

CHILDREN AND AGGRESSIVE TOYS:
EMPIRICAL STUDIES OF TOY PREFERENCE

JACQUELINE A. JUKES

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ABSTRACT

A series of studies investigated the relationship between aggression and aggressive toys in 7 and 8 year old children. Relevant theories of aggression were reviewed followed by an evaluation of the previous empirical research and the 'war toy' debate.

In the first of 5 studies, 20 boys rated sets of toy weapons, vehicles and characters on 'fighting', 'happy', and 'cross' dimensions. Toys from all groups were perceived as aggressive toys. Children are equally likely to play aggressive games with toy weapons, vehicles and characters.

In study 2 a toy preference questionnaire was developed, and its validity and reliability determined.

The relationship between trait aggression and toy preference was examined in Study 3. 30 boys and 30 girls completed the toy preference and the Sears self-report aggression questionnaires. The boys' data indicated a positive and significant correlation ($r=0.63, df=28, p<.0005$) between aggression and preference for aggressive toys. Boys had a stronger preference for aggressive toys than girls ($t=4.05, p<.05$) but there was no significant

difference between the boys' and girls' trait aggression.

30 boys and 30 girls participated in Study 4 which examined the effect of arousal on toy preference. Girls in the exercise- and frustration-induced arousal conditions showed greater preference for aggressive toys ($s=152$, $p<.01$). Although boys' toy preference was not influenced by either arousal treatments, there was a positive correlation between arousal and preference for aggressive toys amongst boys and girls ($r=0.86$, $df=58$, $p<.0005$). Aroused children prefer aggressive toys, less aroused children prefer non-aggressive toys.

Study 5 looked at the influence of an aggressive prime on the toy preference of 30 girls and 30 boys. Contrary to expectation, the aggressive prime decreased boys' preference for aggressive toys ($t=2.16$, $p<.025$), and had no effect on girls' toy preference.

The findings highlight the role of subject variables in aggressive play and support the view of aggressive play as child-led rather than toy-led.

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INTRODUCTION

For many years politicians, educators, toy manufacturers, and parents have debated the issue of aggressive or 'war' toys. The core of 'the war toy controversy' is the extent to which these toys are harmful to children. The controversy is examined below.

Those who disapprove of aggressive toys argue that they encourage violent and aggressive attitudes and behaviour (Gibson-Grant 1985). Playing with aggressive toys not only encourages violence but is said to desensitize children to violence. Furthermore the toys encourage children to resolve conflict with violence (Frost 1986). The extent to which war toys play a long-term role in shaping violent attitudes is unknown; possible research in this area would be restricted by the presence of other more influential and contaminating factors, such as parental attitudes toward violence. The investigation of the long-term consequences of war toy play would require longitudinal studies. Longitudinal studies are expensive and the time frame involved would be unfeasible for most researchers.

Despite lack of experimental evidence, there are various anti-war toy lobbies throughout the world which attempt to have the production, advertising or sale of war toys banned. In Britain, the Peace Pledge Union is active in campaigning against the sale of 'war toys'. The term 'war toys' has been used to encompass 'all playthings which imitate things that are used to solve conflict, gain power, or win through violence, and whose aim is to wound or kill' (pg 12, Spring 1989). The Peace Pledge Union supplies a long list of potential 'war toys'. These include replicas of military vehicles, model soldiers and board games. Few others have attempted to define war toys. Wegener-Spohring (1989) claimed that they are 'toys with which one can fight'. This issue is examined in the first study of this thesis.

The arguments in favour of war toys are that they facilitate superhero play which allows children to develop concepts of good and bad, to be noisy, to defy death, and to experience power and control (Beresin 1989). Similarly, Carlsson-Paige and Levin (1990) point out that playing war can enable children to feel powerful, to work out the difference between reality and pretence, to start to understand politics, to learn co-operation, and to come to terms

with the violence that they may witness on the television or experience directly. Children may also improve their cognitive skills by building weapons from construction toys, and improve language skills through communication with their playmates. The benefits of such play have been determined by observation of children both at home and in school. Carlsson-Paige and Levin (1990) provide detailed documentation of children's war games and from this inferred not only the functions of such play but also a developmental sequence.

Another author who condones children's aggressive play is Fine (1988). Although his work is not specifically on play with war toys, he has studied what he labels 'dirty play' which refers to aggressive, sexual and racist behaviour. Fine claims that these acts are part of a distinct developmental phase where children are learning about control, social differentiation, and status. Children themselves know that they will not display these behaviours in adulthood. Possibly the most valuable contribution of Fine's work is his proposal that adults show concern about 'dirty play' because our society idealises childhood innocence. A display of behaviour which undermines this belief upsets adults

and makes them feel that children have been corrupted by the adult world. This point illustrates the need for considering children's play in the context of society and for this reason warrants further analysis.

Children's play does not exist in a vacuum - such behaviour reflects individual experiences as well as the state of society. When studying play it is essential to regard the culture and era in which the research is conducted. This has important implications since the majority of the empirical work on war toys has been carried out in the U.S. and it is possible that cross-cultural differences limit the extent to which results can be generalized to other cultural settings.

One prominent cultural difference relevant to the current context, is the accessibility of weapons in the U.S. compared with Britain. American children may be exposed to real weapons from a very young age. Their parents may possess them, the Police forces are armed, shooting competitions are common, and guns are a part of everyday life for an American child. Crimes involving a firearm are prevalent in the U.S. (Meninger 1984) and this concern possibly sensitises

people to the potential harmful effects of toy weapons. The war toy controversy may also have been influenced by periods of military involvement and reactions to it. For example, much of the empirical research on this issue took place during or soon after the Vietnam war. During this period there was extensive anti-war fervour amongst a number of U.S. citizens. The interest in studying war toys may well reflect a desire to reduce the likelihood of rearing a pro-military generation. Also it is possible that children had an increased interest in military toys during the Vietnam war and this was particularly upsetting to pacifists.

In Britain, however, children have few opportunities to see a real gun. The media are the main source of knowledge about guns and fighting. Information about war, however, is plentiful in Britain, from Grandparents, stories, films, museums, history lessons, etc. War is an important part of Britain's history and children are constantly reminded of this. The reasons that children engage in war play may well differ in countries throughout the world. Tolerance towards and restriction of war play also varies - for example, in Sweden the production of war toys has been banned (although they are still imported),

whereas Spain and Germany do not allow war toys to be advertised (European Parliament Document on war toys, 1982). Culture and society contribute enormously to children's play themes and ascertaining the true impact would be very difficult.

There is, however, a need for empirical research into the relationship between aggression and aggressive toys. The present series of studies examined some of the basic questions about aggressive toys.

The previous empirical studies are evaluated to establish what is and is not known about the relationship between aggression and aggressive toys. First, relevant aggression theories are reviewed.

AGGRESSION THEORIES: A REVIEW

This chapter is a review of aggression theories relevant to research on aggressive toys.

The ethological approach, the frustration-aggression hypothesis, and social learning theory are examined in detail. Features of these theories form the theoretical bases of previous empirical studies on aggressive toys.

Research on aggressive television is considered because it provides a useful research framework which may be applied to aggressive toy research. Finally, there is a review of sex differences in aggression and toy choice.

First, we will consider definitions of aggression.

Defining Aggression

Aggression has been defined in a number of ways. According to some psychologists, aggression is a behaviour that harms another. For example, Singer and Singer define aggression as "the delivery of a

noxious response to a person or property" (1986, pg 110). Eron (1987, pg 435) refers to aggression as :
" an act that injures or irritates another person".

According to these definitions, aggression refers to any behaviour that harms another. This implies that a dentist who hurts his patient whilst pulling a tooth, is carrying out an act of aggression. An individual who accidentally trips up another is also being aggressive. These are not, however, usually regarded as aggressive incidents. What is missing is the concept of intent. The dentist does not intentionally harm his patient, therefore we do not call his behaviour aggressive. Accidental injury is also unintentional and is distinct from an act of aggression. It is not sufficient to define aggression in terms of harming another. Intent must be included to distinguish aggression from surgical and accidental harm (Geen, 1990).

Intent itself is not observable, it has to be inferred from a behaviour. Reconsider the example of the individual who accidentally trips up another. How do we know that it was an accident? We might look at facial expressions and body movements and then decide whether the act was intentional or accidental. But we

may have different interpretations of the expressions. Some may decide that the incident was an accident whilst others argue that it was intentional. Although it is necessary to include intent in a definition of aggression, problems arise. As Bandura and Walters (1963) point out, reliability of measurement is reduced by such dependence upon an observer's inference.

Intent can, however, be reliably inferred on occasions. For example, Blurton Jones (1967) reported that 75% of aggressive interactions of nursery school children are caused by loss of possessions. It would, therefore, be feasible to infer that a 4-year old acts aggressively towards a peer with the intention of regaining a possession. In order to successfully infer intent we need to account for various factors, including the age of the actors and observers, and the culture in which the aggression occurs.

Most researchers of aggression point out that assertiveness should be differentiated from aggression, thus the term 'aggressive salesman' is not included in any reference to aggression.

One of the earliest definitions of aggression, proposed by Dollard, Doob, Mowrer and Sears (1939), does include intent: "aggression is a behaviour for which the goal response is the injury of the person toward whom it is directed". The term 'goal response' refers to the aim or intention of the aggressor. This definition has been simplified by Parke and Slaby (1986): "aggression is a behaviour that is aimed at harming or injuring another person or persons" (page 55).

The above definition, which includes intent, will be used throughout this thesis. The 'behaviour' referred to in this definition includes both verbal and physical behaviour.

There are various types of aggressive behaviour. Groebel and Hinde (1989) categorised all types of aggression types, which Geen (1990) re-divided into instrumental and affective aggression.

Instrumental Aggression

Defined by Buss (1961), instrumental aggression is behaviour used in an attempt to achieve a desired goal. Aggression occurs when an individual is

prevented from achieving his goal. He aggresses against the person who is perceived as the obstacle. Reaching the goal acts as an extrinsic reinforcement. For example, a criminal who hits a policeman does so not necessarily because he wants to harm him. The policeman is an obstacle in the path of the criminal whose goal is freedom.

Aggression resulting from obedience is another example of instrumental aggression. This was demonstrated experimentally by Milgram (1963). Subjects administered electric shocks when ordered to by experimenters, who were considered to be of a higher status. Similarly, during wars individuals act violently towards the enemy in accordance with the commands of their superiors. The goal of the aggression is not to harm another but is to win the war or to escape punishment (Groebel and Hinde 1989).

We are not concerned here with this type of aggression as it is dependent upon different motivations than those suggested by our definition of aggression as a 'behaviour aimed at harming another'. For details about the relationship between interpersonal aggression and war, see Groebel and

Hinde (1989).

Affective Aggression

Affective aggression is also known as hostile/angry aggression (Geen 1990). Here the main purpose of the aggression is to harm another. It is usually accompanied by negative affect, such as anger.

Affective aggression has received the most attention from researchers (for example, Bandura 1973, Anderson 1987, Dodge 1980). As Geen (1990) points out, it is not that instrumental aggression is unimportant, it just has not been looked at in as much detail. The theories reviewed in this chapter concern the processes involved in affective aggression. The ethological approach is looked at first.

THE ETHOLOGICAL APPROACH

Advocates of the ethological position argue that animals are instinctively aggressive and as man evolved from animals, he too possesses an aggressive instinct. The earliest expression of this theory was by Hobbes (1651), who maintained that man's aggression stems from his desire for self-

preservation. Similarly, Darwin (1872) viewed aggression as a result of natural selection. Behaviours, including aggression, evolved in order to adapt to varying environmental conditions. Aggression, therefore, was seen as adaptive for mankind's survival.

Lorenz (1966) added to the ethological approach. He referred to aggression as 'a fighting instinct' that developed phylogenetically. As the species developed certain repertoires of behaviour emerged. These became permanent fixtures of human nature, labelled 'fixed-action patterns'. Fixed-action patterns do not vary, nor is their performance influenced by sensory feedback. A common example of a fixed-action pattern is the egg-retrieval behaviour of the greylag goose. The goose pulls the egg back under it's head by a series of small movements, and will continue these movements even if the egg is removed.

Behaviours, such as fixed-action patterns have been observed in many animal species. Although part of the animal kingdom, humans do not display fixed-action patterns. The extent to which instinct theory can be applied to man is therefore limited (Huntingford 1989). This is because of the existence of higher

cognitive processes in our species.

Anthropological studies show that man is not fundamentally aggressive. Aggression is determined by socialization experiences rather than instinct. For example, Draper (1978) studied the !Kung tribe of the Kalahari Desert where aggression and violence are very rare. Parents do not administer physical punishment and aggression is devalued. Therefore, children do not have the opportunity to learn aggressive behaviours. According to the ethological view aggression is an instinct present in all humans. Accounts of non-violent societies (Fry 1988, Dentan 1978) contradict this view, and demonstrate the role of learning in the development of aggression.

The Catharsis Hypothesis

Lorenz (1966), Tinbergen (1968), and other ethologists described aggression in terms of energy that builds up over time. This energy needs to be released or triggered by an appropriate external stimulus. The strength of the stimulus and the amount of accumulated aggressive energy determine the extent of the aggressive act. This model of aggression implies that aggressive energy needs to be

released periodically. If the aggressive energy is not released by an appropriate stimulus, then displacement of aggression will occur in the presence of a weak stimulus. That is, it will take increasingly less to stimulate aggressive behaviour.

Once aggression has occurred, ethologists hypothesise that aggressive energy reduces - a 'catharsis'. This concept has been investigated extensively. Based on a review of the literature, A.P. Goldstein (1989) concluded that 'catharsis is a myth' (page 116).

Goldstein (1989) looked at the many studies on catharasis and divided them into various categories, 'static comparisons', 'before-after comparisons', 'archival studies' and 'laboratory experiments'. The 'static comparison studies' are comparisons between those who do and do not engage in aggressive activities. The findings are contrary to catharsis. Individuals who participate regularly in aggressive activities are no more nor less aggressive than individuals who do not engage in aggressive activities. The 'before-after' comparisons hypothesise that those who are allowed to aggress will have a lower level of aggression than those

prevented from aggressive behaviour. Again the findings do not uphold the catharsis hypothesis. Individuals permitted to aggress are more, rather than less aggressive than those who have not behaved aggressively. Russell (1983) conducted a study which comes under Goldstein's third set of studies - 'archival studies'. The catharsis hypothesis implies that over time aggression should decrease for those individuals who regularly participate in aggressive sports. Russell reports, however, that aggression increases over time. Finally, laboratory studies on catharsis (e.g. Berkowitz 1964) also report an increase in aggression rather than a decrease after observing an aggressive film. It is apparent, therefore, that there is insufficient evidence to support the notion of catharsis .

Catharsis and Aggressive Toys

Despite the lack of support for the catharsis hypothesis, the concept inspired a number of people to research the effect of play with aggressive toys on children's aggressiveness. Based upon the premise that aggressive play would decrease aggression, Feshbach (1956), for example, hypothesised that participation in aggressive play decreases subsequent

aggression. The studies will be considered in detail in the next chapter.

The frustration-aggression hypothesis is based to some extent upon the ethological approach.

Frustration-Aggression Hypothesis

This hypothesis relies on the assumption that man's behaviour is controlled by internal drives.

Frustration is thought to create an aggressive drive. The original advocates of the frustration-aggression hypothesis, Dollard et al (1939), stated that the aggressive drive and subsequent aggressive behaviour is created only by frustration (an interference in goal directed behaviour). Frustration was considered always to cause aggression. Later, Miller (1941) amended the theory to state that frustration did not always cause aggression but caused an 'instigation to aggress'.

The aggressive drive is similar to the aggressive energy model proposed by Lorenz (1966). That is, if the frustrated individual is unable to express aggression due to inhibitory factors, then displacement of aggression occurs. This means that

the aggression caused by the frustration will be vented in some way and catharsis will occur. As mentioned above, there is insufficient evidence that catharsis exists in man.

There is evidence that supports the frustration-aggression hypothesis, for example, Rule and Percival (1971) and Feshbach (1989). However studies show that frustration does not always cause aggressive behaviour. For example, Davitz (1952) found that although children are likely to be aggressive following a frustrating situation, this behaviour is not always the outcome. Whether or not a child responds aggressively to frustration depends on the individual's repertoire of behaviours. Davitz (1952) demonstrated that children can be taught different responses to frustration. Children who had had prosocial training sessions, where they were rewarded for constructive behaviour, showed less aggression following a frustrating incident than children who had not had prosocial training. This shows that aggression is sometimes, but not always the response to frustration.

Different frustration situations elicit different aggressive behaviours. Lange (1972) carried out an

experiment where subjects were put in situations of varying degrees of frustration and their consequent aggression was measured by the intensity of electric shocks given to a victim. Lange reports that the greater the frustration the less aggression expressed. This finding puts the original frustration-aggression theory into dispute. Buss (1966) concludes that although frustration may be one of the antecedents of aggression it certainly is not the only one.

Frustration as Arousal

Berkowitz (1969) updated the frustration-aggression model and proposed that frustration causes a state of arousal in which aggression is likely to occur. Whether or not aggression does occur depends upon the individual's repertoire of responses learned through reinforcement.

Berkowitz's model has been a more accepted form of the frustration-aggression theory, perhaps because the emphasis has moved away from the aggressive 'drive' to focus upon arousal and learning. The response activated by arousal depends upon the

individual's aggressive predisposition. Berkowitz (1989) argues that this is a "product of some latent qualities that enhance the likelihood of aggressive responses to appropriate situational stimuli" (pg 92).

There is much evidence to support the theory that increased arousal leads to increased aggression (e.g. Tannenbaum 1971, Zillmann 1984). Arousal is a general state of increased autonomic activity. It may be due to, among others, sexual stimulation (Zillmann 1971), adrenalin injection (O'Neal and Kaufman 1972), physical exercise (Zillmann, Katcher and Milavsky 1972) and frustration (Berkowitz 1989).

In his most recent revision of the frustration-arousal hypothesis, Berkowitz (1989) incorporated affective and cognitive factors. He states that frustrations increase negative affect, that is, unpleasant emotions and feelings. The negative affect acts as a prime to activate ideas related to aggression. Aggressive behaviours are also primed, increasing the likelihood of an aggressive response. The update of this theory demonstrates the role of cognitive factors in the development and expression of aggression. It also illustrates the increasing

refinement of theories of human aggression.

The theories reviewed show how the original view of aggression as an instinct has progressed. Originally, environmental factors were neglected. The frustration-arousal hypothesis, however, examines the interaction between external and internal processes. Frustrating situations influence both physiological and cognitive functioning and increase the likelihood of aggression.

Researchers of aggressive toys have based their studies on only one feature of the ethological approach - the catharsis hypothesis. Ironically, the only feature to be consistently disproved. Other features of the ethological viewpoint may, however, be more appropriate theoretical bases for studies of aggressive toys. The arousal and frustration hypotheses, for example, could account for a relationship, if any, between aggression and aggressive toys. That is, play with aggressive toys may be arousing. The increased arousal then activates aggressive responses. Alternatively, when aroused, children may select to play with aggressive toys in order to play vigorously or to express aggression.

There has been no previous research on how frustration and arousal influence play with aggressive toys. The only study to look at frustration and toy play was by Hollenberg and Sperry (1951), who investigated the aggressive doll play of nursery school children. They report that children who experience high frustration and punishment in the home are more aggressive in doll play than children who are less frustrated at home. This finding suggests that frustration influences the themes of children's play. The role of frustration in aggressive toy play needs to be investigated.

SOCIAL LEARNING THEORY

The opinion that man's aggression is learned and not innate is perhaps most clearly expressed in Bandura's (1973) social learning theory. Ethological theories view aggression as an internal instinct or drive. In contrast, social learning theory looks at environmental and cognitive factors.

According to Bandura, aggression is learned through imitation or 'modeling'. Children see others behaving aggressively and copy the observed behaviours. The observed models may include parents, peers and

characters from films and television. Bandura (1973) demonstrated 'observational learning' with nursery school children. The children watched an adult displaying unusual aggressive behaviour towards an inflated doll. When presented with the doll, the children imitated the adults' aggressive behaviour. The children in the control group who did not watch the aggressive model, displayed significantly fewer aggressive behaviours. This study is one of many (e.g. Bandura, Ross and Ross 1963, Steuer, Applefield and Smith 1971) that lend support to the notion that aggression can be learned through modeling.

Reinforcement and cognitive processes determine whether a learned aggressive response is expressed. Aggressive behaviour is more likely to be imitated if the actor is reinforced for the aggression. Walters and Demrow (1963), for example, rewarded children for hitting an inflated doll on the nose. In their subsequent free play, these children showed more hitting and kicking than children who had not been rewarded for punching the doll. Aggressive behaviour is, therefore, strengthened by positive reinforcement.

Bandura (1977) described the cognitive processes that

affect how well observed behaviours are learned and reproduced. Attentional and perceptual abilities influence how closely the model is observed, the characteristics selected for attention, and the accuracy of the observer's perception. The ability to symbolically encode and retrieve information influences how accurately observed behaviours are stored and recalled. Finally, reproduction of the behaviour is determined by the ability to interpret the encoded information into physical behaviours. These cognitive skills are prerequisites of successful observation learning. A child who has not yet developed these abilities will have limited learning skills. Observation learning is influenced by the maturity of the child.

Interest in the encoding and retrieval of observed events lead Huesmann (1982) to add an information processing perspective to social learning theory. Huesmann (1988) states that children observe others' behaviours and form 'scripts' that are made up of 'vignettes'. A vignette is an 'encoding of an event of short duration' (Abelson 1976), and includes a perceptual image and a conceptual representation. For example, if an individual encodes a scene of an adult smacking a child for stealing, s/he forms a

perceptual image of the adult smacking the child and a conceptual representation of being smacked for stealing. A number of encoded events form a script.

Scripts determine future behaviour. For each situation the individual selects a particular script and a role within that script. Man has many scripts from which to choose. Tulving and Thomson (1973) considered how one particular script is selected. They proposed that recall is dependent upon encoding specificity. A script is recalled if the recall situation is similar to the original situation in which encoding took place. For example, a child watches a violent television programme where an actor hits another for breaking his possession, subsequently the child is in a situation where his friend breaks his toy. The similarity of the situations means that he retrieves the script encoded from the television programme and hits his friend.

The concept of scripting shows that aggression is an interaction between cognitive processes and situational factors. Tulving and Thomson (1973) propose that script retrieval is dependent upon encoding similarity. They omitted to consider, however, the role of individual differences in

script retrieval. It is feasible that two situations judged similar by one person will be considered dissimilar by another.

The interaction between internal and external factors has also been investigated by Berkowitz (1984) in his work on 'associative priming'.

Associative Priming

Berkowitz (1984) proposed that media reports of war and violence serve to 'prime' or activate aggressive ideas. His 'cognitive neoassociationism' approach (a framework originated by Anderson and Bower 1973) is based upon memory research.

Memory is seen as many networks made up of emotional and cognitive elements called 'nodes'. The networks are linked by associated pathways - the association may be semantic or contextual similarity. Collins and Loftus (1975) propose that thoughts activate associated pathways and trigger related ideas, this process they labelled 'spreading activation'. The initial activation leads to a period of residual excitation in which related pathways are activated. For example, after viewing violence on television,

aggressive ideas, emotions and actions are primed because of spreading activation in the network.

There are various experimental demonstrations of associative priming. Bargh and Pietromonaco (1982) subliminally presented subjects with words semantically related to hostility. The subjects were then required to rate someone. Subjects who had had subliminal exposure to hostile words provided a more negative assessment of the person. The hostile words acted as a prime to activate negative thoughts.

Berkowitz, Parker and West (1973) also investigated associative priming. Children were presented with two words to complete a sentence and had to select one. Subjects who had read a war comic book selected aggressive words but those who had read a neutral comic book selected the non-aggressive alternative. On a larger scale, Archer and Gartner (1976) found that following a war, homicide rates increase in both the defeated and winning nation. It is apparent that both verbal and physical aggressive behaviours are elicited by aggressive literature and aggressive current events.

Josephson (1987) conducted an experiment that

investigated the role of priming and scripting in aggression. Seven and eight year old boys were shown either a violent or non-violent programme. During the violent programme police carried walkie talkies. The subjects then played hockey after being exposed to adults carrying walkie talkies. Josephson (1987) hypothesised that the film would activate scripts and lead to an increase in aggressive behaviour during the hockey match. According to priming theory, the walkie talkies would also act as cues to elicit aggression. The results suggest that aggressive television and associated primes do have a disinhibition effect and increase aggressive behaviour, but only amongst the subjects who had a high characteristic aggression. It is likely that these children have a higher number of aggressive scripts than their less aggressive peers.

The results also lend support to the Berkowitz model. Aggressive primes may facilitate aggressive behaviour in highly aggressive children because they have more established pathways between aggressive thoughts and action. Conversely, non-aggressive boys may have associations between aggression and negative ideas and emotions, such as guilt and anxiety. An aggressive prime may activate inhibitory thoughts and

decrease the likelihood of the non-aggressive child giving an aggressive response. Josephson's (1987) study demonstrates the value of both scripting and associative priming theory in explaining how environmental cues elicit aggressive behaviour.

It is not only the mass media that act as a prime. Berkowitz also looked at weapons as 'cues' which prime aggressive thoughts and ideas, known as the 'weapons effect'. Berkowitz and LePage (1967), and Turner and Simons (1974) are some of the researchers who report that the presence of a weapon increases the aggressive response in an experimental situation. Berkowitz (1968) states that a gun acts as an aggressive cue that primes aggressive ideas which, in turn, facilitate the expression of aggression.

