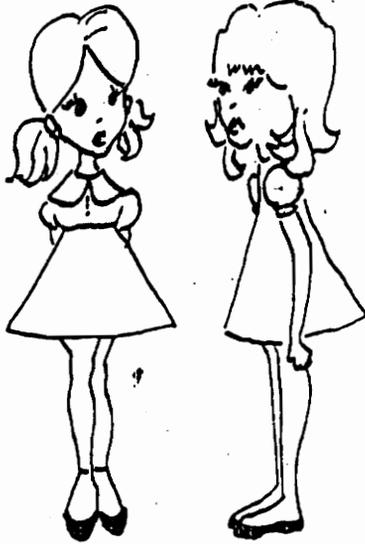
When somebody your age wants to be your enemy, is there anything you can do to make him or her like you?

yes no



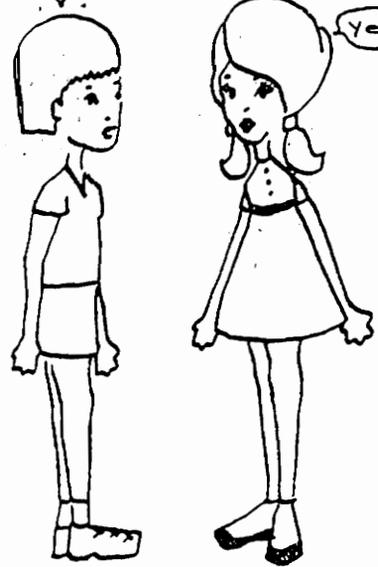
18

Should your Mommy and Daddy decide what you should do?
yes. no



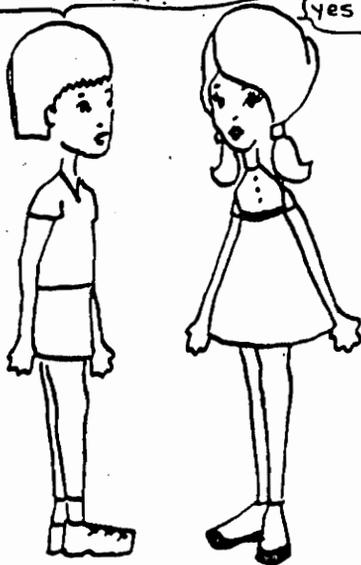
19

Is it almost impossible to try to win a game because most of the other kids are just plain better than you are?
yes no



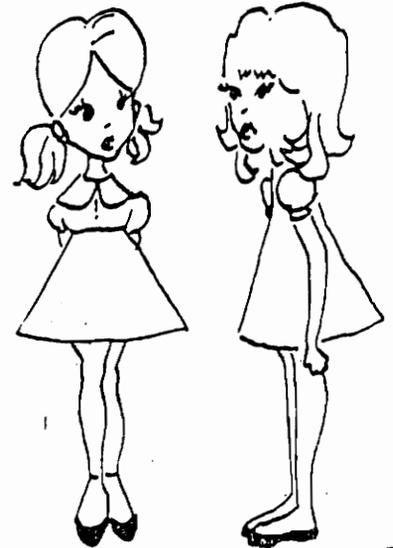
20

When a person doesn't like you, is there anything you can do about it?
yes no



21

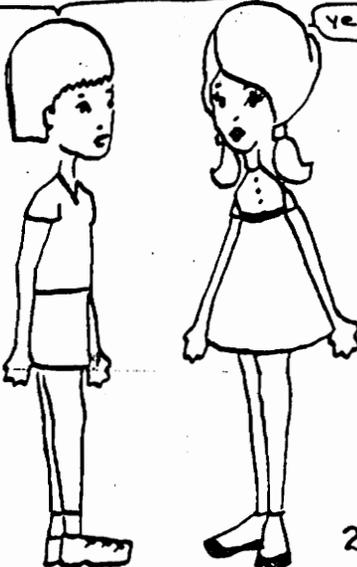
Are most of the other girls your age stronger than you are?
yes no



22

Are you the kind of child who believes that thinking about what you are going to do makes things turn out better?

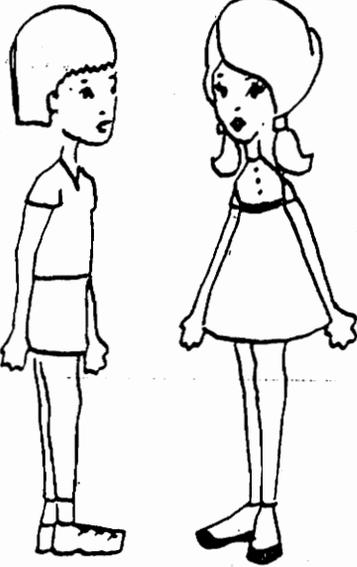
yes no



23

Do you think it's better to be smart than to be lucky?

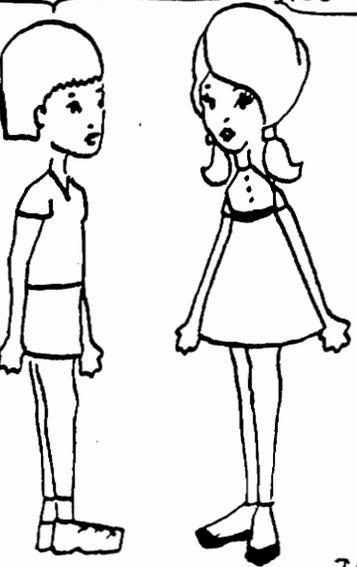
yes no



24

When another child hits you, is it usually because of something you did?

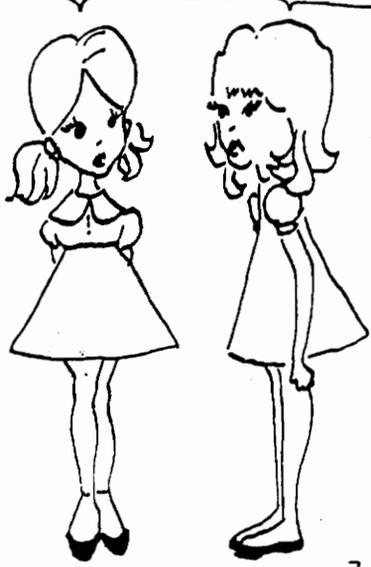
yes no



25

Is one of the best ways to handle a problem just not to think about it?

yes no

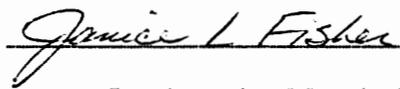


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VITA

Janice Loffert Fisher was born in Fort Ord, California on the 22nd of June, 1963. After graduating from Heidelberg American High School in 1981, she began studies in Child development and Family Relations at Indiana University of Pennsylvania. In addition to her studies, she competed for IUP on the track and cross country teams for four years. She recieved her Bachelor of Science degree in May of 1985.

She began graduate studies at Virginia Polytechnic Institute and State University in Family and Child Development in September, 1985. In addition to her graduate studies, she held graduate teaching assistantships in the Child Development Laboratoty School for two years. In July of 1987 she married Robert Paine Fisher and in May of 1988 she completed the requirements for the Master of Science degree in Family and Child Development.



Janice Loffert Fisher