According to scripting and priming theories, aggressive toys could act as cues to elicit aggressive behaviour in children. Turner and Goldsmith (1976), for example, argue that a toy gun acts as a stimulus that increases aggressive behaviour. This is based upon the premise that the child has learned to associate the gun with aggression through repeated exposure to, for example, cowboy films. When presented with a toy gun

the child will initially reproduce the aggressive behaviours associated with the gun. These aggressive behaviours prime other aggressive ideas and lead to heightened aggression. The extent to which this theory is supported by the Turner and Goldsmith experiment and related research will be evaluated in the following chapter.

Social learning is a useful theory for explaining the development of aggressive behaviours. Unlike ethological theories, the role of both situational and cognitive processes are considered. Various studies have investigated aggressive toys as cues that elicit learned aggressive behaviours (Turner and Goldsmith op cit, Mendoza 1972, Potts, Huston and Wright 1986). These aggressive behaviours are learned from models in the child's immediate environment. We now look at the main sources of aggressive models.

SOURCES OF AGGRESSIVE MODELS

As we have seen, aggressive behaviour is learned by observing aggressive models. The dominant sources of aggressive models in the child's environment are family, peers and television characters.

Family

The family is an important source of aggression (Green 1980). In violent homes, children are exposed to both explicit and implicit aggression. They witness and are victims of aggression. They also learn that aggression is an acceptable way to deal with conflict.

Aggressive parents act as aggressive models. There is evidence that parental aggression is imitated by children. Steinmetz (1977) reported that children who witness aggression between their parents imitate this behaviour with their siblings. Also, children who have been physically punished reproduce this behaviour with other children.

Physical punishment is one child-rearing practice that influences children's aggressiveness (Patterson

1980). Longitudinal studies (Eron 1987, Farrington 1978) report a relationship between physical punishment in childhood and aggression in adults. Children exposed to physical punishment frequently become aggressive adults (Feshbach 1989). Physical punishment is, however, a widely-used method of child-management. Erlanger (1974) reported that 84-97% of parents in the U.S.A. physically punish their children. This suggests that the majority of American children learn that aggressive behaviour is acceptable.

Child-rearing practices also associated with the development of aggression are parental rejection (Feshbach 1970), parental inconsistency (Martin 1975), and power assertive discipline (Bandura and Walters 1959). By training parents in effective rearing it is possible to reduce children's aggression (Loeber and Dishion 1984).

A number of factors account for aggression in families (Gelles and Straus, 1979; Green, 1980; Straus, 1980). The intensity of the relationships between family members, especially parents, means that aggression is likely. Conflict also occurs because people of different ages, sexes, experiences

and goals are in close proximity and spend a lot of time together. Finally, the family's right to privacy means that it is difficult for outside sources to monitor and control violent events.

Violence is most likely to occur in families with high stress (Straus 1980). This stress may be caused by work problems, marital separation, sexual problems and money difficulties. In turn, violence in the home can cause stress in children. Cummings, Iannotti and Zahn-Waxler (1985) observed the behaviour of two year old children who had watched aggression between adults. The children became aggressive and emotionally distressed. This increased with repeated exposure to aggressive adults. Cummings et al (1985) argue that stress, caused by aggression in the children's immediate environment, is a strong antecedent to aggression.

To summarize, the family is a potential source of aggression in a number of ways. Violent adults act as aggressive models, from whom children learn aggressive behaviour. Parents also show children that aggression is acceptable by administering physical punishment. Finally, aggression in the home may cause stress which is an antecedent to aggression.

Role of Peers

The family is initially the most important source of aggression but, as the child gets older, peers become influential in the learning and mediating of aggressive behaviours.

Aggression is learned from peers by the processes described in Bandura's (1963) social learning theory. Children observe and imitate their peers' aggressive behaviours. This is particularly so when younger children at school observe older children being rewarded for aggressive bullying.

Peers can also act as reinforcers of aggressive behaviour. Patterson et al (1967) reported that nursery school aggression was reinforced if the victim cried, acquiesced or withdrew. Patterson et al (1967) noted that children who were the victims of aggression consequently displayed more aggressive behaviour. A similar finding is reported by Hall (1973). Hall trained children to behave aggressively. They were then paired with a passive child and the subsequent interactions observed. When the trained child acted aggressively there was a high likelihood

of an aggressive response from the passive child. It is apparent that aggressive children elicit aggression in passive children.

Josephson's (1987) study on scripting and priming was reviewed earlier. She noted that less aggressive children demonstrated heightened aggressive behaviour in the presence of aggressive peers. Josephson (1987) suggests that aggressive children act as aggressive-cues that prime aggressive ideas and thoughts.

Aggressive peers are influential in aggression acquisition. They act as aggressive models and reinforce aggressive behaviour. Furthermore, they elicit aggressive behaviour in passive children.

Television

There is extensive literature on the effect of television on children's aggression. A full review is presented by Gunter and McAleer (1990). Numerous experiments demonstrate an increase in physical and verbal aggression following observation of violent television (e.g. Bandura 1963, Berkowitz 1965) but the extent to which the findings can be generalized

to real life are limited (Gunter and McAleer 1990).

The amount of aggression elicited by violence portrayed in the media is determined by the perceived realism of the violence. Berkowitz and Alioto (1973) showed subjects a war film. Half of the subjects were told the film was real footage, the other half were told that it was fiction. The subjects who thought they had seen real war footage gave longer electric shocks to the person who had previously angered them. Geen (1975) showed subjects a film of two men fighting in a car park. Those who had been told that the fight was real were more aggressive and had higher blood pressure than the subjects who believed that the fight was acted. Geen (1990) explains the findings in terms of arousal. He suggests that real aggression is more arousing than fictional portrayals of violence and that heightened arousal elicits aggressive responses.

Parke (1978) has considered how violent television indirectly influences children's aggression. He proposes that television affects family interactions in general. Parents who watch a lot of violent television tolerate higher levels of aggression in their children. Furthermore, television may provide

some parents with a distorted idea of the role of aggression in the world (Gerbner et al 1980). For example, they may think that aggression is beneficial in gaining goals and should therefore be encouraged in children.

In summary, there are three ways in which television influences childhood aggression. First, it provides aggressive models which children may copy. Secondly, violent television programmes increase arousal which, in turn, increases the likelihood of an aggressive response. Thirdly, parents who watch a lot of aggressive television tolerate and encourage children's aggressive behaviours.

Media Preference

Geen (1990), Gunter (1983) and Fenigstein (1979) consider the possibility that there is a circular or bi-directional relationship between aggression and media violence. Media violence may increase aggression, but aggressive dispositions may lead people to seek out aggressive television. Fenigstein (1979) argues that the concern is whether "viewing t.v. violence is the dependent or causal variable in this relationship. For example, do viewers exhibit

tendencies to watch programmes that are supportive of their aggressive predispositions?" (pg 167).

There is support for the hypothesis that aggressive people prefer violent programmes. Freedman and Johnson (1972) report that aggressive boys like more violent television programmes than non-aggressive boys. Diener and Dufour (1978) also found a positive relationship between liking violent films and dispositional aggression.

As well as dispositional aggression, there is evidence that preference for aggressive television is influenced by the mood of the viewer. Fenigstein (1979) reported that physical and fantasy aggression increased preference for viewing violence. The 'salience' studies reviewed by Goldstein (1986) show the impact of real life violence upon media preferences. Boyanowsky, Newtonson and Walster (1974) looked at the film preference of students following a murder. The attendance at a violent film increased by 63% following the murder whereas attendance at the non-violent film increased by only 13%. The authors suggest that the increased interest in the violent film occurred because students wanted to be exposed to violence that would not harm them, in order to

come to terms with the fear caused by the murder.

An experimental investigation of the salience hypothesis was conducted by Goldstein in 1972. Students read either an aggressive, sexual or neutral passage and were then asked to select from aggressive, sexual, or neutral films. Goldstein (1972) reports a relationship between the theme of the literature and film preference. Students exposed to the aggressive passage selected the aggressive film, those who read the sexual passage chose the sexual film and the neutral film was preferred by the students who read the neutral passage. According to Goldstein (1972), this demonstrates how exposure to real aggression can increase preference for aggression in the media whereas, for others, aggression in the media can cause an increase in preference for real aggression. The findings of the salience studies could be explained by scripting and priming theory. Real aggression or aggressive literature acts as a prime to activate aggression-associated ideas or scripts. The choice of films is therefore influenced by increased activity in the aggression network, making aggression a dominant theme.

The media preference literature also lends support to the existence of a positive feedback loop. Violent television increases aggression which leads to an increase in preference for violent television (Lagerspetz 1989). Research into violent television effects needs to account for the antecedents of viewing aggression. Fenigstein (1979) criticises the experimental studies of television violence where subjects were not given a choice of programmes. He argues that the influence of programme content upon the individual is affected by individual differences including motivation and aggressiveness.

The majority of empirical studies on the relationship between aggression and television violence have involved presenting violent films to children and then measuring their aggression (e.g. Bandura 1963). Aggression is the dependent variable. Many studies investigating aggressive toys employ a similar experimental design, using aggressive toys as the independent variable and aggression as the dependent variable (e.g. Wright 1967). The media preference studies, however, demonstrate the value of employing aggression as the independent variable and media preference as the dependent variable. This design may prove useful in investigating the relationship

between aggression and aggressive toys and will be considered further in the next chapter.

The main sources of aggressive models have been reviewed. Children's aggressive behaviour is learned predominantly from aggressive family members, particularly from parents who administer physical punishment (Eron 1987). Peers and television are also potential sources for observing and learning aggression (Patterson et al 1967, Berkowitz 1965). The media preference research shows that the influence of media violence depends upon individual differences in temperament (Gunter 1983).

The role of aggressive toys in the development of aggression needs to be put into perspective. Their role is minimal, compared to the enduring influence of the family. In the next chapter we consider previous research examining the hypothesis that aggressive toys act as cues to elicit aggressive behaviour. If the hypothesis is supported we need to bear in mind that the behaviours cued by the toys have been previously learned. Children do not learn aggression from the toys themselves. Aggression is learned from aggressive models in the social environment.

Aggressive toys are commonly thought of as "boys' toys". This is based upon the belief that boys play games with violent themes because boys are more aggressive than girls. We now consider whether this belief is justified.

SEX DIFFERENCES

There is strong evidence that boys are more aggressive than girls. Maccoby and Jacklin (1980) conducted a meta-analysis of 32 observational studies of children's aggression. They report that in 24 of the studies boys are more aggressive than girls. In the other 8 studies there was no difference between the sexes. This sex difference in aggression diminishes with age (Eagly and Steffen, 1986; Hyde, 1984).

Longitudinal studies have shown that aggression is a relatively stable trait (Olweus, 1979, 1982; Lefkowitz et al, 1977; Farrington, 1978; Rutter, Tizard and Whitmore, 1970). There are, however, sex differences in the stability of aggression. For example, physical aggression in boys relates to competitiveness in adulthood (Kagan & Moss 1962). Females who were

physically aggressive as girls do not, however, become competitive. Their aggressiveness becomes anxiety in adulthood. It is apparent that aggressiveness is a stable trait in males but not in females.

Sex differences in aggression stem from the way that adults treat children. Adults tolerate different levels of aggression in boys and girls. Aggression in boys may be encouraged as being a traditional male trait. Girls, however, may be punished for expressing aggression. Connor, Serbin and Ender (1978) looked at children's reactions to aggression. They report that boys approve of aggressive behaviour more often than girls. Connor et al (1978) suggest that this is because girls are taught that non-aggressive, passive behaviours are more useful in achieving goals. Boys, however, learn that aggressive behaviours are more effective than passive behaviours.

In most cultures, boys engage in more play fighting than girls (Humphreys and Smith, 1984). Again, parental behaviour is partly responsible for this difference. Block (1978) observed that parents are more physically active with boys than girls. Furthermore, parents discourage rough and tumble play

with girls.

Boys also have a stronger preference for aggressive toys (Wegener-Spohring 1989) than girls. This may be due to the distinct gender differences in toy choice that are evident even in very young children (Parke and Slaby, 1983; Davie et al, 1984; Giddings and Halverson, 1981). Differences in toy choice tend to reflect awareness of sex-roles. Whilst gender identity is being established, typically between the ages of 5 to 7 (Eaton 1983), children make sex-appropriate toy choices. Children aged 7 and over start to be aware that the sex-appropriate rules can be broken. At this age children begin to show an interest in toys which are not appropriate for their sex.

The mass media reinforce children's toy choice by encouraging play with sex-role appropriate toys. For example, toy catalogues show children playing with toys 'appropriate' to their sex (Schwartz and Markham, 1985). Television advertisements for toys differ in dramatic style according to the sex-typing of the product (Welch et al, 1979). The long term effects of playing with stereotyped products is not known. Preference for sex-appropriate toys is more

likely to be a symptom of sex-role socialising rather than the cause.

There is evidence to support the belief that aggressive toys are preferred by boys. This is due to sex differences in aggression. Boys are more aggressive than girls at least in part because of their socialization experiences. Aggression is tolerated and even encouraged in boys. Girls, however, are discouraged from expressing aggression.

SUMMARY

This chapter began with a look at definitions of aggression. The following definition was selected for use during this thesis: "aggression is a behaviour that is aimed at harming or injuring another person or persons" (Parke and Slaby 1986, page 55).

Theories of aggression based upon ethology were then reviewed. According to this approach aggression is an instinct or drive innate in animals and humans. The catharsis hypothesis is the only aspect of the ethology position to be applied to research on aggressive toys. Unfortunately, empirical studies fail to support the notion of catharsis. There is,

however, evidence that aggression can be explained by the frustration-arousal hypothesis (Berkowitz 1969). Heightened arousal facilitates aggression. It is possible that arousal influences the relationship between aggressive toys and aggression. Aggressive play may increase arousal, thereby increasing the likelihood of real aggression being expressed. The role of arousal needs to be empirically investigated.

We also looked at social learning theory which states that aggression is learned from aggressive models. The major sources of aggressive models are the family, peers and television. The development of aggression is most influenced by family violence, especially child abuse. Peers are also influential in teaching and reinforcing aggressive behaviours. Violent television programmes provide children with opportunities for observation learning. In the context of learning theory, aggressive toys elicit previously learned aggressive behaviours (Turner and Goldsmith 1976).

Despite 35 years of research on aggressive toys, the area remains in its infancy. Progress is restricted because of limited theoretical bases. The only two theoretical bases for this research are the catharsis

hypothesis and learning theory. To accelerate progress an alternative research framework is required. A similar area of research may supply the required framework. There is a similarity between research on aggressive toys and the early studies of the impact of television violence. Both toys and television content act as aggressive-related stimuli. The similarity between the areas suggests that research models and paradigms applied to television violence may also be of use in toy research. Such an application could help to progress our knowledge about the effect of aggressive toys upon children.

Investigators of television violence have recently discovered a bi-directional or circular relationship between an individual's aggressiveness and the influence of television violence. It is possible that an analogous feedback loop determines the effect of aggressive toys upon aggressive behaviour. This issue will be looked at further in the next chapter.

CONCLUSIONS

We can conclude from this review that :

- Aggression is "a behaviour that is aimed at harming or injuring another person or persons" (Parke and

Slaby 1986, page 55).

- Learning plays an important role in the development of aggression.
- Aggressive behaviour is learned from aggressive models, parents in particular.
- Aggressive toys play a comparatively small role in the development of aggression.
- Boys are more aggressive than girls and prefer aggressive toys.
- Research into aggressive toys has been based on the catharsis hypothesis and on learning theory.
- The relationship between aggression and aggressive toys may be better investigated by applying the research models used for violent television research.

AGGRESSIVE TOYS: REVIEW OF THE LITERATURE

EMPIRICAL RESEARCH

The catharsis hypothesis (Goldstein 1989) and learning theory (Bandura 1973) have provided the theoretical bases of previous empirical studies of aggressive toys. The empirical studies are reviewed in this chapter. Conclusions about the relationship between aggression and aggressive toys can only be drawn from acceptable empirical research. It is therefore necessary to determine whether the studies have adhered to essential scientific principles. These principles include adequate sample size, control of variables, appropriate measures of dependent variables, and high inter-observer reliability.

The majority of experiments on aggressive toys are observation studies. Children are presented with aggressive toys and observers record aggressive behaviours. According to a number of authors (e.g., Feshbach 1956, Sutton-Smith 1988, Goldstein 1988) it is essential to distinguish between appropriate (also called pretend, thematic, or play aggression) and inappropriate aggression (non-thematic, real

aggression). Appropriate aggression refers to behaviours that are based upon the theme of the toy. In the case of a gun, aiming the gun at another and saying 'I've shot you, you're dead', illustrates appropriate aggression where the toy type determines behaviour. As Feshbach (1956) pointed out: 'It would be banal to demonstrate that when children are given tanks they play at war, or when they are given swords they duel. ' (pg 449).

However, inappropriate aggression is aggression which is not part of the play theme (e.g. quarrelling, hitting and fighting). There is evidence that children can tell the difference between real and pretend aggression. Snow (1974) states that by 4-8 years children can distinguish between play and real violence. The former is seen as funny, the latter is hated (Sutton-Smith 1988). As we are concerned with the relationship between real aggression and aggressive toys, the distinction between appropriate and inappropriate aggression is essential. It is therefore important to determine whether the empirical studies have made this distinction.

There are issues common to many of the studies but the experimental procedures vary greatly. Therefore,

each study is reviewed individually. This avoids repetitive reviews of procedures and findings, and permits a detailed review of all the empirical studies on aggressive toys.

The first studies reviewed are based upon the catharsis hypothesis.

The Catharsis Hypothesis

According to the catharsis hypothesis an aggressive act reduces the aggressive drive. The reduction in drive means that further aggressive behaviour is less likely. With reference to aggressive toys, it is hypothesised that play with aggressive toys reduces the aggressive drive and subsequent aggression (e.g. Feshbach 1956).

Feshbach (1956)

Feshbach (1956) hypothesises that play with aggressive toys reduces 'inappropriate' aggression. He also proposes an alternative hypothesis that play with aggressive toys increases inappropriate aggressive behaviour. This should happen because the aggressive properties of the toys stimulate

aggression. Feshbach suggested two ways in which aggression is stimulated. The toys could act as a stimulus to elicit an aggressive response already established in the repertoire. Alternatively, the aggression may be caused by 'diffusion of tension into neighbouring regions'. (pg 450). The 'diffusion of tension' is similar to associative priming where aggressive toys prime thematic aggressive behaviour (Berkowitz 1984). This then activates associated aggressive behaviours and inappropriate aggression is elicited.

Feshbach looked at 30 boys and 31 girls aged between 5 and 8 years. A teacher rating was obtained for each child on aggression. Children with scores above the median were labelled high aggression children. Those with scores below the median were labelled low aggression children. The subjects were randomly assigned to one of three treatment conditions, the Aggressive toy group, the Neutral toy group and the control group.

The children in the experimental groups were played a record, read a story, and presented with toys based upon specific themes. The aggressive toy-group's themes were indians, cowboys, soldiers, and pirates.

The themes for the neutral toy group were trains, farm, circus and store. The children in the control group remained in the classroom and did not engage in any play activities. The childrens' play with the toys was observed for 21 minutes. Play sessions (each of 21 minutes) occurred once a week for four weeks. Inappropriate aggressive behaviour was recorded by an observer. Interobserver reliability was 88 per cent. Inappropriate aggression was behaviour such as hitting, insulting or taunting another child 'outside the content of a play theme' (pg 454). After the final play session, each child's aggression level was again rated by their teacher after the play session. This allowed Feshbach to determine the influence of the play session upon subsequent aggression.

Feshbach reported a higher level of inappropriate aggression for the aggressive toy group compared to the neutral toy group and the control group. This finding, however, was only apparent in boys and was more obvious in the older children (7 and 8 year olds). Only the boys with very low aggression scores were rated by teachers as more aggressive following the play session.

The results contradict the the catharsis hypothesis

as aggressive toy play did not reduce inappropriate aggression, nor did the play reduce subsequent aggression. The increase in inappropriate aggression in the aggressive toy group confirms Feshbach's alternative hypothesis. That is, that aggressive toys act as aggression-eliciting stimuli.

Methodological errors, however, limit the findings of this study. The independent variable (aggressive toys) was confounded with two other variables, the record and the story. Therefore, it is not possible to determine the influence of the aggressive toys alone. The increase in aggression may have been due to any one or a combination of the independent variables. Additionally, the aggressive and neutral themes were not comparable. The aggressive themes involved people (cowboys, pirates etc), whereas the neutral themes were based upon objects and places (trains, circuses, shops). The differences in themes may account for the different levels of inappropriate aggression. Themes which involve people may elicit more aggression than themes involving objects. Without matched themes it is impossible to explain the difference in aggression level observed.

The amount of aggression elicited may also have been

influenced by the adults' behaviours. The teachers were not present during the experimental sessions. According to Sutton-Smith (1988) the children may have perceived themselves to be in a permissive situation where aggression was allowed.

After playing with aggressive toys, boys with very low pre-treatment aggression scores were rated subsequently as more aggressive. Feshbach (1956) argues that these children are usually inhibited to aggress. Play which permits aggressive behaviour reduces such inhibitions. This explanation is criticised by Sutton-Smith (1988) who states that if aggressive play reduces inhibitions to aggress, the girls' aggressive behaviour should also have increased. The girls did not, however, behave more aggressively. Inhibition, therefore, does not provide a satisfactory explanation.

Feshbach's findings are open to a variety of explanations. The increase in inappropriate aggression in the aggressive toy group appears to provide support for learning theory, where aggressive toys act as cues to elicit behaviours associated with the toys. The children's behaviour with the aggressive toys may, however, have been influenced by

prior exposure to a story and record based upon aggressive themes. The story and record could have acted as 'associative primes'. These primes activated aggressive ideas that interacted with the play with aggressive toys.

Aggressive children have been shown to be more influenced by aggressive primes than non-aggressive children (Josephson 1987). In Feshbach's study it is likely that the children with a high aggression score displayed more inappropriate aggression than the children with low aggression scores. Unfortunately, Feshbach did not consider the interaction between aggressiveness and inappropriate aggression. An interaction would correspond with Josephson's (1987) findings that aggressive children are affected by aggressive primes. This could be because they have a stronger association between aggressive stimuli and real aggression than non-aggressive children.

Despite the problems with this study, Feshbach's findings provide an invaluable basis for research into the influence of aggressive toys on children's behaviour. Specifically, Feshbach did distinguish between appropriate and inappropriate aggression, a distinction which, unfortunately, has been neglected

in some more recent studies.

WRIGHT 1967

Wright sought to replicate Feshbach's (1956) study. She hypothesised that play with aggressive toys reduces subsequent aggression. The subjects were 48 four year old boys. The subjects formed six groups of eight children (information about whether the groups were selected at random or not is not available).

In the first phase of the study three of the groups played with aggressive toys for 13 minutes. The aggressive toys included a toy rifle, helmet and a cartridge belt. The other three groups played with the non-aggressive toys (tool belt with hammer, screwdriver, flashlight, pliers and wrench). During the second phase the conditions were reversed so that all children were observed playing with both aggressive and non-aggressive toys. The behaviours recorded during the play session included hitting, threatening, pushing and grabbing. The aggression level after the toys were removed was also recorded to determine whether or not the aggressive toys had a cathartic effect.

Wright found no difference in aggression between the two conditions. Aggression only increased when the toys were removed. This happened in both the aggressive and the non-aggressive toy groups. Aggression levels were not influenced by the aggressive toys. Therefore aggressive play did not have a cathartic effect upon subsequent aggression level.

Wright's findings are similar to Feshbach's (1956) as she failed to show catharsis. Contrary to Feshbach, however, Wright did not find an increase in aggression whilst playing with the aggressive toys. This lack of effect may have been caused by inhibiting factors. During the experiment the children were reminded that their teacher was nearby (Sutton-Smith 1988). The proximity of the teacher may have inhibited the childrens' aggression as teachers are usually intolerant of aggressive behaviour. The influence of the aggressive toys may have been reduced as the children were in a situation which did not permit aggression.

Although Wright sought to replicate the Feshbach study she used different toys, military toys. Feshbach (1956) does not detail the toys used. He

states that they were associated with themes of cowboys, Indians, soldiers and pirates. Feshbach reported an increase in inappropriate aggression whereas Wright failed to find a comparable effect. The difference in results may be attributed to the different types of toys used.

There have been no empirical studies on how different types of aggressive toys influence aggression. It is possible, that military toys elicit different behaviours than, for example, cowboy guns. According to social learning theory a child who watches many cowboy films associates the cowboy gun with aggressive behaviour. One would expect, therefore, a toy cowboy gun to elicit the associated aggressive behaviours. For military toys to elicit aggression they would also have to be associated with aggressive behaviours through observation learning. The observation learning would involve repeated exposure to war films. Possibly, four year old children in the 1960's are more likely to have watched cowboy films than war films. Wright's choice of toys may have determined the behaviours elicited.

Wright did not measured the subjects' level of aggression prior to the experiment. As mentioned

above, this is an important consideration as the influence of aggressive toys has sometimes been affected by individual differences in aggression. Aggressive children may behave aggressively regardless of the type of toys present. Without knowing how children usually behave it is not possible to determine the impact of toys upon their behaviour. If the children in Wright's study rarely behaved aggressively, it is possible that aggressive toys are unlikely to elicit aggressive behaviours.

In summary, in Wright's study aggressive toys did not influence aggressive behaviour. The absence of influence could have been caused by inhibiting factors, the type of toys used or by the use of a sample with low aggression.

WOLFF 1976

A further test of the catharsis hypothesis was by provided by Wolff. Six 5 year old children (4 boys and 2 girls) were nominated by a classroom consultant who judged 2 children as very aggressive, 2 as moderately aggressive and 2 as having low aggression. Teacher ratings of aggression in the classroom confirmed the aggression ratings.

Each child was observed playing individually for 10 minutes with aggressive toys. These included toy guns, an inflatable Batman, boxing gloves and a dagger. The child's subsequent behaviour in the classroom was observed for 10 minutes. The procedure was repeated with neutral toys so that all subjects played with both toy types. The neutral toys consisted of puzzles, telephone, doll and a puppet. Two observers recorded aggressive behaviour during the play sessions. The aggressive behaviours included fighting, manipulative body contact (for example, squeezing, choking, holding down), destroying property and verbal hostility (for example, threatening violence, teasing).

Wolff's findings do not support the catharsis hypothesis. Play with aggressive toys had no effect upon subsequent aggressive behaviour. The two most aggressive boys displayed more aggressive behaviour with the aggressive toys than with the neutral toys, but no effect was observed for the other subjects. This finding seems to support Josephson's (1987) conclusions on associative priming, that aggressive children are more influenced by aggressive stimuli than non-aggressive children.

The major drawback with Wolff's study is that it failed to make the essential distinction between real and pretend aggression (Sutton-Smith 1988). It is therefore not possible to determine whether or not the aggressive toys elicited real aggression. The aggressive boys who showed an increase in aggression with the toys may have been showing pretend or 'appropriate' aggression. They may enjoy toys with aggressive themes more than other children and therefore engage in more aggressive fantasy play which was erroneously recorded as aggression.

Wolff only employed 6 subjects, 4 boys and 2 girls in her research. It is unlikely that such a small sample is representative of children of this age group and it is extremely unlikely that statistically significant differences will be found.

Sutton-Smith (1988) has drawn attention to the acceptability of aggression in the experimental situation and in classrooms. In the experimental room children were permitted to be aggressive and no teacher was present to inhibit aggression. In the classroom, however, the teacher was present and aggression prohibited. The aggressive behaviours

observed could be attributed to the permissiveness of the environment, rather than the aggressive toys.

The results of the Wolff study are ambiguous because she did not distinguish between real and pretend aggression.

MALLICK AND McCANDLESS 1966

Mallick and McCandless hypothesised that participation in aggressive activities reduces frustration-induced aggression, the aggressive activities are thereby cathartic.

Mallick and McCandless conducted two experiments. In the first experiment subjects were 30 boys and 18 girls with mean age of 9 years. One 11 year old boy and an 11 year old girl were selected as the confederates. The children were randomly assigned to the frustration and non-frustration groups. The subjects in the frustration group were required to complete a block puzzle, but were prevented from doing so by the confederate. The confederate in the non-frustration condition helped the subjects to complete the puzzle. In the second phase the subject

participated in one of the following interpolated activities: shooting a play gun at targets of a boy, girl, man, woman, cat or dog; shooting a play gun at targets with a bulls-eye; solving a simple maths puzzle. In phase 3, the subject was shown the confederate wired up to apparatus which yields electric shocks. The subjects were told that they may push a button to administer electric shocks to the confederate. The number of shocks administered provided an aggression score for each subject.

Mallick and McCandless report that the frustration group administered more electric shocks to the confederate than the non-frustration group. The interpolated activity did not, however, determine the amount of shocks given. Mallick and McCandless had predicted that the interpolated activities would be cathartic but the results of their first study suggest that these activities do not reduce aggression.

In a second similar study there were thirty 8 year old boys, thirty 8 year old girls, an 11 year old boy and girl as confederates. The frustration and non-frustration tasks were the same as in the first experiment. Following the frustration phase each

subject rated the confederate on a like/dislike scale. The interpolated activities consisted of either shooting guns at a target of an 11 year old child, talk with the experimenter, and talk with interpretation, (the experimenter discussed with the subjects possible explanations for the frustrator's uncooperative behaviour, e.g. tired). Phase 3 involved aiding or preventing the confederate who was shown completing a block puzzle task. Pushing one button helped the confederate, the other button prevented the confederate from completing the task. The number of times the subject pushed the prevent button was recorded as a measure of aggression.

Mallick and McCandless report that the frustration group had higher aggression scores than the non-frustration group. The interpolated activities, however, did not influence the subsequent aggression level. Once again catharsis was not observed. The aggression scores for the non-frustration aggressive play group were reported as higher than the mean scores in the non-frustration social talk group. Mallick and McCandless conclude that aggressive play leads to an increase in aggression.

Frost (1986) claims that this study demonstrates that

aggressive toys cause aggressive behaviour in children. This statement can be criticised for a number of reasons. Firstly, the aggression scores of the 'non-frustration aggressive play group' and the 'non-frustration social talk group' were not significantly different. It is misleading of Mallick and McCandless to quote this as a finding without statistical support. Second, the measure of aggression employed in these experiments can be questioned. Each child was required to push one button to help the confederate complete the puzzle or another button to hinder completion. It is unknown to what extent this exercise reflects or is indeed associated at all with real aggression. A child who pushes a button to prevent another child from completing a block puzzle is not necessarily going to harm or injure another.

Mallick and McCandless claim that the shooting activity increased aggression. They assume that this activity represents play with aggressive toys. There are, however, a number of differences between the two activities. In the experiment, the children had no choice but to shoot at a target. In a play situation, however, children selectively play with aggressive toys. Also the experience of shooting bullets at a

target is unlike playing a game with, for example, space guns. Children usually play with other children when playing with toy guns and the games involve more than merely shooting at each other. Furthermore, a child who is not experienced in target shooting may find this activity frustrating or arousing. The increase in arousal may cause an increase in aggression. In conclusion, the results of this study lend more evidence to an argument against clay pigeon shooting or darts than against aggressive play or toys.

ETAUGH AND HAPPAH 1979

Etaugh and Happach (1979) looked at the influence of aggressive play on preschool children's subsequent aggression. Twelve children, 10 boys and 2 girls with a mean age of 27.6 months, were observed in free-play sessions. The aggressive behaviour of each child was recorded during 4 one-hour play sessions to provide a baseline rate of aggression. Aggressive behaviour included hitting or pushing another child, throwing an object at another child, taking an object away from another child, and verbal expression of aggression. There were two observers, 100% inter-observer reliability was established.

Subjects were matched for their baseline aggression. One member of the matched pair was randomly assigned to the experimental or control group. In the experimental condition, the subjects were presented with a punching bag toy. The experimenter verbally encouraged the child to hit the punch bag for a maximum of 5 minutes. The matched pair in the control group spent the same amount of time drawing on a blackboard. The activities were repeated 19 times over a period of 12 weeks. Immediately after participating in the activities, each child was observed in free-play for five minutes. Aggressive behaviour was recorded using the same categories in establishing baseline aggression.

Aggressive behaviour increased after the treatment, thus contradicting the catharsis hypothesis. An increase was evident in both the experimental and control groups. Etaugh and Happach suggest that the lack of difference between the groups may be because the children were only observed for 5 minutes. This may not have been long enough for any carry-over effects of the aggressive activity to surface. But as aggression increased in both groups, it does not seem that aggression is related to any particular

treatment.

The results of the study are limited by such a small sample size. There were only 12 subjects which reduces the likelihood of obtaining statistically significant results. The aggressive activity, used as the independent variable, involved hitting a punchbag. This activity is problematic for two reasons. First, it is questionable whether hitting a punch bag is comparable to other forms of aggressive play, such as may occur in interpersonal play. Second, the children did not spontaneously hit the punchbag. They were encouraged to do so by the experimenter. The behaviours elicited are therefore not comparable with aggressive play which is a voluntary and spontaneous activity.

The theoretical inferences that can be drawn from this study are unclear. The aggressive activity did not have any greater influence on subsequent aggression than the non-aggressive activity. It is not possible to determine whether the lack of effect was due to the fact that the activity was unrepresentative of children's aggressive play or whether for this sample, aggressive activities do not elicit generalised aggression.

WATSON AND PENG (1990)

Watson and Peng looked at the long term relationship between playing with toy guns and aggression within a broader frame. The relationship between television programme preferences, family discipline, aggression and gun play were also investigated. Watson and Peng hypothesised that children who play with toy guns will be less aggressive than those who do not play with toy guns (i.e. a catharsis hypothesis).

Watson and Peng asked thirty-six 3-5 year old children (19 boys and 17 girls) whether they had toy guns at home. Parenting styles, family variables and television viewing were measured using a parent questionnaire. The children were each interviewed to find out about toy preference, television preference and amount of toy gun play. Each child was observed during two 15 minute free-play sessions. The behaviours recorded were categorised as real aggression, pretend aggression, and non-aggressive pretend play.

Twenty subjects (13 boys and 7 girls) said that they had toy guns at home. The remaining 16 subjects (6

boys and 10 girls) did not own toy guns. The sex difference in toy gun ownership is consistent with sex differences in toy preference (e.g. Wegener-Spohring 1989).

Watson and Peng found that overall boys show more pretend and real aggression than girls. This finding is compatible with many others on sex differences in aggression (e.g. Maccoby and Jacklin 1980). Watson and Peng also report that real aggression correlates highly with parental spanking. For boys, but not for girls, toy gun play predicted real aggression but not pretend aggression. Pretend aggression was best predicted by preference for violent television programmes. The authors claim that their findings are contrary to catharsis hypothesis which states that playing with aggressive toys reduces real aggression. Watson and Peng conclude that toy gun play is associated with real aggression, although they do qualify this by stating that the best predictors of children's aggressiveness are parental spanking and parental discipline styles. This would be consistent with social learning, where children learn aggressive behaviours from parents who are physically aggressive (Gelles 1980, Carroll 1977).

Evidently, there is a relationship between aggression and preference for aggressive toys. The direction of this relationship is, however, unclear. If aggressive toys are a causal factor in aggression the effect would be evident in boys and girls. In the Watson and Peng study, however, real aggression did not correlate with gun ownership for the girls. Playing with toy guns does not necessarily cause aggression. Alternatively, the relationship between aggression and aggressive toys could be in the other direction. Aggressive children may have a stronger preference for toys with aggressive themes than non-aggressive children. Parents of aggressive boys may buy them guns as a way of directing their aggression resulting in aggressive boys owning more aggressive toys than non-aggressive boys. Preference for aggressive toys may be a symptom of aggression rather than the cause of aggression. Watson and Peng's study illustrates the necessity for considering the impact of toys in the context of all the socialising agents in the child's environment.

Summary of Studies of the Catharsis Hypothesis

All extant studies on the catharsis hypothesis and aggressive toys have been reviewed. The six studies

confirm that aggressive play does not have a cathartic effect. The summary table (Table 1) permits direct comparison of the design and results of this group of studies. The results of four of the studies (Feshbach, Wolff, Mallick and McCandless, and Watson and Peng) appear to support the learning theory interpretation, where aggressive toys increase aggressive behaviour. The extent of the support is, however, influenced by methodological limitations.

Feshbach reported that aggressive toys elicit inappropriate aggressive behaviour. As the children heard an aggressive story and record prior to exposure to the toys, Feshbach unwittingly demonstrated the effect of aggressive primes on behaviour with aggressive toys. The primes activate aggressive ideas, the toys facilitate their expression.

The inferences that can be made from Wolff's study are restricted because she did not distinguish between real and pretend aggression. All that can be concluded from her research is that aggressive boys play aggressive games with aggressive toys. This leaves open the question of the relationship between real aggression and aggressive toys.

Mallick and McCandless concluded that aggressive play increases aggression. There was, however, no statistical difference in aggression between the groups who participated in aggressive and non-aggressive activities. A further drawback of this study is that target shooting is not representative of aggressive toy play. The validity of the aggression measure (pushing a button to prevent completion of a block puzzle) can also be questioned.

The findings of Watson and Peng do, however, contribute to theories about aggression and aggressive toys. They shifted the emphasis from the properties of the toy to the characteristics of the child. Watson and Peng found that aggressive boys engage in more toy gun play than non-aggressive boys. Further research is required in order to determine the direction of the relationship between the two variables. Toy guns may elicit aggressive behaviour, a strong preference for toy guns may be a symptom of aggressiveness, alternatively, parents of aggressive boys may give them toy guns to channel their aggression.

Various kinds of aggressive toys have been used in the studies. Some have involved toy guns (Mallick and McCandless, Watson and Peng), others have used a variety of toys (Feshbach and Wolff). The studies that employ a variety of toys do not state which toys the children actually played with, nor how they played with them. Some aggressive toys can be played with in a variety of ways. A GI Joe doll, for example, could be used as a soldier or as a doll to dress and undress. Other aggressive toys have limited uses. A toy gun, for example is most likely to be used for pretend shooting. The findings of a study using toy guns can not be generalised to other aggressive toys. Some aggressive toys may elicit more aggressive play than other aggressive toys. The comparative 'aggressiveness' of each toy needs to be assessed. The first study in this thesis investigates this issue.

To summarize the conclusions drawn from these studies:

- aggressive play has not been shown to be cathartic
- aggressive primes elicit aggressive behaviour with aggressive toys.
- aggressive children engage in more aggressive play

than non-aggressive children.

TABLE 1: SUMMARY OF STUDIES OF CATHARSIS HYPOTHESIS

AUTHORS	FESHBACH	WRIGHT	WOLFF	MALLICK & MCCANDLESS	ETAUGH & HAPPACH	WATSON & PENG
S's AGE (yrs)	5-8	4	5	9	2	3-5
BOYS	Y	Y	Y	Y	Y	Y
GIRLS	Y	N	Y	Y	Y	Y
N	60	48	6	48	12	36
INDEP VAR	Agg toys	Agg toys	Agg toys	Shooting	Hitting punchbag	Agg toys
TOYS USED	Various	Military	Various	Guns	Punchbag	Guns
DEP VAR	Agg level	Agg level	Agg level	Agg level	Agg level	Agg level
DEP VAR MEASURE	Behaviour observn.	Behaviour observn.	Behaviour observn.	No. of shocks administered	Behaviour observn.	Behaviour observn. & parenting styles
OBSERVN.	21 mins	13 mins	10 mins	N/A	5 mins	15 mins
DURATION	4 sessions	1 session			19 sessions	2 sessions
DISTINCTION	Y	Y	N	N/A	N	Y
CATHARSIS	N	N	N	N	N	N
LEARNING	Y	N	Y	Y	N	Y

Key : INDEP VAR: Independent Variable Agg. Toys: Aggressive Toys
 DEP VAR: Dependent Variable DEP VAR MEASURE: Dependent variable measure
 OBSERVN.DURATION: Length of time S's behaviour was observed
 DISTINCTION: Whether distinction made between real and pretend aggression.
 CATHARSIS: Whether results support the catharsis hypothesis.
 LEARNING: Whether results support learning theory

LEARNING THEORY

There are two similar models in learning theory which may explain the relationship between aggression and aggressive toys. First, the classical conditioning model in which aggressive toys are related to an aggressive context and facilitate aggressive behaviour. Through repeated exposure to cowboy films, for example, the child associates a cowboy gun with aggressive behaviour. Subsequent exposure to the cowboy gun elicits a generalised aggressive response. Secondly, according to the information processing model, toy guns act as retrieval cues to stimulate aggressive behaviours associated with the gun. These aggressive behaviours have been acquired through observation learning. The media, especially aggressive films and television programmes, provide opportunities for observation learning. Toy guns initially elicit thematic or appropriate aggression. The thematic aggression primes associated aggressive ideas and behaviours. Inappropriate aggression results from the associative priming.

The studies reviewed are based on the above theories.

BERKOWITZ 1968

Berkowitz proposes that the presence of real weapons facilitates aggressive behaviour. In his 1968 article he reviews studies on the 'weapon effect'. Berkowitz claims that guns act as aggressive stimuli to which aggression is a conditioned response. The study of children reviewed demonstrates the 'weapons effect'.

Young children (information on age, gender and number is not provided) played with an older child. The older child had been instructed by the experimenter to be friendly. Some subjects were then given toy guns to play with whilst the remaining subjects chatted quietly with the experimenter. The subjects were then told that the older child had built a structure out of building blocks, if they pressed the button the table would shake and the blocks would fall down. Berkowitz reports that the button was pushed more often by the children who had played with guns. He claims that this is because the guns 'pull out aggressive reactions that would not otherwise have occurred' (pg 20).

Sutton-Smith (1988) questions the validity of Berkowitz's measure of aggression. Sutton-Smith (1988) argues that knocking down play blocks is

stereotyped behaviour with blocks, it is not aggression. This is therefore not an appropriate measure of aggressive behaviour. Additionally, Sutton-Smith (1988) states that the children who were given toy guns may have believed that aggressive behaviour was condoned, the increase in aggression may be due to the permissive situation rather than the toys.

The differences in aggression between the groups could be accounted for by differences in arousal. It is possible that the children in the toy gun group may have been more aroused because they had been engaging in boisterous play. This arousal may have extended to the subsequent session which resulted in an eagerness to knock down play blocks.

Berkowitz does not state the criteria for assigning subjects to the experimental groups. If the children were not assigned at random, then Berkowitz has not controlled for individual differences in aggression. There may have been more aggressive children in the toy guns group than the control group. Aggressive children display aggressive behaviour regardless of the toys present. The influence of the toys upon aggression can not be determined without initially

assessing each child's aggression level or ensuring that there is an equal distribution of aggressiveness amongst the experimental and control groups.

Berkowitz's study can only be interpreted as showing that after playing with toy guns, children are more likely to knock down other children's blocks. He has not adequately demonstrated the weapons effect.

TURNER AND GOLDSMITH 1976

Turner and Goldsmith's hypothesis is based upon the classical conditioning model where toys become associated with aggressive behaviour, primarily because the objects have been seen on television in an aggressive context. Subsequent exposure to the toys then elicits aggressive behaviour.

In their study, 10 subjects were aged 4-5 years. There were 7 boys and 3 girls. The children's play was observed for 30 minutes over 16 days. On days 1,2,4,5,6,11,12 and 17 the children played with their usual toys, with toy guns on days 1,7,9,10,13 and 14, and with toy airplanes on days 15 and 16. Two observers (inter-observer reliability was 75%) recorded the amount of verbal and physical antisocial

behaviour displayed by each child. Thematic aggression was not recorded as antisocial behaviour.

Turner and Goldsmith report an increase in antisocial behaviour in the toy gun condition. No increase in antisocial behaviour occurred in the other conditions. They conclude that toy guns introduce aggressive play themes, increasing the likelihood of other aggression occurring. The findings appear to provide support for the classical conditioning and associative priming aspects of learning theory.

This study has been criticised by Jenvey (1988) on the basis that only a few children are observed ($n=10$) and that sex differences are not considered. Sutton-Smith (1988) points out that the actual number of aggressive acts carried out in the toy gun condition was only 1 per 30 minutes, the difference in aggression between the groups is trivial. Furthermore, Sutton-Smith (1988) argues that the observers were not blind, that is they knew the hypothesis. There is also much prejudice against toy weapons. He claims that this study was published because it 'confirmed the prejudices of the reviewers' (pg 64).

A further criticism of the Turner and Goldsmith study is made by Connor (1989) who points out the problem of bringing toy guns into school. If toy guns are usually banned from school then their presence is likely to elicit behaviour which is unrepresentative of play behaviours in the home. Also, the provision of toy guns in school may give implicit permission for aggressive play.

Turner and Goldsmith did not account for individual differences in aggression. Connor (1989) states that 1 or 2 aggressive children in a sample gives the impression of an increase in aggression in the whole group. Aggressive children are also most likely to behave aggressively with aggressive toys. It is therefore necessary to control for individual levels of aggression.

Despite criticisms, Turner and Goldsmith's study is more rigorously designed than many others. For example, they carefully distinguished between appropriate and inappropriate aggression and manipulated the presentation order of the toys. It would appear that, for some young children, guns act as cues to elicit previously learned aggressive behaviour. Assessment of individual differences in

aggression is required to determine which children are most likely to be influenced by toy guns.

MENDOZA 1972

Mendoza looked at the effect of 'toys conducive to violence' on forty 5-6 year old boys and girls. The subjects were randomly assigned to one of 8 groups (N= 5 per group). Four groups were presented with aggressive toys (G.I. Joe, guns, tanks, toy soldiers and daggers) and the remaining four groups played with non-aggressive toys (baby dolls, tea set, trains, fire engines, doctors kits and Ken dolls). The children's behaviour with the toys was observed. Aggressive behaviours recorded included biting, kicking, name-calling, hitting, pretending and threatening to kill another or oneself. Information about the duration of observation and inter-observer reliability is not available.

Mendoza reports that children who played with the aggressive toys were more aggressive than the children who played with the non-aggressive toys. There was no carry-over effect, aggression returned to baseline once the toys were removed. Mendoza concluded that aggressive toys elicit aggressive

behaviours.

A fundamental problem of this study is Mendoza's lack of distinction between appropriate and inappropriate aggression. All aggressive incidents were classified as 'real' aggression. Furthermore, she did not assess the baseline aggression level of the children beforehand to ensure that there was an equal distribution of aggressiveness in each group.

POTTS, HUSTON AND WRIGHT 1986

The hypothesis for this study was based upon observation learning and arousal theory. Although the primary aim was to look at the effect of television viewing upon aggression, aggressive toys were included as situational cues. Potts, Huston and Wright examined whether the action level of a television programme increases arousal and thereby leads to an increase in aggression. Aggressive toys were included as cues to elicit the arousal-induced aggression.

The study involved 64 male subjects with a mean age of 55 months. The subjects watched two of 8 television programmes. The programmes had been

selected because they represented the factorial combinations of high and low action, high and low violence, animated cartoon and live programme. In a 12 minute post-viewing play session, children either played with toys which represented 'aggressive cues' (bobo doll, boxing robots, Star Wars character and a rocket ship) or 'prosocial cues' (basketball hoop, peg board). Nonthematic toys were also available, including velcro balls with target, Playskool characters and interconnecting blocks. Behaviours recorded included object aggression, fantasy aggression, cooperation and dyadic play.

Potts et al report that the aggressive cues (aggressive toys) produced more aggressive behaviour than the prosocial cues. Television content was not related to aggressive play and the authors conclude that 'For young boys, toys with aggressive cues appear to elicit generalized patterns of aggressive behavior.' (page 13). The results appear to support a learning theory explanation of the relationship between aggression and aggressive play.

Jenvey (1988) argues that Potts et al's results were due to the arousing nature of television viewing rather than the toys, since the toys were always

presented following the television programme. Possibly, children's play with aggressive toys is influenced by their arousal level. It is impossible to determine whether the aggressive behaviour was elicited by the television programme, the toys or an interaction of both independent variables. Aggressive television may prime aggressive responses and therefore elicit aggressive behaviour. Aggressive primes affect aggressive children more than non-aggressive children (Josephson 1987). We do not know, however, the aggression level of each child in Potts et al's study. It is possible that there were more aggressive children in the aggressive television/toy group, therefore increasing the priming effect.

Sutton-Smith (1988) claims that Potts et al have demonstrated the importance of 'situational cues' compared with television. He goes on to say that the authors did not pay enough attention to whether the aggression was play or real. The correlation between observers' ratings was lowest for the behavioural category 'interpersonal aggression (0.79), and much higher for other ratings (e.g. fantasy aggression .91 and non-compliance .95). This discrepancy illustrates the difficulty that many experience in distinguishing between real and pretend aggression.

The findings of this study indicate a possible relationship between arousal and children's toy play. This demonstrates that play behaviours are not just determined by the type of toy present, the state of the child needs to be considered.

LOVAAS 1961

Lovaas looked at the influence of symbolic aggression on children's aggressive play. He hypothesised that aggressive stimuli increase aggressive behaviour.

Twelve, 5 year old children were randomly assigned^{to} an aggressive film or to a nonaggressive film group.

They were shown either the aggressive or nonaggressive film for 5 minutes. Following the film, the children were given a choice of toys to play with for 4 minutes. The aggressive toy consisted of two dolls, one with a stick. When the lever was pressed the doll with the stick repeatedly hit the other doll on the head. The nonaggressive toy involved a wooden ball in a cage, when the lever was pressed the ball moved through various obstacles. The dependent variable was toy preference, measured by the number of times the lever was pressed on each toy.

Lovaas found an interaction between the type of film observed and toy preference. The children who had watched the aggressive film preferred to play with the aggressive toys. The nonaggressive film group showed a stronger preference for the nonaggressive toy. Lovaas concluded that aggressive television makes children more aggressive.

Lovaas's conclusion can be questioned. The aggressive film did not elicit heightened aggression, it elicited aggressive play. As mentioned previously, it is essential to distinguish between aggressive play and real aggression. Lovaas did not make this distinction. He did, however, demonstrate the influence of aggressive primes upon toy choice. When aggression is salient children want to play aggressive games. Aggressive television primed aggressive ideas which prevailed in the play session, demonstrated by children's preference for the aggressive toy.

Aggressive dolls were used in this study. They may not be representative of all aggressive toys, such as guns and soldiers. It would therefore be useful to conduct a similar study using a range of aggressive

toys. Conclusions could then more readily be generalized to all aggressive toys, not just dolls.

Lovaas' study is important because he has looked at the antecedents of aggressive play. Children choose to play aggressively when they have been exposed to an aggressive prime. Unlike other researchers, Lovaas gave the children a choice of toy, the behaviours are therefore more representative of a natural play situation in which children choose toys. When there is no choice of toy type the behaviours elicited are unlikely to depict natural play.

Summary of Studies of Learning Theory

All of the studies reviewed in this section appear to support learning theory (see Table 2). There are, however, problems which may limit the support. Berkowitz used an inappropriate measure of aggression, knocking down play blocks may not represent real aggression. Mendoza did not distinguish between real and pretend aggression, a drawback also evident in the studies of Potts, Huston and Wright and Lovaas.

The issue of the distinction between real and pretend

aggression has come up in most studies. Problems occur because there are no universal criteria for making this distinction. Connor (1989) looked at the influence of individual differences upon people's perception of aggressive play. She found that children's behaviour with aggressive toys was rated as 'real aggression' by females and as 'play aggression' by males. The ability to distinguish between real and play aggression is also influenced by experience of aggressive play. Connor (1989) noted that women who had played aggressive games as children were more likely to label aggression as 'play' than women who had not played aggressive games. Future observation studies of aggressive play need to establish suitable criteria for distinguishing real aggression from play. Rigorous training of observers is also required.

Another recurring issue concerns individual differences in aggression. Watson and Peng, for example, established that aggressive children play more aggressive games than non-aggressive children. Similarly, Bonte and Musgrove (1943) reported that aggressive play is most frequently initiated by aggressive boys. To determine the influence of aggressive toys it is important to know the

aggression level of each child in the sample. Most of the studies reviewed did not measure individual differences in aggression prior to the treatment sessions.

To summarise the conclusions that can be drawn from learning theory studies:

- some children behave aggressively with aggressive toys
- arousal increases aggressive play.
- aggressive primes increase aggressive play.

TABLE 2 : SUMMARY OF STUDIES OF LEARNING THEORY

AUTHORS	BERKOWITZ	TURNER & GOLDSMITH	MENDOZA	POTTS, HUSTON & WRIGHT	LOVAAS
S's AGE	-	4-5	5-6	4	5
BOYS	-	Y	Y	Y	Y
GIRLS	-	Y	Y	N	Y
N	-	10	40	64	12
INDEP VAR	Agg toys	Agg toys	Agg toys	Agg toys	Agg film
TOYS USED	Guns	Guns	Military	Various	Agg dolls
DEP VAR	Agg level	Agg level	Agg level	Agg level	Toy Pref.
DEP VAR MEASURE	Block play	Behaviour observn.	Behaviour observn.	Behaviour observn.	No. of lever presses
OBSERVN. DURATION	N/A	30 minutes 16 sessions	N/A	12 minutes 1 session	4 minutes 1 session
DISTINCTION	N/A	Y	N	N	N
LEARNING	Y	Y	Y	Y	Y

Key : INDEP VAR: Independent Variable Agg. Toys: Aggressive Toys
 DEP VAR: Dependent Variable DEP VAR MEASURE: Dependent variable measure
 OBSERVN DURATION: Length of time S's behaviour was observed.
 DISTINCTION: Whether distinction made between real and pretend aggression
 LEARNING : Whether results support learning theory.

CONCLUSIONS

The reviewed empirical studies on aggressive toys provide no support for catharsis hypothesis and only limited support for learning theory. Aggressive toys elicit aggressive behaviours in some children under some conditions. The learning theory account is too simple as it predicts a stimulus-response relationship, aggressive toys act as the stimulus and aggression is the response. The model does not account for individual differences in aggression which determine the strength of the aggressive response. These individual differences include both trait aggression and transient states of aggression induced by arousal and aggressive primes. Trait aggression, arousal and aggressive primes are looked at in turn.

Trait Aggression.

Wolff (1976), Watson and Peng (1990), and Bonte and Musgrove (1943) have all reported that aggressive children engage in more aggressive toy play than non-aggressive children. It is not clear, however, whether aggressive play has made these children aggressive, or whether aggressive children prefer

aggressive play themes and toys. This question will be addressed in this thesis. The relationship between trait aggression and preference for aggressive toys will be investigated.

Predictions about the direction of the relationship between aggression and aggressive toys are based upon research on television violence. A number of researchers (Gunter 1983, Robinson and Bachman 1972, Friedman and Johnson 1972) have established that television violence is preferred by individuals with strong predispositions towards aggression. According to Gunter (1983), the cause-effect relationship between television violence and aggression is not straightforward. The television viewer is not 'a passive recipient of mass media influences' (pg 166). Individual differences in viewing preferences determine reactions to the programme content. Similarly, one predicts that aggressive toys will be preferred by aggressive children. Confirmation of this prediction will demonstrate that subject variables have an active role in aggressive play.

The methodological framework for this study is based upon the television preference studies. Individual differences in aggression are the independent

variable, with toy preference as the dependent variable. This framework is the reverse of the majority of previous research on aggressive toys, where aggressive toys are the independent variable and the children's behaviours the dependent variable.

Arousal

Potts et al (1986) may have demonstrated the effect of arousal upon play with aggressive toys (Jenvey 1988). Heightened arousal increases aggressive play because aroused children want to engage in boisterous play to maintain their arousal. Alternatively, the arousal may facilitate aggression which can be expressed through aggressive play. To investigate this cause-effect issue, we need to look at how arousal influences children's toy preference.

In the previous chapter, we saw that there is much evidence that arousal increases aggression (e.g. Zillmann 1984). Various factors cause a state of arousal, including sexual stimulation and adrenalin injections (O'Neal and Kaufman 1972). The arousal-inducing factors which are considered the most appropriate to aggressive play are frustration and physical exercise. Freedman and Newton (1975) found

that frustrated subjects had a stronger preferences for violent films than non-frustrated subjects. Similarly, a relationship between heightened arousal and preference for aggressive toys is predicted.

Priming

Aggressive primes also produce a transient state of aggression which influences aggressive play. Lovaas (1961) found that exposure to aggressive television increases preference for aggressive toys. This result is consistent with other findings on associative priming, (e.g. Goldstein, 1972; Berkowitz, Parker and West 1973), where aggressive material primes aggressive ideas and thoughts. It is predicted that children exposed to an aggressive prime will have a higher preference for aggressive toys than children exposed to a non-aggressive prime.

Individual differences in aggression determine whether aggressive toys elicit an aggressive response. The relationship between aggression and aggressive toys is therefore influenced by individual differences. The aim of the present research is to examine the role of individual differences in

aggression associated with aggressive toy play. It is predicted that preference for aggressive toys is increased by the following states of aggression:

1. Trait aggression (a predisposition to aggress).
2. Arousal-induced aggression.
3. Aggression induced by an aggressive prime.

OVERVIEW OF RESEARCH STRATEGY

Study 1: The first study aims to investigate boys' perception of aggressive toys. The comparative aggressiveness of a variety of toys will be determined.

Study 2: A toy preference questionnaire will be designed and its reliability and validity assessed.

Study 3: The relationship between trait aggression and toy preference will be investigated. Sex differences in trait aggression and toy preference will also be examined.

Study 4: This study will investigate the effect of exercise- and frustration-induced arousal upon boys' and girls' toy preference.

Study 5: Finally, the effect of an aggressive and a non-aggressive prime on boys' and girls' toy preference will be examined.

Seven and eight year old children will participate in all the studies.

STUDY 1: COMPARATIVE AGGRESSIVENESS OF TOYS

The empirical studies reviewed investigate the effect of various 'aggressive toys' on children's behaviour. A few of the researchers investigated specific types of toys. Wright (1967) studied the effects of military toys, and Turner and Goldsmith (1976) looked at the impact of toy guns. The other studies used a variety of toys labelled 'aggressive toys' (Wolff 1976) or 'toys conducive to violence' (Mendoza 1972). It is not possible to generalise findings of a study on toy guns to all 'aggressive toys' because little is known about the comparative aggressiveness of toys. Some toys may be more likely to elicit aggressive behaviours than other toys. The aim of this study is to establish what types of toys elicit aggressive play.

'War toys' is the most common label for toys associated with aggressive themes (for example, Sutton-Smith 1988). The classification would appear to include only military type toys such as guns, soldiers, and tanks. Children, however, consider a variety of non-military toys as 'war toys' (Wegener-Spohring 1985, 1989). Wegener-Spohring conducted many discussions with children to establish that war toys include weapons (50%), male figures (20%), space-age toys (17%), and miscellaneous toys (13%). She defines war toys as "toys one can fight with" (1989, pg 36). Evidently military toys are not the only types of toys associated with aggressive play. To represent the range of toys with aggressive themes,

three categories of toys are used in the present study.

The first category, 'Weapons', includes a space gun, a replica military gun, and toy sword. A penknife and a garden stick represent neutral objects that could be used for aggressive play. It is predicted that the 'Weapons' category will be perceived as the most aggressive as they are single-purpose toys which encourage aggressive play (Carlsson-Paige and Levin 1990).

Five vehicles are included in the second toy category 'Vehicles'. There are a variety of vehicles, four have weapons, one is a military replica, the remainder are space-age type vehicles. 'Characters' form the third category of toys. The toy people are either military (e.g. soldiers), fantasy (e.g. robots) or neutral (e.g. train passengers)

The toys will be rated by children on various dimensions. The main dimension is labelled 'fighting'. The score on this dimension indicates the type of behaviours elicited by the toy. The term 'fighting' is used instead of 'aggression' because it is more readily understood by children. In an informal pilot study, 10 children between the ages of 6 and 8 were asked "what does aggression mean?". Most of the children found this difficult, the responses varied from 'being cross' to 'wanting to win a game'. All the children could, however, easily define the term 'fighting'.

To clarify the type of fighting behaviours elicited by a toy, the children also rated the toys on four

other dimensions, 'pretend-real fighting', 'happy' and 'cross'. Toys which elicit real aggression were expected to obtain high real fighting, high unhappy and high cross scores. Conversely, toys associated with pretend aggression were expected to receive high pretend fighting, high happy and low cross ratings.

As no previous research has been conducted on the perceived comparative aggressiveness of toys, it is difficult to predict which toys will receive high 'fighting' ratings. Inferences can, however, be made from the social learning theory account of the effect of aggressive toys upon aggressive behaviour (Turner and Goldsmith 1976). According to social learning theory children learn from various sources that weapons are associated with aggression. Subsequent exposure to a toy weapon may elicit the observed aggressive behaviours. A child who watches cowboy films will, in theory, be more likely to reproduce the learned behaviours when presented with a toy gun. Similarly, a toy soldier may elicit aggressive behaviours in a child who has been exposed to war films, history books, or television news programmes. There is a likelihood, therefore, that toy weapons and military toys will be strongly associated with aggression and that children will play aggressive games with these types of toys. Hence it is predicted that military toys and toys in the weapons category will obtain the highest scores on the fighting-not fighting dimension. Confirmation of this prediction would provide support for long held beliefs that military toys and weapons elicit aggression. This assumption is the basis for legislation against the production of war toys in Sweden and against the advertising of war toys in Germany and Spain.

Scores on the 'real-pretend fighting', 'happy', and 'cross' dimensions help establish the type of fighting and aggressive behaviours elicited by each toy. Wegener-Spohring (1989) reports that children perceive aggressive play with aggressive toys as fun. Furthermore, aggressive toy play has been shown to be distinct from real aggression (Sutton-Smith 1988). Based upon these conclusions, it is predicted that the toys will elicit play fighting. This would be shown by a relationship between fighting scores and happy and cross scores. Additionally, it is predicted that the toys perceived as aggressive toys will obtain higher scores on the 'happy' dimension than the non-aggressive toys.

Only boys participated in the present study. Boys' have more experience with aggressive toys than girls (Wegener-Spohring 1989) thus they should be able to provide accurate information about the type of behaviours associated with each toy type.

The subjects participating in the present series of studies are aged between 7 and 8 years. Children of this age group were selected because they have reached the 'concrete operational stage' of intellectual development (Piaget 1936). This stage marks the improvement of logical ability and reading skills. Such skills are required for comprehension of the questionnaires. Furthermore, the toys investigated in this thesis are marketed at and purchased by 7 and 8 year old children. This age group tends to select toys for themselves whereas younger children have their toys chosen and bought for them by their parents.

HYPOTHESES

It was predicted:

1. That weapons will have a higher fighting score than vehicles and characters.
2. That military toys will have higher fighting scores than non-military toys.
3. That fighting toys will obtain higher scores on the 'happy' dimension than non-fighting toys.
4. That fighting toys will obtain high pretend scores fighting scores and high not cross scores.

METHODS

EXPERIMENTAL DESIGN

The 20 subjects rated all the toys. Toy type is the independent variable, the dependent variable consists of ratings on dimensions of 'fighting', 'real-pretend fighting', 'happy' and 'cross'.

SUBJECTS

20 boys with a mean age of 7 yrs, 8 months (s.d.=.29) participated in the study. The subjects are members of a central London Beavers pack (Junior cubs).

APPARATUS

(see Figure 1, Appendix 1)

The rating scale was constructed of a cardboard base (42 cm x 21.5 cm) with a length of wire upon which a red ball was suspended. The ball could be moved along the wire to indicate the response to the question. Pictures representing the extremes of each dimension were placed at each end of the continuum. The ratings were read from a 32 point scale that extended the length of the continuum. The scale could only be seen by the Experimenter.

STIMULUS MATERIALS

The subjects were initially trained to use the scale. The stimulus materials for the training phase included a yellow card, a green card, 4 cards depicting different shades of blue, a picture of a

teddy bear, and a picture of a toy gun.

The stimulus materials in the experimental phase are presented in Appendix 1. The names of the toys and manufacturers are presented below:

Weapons: W1: Transformers Lazergun (Hasbro)
 W2: Rocket launching pistol (Rainbow) M
 W3: Ghostpopper (KennerParkerTonka)
 W4: He-Man power sword (Mattell)
 W5: Garden stick
 W6: Swiss Army penknife

Vehicles: V1: Car recovery crane (Matchbox)
 V2: Space series (Fisher Price)
 V3: He-Man shuttle pod (Mattel)
 V4: Road grabber (Hasbro)
 V5: Action Force ski mobile (Hasbro) M

Characters: C1: Pirates (Lego)
 C2: Transformers (Hasbro)
 C3: Black Fortress (Lego)
 C4: Train (Lego)
 C5: Mobile Command Centre (Hasbro) M

N.B. M indicates military toy - A2: Rocket launching pistol (Rainbow), V5: Action force ski mobile (Hasbro) and C5: Mobile Command Centre (Hasbro).

The dimensions were:

Fighting - Not Fighting

Pretend Fighting - Real Fighting

Happy - Unhappy
Cross - Not Cross

PROCEDURE

The experiment consisted of two phases - a training phase and the experimental phase.

Training Phase

Each subject participated individually in this phase. The subject was first shown the yellow coloured card and asked to move the ball along the wire in response to the question "what colour is this?". A card with the word YELLOW was placed on the right hand side of the dimension. The subject was then shown the green coloured card and again asked "What colour is this?". A card with the word GREEN was placed on the far left hand side of the dimension. The dimensions were then altered so that the right extreme read DARK and the word LIGHT was placed on the left extreme of the dimension. The subject was presented with a blue coloured card and asked "What shade of blue is this?". The subject was required to move the ball along the continuum to indicate the shade. This procedure was repeated with the 3 remaining cards of varying shades of blue (verbal instructions in Appendix 2).

A third training task involved the 'fighting' dimension. The subject was shown the picture of the teddy bear and asked "How would you play with this toy?". A picture of two stick men fighting and the word FIGHTING was placed on the extreme left of the

dimension. The picture on the extreme right of the dimension consisted of two stick men standing together and the words NOT FIGHTING. The procedure was repeated with the picture of the toy gun. All s's successfully completed the training phase.

Experimental Phase

The subjects were individually tested with all 16 toys. The presentation order of the stimulus materials was randomised for each subject. The procedure was the same for each toy. The subject was shown the picture and asked "How would you play with this toy?" (see Figure 2). The response was indicated on the fighting-not fighting dimension. If the subject rated the toy as fighting he was then asked to indicate "What sort of fighting would this be?" on the real-pretend fighting dimension. If the subject rated the toy as not-fighting the real-pretend fighting dimension was not presented. The response to the third question "How happy would you be" was indicated on the happy-unhappy dimension.

Finally the cross-not cross dimension was presented and the question "How cross would you be?" asked. The extremes of the dimensions were altered each turn to avoid the potential effect of handedness.

After rating the toys each subject was presented with all the stimulus materials in a category and asked to pick up the picture of the toy he was most likely to play fighting with. The toy selected was recorded and the subject then asked which was the next toy he was most likely to play fighting with. The process

was continued until all the stimulus materials had been placed in order of fighting to least fighting.

Finally, the subjects were asked informal, open-ended questions such as "Why would you play fighting with that toy?" and "What do you enjoy about fighting?". The responses were recorded verbatim (see Appendix 3).

FIGURE 2: SUBJECT USING THE RATING SCALE



RESULTS

Rating Scores

The scores were recorded on a scale which ranged from 0-32. As the extremes of the dimensions were altered (i.e., FIGHTING was on the left on some trials and on the right on others), it was necessary to ensure that the scores were consistent so that a high score always indicates 'fighting' and a low score indicates 'not fighting'. A high score on the pretend-real fighting dimension signifies pretend fighting, a low score indicates real fighting.

A high score on the happy-unhappy dimension indicates that the subject would be happy playing with that toy. A low score indicates that the subject would be unhappy playing with the toy. Finally, a high score on the cross-not cross dimension signifies that the subject would not be cross playing with the toy, a low score indicates that he would be cross playing with that toy.

A summary of the score interpretation is below:

<u>DIMENSION</u>	<u>HIGH SCORE</u>	<u>LOW SCORE</u>
FIGHTING-NOT	FIGHTING	NOT FIGHTING
PRETEND-REAL	PRETEND FIGHTING	REAL FIGHTING
HAPPY-UNHAPPY	HAPPY	UNHAPPY
CROSS-NOT CROSS	NOT CROSS	CROSS

The mean scores obtained by each toy on each dimension are presented below (Table 3).

TABLE 3 MEAN RATING SCORES ON ALL DIMENSIONS

TOY NO. FIGHTING HAPPY PRETEND NOT CROSS

W1	22.28	28.90	15.57	27.29
W2	30.90	24.81	21.52	30.00
W3	21.67	26.19	15.14	20.67
W4	19.86	24.33	21.48	21.05
W5	16.90	22.00	6.00	21.67
W6	16.95	13.95	2.81	22.89
V1	3.19	25.14	6.09	31.67
V2	14.43	27.86	20.33	27.90
V3	29.71	27.09	27.38	24.29
V4	28.43	27.81	22.86	27.14
V5	15.48	27.43	16.67	27.24
C1	28.85	29.95	23.55	25.50
C2	23.65	28.25	24.65	26.10
C3	16.70	27.00	16.05	26.00
C4	3.75	29.65	1.40	28.55
C5	31.75	31.75	26.40	31.35

N.B. Highest possible score is 32

TABLE 4 TOYS WITH HIGHEST MEAN SCORES ON EACH
DIMENSION

POSITION	FIGHTING	HAPPY	PRETEND	NOT CROSS
1	C5	C5	V3	V1
2	W2	C1	C5	C5
3	V3	C4	C2	W2
4	C1	W1	C1	C4
5	V4	C2	V4	V2
6	C2	V2	W2	W1
7	W1	V4	W4	V5
8	W3	V5	V2	V4

The following bar charts (Figures 3, 4 & 5) represent the results of the ordering task. The 'percentage response' refers to the percentage of subjects who rated the toy as 'most fighting'. 55% of subjects rated W2 as 'most fighting' in the weapons category, 90% said that V3 is the 'most fighting' in the vehicles category, and 85% of subjects indicated that they were most likely to play fighting with C5 in the characters category.

FIGURE 3

WEAPONS - BAR CHART DEPICTING RESULTS OF ORDERING TASK

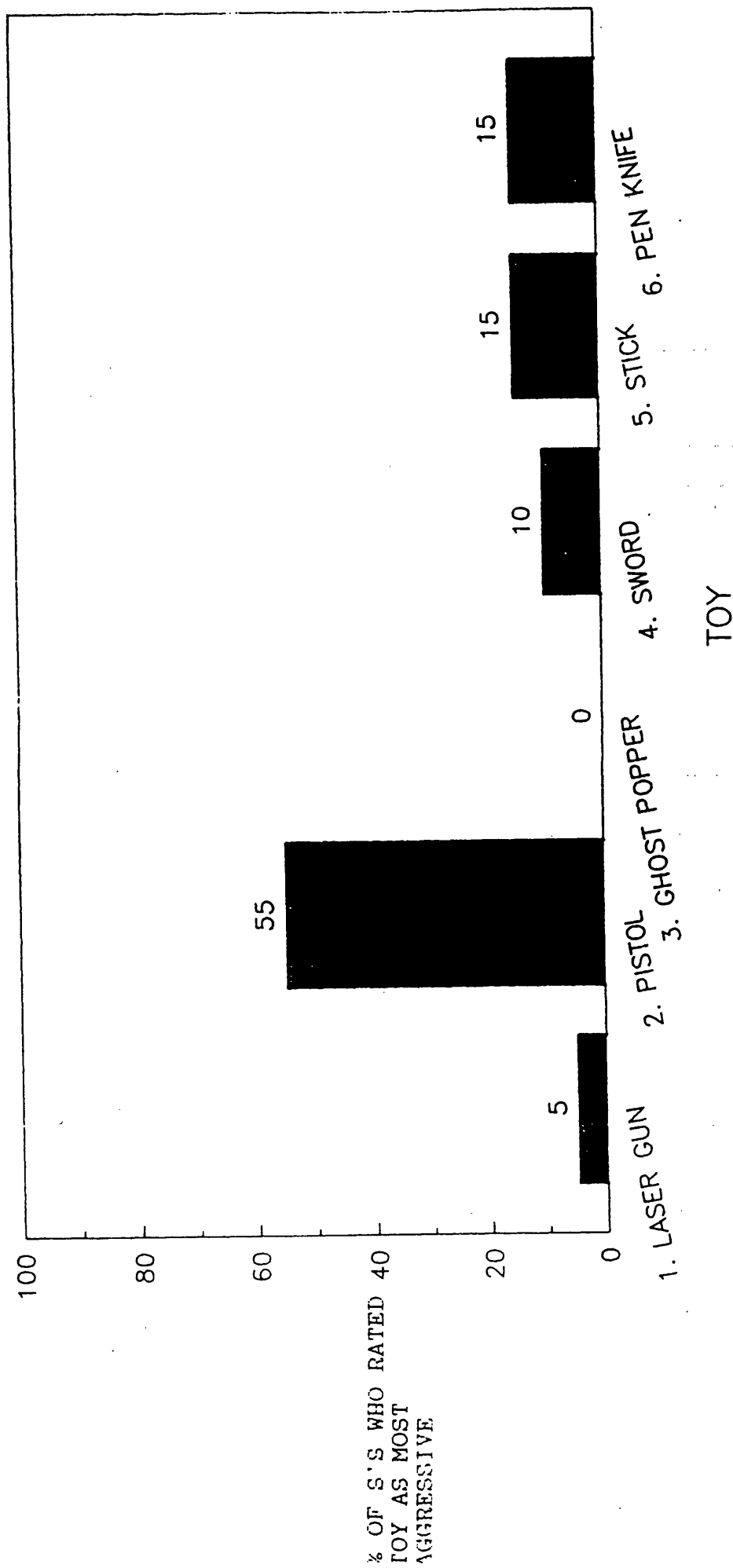


FIGURE 4

VEHICLES - BAR CHART DEPICTING RESULTS OF ORDERING TASK

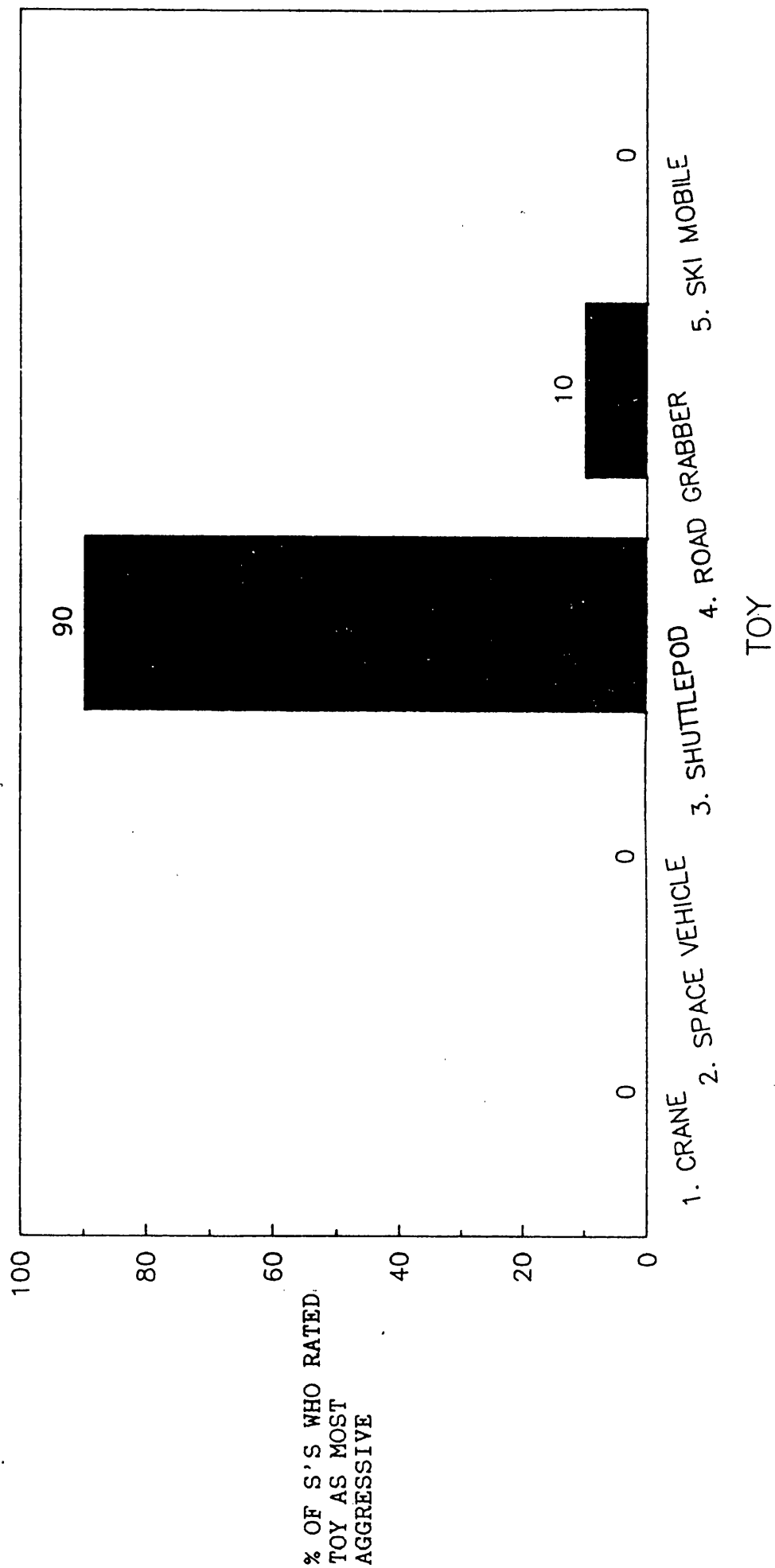
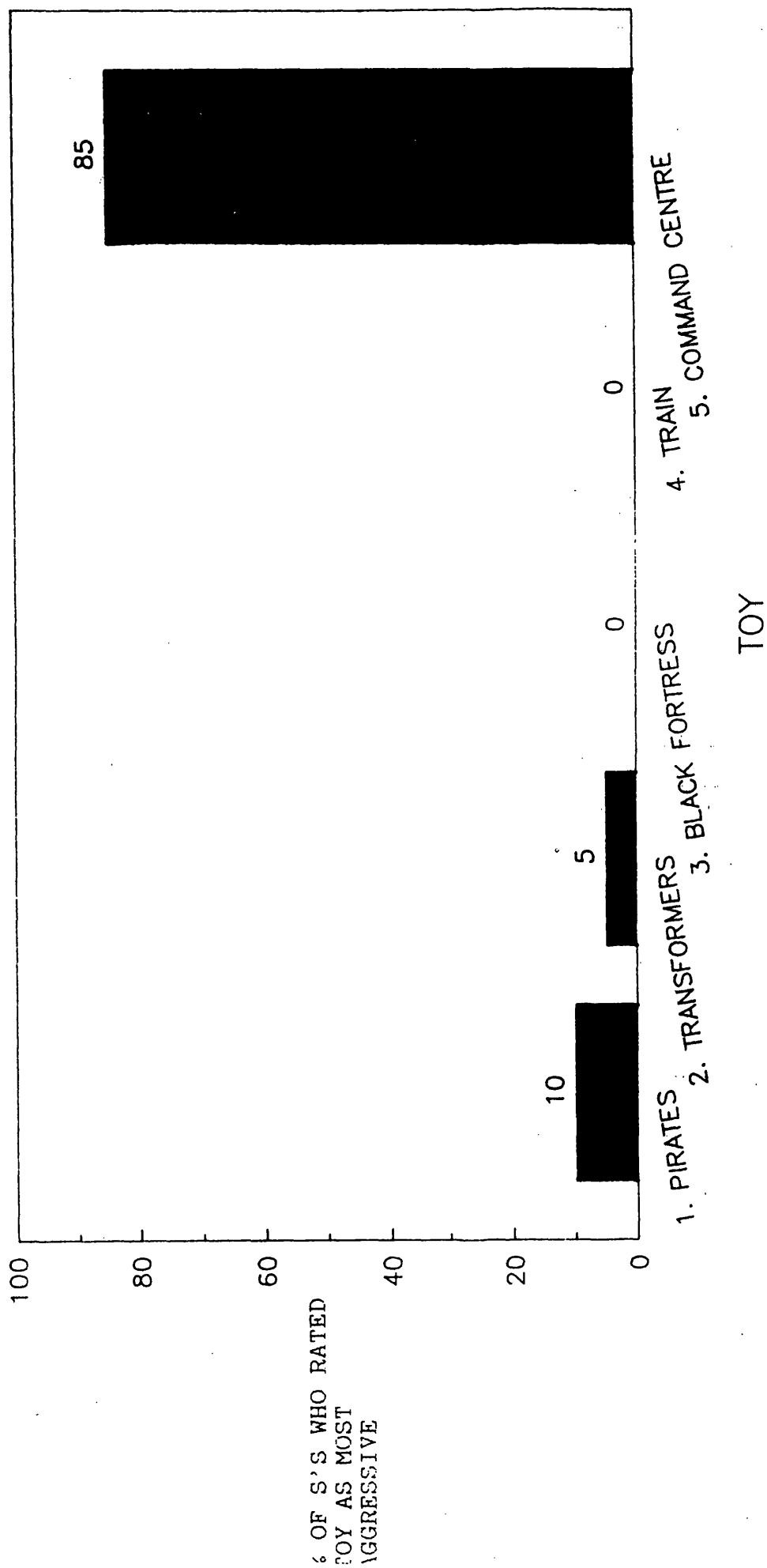


FIGURE 5

CHARACTERS - BAR CHART DEPICTING RESULTS OF ORDERING TASK



RESULTS RELATING TO HYPOTHESIS 1

That weapons will have a higher fighting score than vehicles and characters.

A 3x1 ANOVA was conducted on the fighting scores of the toys in 3 groups - weapons, vehicles and characters. The scores were not significantly different ($F(2,60) = 1.37, p < .05$). The data therefore do not support the hypothesis, weapons are not perceived as more aggressive than the toys in the other groups.

HYPOTHESIS 2

That military toys will have higher fighting scores than non-military toys.

W2, V5 and C5 are military toys.

The toys W2 and C5 have the highest mean fighting scores in the weapons and character categories (see Table 3). The results of the ordering task confirm that W2 and C5 were ordered first in their respective categories (see bar charts). V5, however, did not receive a high fighting score, nor was it placed first in the ordering task.

T tests were conducted to determine whether the fighting scores for the military toys in the weapons and character categories were significantly higher than the score obtained by the toy with the next highest fighting score.

The fighting score for W2 is significantly higher than W1, the second highest fighting toy in the weapons category ($t=2.68, df=38, p<.01$).

The C5 fighting score is significantly higher than C1 ($t=2.73, df=38, p<.01$) in the characters category.

It is possible to conclude that the military toys in the weapons and character categories have a higher fighting score than the other toys. The military toy in the vehicle category did not, however, obtain a higher fighting score than the non-military vehicles.

HYPOTHESIS 3

That fighting toys will obtain higher scores on the 'happy' dimension than the non-fighting toys.

The 16 toys were divided into 2 groups, group 1 (fighting toys) comprised of the 8 toys with the highest scores on the fighting dimension (see Table

4). Group 2 (non-fighting toys) represented the 8 toys with the lowest scores on the fighting dimension. A t test indicated that the toys in group 1 obtained significantly higher scores on the 'fighting' dimension than group 2 ($t=1.87, df=14, p<.05$). A further t test was conducted to determine whether fighting toys obtained higher scores on the 'happy' dimension than the non-fighting toys. The results of the test confirm the hypothesis ($t=1.79, df=14, p<.05$), boys are happier playing with fighting toys than non-fighting toys.

HYPOTHESIS 4

That fighting toys will obtain high pretend fighting scores and high not cross scores.

A Pearson product moment correlation was performed between the 'fighting' scores and 'pretend' scores of the 8 most fighting toys. The results indicate a positive correlation between fighting and pretend fighting ($r=0.75, df=6, p<.05$). Fighting toys are therefore associated with pretend fighting.

The 'fighting' and 'not cross' scores were also correlated using the Pearson product moment

correlation. The correlation was significant and positive ($r=0.63, df=6, p<.10$). Thus, boys do not associated fighting toys with being cross.

The correlations show that high fighting scores correlate with high pretend fighting and high not cross scores.

DISCUSSION

The present study provides an insight into boys' view of aggressive toys. The expectation that children are most likely to play fighting with military-type toys has been borne out by the data. The military vehicle did not, however, receive the highest fighting score in the 'vehicles' category. There are two possible explanations for this finding. First, the vehicle may not have been perceived as a military replica. A more common military vehicle, a tank for example, may have received a higher 'fighting' score. The hypothesis concerning military-type toys could have been more rigorously tested if the children had been asked to identify the military toys after the rating task. This would have ensured that the high fighting rating was based upon the type of toy rather than the number of weapons or other influential factors. Alternatively, the toy rated as 'most fighting' in the vehicles group (the He-Man shuttlepod') may have more blatant weapons than the military vehicle. Furthermore, this toy is shown on the 'He-Man' television cartoon, children who have been exposed to this cartoon will have seen the toy being used for aggressive purposes.

This study also shows that children are just as likely to play fighting with weapons, characters and vehicles. Therefore, when referring to 'aggressive' or 'war' toys it is important to include all the types of 'toys one can fight with' (Wegener-Spohring). It is not sufficient to include military-type toys or all toy guns, particularly as different types of guns elicit different amounts of aggressive play. This point is illustrated by the finding that boys are more likely to play aggressive games with Lego pirates than with a lazergun.

The boys in this study initially rated the toys on the fighting-not fighting dimension. It is possible that the presence of this dimension caused the child to focus upon the fighting elements of the stimulus materials rather than consider how he would, hypothetically, play with the toy. If this was the case the toys displaying the most weapons would receive the highest scores on the fighting dimension. Looking at the toys in the characters group, C1 has more figures fighting and weapons than C5, yet C5 was rated as the most 'fighting'. This suggests that a factor other than the number of fighting elements influences the child's perception of the toy. The extent to which the figures are realistic could

influence the child's judgement as C5 shows army-type miniature people with contemporary weapons. C1 includes pirates made of Lego fighting with swords and old fashioned guns. The lifelike characters, however, have a higher 'pretend fighting' score than the pirates. This suggests that the realism of a toy is not the determining factor. There may be other aspects of toys that influence the fighting rating obtained. Further research is required to establish what this factor is.

The toy ratings indicate that the behaviours elicited by toys are definitely pretend fighting. This finding supports Sutton-Smith's (1988) argument that children are able to distinguish between real and pretend fighting. The penknife and garden stick that could be used for fighting obtained very low fighting scores. Many children said that they would not fight with these because someone might get hurt (see Appendix 3). Also, the toys with the highest 'fighting' scores obtained the highest pretend fighting and happy scores. This suggests that children find aggressive play enjoyable, expressed by Wegener-Spohring (1985) in her statement "playing war is fun".

To summarise, this study has shown the comparative aggressiveness of a variety of toys. There is no difference in the aggression elicited by the main categories of toys, weapons, vehicles and characters. There is, however, a difference in the aggressiveness of the toys within the categories. Military-type toys, for example, elicit more aggressive play than non-military toys. When considering aggressive toys it is important to look at all types of toys one can fight with. Play with aggressive toys is not related to real aggression and is an enjoyable experience. This is further supported by the finding that the children in this study were happier playing with toys they can fight with than the non-aggressive toys.

To conclude:

- Boys are most likely to play fighting with military type toys.
- Boys perceive toy weapons, vehicles and characters as aggressive toys.
- Fighting with aggressive toys is pretend fighting, distinct from real fighting and aggression.
- Boys are happier playing with aggressive toys than non-aggressive toys.

STUDY 2: TOY PREFERENCE QUESTIONNAIRE DESIGN

The remaining empirical studies in this thesis will look at the influence of aggression upon children's preference for aggressive toys. An appropriate measure is required to determine children's toy preference. There is no existing toy preference questionnaire so it has been necessary to devise one.

A 'paper and pencil' measure is preferable for various reasons. First, more than one child can be tested at a time. A toy preference test where the child is presented with the actual toys can only be conducted with individual children. If a group of children participated it would be necessary to have more than one toy present in case that toy was selected by a number of children. Furthermore, the toy preference may be influenced by the presence of peers. If a popular child indicates preference for one type of toy the other children may select the same toy. By using a preference questionnaire one can ensure that the children complete the questionnaire without conferring.

The validity of the written questionnaire is assessed

in 2 ways. First, the children are presented with the actual toys, second an alternative form of the questionnaire is presented. The reliability is determined using test-retest reliability.

STIMULUS MATERIALS

The results of the previous study indicated that 'aggressive toys' include toy weapons, vehicles and characters. It is important, therefore, to include this variety of toys in the questionnaire. Also, non-aggressive toys that are as popular and available were required. Bearing these criteria in mind, 20 toys were selected from toy manufacturers' current brochures. Pictures of the toys were presented to 20 adults of various ages, 10 females and 10 males. They were also shown to 10 children, 5 boys and 5 girls. The subjects were asked to indicate the 5 toys that children are most likely to play fighting with (aggressive toys), and the 5 toys children are least likely to play fighting with (non-aggressive toys). After looking at the percentage agreement, the 5 most aggressive and 5 least aggressive toys were selected for use on the toy preference questionnaire (see Appendix 4).

The aggressive toys selected were:

1. Toy gun
2. Hand Grenade
3. Action Force
4. Ghostpopper gun
5. He-man Sword

The non-aggressive toys were:

1. Robot
2. Play-doh
3. Tonka truck
4. Lego train
5. Ghostbuster car

Toy preference is measured on a 5-point continuum.

The child is asked to complete the declarative statement: "I would like to play with this toy..." by ticking one response:

very much

quite a lot

not sure

not much

not at all.

The 5-point continuum is preferable to a dichotomy or

3-point continuum. This is because it allows one to measure the degree to which children want to play with a toy. The choice of 5 responses enables the children to give an accurate response.

The presentation of the continuum on the response sheet is alternated for each toy. 'Very much' is on the right hand side for the first toy and on the left for the second toy. This is designed to reduce the possible effect of handedness (response sheet shown in Appendix 5).

SCORING

The questionnaire is scored so that a high score indicates strong preference for aggressive toys. The scoring for each response is presented below (and in Appendix 6):

Aggressive toys:

- 'Very much' - 5 points
- 'Quite a lot' - 4 points
- 'Not sure' - 3 points
- 'Not much' - 2 points
- 'Not at all' - 1 point

Non-aggressive toys:

- 'Very much' - 1 point
- 'Quite a lot' - 2 points
- 'Not sure' - 3 points
- 'Not much' - 4 points
- 'Not at all' - 5 points

The possible range of scores is from 10-50 points.

The continuum was shown to four primary school teachers who teach 7 and 8 year old children. They all confirmed that the continuum was suitable for pupils of this age. In a pilot study the continuum was shown to 7 year olds who had no problem understanding and using the measure.

VALIDITY

The questionnaire was designed to determine which toys children like playing with. It is possible that the responses elicited by pictures of toys are different from responses elicited by the actual toy. It was necessary, therefore, to validate the questionnaire.

10 boys and 10 girls completed the toy preference

questionnaire. Each child was then taken to a separate room in the school and shown a pair of toys. The child was allowed a few minutes to look at the toys and then asked which s/he would most like to play with. The procedure was repeated with all the 9 pairs of toys. Each pair of toys consisted of an aggressive toy and a non-aggressive toy. The presentation order was constant for all subjects. The combinations are shown below :

1. Gun & Robot
2. Hand grenade & Playdoh
3. Sword and tonka truck
4. Gun & Playdoh
5. Sword & Robot
6. Gun & Tonka truck
7. Hand grenade & Robot
8. Sword & Playdoh
9. Hand grenade & Tonka truck.

Aggressive toys: gun, sword, and hand grenade.

Non-aggressive toys: robot, playdoh, Tonka truck.

Preference for the aggressive toy received 2 points, preference for the non-aggressive toy received 1 point. A composite score was obtained for each subject.

The Pearson product moment correlation between the scores obtained on the toy preference questionnaire and the scores on the toy selection task was significant ($r=0.89, df=18, p<.001$).

The second test of validity involved the use of a different version of the toy preference questionnaire called the 'forced choice' questionnaire. Here the 5 aggressive toys are paired with the 5 non-aggressive toys in every possible combination to give 25 pairs. The pictures of the pairs are presented in Appendix 7.

15 boys and 15 girls participated in the study. They were required to tick a box to indicate which toy in the pair they would most like to play with. Preference for the aggressive toy received 2 points, preference for the non-aggressive toy was awarded 1 point. A composite score was obtained for each subject. The children were then presented with the original toy preference questionnaire. A Pearson product moment correlation was performed on the scores obtained on both versions of the toy preference questionnaires. The correlation was positive and significant ($r=0.74, df=28, p<.001$). The

high correlation between the two measures indicates that the toy preference questionnaire has high validity.

RELIABILITY

10 boys and 10 girls completed the toy preference questionnaire and were retested over a period of 1 to 3 months (see Figure 6). A Pearson product moment correlation was conducted between the toy preference scores obtained in period 1 and period 2. The correlation was high and significant ($r=.95, df=18, p<.0005$) which indicates that the questionnaire has high reliability.

FIGURE 6: CHILDREN COMPLETING THE TOY PREFERENCE QUESTIONNAIRE



The toy preference questionnaire which has been designed is a reliable and valid measure of children's toy preference. Furthermore, 7 and 8 year old children can complete the questionnaire with ease.

It is important to note that toy preference questionnaires have a limited shelf-life. This is because new toys are constantly introduced on to the market. Some toys are popular not necessarily because of their aggressive properties, but because they are fashionable (e.g. Teenage Mutant Hero Turtles). Toy preference questionnaires may become outdated because the toys used become less popular whereas others are re-advertised or associated with a television cartoon. Additionally, it is possible that the use of the toy preference questionnaire described above is limited to 7-8 year old children. The toys depicted may be too mature or immature for younger or older children.

STUDY 3: TRAIT AGGRESSION AND TOY PREFERENCE

This is the first in a series of studies that investigate the relationship between individual differences in aggression and toy preference.

This study focuses specifically on trait aggression, further studies investigate frustration and arousal theories of aggression.

The term trait aggression refers to aggressive temperament or 'dispositional' aggression (Patterson 1976). This is examined by assessing the individual's attitude to and acceptance of aggression. Trait aggression is a comparatively stable and consistent trait (Lefkowitz, Eron et al, 1977) that differs from situational aggression in which external factors (frustration and arousal, for example) elicit aggression. It is important to distinguish the different types of aggression particularly when referring to children's play in which both trait and situational aggression may exist. This distinction should provide an insight into the role of aggression in children's play with aggressive toys. That is, whether aggressive play is a function of trait aggression and/or situational aggression.

The aggression questionnaire employed in this study (Sears, 1961) is a self-report measure of attitudes to aggression. This method is rarely used with children, behavioural ratings are more commonly used in the belief that they have a higher validity. Some psychologists do, however, advocate the self-report method on the basis that children are able to give information about their aggressiveness. Capprara and Pastorelli (1989) argue "one should not overlook the level of awareness that children have of the behaviours which disturb others and because of which they are disliked by others" (page 129). To assess the validity of the self-report measure, a teacher checklist of aggressive behaviours was also administered.

Sears (1961) developed an inventory to measure various types of aggression, including prosocial and self-aggression, in children. As we are concerned here with antisocial aggression only the nine items referring to antisocial aggression are used. Three non-aggressive buffer items are also included.

The first hypothesis is based upon the consistent finding that aggressive children engage in more

aggressive toy play than non-aggressive children (Wolff, 1976, Watson and Peng 1990, Bonte and Musgrove 1943). The present study differs from the previous research as the toy preference of aggressive children is investigated whereas previous researchers observed children's play with aggressive toys. Furthermore, studies on media preference conclude that violent television programmes are preferred by individuals with strong aggressive dispositions (Friedman and Johnson, 1972, Diener and Dufour, 1978). Looking specifically at 8 year old children, Lefkowitz et al (1977) report a correlation between peer-rated aggression and preference for viewing violent television programmes. In line with this research, it is hypothesised that aggressive children will have a strong preference for aggressive toys. The children who obtain high scores on the trait aggression inventory will also obtain high scores on the toy preference questionnaire.

The second hypothesis concerns sex differences in aggression. Many studies report that boys are more aggressive than girls (Maccoby & Jacklin, 1980). Differences also exist in attitudes to aggression. Boys have been shown to approve of aggressive behaviour (Connor, Serbin & Ender, 1978) whereas

girls favour passive behaviours to achieve goals (Connor et al 1978). The aggression inventory used in the present study measures attitudes towards aggression. Children who condone aggression obtain high scores on this measure, low scores are obtained by children who do not approve of aggression. It is hypothesised that boys will obtain higher trait aggression scores than girls.

The final hypothesis states that boys will have a stronger preference for aggressive toys than girls. Research on toy preference shows a consistent difference in boys' and girls' toy choice. Boys have been shown to prefer cars, blocks and guns and girls choose dolls, crayons and kitchen toys. (Fagot 1977, Giddings and Halverson 1981). Similarly, Brooks-Gunn and Matthew (1979) report sex differences in play themes - girls adopt domestic themes and boys play at spacemen, soldiers and monsters. Aggressive toys are usually favoured by boys and related advertisements tend to show boys playing with these types of toys (Schwartz & Markham, 1985). Toy preference is assessed in this study with a questionnaire rather than the observation method used in previous studies. It is predicted that the boys in this study will obtain higher scores on the toy preference

questionnaire.

The toy preference questionnaire and trait aggression inventory have not previously been administered together, it is necessary, therefore, to control for order of presentation effects.

HYPOTHESES

It was predicted:

HYPOTHESIS 1

That there will be a positive correlation between preference for aggressive toys and trait aggression.

HYPOTHESIS 2

That boys will obtain higher aggression scores than girls.

HYPOTHESIS 3

That boys will have a stronger preference for aggressive toys than girls.

METHODS

TRAIT AGGRESSION QUESTIONNAIRE VALIDATION

The Sears (1961) self-report measure of aggression (Five Aggression Scales) was abridged to 12 items, 9 measure antisocial aggression, 3 are buffer items. (See Appendix 8). Each item is a declarative sentence, to which the subject is required to indicate agreement or disagreement on a 3-point scale consisting of 'AGREE', 'NOT SURE', and 'DISAGREE'. To validate the abridged questionnaire the scores were compared with a teacher rating of aggression. The teacher checklist (See Appendix 9) was originally a peer-rating measure of aggression (Lefkowitz, Eron et al 1977). Josephson (1987) adapted the measure to form a teacher checklist, where the teacher indicates the behaviours exhibited by each pupil. There are 9 items which refer to antisocial behaviours such as 'Does things that bother others', and 'Starts a fight over nothing'.

20 boys and 20 girls (aged 7) completed the trait aggression questionnaire. Their class teacher, who had taught them for a year, completed the teacher checklist for each pupil. The correlation between the

scores on both inventories was assessed using the Pearson product moment correlation. The correlation was significant ($r=0.69, p<.05$). The results indicate that the trait aggression inventory is a valid measure of aggression.

The toy preference questionnaire was described in Study 2.

Subjects

The subjects consisted of 30 boys and 30 girls ($N=60$) with a mean age of 7 yrs and 10 months ($s.d = .28$). They were all pupils at two inner London Primary schools.

Materials

The adapted Sears trait aggression inventory (See Appendix 8). The toy preference questionnaire (See Appendix 4).

Design and Procedure

All subjects completed the 2 questionnaires. Trait aggression and toy preference are within-subjects

variables. Gender is the between-subjects variable.

The subjects were randomly assigned to group 1 and group 2, ensuring an equal distribution of boys and girls amongst the groups, to control for order of presentation effects. Group 1 received the trait aggression inventory followed by the toy preference questionnaire. Group 2 were presented first with the toy preference questionnaire, then the trait aggression inventory was administered.

The experimenter administered the questionnaires to 5 subjects at a time. The 30 subjects in group 1 and the 30 in group 2 were divided into subgroups of 5 children. There were either 2 girls and 3 boys or 3 girls and 2 boys in each group. 30 subjects completed the aggression questionnaire first and 30 subjects completed the toy preference questionnaire first. The questionnaires were completed in the school library. The verbal instructions are presented in Appendix 10.

RESULTS

Data Collation

The questionnaires were scored according to the score sheet in Appendix 8. High aggression scores indicate high trait aggression, low scores indicate low trait aggression.

Order of presentation effects.

Order of presentation was examined by comparing the counterbalanced groups. The scores for group 1 (who were presented with the aggression inventory and then the toy preference questionnaire), were compared with the scores obtained by group 2, who had completed the toy preference questionnaire first followed by the trait aggression inventory.

The t tests showed that order of presentation does not affect the scores obtained on the trait aggression inventory ($t=.31, df=58, n.s.$) and the toy preference questionnaire ($t=.82, df=58, n.s.$)

The means of the scores obtained on the trait aggression inventory and the toy preference

questionnaire are presented below (Table 5).

TABLE 5 MEAN SCORES ON TRAIT AGGRESSION AND
TOY PREFERENCE QUESTIONNAIRES

QUESTIONNAIRE	BOYS X	GIRLS X	BOTH X
AGGRESSION	18.5	17.33	17.92
TOY PREFERENCE	29.83	25	27.41

The scores on the trait aggression questionnaire range from 11-29 and from 18-33 on the toy preference questionnaire.

RESULTS IN RELATION TO HYPOTHESIS 1

That there will be a positive correlation between preference for aggressive toys and trait aggression.

A Pearson Product Moment correlation was conducted on the toy preference questionnaire and trait aggression inventory scores (see Figures 7 and 8). The results of the analysis indicate a positive

FIGURE 7: SCATTERPLOT SHOWING BOYS'
TOY PREFERENCE AND AGGRESSION SCORES

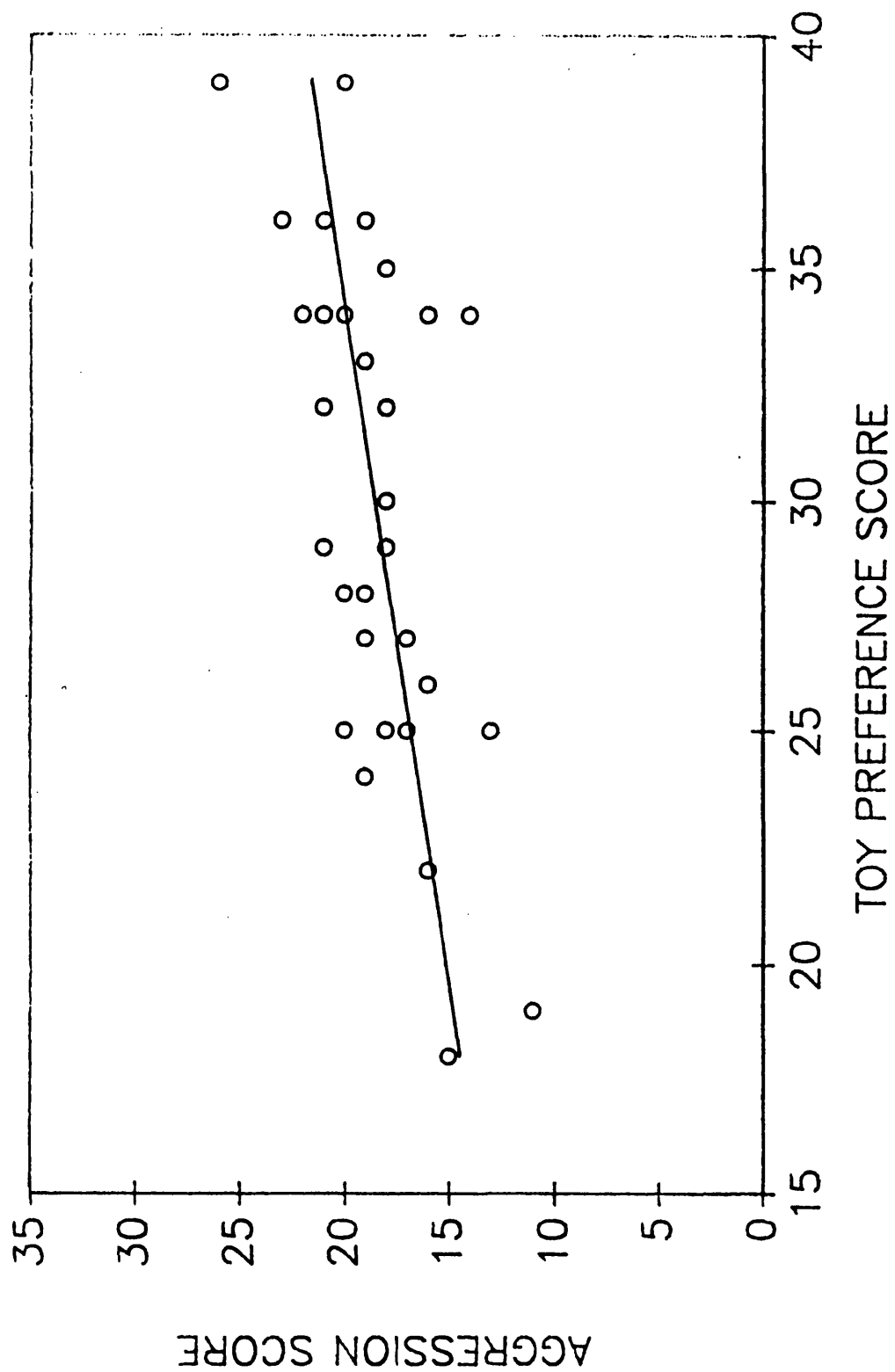
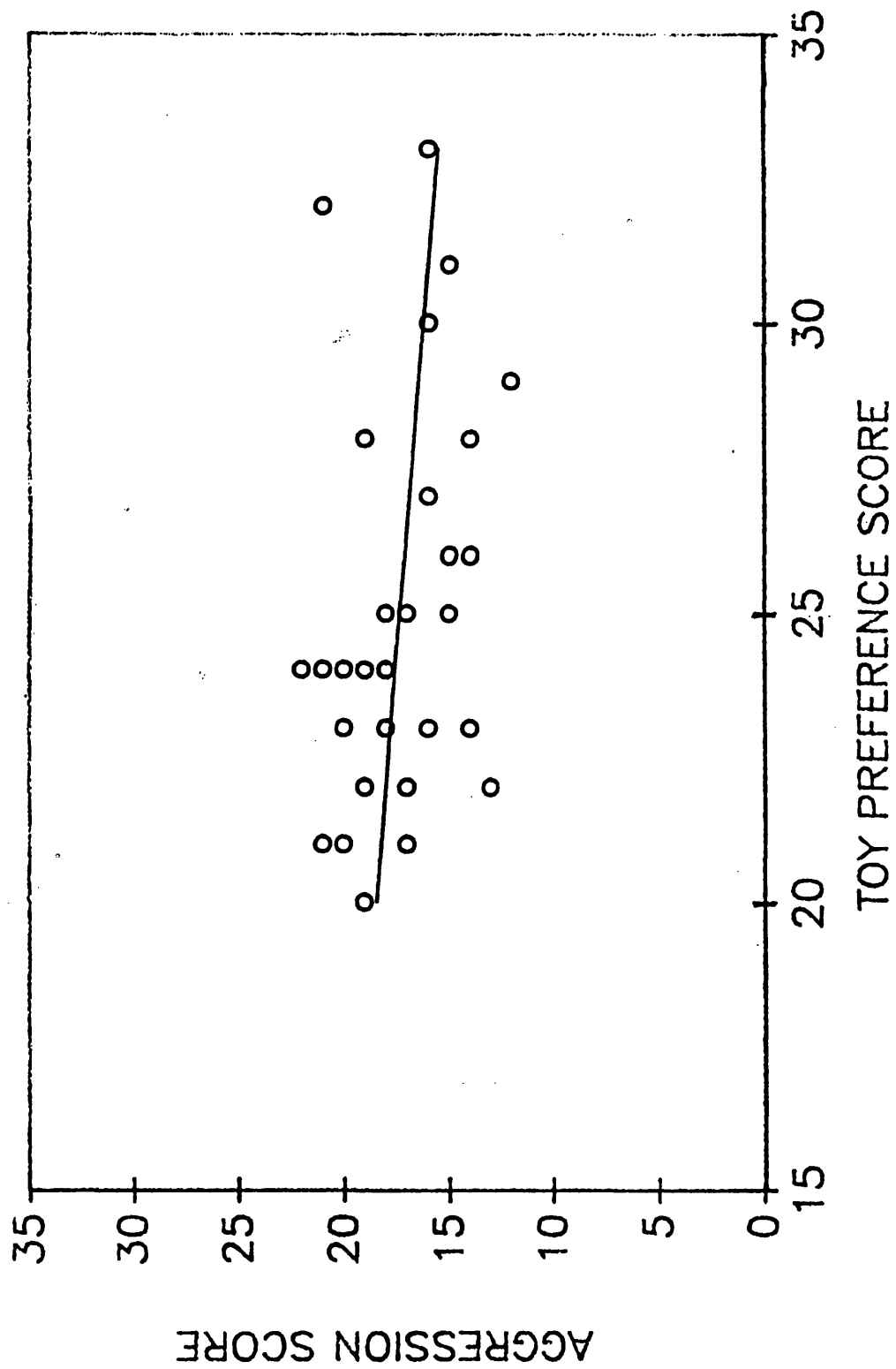


FIGURE 8: SCATTERPLOT SHOWING GIRLS' TOY PREFERENCE AND AGGRESSION SCORES



correlation for boys and girls scores combined ($r=.36, df=58, p<.005$). The positive correlation was also apparent for the boys scores ($r=0.63, df=28, p<.0005$). The correlation between trait aggression and toy preference was not significant for the girls's data ($r=-0.29, df=28, p<.05$ n.s.).

The data support the hypothesis.

HYPOTHESIS 2

That boys will obtain higher aggression scores than girls.

A t-test was performed on the aggression scores of boys and girls. This indicated that there was no difference between the boys and girls scores on the trait aggression inventory ($t=1.59, df=58, n.s.$). The findings do not support the hypothesis.

HYPOTHESIS 3

That boys will have a stronger preference for aggressive toys than girls.

A t-test was performed on the boys' and girls' toy preference questionnaire scores. This revealed that boys have a higher preference for aggressive toys than girls ($t=4.05, df=58, p<.05$). This confirms the hypothesis.

DISCUSSION

This study has shown that, for boys, there is a positive correlation between trait aggression and preference for aggressive toys. Aggressive boys prefer aggressive toys, less aggressive boys prefer non-aggressive toys. Girls' level of trait aggression, however, is not associated with their toy preference. These findings are consistent with Lefkowitz et al's (1977) research with children of this age group. Although a relationship exists between boys' trait aggression and television programme preference, Lefkowitz et al (1977) did not find a similar relationship for girls. They suggest that this is due to socialisation factors which may discourage girls from watching violent television. Similarly, socialisation practices may deter girls from playing with aggressive toys.

Surprisingly, there was no difference between the boys' and girls' trait aggression scores. This finding is contrary to the many other studies that report sex differences in aggression (for review see Maccoby and Jacklin 1980). Various factors could account for the lack of sex difference in the present study. First, aggression was measured using a self-report inventory whereas previous studies used behavioural measures. Possibly the different types of measures yield different results. Girls may obtain low scores on the behavioural measures because they are inhibited from displaying aggressive behaviours. The self-report inventory, however, determines attitudes towards aggression and may tap girls feelings about aggression that are not manifested behaviourally. Furthermore, the child's responses on

the aggression inventory are private which may decrease inhibitions and desire for social acceptance. The lack of sex difference in aggression could also be explained by society's attitude to aggression. The studies reviewed by Maccoby and Jacklin (1980) were conducted in the 1970's. The results of the present research conducted in 1990 may reflect the impact of sexual equality over the past two decades. This equality effect may have been brought about by an increase in girls aggression or a decrease in boys' aggression levels.

The results of this study confirm the hypothesis that boys have a stronger preference for aggressive toys than girls. This finding supports the results of other studies on toy preference (e.g. Wegener-Spohring, 1985) that boys engage in aggressive play more frequently than girls and play with aggressive toys.

It is apparent that there is a relationship between trait aggression and strong preference for aggressive toys. Aggressive children may select aggressive toys because of their aggressive disposition. This, in turn, could influence the way that they behave with the toys, hence the finding that aggressive children are more aggressive with aggressive toys than non-aggressive children (Wolff, 1976, Watson and Peng 1990, Bonte and Musgrove 1943). Some researchers of aggressive toys (e.g. Turner and Goldsmith 1976) have concluded that aggressive toys are the causal variable in the relationship. The present study, however, implicates trait aggression as the causal variable and aggressive toys as the dependent variable.

The results of the present research have implications for research on children's play with aggressive toys. They show that children's play is a complex interaction between individual differences in aggression and situation variables. When observing children's play, particularly with aggressive toys, it is essential to account for trait aggression and toy preference. These variables are important determinants of the behaviours elicited by aggressive toys.

In summary, the findings show that

1. Aggressive boys have a strong preference for aggressive toys.
2. Non-aggressive boys prefer non-aggressive toys.
3. Boys have a stronger preference for aggressive toys than girls.
4. There are no sex differences in trait aggression.

STUDY 4: AROUSAL AND TOY PREFERENCE

The results of the previous experiment indicated a positive relationship between trait aggression and preference for aggressive toys. Many psychologists have demonstrated that arousal is an important determinant of aggression (e.g., Berkowitz 1960, Tannenbaum, 1971). Arousal refers to an increase in autonomic activity which increases the likelihood of aggression occurring (Berkowitz 1969). As mentioned previously, although there are various antecedents of arousal the most appropriate to aggressive play are frustration (Vasta and Copitch 1981), and exercise-induced arousal (Zillman, Katcher and Milavsky, 1972).

Frustration has been defined as the interference of a goal-directed behaviour (Dollard et al 1939) which leads to a state of arousal (Berkowitz 1969). The effect of frustration on play has been investigated by Hollenberg and Sperry (1951) who found that frustrated children engage in more aggressive doll play than non-frustrated children. It is likely, therefore, that frustration will increase preference for aggressive toys, when made available. This hypothesis is also based on the findings of Freedman

and Newson (1975) who investigated the effect of frustration on film preference. Frustrated subjects had a greater preference for violent films than the non-frustrated subjects. Similarly, one predicts that frustrated children will have a stronger preference for aggressive toys than non-frustrated children.

The subjects in the exercise-induced arousal group are also predicted to have a higher preference for aggressive toys. Physiologically aroused children may prefer aggressive toys because they wish to play boisterously maintaining their level of arousal. Alternatively, non-aggressive toys may be preferred to facilitate restful play and reduce an uncomfortable arousal state. Based upon the arousal-aggression theory, after physical exercise children will have a stronger preference for aggressive toys than a non-aroused control group.

Boys and girls will participate in the present study. Although there are no hypotheses about sex differences, the effect of gender will be analysed. It will then be possible to determine whether boys' and girls' toy preferences are influenced by arousal.

The subjects in the frustration treatment will be

prevented from completing a puzzle. To ensure that the frustration group and physical-exercise group are aroused, their pulse will be monitored. This is because increased cardiac activity is a symptom of heightened arousal. Furthermore, measuring heart rate is less obtrusive than assessing other physiological activities such as adrenaline excretion.

HYPOTHESES

It was predicted:

1. That arousal (both frustration- and exercise-induced) will increase children's preference for aggressive toys.

METHODS

Subjects

Sixty 7- and 8-year olds (s.d.=2.83). 30 boys and 30 girls from 3 inner London junior schools. All were naive about the purpose of the experiment.

Materials

A 'Boso Pulsemeter' was used which provides a plethysmographic measure of cardiac activity. The meter consists of a small box (2" x 5") and a lead with a clip. The clip has a light on one side and a photosensitive plate on the other side. When the clip is attached to the finger, the photosensitive plate records the amount of light which has shone through the muscle tissue (Hassett 1978). The change in light level indicates the flow of blood through the finger, the less light registered, the greater the blood flow. The pulse displayed on the meter's digital display represents a sample of beats per minute. When the clip is first attached to the finger the pulse meter output changes constantly, after approximately 30 seconds the output becomes stabilised at which point the pulse is recorded.

The other materials include the toy preference questionnaire, a skipping rope and a picture cube puzzle of Red Riding Hood.

Design and Procedure

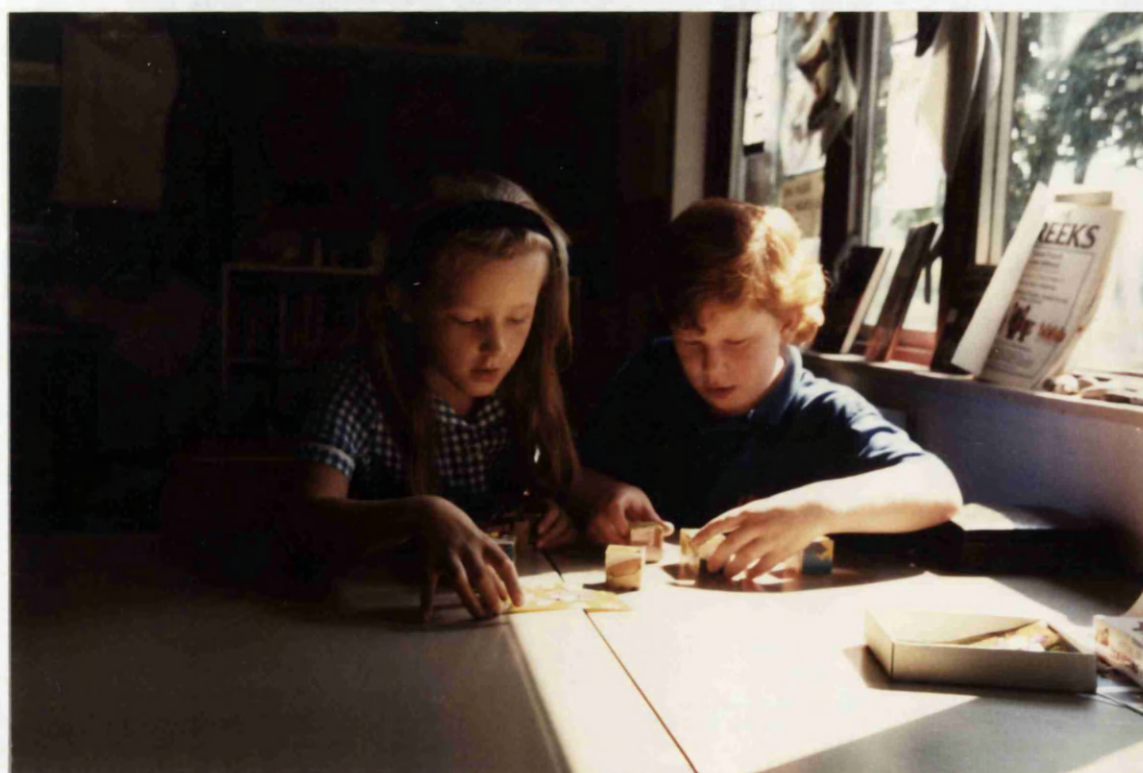
The subjects were divided at random into 3 groups of 10, one control and two treatments (frustration-arousal and exercise-arousal). Gender is a within group factor and the between group factor is treatment (frustration, exercise and no arousal control). This makes a 2 x 3 factorial design with independent groups of subjects.

Each child had a practice session with the pulsemeter a week before the experiment to familiarise them with the instrument. This was done to avoid the possibility that pulse rates might be heightened by anxiety about an unfamiliar object.

The subjects in the frustration-arousal group were randomly assigned to groups of 3 subjects, with either 2 boys and a girl in a group or 2 girls and a boy, there was also a group of 2 subjects to bring the total in this condition to 20 - 10 boys and 10

girls (see Figure 9). Each group was presented with a picture cube puzzle which was difficult for their age group and told to complete the puzzle as quickly as possible. After 3 minutes the experimenter reminded them twice that they were running out of time and that they would not finish if they did not hurry. As they were about to complete the puzzle the experimenter informed the subjects that they were too late and had run out of time. Each subject then had his/her pulse measured and then completed the toy preference questionnaire. Immediately, after completing the toy preference questionnaire the subjects were informed about the purpose of the experiment. They were allowed to play with the picture-cube puzzle and were given a small gift for participating in the study.

FIGURE 9: CHILDREN IN THE FRUSTRATION CONDITION



The 20 subjects (also 10 boys and 10 girls) in the exercise-arousal group were allocated to five sub-groups of 4 subjects with two boys and two girls in each sub-group. Each subject in the sub-group skipped with a skipping rope for 3 minutes, following which their pulse was measured. Afterwards, the subjects completed the toy preference questionnaire.

The control group incorporated 20 subjects (10 boys and 10 girls). The children sat reading for 3 minutes. Each subject's pulse was measured prior to completing the toy preference questionnaire (verbal instructions for all treatments presented in Appendix 11).

RESULTS

The toy preference questionnaire was scored using the same scoring method as used in Study 3. The mean pulse and toy preference scores are presented below.

TABLE 6 PULSE AND TOY PREFERENCE MEANS

	BOYS \bar{X}	GIRLS \bar{X}	BOTH \bar{X}
<u>PULSE</u>			
Frustration	81.8	76.8	79.3
Exercise	98.6	92.3	95.45
Control	66.1	65.9	66.00
<u>TOY PREFERENCE</u>			
Frustration	24.8	24.6	24.7
Exercise	28.6	26.3	27.45
Control	28.5	20.9	24.7

Pulse scores were obtained to confirm the effectiveness of the treatment conditions. It is evident from the analysis of variance of sex x condition ($F(1,54)=19.07, p<0.025$) on Table 7 and Figure 10 that the arousal manipulation was successful.

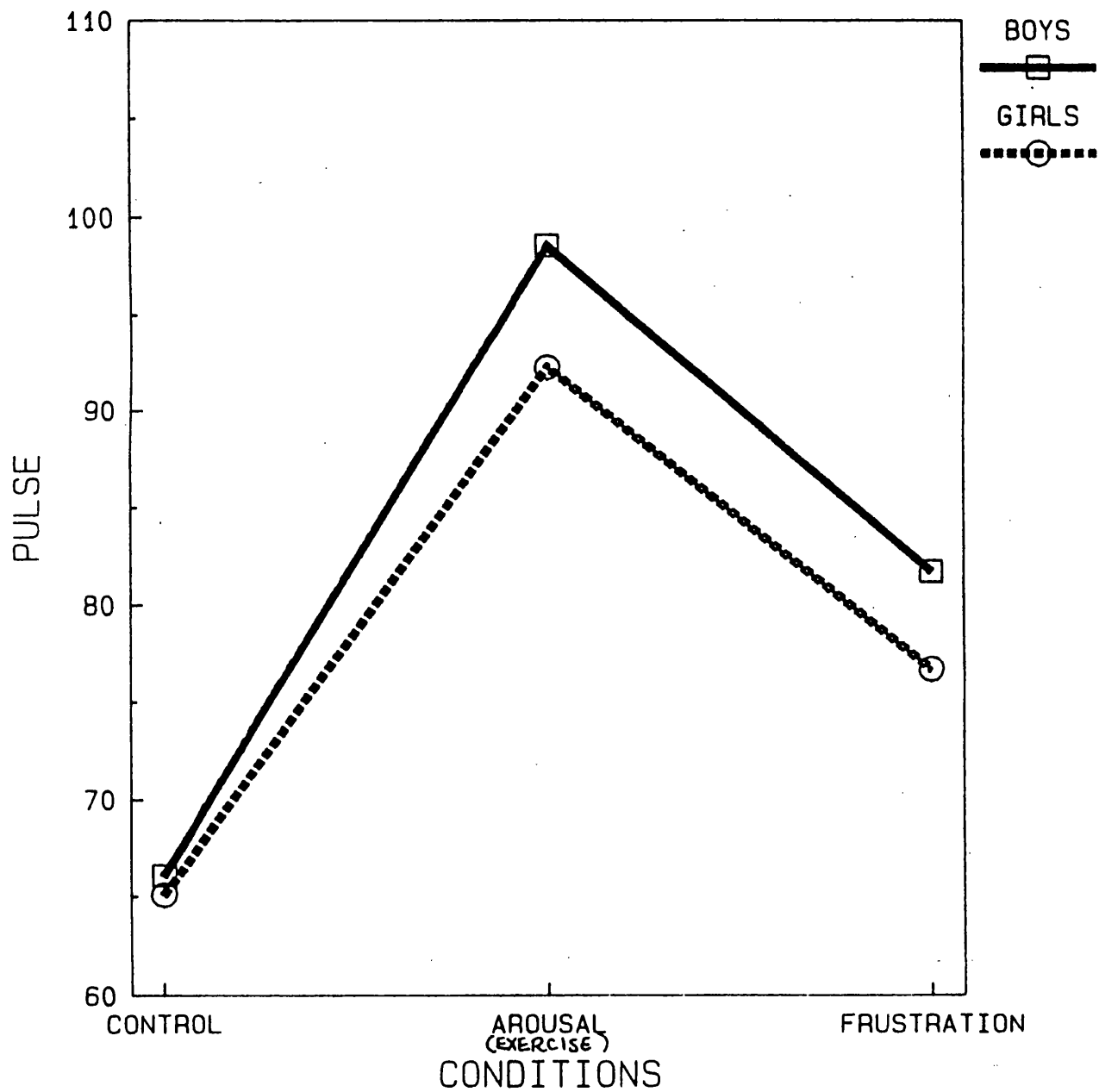
TABLE 7 ANALYSIS OF VARIANCE PULSE

SOURCE	df	SS	MS	F	p
SEX	1	220.41	220.41	0.96	n.s.
CONDITION	2	8700.1	4350.05	19.07	<.025
INTERACTION	2	103.24	51.62	0.23	n.s.
ERROR	54	12317.5	228.10		

TABLE 8 ANALYSIS OF VARIANCE TOY PREFERENCE

SOURCE	df	SS	MS	F	p
SEX	1	170.02	170.02	6.55	<.025
CONDITION	2	100.83	50.41	1.94	n.s.
INTERACTION	2	145.43	72.71	2.8	n.s.
ERROR	54	1401.896	25.96		

FIGURE 10: GRAPH SHOWING MEAN PULSE SCORES
OF THE AROUSAL AND CONTROL GROUPS



BOYS 66.1
GIRLS 65.1

98.6
92.3

81.8
76.8

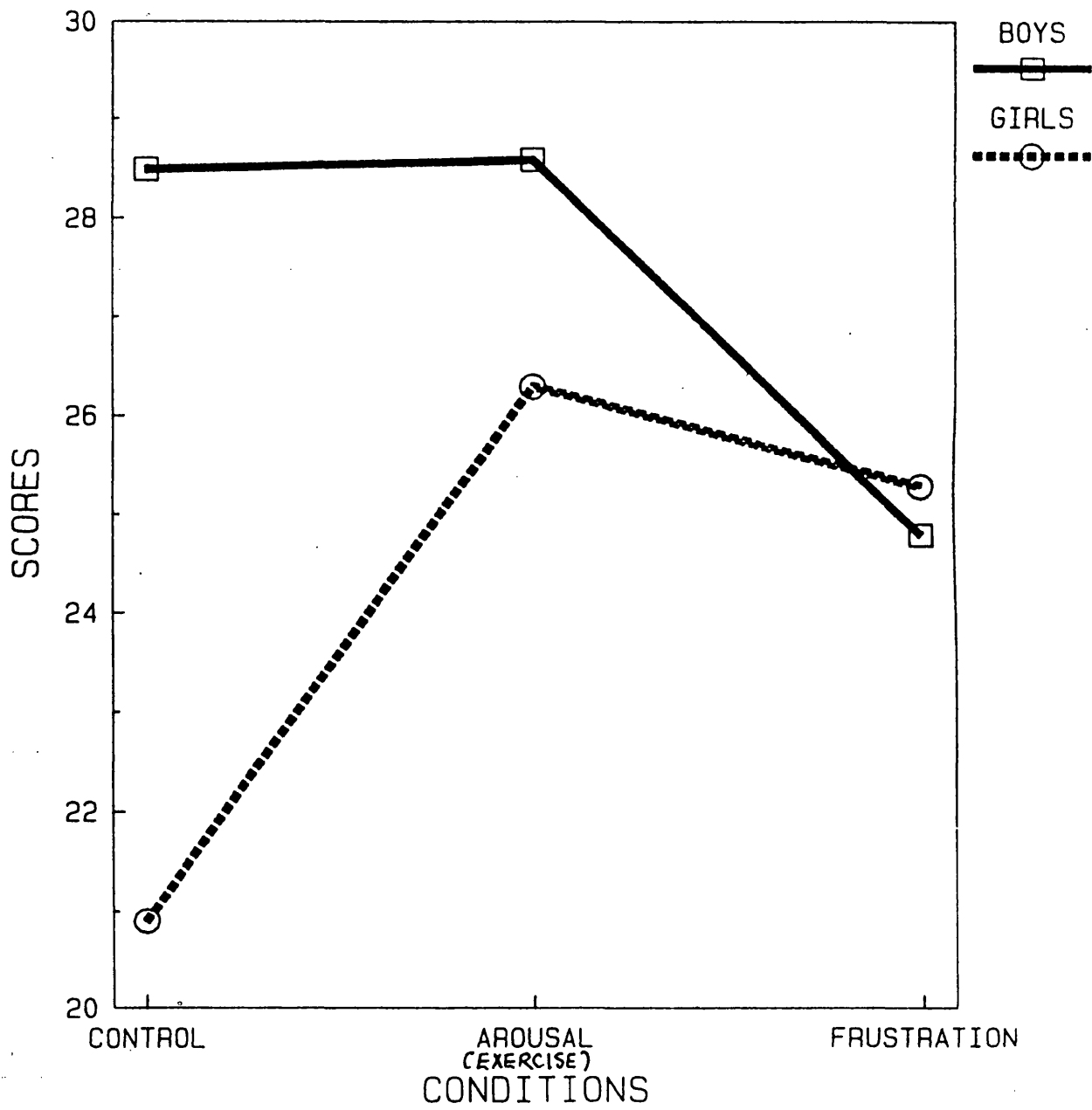
JJ1

A Pearson Product Moment correlation was conducted on the boys' and girls' toy preference and pulse scores. The correlation obtained was significant and positive ($r=0.86, df=58, p<.0005$) indicating that high arousal is associated with strong preference for aggressive toys and low arousal is associated with preference for non-aggressive toys.

The effects of both frustration and exercise on toy preference were analysed using analysis of variance. The toy preference scores for the treatment and control conditions are shown in Figure 11. The analysis of variance of toy preference scores (sex x condition) indicated an effect for gender ($F(1,54)=6.55, p<.025$) but not for treatments (see table 8).

As there was a main effect for gender, a simple main effects test (Howell, 1987) was performed which indicated a sex difference in toy preference scores in the control group ($F(1,37)=11.12, p<.025$ see Table 9). An ANOVA was performed on the girls' toy preference scores. This showed an interaction between conditions and toy preference scores ($F(1,27)=5.29, p<.025$ see Table 10). To determine which treatment had the greatest effect on toy

FIGURE 11: GRAPH SHOWING MEAN TOY PREFERENCE SCORES OF THE AROUSAL AND CONTROL GROUPS



BOYS 28.5
GIRLS 20.9

28.6
26.3

24.8
25.3

TABLE 9 SIMPLE MAIN EFFECTS
EFFECT OF GENDER ON CONTROL AND AROUSAL

SOURCE	df	SS	MS	F	p
GENDER AT 1	1	288.8	288.8	11.12	<.025
GENDER AT 2	1	26.45	26.45	1.02	n.s.
ERROR	37	960.52	25.96		

TABLE 10 ANALYSIS OF VARIANCE GIRLS' TOY PREFERENCE

SOURCE	df	SS	MS	F	p
CONDITION	2	152.47	76.24	5.29	<0.25
ERROR	27	389.40	14.42		

preference a Jonckheere trend test was performed. This confirmed that highest scores were obtained by the exercise-arousal group, lower scores were obtained by the frustration group and the lowest scores were obtained by subjects in the control group ($s=152, p<.01$). The girls' data confirm hypothesis 1 and 2 that the frustration and exercise groups will have a higher preference for aggressive toys than the non-aroused control group.

Arousal does not appear to influence boys' toy preference. The lack of difference in toy preference between the treatment and control groups could be due to a 'ceiling effect'. The boys obtained high toy preference scores in all groups which means that there is less room for an increase in toy preference. The ceiling effect therefore reduced the efficacy of the independent variable.

DISCUSSION

The hypothesis that arousal increases children's preference for aggressive toys was supported by the girls' data but not by the boys' data. Girls in the both arousal conditions exhibited higher preference for aggressive toys than the girls in the control group. A ceiling effect was evident in the boys' scores which could explain the lack of treatment effect. That is, boys entered the experiment with a pre-existing preference for aggressive toys. This meant that there was little room for an increase in such preference as a result of the independent variables in this study. Trend analysis of the girls' scores showed that the exercise-arousal group had the highest preference for aggressive toys and the control group had the least preference for these toys. The possible explanations for these results are now considered.

Possibly, girls perceive aggressive toys as a means to reduce their arousal-induced aggression. Girls may believe that play with aggressive toys has a cathartic effect. This assumes that girls associate aggressive play with real aggression. There is evidence that females do perceive behaviour with

aggressive toys as real aggression (Connor 1989). It is likely, therefore, that the girls in the present study also associate aggressive toys with real aggression and therefore select these toys to display their aggression. Boys, however, are more familiar with aggressive toys, know that aggressive play is distinct from real aggression (Connor 1989). Boys, therefore, do not associate arousal-induced aggression with aggressive play. This could explain why the boys' toy preference scores were not influenced by the treatments.

An alternative explanation is that the girls in the control group were inhibited from selecting toys that are traditionally considered 'boys toys'. When physiologically aroused, however, the girls' inhibitions decrease. The girls then wish to play with toys that enable them to be boisterous. As it is acceptable for boys to play boisterously and they often engage in this sort of play, their arousal level has little impact on their selection of toys with which to play.

Interestingly, the girls in the exercise-arousal group had a higher preference for aggressive toys than the girls in the frustration group. It is

possible that the exercise-arousal group became excited and energetic from skipping and wished to play with toys which would maintain this level of arousal. The girls' observation of boys' play may have led them to believe that aggressive toys facilitate noisy and rowdy play. This toy choice possibly had nothing to do with aggression but with an increase in desire to play boisterously. Subjects in the frustration group, however, were experiencing aggression and preferred aggressive toys as the subjects wanted to display their aggression. This suggests that girls perceive aggressive toys as serving two functions. First, to facilitate boisterous aggressive play, second as a means to display and possibly reduce aggression levels.

To summarise, girls' preference for aggressive toys is influenced by arousal. The ceiling effect apparent for the boys data makes it difficult to determine whether arousal effects boys' toy preference.

To conclude:

- Arousal increases girls' preference for aggressive toys.
- Boys' toy preference is not influenced by arousal.

STUDY 5: PRIMING AND TOY PREFERENCE

This study looks at the effect of aggressive priming on children's preference for aggressive toys.

Associative priming theory explains the effect of an aggressive prime on subsequent behaviour. Berkowitz (1984) argues that aggressive primes can activate associated thoughts and ideas. Thus, a violent film primes aggressive ideas and emotions. These aggressive thoughts remain salient after viewing the film because of increased activity along the associated pathways.

Many studies have demonstrated the influence of aggressive primes. Berkowitz, Parker and West (1973) found that children who read a war comic book subsequently selected aggressive words to complete a sentence. The subjects who had read a neutral comic book chose the non-aggressive words. Similarly, Goldstein (1972) established a relationship between aggressive literature and film preference. Students exposed to an aggressive story then selected an aggressive film. Lovaas (1961) demonstrated the effect of an aggressive prime on the toy preference of 5 year old children. Children who viewed a violent

television programme chose to play with the aggressive toy. The non-aggressive toy was preferred by the children who had watched a non-violent television programme.

The present study looks the effect of an aggressive prime on the toy preference of 7 and 8 year old children. It is expected that the prime, an aggressive story, will activate aggressive ideas making aggression a dominant theme. This should be reflected in an increase in preference for aggressive toys.

Although the effect of gender will be analysed, there are no predictions on sex differences.

HYPOTHESIS

It is predicted that children exposed to an aggressive prime will have a stronger preference for aggressive toys than children exposed to either a non-aggressive prime or in the unprimed control group.

METHODS

Subjects

Sixty 7 and 8 year olds (s.d.=.23). 30 boys and 30 girls from 2 inner London Junior schools. 10 boys and 10 girls were randomly assigned to each condition.

Design

The 3 conditions (control, aggressive story and non-aggressive story) were combined factorially with gender in a 3 X 2 design.

The stories represent the independent variable and toy preference the dependent variable.

Materials

Stories

The aggressive and non-aggressive stories were selected from a currently popular children's novel (Lewis: The Lion, the Witch and the Wardrobe) and matched for word number (see Appendix 12). Both

stories were recorded by the same male reader onto audio cassette tape and were 4 minutes and 10 seconds duration.

Toy Preference Questionnaire

Details are provided in the previous studies.

Procedure

The subjects were randomly assigned to conditions (by drawing names from a hat). The 20 subjects in each condition were allocated to sub-groups of 5 subjects (either 3 boys and 2 girls in a group, or 3 girls and 2 boys).

Each sub-group joined the experimenter in a quiet room in the school library. The subjects in the aggressive and non-aggressive story conditions listened to the recorded story for 4 minutes and 10 seconds and then completed the toy preference questionnaire.

The subjects in the control group continued participating in their normal school activities and then completed the toy preference questionnaire.

Finally, the subjects were asked questions about war and war play. The questions and their responses were recorded verbatim and presented in Appendix 13.

RESULTS

The table below shows the mean toy preference scores for boys, girls and all subjects.

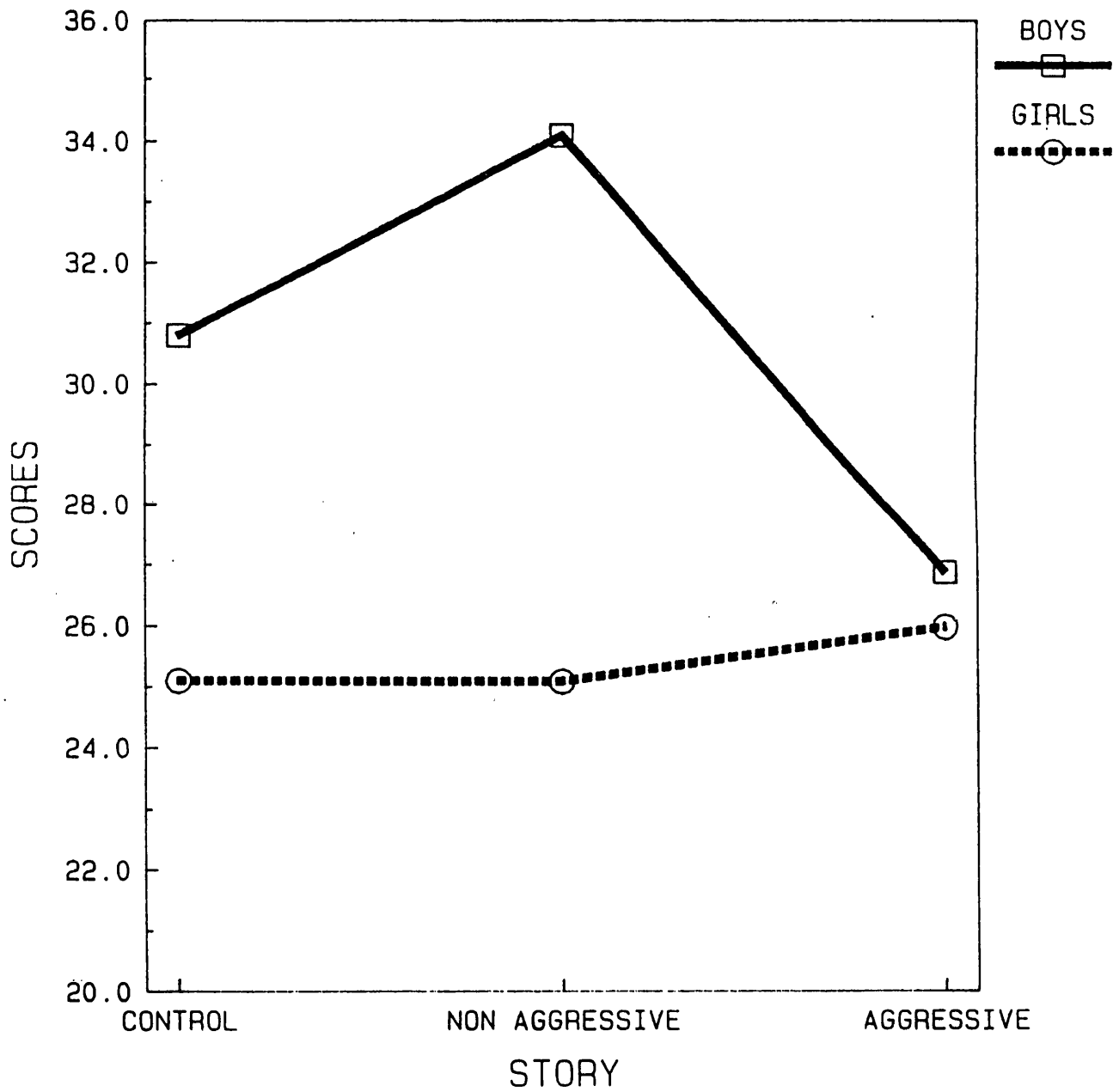
TABLE 11 TOY PREFERENCE MEANS

	BOYS	GIRLS	BOTH
CONDITION	\bar{X}	\bar{X}	\bar{X}
AGG. STORY	26.9	26.0	26.45
NON-AGG. STORY	31.1	25.1	28.1
CONTROL	30.8	25.1	27.95

A 3 x 2 analysis of variance (condition x gender) was conducted (see Table 12) on the toy preference scores. This indicated an effect for gender ($F(1,54)=14.19, p<.01$) but no effect for treatment. To investigate the effect for gender, a simple main effects test was performed (see Table 13) which indicated a difference in the boys' and girls' toy preference scores in the control and non-aggressive story conditions. The boys' preference for aggressive toys is significantly higher than girls' scores in the control and non-aggressive story conditions but is not significantly different in the

aggressive story condition. This is illustrated in
Figure 12.

FIGURE 12: GRAPH SHOWING MEAN TOY PREFERENCE SCORES
OF THE PRIMED AND CONTROL GROUPS



BOYS 30.8
GIRLS 25.1

34.1
25.1

26.9
26

JJ3

The boy's data was analysed separately but no effect of treatment was demonstrated (see Table 14). There is, however, a significant difference between the boys' toy preference scores in the aggressive and non-aggressive story conditions ($t=2.58$, $df=18$, $p<.01$) where the boys in the non-aggressive story condition had higher toy preference scores than the boys in the aggressive story condition. The boys in the control group also had higher toy preference scores than the boys in the aggressive story condition ($t=2.16$, $df=18$, $p<.025$). This finding suggests that listening to an aggressive story decreases boy's preference for aggressive toys. Girl's toy preference is not influenced by the treatments.

Results relating to hypothesis

It was predicted that children exposed to an aggressive prime will have a stronger preference for aggressive toys than children exposed to either a non-aggressive prime or in the unprimed control group. The hypothesis is not supported by the data. Girls' toy preference is not influenced by an aggressive prime. The aggressive prime reduced boys' preference for aggressive toys.

TABLE 12 ANALYSIS OF VARIANCE TOY PREFERENCE

SOURCE	df	SS	MS	F	p
CONDITIONS	2	33.30	16.65	0.89	n.s.
GENDER	1	264.60	264.60	14.19	<.01
INTERACTION (Gender X Condition)	2	81.90	40.95	2.20	n.s.
ERROR	54	1007.20	18.65		

TABLE 13 ANALYSIS OF VARIANCE BOYS' TOY PREFERENCE

SOURCE	df	SS	MS	F	p
CONDITION	2	25001.43	12750.67	0.45	n.s.
ERROR	27	762149.40	28227.76		

TABLE 14 SIMPLE MAIN EFFECTS. EFFECT OF GENDER ON
CONTROL (1) AND NON-AGGRESSIVE STORY (2) CONDITIONS

SOURCE	df	SS	MS	F	p
GENDER AT 1	1	162.45	162.45	8.71	<.01
GENDER AT 2	1	180.00	180.00	9.65	<.01
ERROR	37	690.05	18.65		

DISCUSSION

The priming treatments did not have the hypothesised effect on children's toy preference. The girls' preference for aggressive toys was not influenced by the aggressive prime. Boys' toy preference decreased as a result of the aggressive prime. Possible explanations for these findings follow.

The aggressive prime may not have been effective for girls because of the content of the story. The main character is a boy who saves his sister by killing a wolf. It is possible that the girls did not identify with the aggressor but with the girl who is portrayed as defenseless. Thus, instead of priming aggressive ideas, the story may have activated thoughts about fear and helplessness. If so, then as aggression was not the dominant theme, the girls did not particularly want to play with aggressive toys. Furthermore, the aggressive story may have heightened stereotyped attitudes to the acceptability of aggression. That is, boys' aggressive behaviours are socially acceptable, girls are discouraged from behaving aggressively (Connor et al 1978). Therefore, the girls did not want to show a preference for aggressive toys which are associated

with male aggression.

In the previous study, arousal was shown to increase girls' preference for aggressive toys. Two possible explanations for the finding were discussed. First, that girls associate aggressive toys with real aggression. Second that, when aroused, girls want to play boisterous games and select aggressive toys to facilitate this type of play. The results of the present study on aggressive primes help to establish the most likely explanation. The aggressive prime may have had little effect on girls' toy preference because it did not activate aggressive ideas. Alternatively, the story may have generated aggressive thoughts, but girls may not connect these thoughts with aggressive toys and play. This suggests that, contrary to the first explanation, girls do not associate aggressive toys with real aggression. Thus, it is more likely that girls select aggressive toys because they want to play rowdy games to maintain their increased arousal level. Further research is required to determine girls' perception of aggressive toys and functions of aggressive play.

In the case of boys, the aggressive prime reduced their preference for aggressive toys. The finding

could be due to the realistic violence portrayed in the story. Although the male character heroically kills the wolf, it is obvious that the boy is terrified. The boys who heard this story may have become over-sensitised to aggression. Furthermore, the story may have generated thoughts which inhibit rather than facilitate aggression. Therefore, the boys avoided toys with aggressive themes.

This experiment was conducted in 1991, during the Gulf War. Possibly children's aggression networks were already primed by the extensive media coverage of the war. The boys may already have had an increased desire for aggressive toys thus reducing the efficacy of the independent variable. Support for this claim is provided by anecdotal data. The subjects in the control group of the present study had significantly higher toy preference scores ($t=1.79$, $p<.05$) than the subjects in the control group in Study 4, conducted in 1989. This suggests preference for aggressive toys increased during the Gulf War. Further evidence that war influences children's war play is provided by Bonte and Musgrove (1943). Following the bombing of Pearl Harbour, children in Hawaii often played war games and made aggressive toys out of clay and building blocks. The

frequency of play with aggressive toys increased during war time. It is likely, therefore, that in the present study the Gulf War increased preference for aggressive toys, thus the primes were ineffective. Alternatively, the reality of war may have meant that boys associate aggression with emotions such as fear and anxiety. The aggressive prime may have activated these thoughts, thus making aggression and aggressive play undesirable. Some of the comments during the interviews with children support this explanation. When asked about playing war one boy said "it's dangerous, the bombs might drop and you'll be playing outside and if there's gas you'll have to wear gas masks" (see Appendix 13). It appears that when aggression verges on reality boys then do not want to play war games or play aggressively.

To summarise, the findings of this study are contrary to those which report an increase in preference for aggressive material following an aggressive prime (e.g. Lovaas 1961, Goldstein 1972). An aggressive story was used as the aggressive prime in the present study, Lovaas (1961), however, demonstrated a priming effect with a violent television programme. It is possible that the contrasting results were due to the difference in priming stimuli. It is also possible

aggressive prime in the present study was minimised by the concurring Gulf War. Furthermore, 7 and 8 year old children participated in the present study whereas Goldstein (1972) investigated students and Lovaas (1961) looked at 5 year old children. Thus, age differences may also account for the findings being inconsistent with previous research.

The relationship between aggressive primes and toy preference requires further investigation. It is important, however, to conduct this research during a period when war is not a salient feature in children's lives.

To conclude:

- An aggressive prime does not influence girls' toy preference.
- An aggressive prime decreases boys' preference for aggressive toys.

GENERAL DISCUSSION

The series of studies indicate that a complex relationship exists between aggression and toy preference. The preliminary study, which investigated children's perception of aggressive toys, demonstrated that toy weapons, characters and vehicles are equally likely to elicit aggressive play. Furthermore, aggressive toys are perceived by 7 and 8 year old boys as more enjoyable than non-aggressive toys. Another important finding was that boys with high trait aggression have a strong preference for aggressive toys. Aggression caused by arousal does not influence boys' toy choice, whereas an aggressive prime decreases preference for aggressive toys. Girls' toy preference is not, however, associated with trait aggression but arousal increases their preference for aggressive toys. The theoretical implications of these findings and directions for future research are now discussed.

Trait Aggression and Toy Preference

Individual differences in trait aggression are associated with toy preference. This is consistent with findings from research on television programme

preference, violent television programmes are preferred by aggressive individuals (Friedman and Johnson 1972, Lefkowitz et al 1977). Furthermore, the finding supports Bonte and Musgrove's (1943) report that aggressive children participate in war play more frequently than non-aggressive children. It is apparent that the present findings contradict the proposed aggressive toys -> aggression relationship (Frost 1986). Instead they indicate that the cause-effect relationship is in the opposite direction, aggression -> aggressive toys. That is, the extent to which aggressive toys cause or elicit aggression depends upon the child's pre-existing aggressiveness. An aggressive child selects aggressive toys and engages in more aggressive play than a non-aggressive child. Preference for aggressive toys is, in part, a symptom of trait aggression. Whether aggressive toys have a role in causing trait aggression is unclear.

The relationship between trait aggression and toy preference has a bearing on the conclusions of previous empirical studies, reviewed earlier. A number of researchers (Turner & Goldsmith 1976, Feshbach 1956, Mendoza 1972) report that aggressive toys elicit inappropriate aggression. As the

aggressive characteristics of the child determine aggressive play, it is important to measure this prior to exposure to aggressive toys. Unfortunately, the studies did not account for individual differences in aggression. Thus it is not possible to determine whether the observed aggressive behaviour was due to the toy or due to the child's pre-existing aggressiveness. Further studies are required to establish whether aggressive toys elicit inappropriate aggression in both aggressive and non-aggressive children.

Watson and Peng (1990) reported a relationship between toy gun ownership and real aggression. This could indicate that owning toy guns contributes to the development of aggression. The present findings, however, support a contrary viewpoint. As aggressive children are more likely to own toy guns than non-aggressive children, toy gun ownership is not a causal factor but a function of trait aggression. Furthermore, if aggressive toys shape aggression, one might expect low levels of trait aggression in children who do not play with aggressive toys. In the present research, however, girls expressed a preference for the non-aggressive toys yet they are as aggressive as boys who prefer aggressive toys.

The present findings, on the relationship between trait aggression and aggressive toy play, also have implications for the traditional learning paradigm. This simple model is inadequate since it fails to take account of subject variables. Aggressive toys may act as stimuli to elicit aggressive responses in aggressive children. Non-aggressive children may respond differently to aggressive stimuli. However, further research is required to determine whether exposure to aggressive toys plays a role in the shaping of aggressive behaviours and attitudes. Wider factors, such as parental rearing styles (Green 1980) would need to be accounted for as they play a significant role in the development of aggression.

Evidently, the child is not passive in the play situation. The child's aggressiveness determines the type of toy to be played with and the type of play elicited. An alternative procedure, which uses neutral toys, might enable one to disentangle the influence of the child compared to the influence of the toy. Such a study would demonstrate how the child assimilates neutral toys to fit in with his/her play scenario. For example, an aggressive child may make toy guns out of construction materials. Thus, one could determine to what extent toy play is child-

led. Bonte and Musgrove's (1943) finding that children exposed to war make armaments out of building bricks, suggests that aggressive play is child-led rather than toy-led.

Arousal and Toy Preference

Contrary to prediction, arousal did not increase boys' preference for aggressive toys. This could be due to a ceiling effect, as the boys in all experimental groups had a high preference for aggressive toys. Alternatively, the treatment may not have been effective. An incidental observation during the arousal condition suggests, however, that the children were physiologically aroused which was reflected in their increased heart rate. Thus, it is apparent that boys' aggressive toy play is more a function of their trait aggression than their arousal level.

Girls' toy preference is, however, influenced by their arousal level. Much of the developmental socialization literature (e.g. Connor et al 1978) demonstrates that girls are socialised to be non-aggressive. Physiological arousal, however, may reduce their inhibitions and facilitate the girls'

latent aggression. The aggressive toys present an opportunity to express aggression and are thus preferred to the non-aggressive toys.

Girls in both the frustration and exercise-induced arousal groups showed a strong preference for aggressive toys. This provides support for the arousal-aggression theory in which an increase in physiological arousal leads to an increase in aggression. The findings were obtained irrespective of whether the arousal was exercise- or frustration-induced. Thus, arousal is the crucial factor which is more important than the means of arousal.

The girls' behaviour was also consistent with previous research on the effect of frustration on aggressive doll play (Hollenberg and Sperry 1951), and film preference research in which subjects who had been frustrated had a higher preference for violent films than non-frustrated subjects (Freedman and Newson 1975).

Potts et al's (1986) concluded from their research that aggressive toys elicit aggression. Jenvey (1988) criticised this on the basis that the children had been exposed to television programmes which were

arousing. The aggression observed was, therefore, caused by increased arousal not by the aggressive toys. Jenvey's re-interpretation of the results is supported by the present research. As there is a relationship between arousal and aggressive play, it can be assumed that the television aroused children and increased their aggression. The subsequent play with aggressive toys is thus, in part, due to the heightened arousal. The impact of the toys can not be determined as they were confounded with the influence of the television. Future research in this area needs to isolate the effect of arousal in order to establish the true impact of aggressive toys on children's behaviour.

Priming and Toy Preference

The present findings do not support the widely-held view that aggressive primes activate the aggression network (e.g. Josephson, 1987). The aggressive prime had the opposite effect in that it decreased boys' preference for aggressive toys. Girls' toy preference was not influenced at all by the aggressive prime. These findings are not consistent with other studies in this area where aggressive primes increase preference for aggressive films (Goldstein 1972),

aggressive words (Berkowitz et al 1973) and aggressive toys (Lovaas 1961). Possibly, this was because the 7 and 8 year old children in the present study were younger than the college students in Goldstein's (1972) study and older than the 5 year old children in Lovaas' (1961) study. Alternatively, the prime may not have been sufficiently potent, in which case this study needs to be repeated using a different aggressive story. The efficacy of the prime may have been reduced as the study was conducted during the Gulf War. The extensive media coverage of the war may have sensitised children to violence which inhibited their desire of aggressive toys. To determine whether the war reduced the efficacy of the independent variable, it would be necessary to repeat this study during peace time, or to measure children's media exposure during the war and covary this with toy preference. This study shows the importance of controlling for wider environmental stimuli and the relative salience of aggressive primes.

If the child's prevailing environment is influential, then it is possible that the child's experience during war time may serve as an aggressive prime. Incidental evidence may be supplied by investigating

the sale of military toys during the Gulf War. Unfortunately, it was not possible to obtain sufficient data to adequately test this hypothesis. However, the sales of G.I. Joe (a toy American soldier) increased by 69.9% (Hasbro, 1991) during the period August 1990 (when Iraq invaded Kuwait) and January 1991, compared with the period August 1989-January 1990 when there was no war. This suggests that during a war children want to play with replicas of military characters that they may have seen in the media.

Bonte and Musgrove (1943) also report an increase in children's war play during a war. They observed children's war play in Hawaii after the bombing of Pearl Harbour. The incidence of war play increased in all the 11 kindergartens studied. Boys most often participated in the war games, playing predominantly at combat, using sticks for bayonets. The girls made armaments out of modelling clay, but were mostly interested in the less aggressive aspects of war and built hospitals and shelters. Bonte and Musgrove noted that, although the play was at times very aggressive, there was no evidence of hostility or fear. The war play even encouraged positive values, including cooperativeness and humanitarianism. They

argue that war play is 'another normal manifestation of the effects of environmental stimuli' (pg 198). It is apparent that children tailor their games according to what is happening in their environment. Playing at war may help children come to terms with new and frightening situations. War play permits the child to express interest in war and to express aggression. Bonte and Musgrove (1943) conclude that adults should not suppress war play as there was evidence that, after teacher intervention, war play becomes overstimulating and destructive.

The results of the study on the comparative aggressiveness of toys demonstrate the need to include a variety of toys in a definition of aggressive toys. Although children are most likely to play fighting with military type toys, fantasy, medieval and space-age toys also elicit play fighting. Further research is required to determine what aspects of toys elicit fighting behaviours, for example the number of weapons, association with television programmes and, or the realism of the toy. The extent to which a toy presents a scenario for the child may depend on how didactic the toy is. A toy with an explicit function may determine how the child plays with the toy. This suggests that play is toy-

led. However, when a child does not have access to readily assimilable toys, s/he creates his/her own toys, demonstrating that play is child-led.

Gender and Aggression

There was no difference in the boys' and girls' level of trait aggression in the present research. This contradicts previous studies which report that boys are more aggressive than girls (Maccoby and Jacklin 1980). The type of aggression measure used may account for this discrepancy. A self-report questionnaire which measures attitudes towards aggression was employed in the current research whereas previous studies have used behavioural measures of aggression. Possibly girls gain higher scores on the self-report measure than the behavioural measure as they are inhibited from displaying aggressive behaviours. Further research is required to determine the extent to which the type of measures used influence gender differences in trait aggression.

The finding that boys have a higher preference for aggressive toys than girls supports the literature on toy choice (e.g. Wegener-Spohring 1985). Children's

toy preference tends to reflect society's view of sex-appropriate roles. Boys, therefore, choose toys which permit boisterous play whereas girls select toys which facilitate imitation of domestic scenarios. Children's preference for sex-appropriate toys does not, however, necessarily reflect or determine their sex-role identity (Brush and Goldberg 1978). For example, a girl who shows a high preference for dolls is not necessarily going to be more feminine than a girl who prefers cars. This is supported by the finding that girls are as aggressive as boys, despite the fact that they rarely play with aggressive toys.

Physiological arousal increases girls' preference for aggressive toys. The higher the arousal, the more likely it is that an aggressive toy will be selected. Boys, however, already have a high desire for aggressive toys, thus arousal does not influence their toy choice. The finding provides information on girls' attitudes towards aggressive play. Girls are usually inhibited from playing with aggressive toys. They are perceived as boys' toys which encourage aggression. Heightened arousal, however, decreases these inhibitions and aggressive toys are viewed as a means to play aggressively. It is not clear whether

girls associate aggressive toys with real aggression or with play aggression. Connor's (1989) research on sex differences in perceptions of aggressive play indicates that females view aggressive play as real aggression. This implies that the girls in the present study wanted to play with aggressive toys in order to display real aggression. Alternatively, girls may associate aggressive toys with boisterous play and select these toys in order to decrease arousal. Research which confirms the latter explanation, would indicate that there are age differences in females' perceptions of aggressive play.

Limitations of Methods

There are a number of factors which determined the methods used in this series of studies. First, as schools are the best source of children, it was essential to obtain the teacher's permission. As young children are involved, the materials had to be approved before they could be administered to the children. Thus, questionnaires and materials which were considered unsuitable had to be amended or substituted with a more acceptable measure. For example, a peer-rating measure of aggression is the

most common tool to measure trait aggression. This method requires each child to consider which of his/her peers are the most aggressive. The process may sensitise children to others' aggression and have a negative affect on the relationship between peers. Fears about whether this measure is ethical were confirmed as teachers refused to approve this measure. They argued that parental permission would have to be obtained, which would have resulted in only investigating volunteers who may not be representative of the population. Thus, the Sear's self-report measure was used instead as it was acceptable to the teachers, particularly as confidentiality was assured.

The story selected as the aggressive prime was also subject to approval. Teachers were shown a number of stories, many of which were very aggressive. The story used in the priming study was the only material accepted as being suitable for 7-8 year olds. A more aggressive prime may have had a greater impact on toy preference, yet it was not possible to expose children to this material.

In the arousal study, children in the frustration task were prevented from completing a puzzle. It was

possible that they may have been left feeling disappointed or inadequate. Therefore, after the task the purpose of the experiment was explained to them. Without exception, the children found it amusing that the experimenter had intentionally prevented them from completing the puzzle. Each child was also given a small gift for participating in the study.

Prior to each study, the experimenter established an informal relationship with the sample of children, in order to gain their trust and confidence. The class was visited a number of times and the experimenter spent time with each pupil listening to him/her read. The experimenter was also known by her christian name so as to distinguish her from a teacher. As the experimenter was familiar with the children prior to the studies, she knew which children were slow readers and was therefore able to give them as much time as they needed to complete the questionnaires.

Finally, it was essential to be flexible as Primary schools tend to have quite strict time-tables which are planned weeks in advance. The experiments were kept as brief as possible and conducted at a time which was least disruptive to the teaching staff.

CONCLUSIONS

Individual differences in aggression determine children's toy choice. This was demonstrated by the positive correlation between trait aggression and preference for aggressive toys. Girls show an increase in preference for aggressive toys when physiologically aroused, yet their toy preference is not influenced by an aggressive prime. An aggressive prime, however, decreases boys' preference for aggressive toys.

The present studies also demonstrate the effect of gender on children's aggressiveness and their toy preference. Socialization experiences account for the observed differences in toy preference, where boys have a higher desire for aggressive toys than girls. There was no difference, however, in boys' and girls' level of trait aggression. This is possibly due to use of a self-report measure which investigates attitudes to aggression rather than behavioural manifestations of aggression.

War was also shown to influence children's aggressive play. When exposed to media coverage of war, children select to play with associated toys. This may be

because the media primes the aggression network making aggressive play salient. Alternatively, children may wish to play with aggressive toys to help them come to terms with a frightening, novel situation.

It is evident that children's aggressive play is influenced by individual differences as well as environmental stimuli, particularly war. Sutton-Smith (1988) argues that 'the toy...is largely insubordinate to pre-existing themes in children's play' (pg 67), and the present studies lend support to this view of play as child-led. Children select aggressive toys as a function of trait and arousal-induced aggression. Thus, the aggressive toy is a tool for aggressive play, rather than the cause of aggression.

REFERENCES

- Abelson, R. (1976). Script processing in attitude formation and decision making. In J. Carroll & W. Payne (Eds.), Cognition and Social Behavior. New Jersey: Lawrence Erlbaum Associates.
- Aldis, O. (1975). Play Fighting. New York: Academic Press.
- Anderson, C.A. (1987). Temperature and Aggression: The ubiquitous effects of heat on the occurrence of human violence. Psychological Bulletin, 106, 74-96.
- Anderson, J. & Bower, G. (1973). Human Associative Memory. Washington DC: V.H. Winston.
- Archer, D. & Gartner, D. (1976). Violent acts and violent times: A comparative approach to post war homicide rates. American Sociological Review, 41, 937-963.
- Aronfreed, J. (1961). The nature, variety and social patterning of moral responses to transgression. Journal of Abnormal and Social Psychology, 63, 223-240.
- Bandura, A. (1965). Influence of model's reinforcement contingencies on the acquisition of imitative responses. Journal of Personality and Social Psychology, 1, 589-595.
- Bandura, A. (1971). Social learning theory of aggression. In J.F.Knutson (Ed.) Control of

Aggression: Implications from basic research.
Chicago: Aldine.

Bandura, A. (1973). Aggression: A Social Learning Analysis. New York: Holt.

Bandura, A. (1977). Social Learning Theory. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). Social Foundations of Thought and Action: A social cognitive theory. Englewood Cliffs, New Jersey: Prentice-Hall.

Bandura, A., Ross, D., & Ross, S. (1963). Imitation of film-mediated aggressive models. Journal of Abnormal and Social Psychology. 66, 3-11.

Bandura, A & Walters, R. H. (1963). Social Learning and Personality Development. New York: Holt.

Bargh, J., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious awareness on impression formation. Journal of Personality and Social Psychology, 43, 437-449.

Baron, R. A. (1977). Human Aggression. New York: Plenum.

Barrett, D. (1979). A naturalistic study of sex differences in children's aggression. Merrill Palmer Quarterly, 25, 193-207.

Beresin, A. R. (1989). Toy War Games and the Illusion

of Two-Sided Rhetoric. Play and Culture, 2, 218-224.

Berkowitz, L. (1964). The effects of observing violence. Scientific American, 210, 35-41.

Berkowitz, L. (1965). The concept of aggressive drive: Some additional considerations. In L. Berkowitz (Ed.) Advances in Experimental Social Psychology, Vol 2. New York: Academic Press.

Berkowitz, L. (1968). Impulse, aggression and guns. Psychology Today, 2, 18-22.

Berkowitz, L. (1969). The frustration aggression hypothesis revisited. In L. Berkowitz (Ed.) Roots of Aggression. New York: Atherton Press.

Berkowitz, L. (1973). Words and Symbols as stimuli to aggressive responses. In J. Knutson (Ed.) Control of Aggression : Implications from Basic Research. Chicago: Aldine.

Berkowitz, L. (1984). Some effects of thought on anti- and prosocial influences of media events: A cognitive-neoassociationist analysis. Psychological Bulletin, 95, 410-427.

Berkowitz, L. (1989). Frustration-Aggression Hypothesis: Examination and Reformulation. Psychological Bulletin, 106, vol 1, 59-73.

Berkowitz, L. & Le Page, A. (1967). Weapons as aggression-eliciting stimuli. Journal of Personality and Social Psychology, vol 7, 2,

- Berkowitz, L. & Alioto, J. (1973). The meaning of an observed event as a determinant of its aggressive consequences. Journal of Personality and Social Psychology ,28, 206-217.
- Berkowitz, L. Parker & West, (1973). Unpublished study reviewed in Berkowitz, L. (1973) Words and Symbols as stimuli to aggressive responses In J.Knutson (Ed.) Control of Aggression : Implications from Basic Research. Chicago: Aldine.
- Berkowitz, L., Parke, R., Leyens, J. P., West, S. & Sebastian, J. R. (1978). Experiments on the reactions of juvenile delinquents to filmed violence. In L. A. Hersov & M. Berger (Eds.) Aggression and Anti-social Behaviour in Childhood and Adolescence. Oxford: Pergamon Press.
- Biblow, E. (1973). Imaginative Play and the Control of Aggressive Behavior. In J. L. Singer (Ed.) The Child's World of Make-Believe: Experimental studies of imaginative play. New York: Academic Press.
- Block, J. H. (1978). Another look at sex differentiation in the socialization behaviors of mothers and fathers. In J. Sherman & F. L. Denmark (Eds.) The Psychology of Women: Future Directions of Research. New York: Psychological Dimensions.

- Block, J., Block, J. H., & Harrington, D. M. (1974).
Some misgivings about the Matching Familiar
Figures test as a measure of reflection
impulsivity. Developmental Psychology, 10, 611-
632.
- Blurton Jones, N. G. (1967). An ethological study of
some aspects of social behavior of children in
nursery school. In D. Morris (Ed.) Primate
Ethology. London: Weidenfeld & Nicholson.
- Boldizar, J., Perry, D & Perry, L. (1989). Outcome
values and aggression. Child Development, 60,
571-579.
- Bonte, E. P. & Musgrove, M. (1943). Influences of war
as evidenced in children's play. Child
Development, 14, 4, 179-200.
- Boyanowsky, E. O., Netwson, D., & Walster, E. (1974).
Film Preferences Following A Murder.
Communication Research, 1, 32-43.
- Brain, P. & Benton, D. (Eds.) (1981).
Multidisciplinary Approaches to Aggression
Research. Amsterdam: Elsevier.
- Buettner, C. (1981). War toys or the organization of
hostility. International Journal of Early
Childhood, 13, 104-112.
- Buss, A. H. (1961). The Psychology of Aggression. New
York: Wiley.
- Buss, A. H. (1963). Physical aggression in relation

- to different frustrations. Journal of Abnormal and Social Psychology, 67, 1-7.
- Buss, A. H. (1966). Instrumentality of aggression, feedback, and frustration as determinants of physical aggression. Journal of Personality and Social Psychology, 3, 153-162.
- Buss, A. H. & Plomin, R. (1984). Temperament: Early Developing Personality Traits. Hillsdale: Lawrence Erlbaum Associates.
- Cahoon, D. & Edmonds, E. (1985). The weapons effect: Fact or artifact? Bulletin of the Psychonomic Society, 23 (1), 57-60.
- Cairns, R. & Green, J. A. (1979). How to assess personality and social patterns: observations or ratings? In R. B. Cairn (Ed.) The analysis of social interactions. Hillsdale, N.J.: Erlbaum
- Cairns, R., Cairns, B., Neckerman, H., Gest, S. & Gariepy, J. (1988). Social Networks and Aggressive Behavior : Peer Support or Peer Rejection. Developmental Psychology, 24, 6, 815-823.
- Caprara, G. (1986). Indicators of aggression: The dissipation-rumination scale. Personality and Individual Differences, 7, 763-769.
- Caprara, G. & Pastorelli, D. (1989). Toward a reorientation of research on aggression. European Jnl of Personality, 3, 121-138.

Carlsson-Paige, N., & Levin, D. (1987). The War Play Dilemma: Balancing needs and values in the early childhood classroom. New York: Teachers College Press.

Carlsson-Paige, N., & Levin, D. (1988). Young Children and War Play. Educational Leadership, Dec 1987/Jan 1988, 80-84.

Carlsson-Paige, N., & Levin, D. (1990). Who's Calling the Shots? How to respond effectively to children's fascination with war play and war toys. Santa Cruz: New Society Publishers.

Carroll, J. C. (1977). The intergenerational transmission of family violence: The long term effects of aggressive behavior. Aggressive Behavior, 3, 289-299.

Christy, P., Gelfand, D. & Hartman, D. (1971). Effects of competition-induced frustration on two classes of modelled behavior. Developmental Psychology, 5, 104-111.

Collins, A., & Loftus, E. (1975). A spreading-activation theory of semantic memory. Psychological Review, 82, 407-428.

Collins, W., Sobol, B., Westby, S. (1981). Effects of adult commentary on children's comprehension and inferences about a televised aggressive portrayal. Child Development, 52, 158-63.

Connor, J., Serbin, L., & Ender, R. (1978). Responses of boys and girls to aggressive, assertive and

passive behaviors of male and female characters. 20
Journal of Genetic Psychology, 113, 59-69.

Connor, K. (1989). Aggression: Is It in the Eye of the Beholder? Play and Culture, 2, 213-217.

Cowie, L. & Kahn, J. (1968). XYY constitution in pre-pubertal children. British Medical Journal, 1, 748-749.

Cummings, E. M., Zahn-Waxler, C. & Radke-Yarrow, M. (1981). Young children's responses to expressions of anger and affection by others in the family. Child Development, 52, 1274-1282.

Cummings, E. M., Iannotti, R. J., & Zahn-Waxler, C. (1985). Influence of conflict between adults on the emotion and aggression of young children. Developmental Psychology, 21, 495-507.

Darwin, C. (1872). The Expression of the Emotions in Man and Animals. London: John Murray.

Davie, C. E., Hutt, S. J., Vincent, E. & Mason, M. (1984). The young child at home. Windsor: NFER-Nelson.

Davitz, J. (1952). The effects of previous training on postfrustration behaviour. Journal of Abnormal and Social Psychology, 47, 309-315.

Delgado, J. (1967). Social rank and radio stimulated aggressiveness in monkeys. Journal of Nervous and Mental Disease, 144, 383-390.

- Dentan, R. K. (1978). Notes on childhood in a non-violent context : The Semai case. In A. Montagu (Ed.) Learning Non-Aggression. New York: Oxford University Press.
- Diener, E., & Dufour, D. (1978). Does television violence enhance program popularity? Journal of Personality and Social Psychology, 36, 3, 333-341.
- Dixon, B. (1990). Playing them false: a study of children's toys, games and puzzles. Staffordshire: Trentham Books.
- Dodge, K. (1980). Social cognition and children's aggressive behavior. Child Development, 51, 162-170.
- Dodge, K. & Frame, C. (1982). Social cognitive biases and deficits in aggressive boys. Child Development, 53, 620-635.
- Dodge, K. & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. Journal of Personality and Social Psychology, 53, 1146-1158.
- Dollard, J., Doob, L., Miller, N., Mowrer, O. & Sears, R. (1939). Frustration and Aggression. New Haven: Yale University Press.
- Drabman, R. S. & Thomas, M. H. (1974). Does media violence increase children's toleration of real-life aggression? Developmental Psychology, 10,

- Draper, P. (1978). The learning environment for aggression and anti-social behavior among the !Kung. In A. Montagu (Ed.) Learning Non-Aggression, the experience of non-literate societies. New York: Oxford University Press.
- Durner, D., Kreuzig, H., Reitner, W. & Staudel, T. (Eds.) (1983). Lohausen : vom umgang mit unbestimmtheit und komplexitat. Bern: Huber.
- Eagly, A. & Steffen, V. (1986). Gender and aggressive behavior: A meta-analytic review of the social psychological literature. Psychological Bulletin, 100, 3, 309-330.
- Eaton, W. O. (1983). Gender understanding and sex-role stereotyping in preschoolers: Implications for caregivers. Child Care Quarterly, 12, 28-35.
- Edmunds, R. & Kendrick, D. (1980). The measurement of human aggressiveness. Chichester: Ellis Horwood Ltd.
- Ellis, M. (1973). Why People Play. Englewood Cliffs, New Jersey: Prentice Hall.
- Emmerich, W. (1966). Continuity and stability in early social development. II: Teacher ratings. Child Development, 37, 17-27.
- Engel, B. (1984). Between Feeling and Fact: Listening to Children. Harvard Educational Review, 54, (3), 304-314.

- Erlanger, H. (1974). Social class differences in parent's use of physical punishment In S. Steinmetz & M. Straus (Eds.) Violence in the Family. New York: Dodd, Mead.
- Eron, L. (1963). Relationship of TV viewing habits and aggressive behaviour in children. Journal of Abnormal Social Psychology, 67, 193-198.
- Eron, L. (1980). Prescription for reduction of aggression. American Psychologist, 35, 244-252.
- Eron, L. (1987). The development of aggressive behavior from the perspective of a developing behaviorism. The American Psychologist, 42 (5), 435-442.
- Eron, L., Walder, I. & Lefkowitz, M (1971). Learning of Aggression in Children. Boston: Little Brown.
- Eron, L., Lefkowitz, M., Walder, L. & Huesmann, L. (1974). Relation of learning in childhood to psychopathology and aggression in young adulthood. In A. Davids (Ed.) Child Personality and Psychopathology Current Topics 1. New York: Wiley.
- Etaugh, C. & Happach, A. (1979). Effects of aggressive play on children's subsequent aggressive behavior. Psychological Reports, 45, 656-658.
- European Parliament Working Documents (June 1982). Report on War Toys, Document 1-228/82.

Eysenck, H. & Nias, D. (1978). Sex, Violence and the Media. London: Maurice Temple Smith

Farrington, D. P. (1978). The family backgrounds of aggressive youths In L. A. Hersov & M. Berger (Eds.) Aggression and Anti-social Behaviour in Childhood and Adolescence, Oxford: Pergamon Press.

Farrington, D. P. (1982). Longitudinal analyses of criminal violence In M. Wolfgang & N. Weiner (Eds.) Criminal Violence. California: Sage.

Feningstein, A. (1979). Does aggression cause a preference for viewing media violence? Journal of Personality and Social Psychology, 37, 2307-2317.

Ferguson, T. & Rule, B. (1988). Children's evaluations of retaliatory aggression. Child Development, 59, 961-968.

Feshbach, S. (1956). The catharsis hypothesis and some consequences of interaction with aggressive and neutral play objects. Journal of Personality, 24, 449-462.

Feshbach, S. (1964). The function of aggression and the regulation of aggressive drive. Psychological Review, 71, 257-262.

Feshbach, S. (1970). Aggression In P. Mussen (Ed.) Carmichael Manual of Child Psychology vol 2, New York: Wiley.

- 217
- Feshbach, S. (1989). The bases and development of individual aggression In J. Groebel & R. Hinde (Eds.) Aggression and War : Their biological and social bases Cambridge:University Press.
- Fine, G. A. (1988). Good Children and Dirty Play. Play and Culture, 1, 43-56.
- Frame, R. (1986). Violence for Fun. Christianity Today, Feb 21st, 1986.
- Freedman, J. & Johnson R. L. (1972). Mass media use and aggression; A pilot study. In G. A. Comstock & E. A. Rubinstein (Eds.) Television and Social Behaviour, vol 3, Television and Adolescent Aggressiveness. Washington D.C.: US Government Printing Office.
- Freedman, J. & Newton, R. (1975). The effect of anger on preference for filmed violence. Paper presented at the annual conference of the American Psychological Association, Chicago.
- Friedrich, L. & Stein, A. (1973). Aggressive and prosocial television programs and the natural behavior of preschool children. Monographs of the Society for Research in Child Development, 38,4.
- Frome Paget, K. (1983). Conceptions of deviance and disorder In R. Leahy (Ed.) The child's construction of social reality London:Academic Press.
- Frost, J. (1986). The deleterious influences of

television on childrens behaviour: Implications for war and peace. Talk given at the conference for International Association for the Child's Right to Play, Birmingham, England.

Fry, D. (1988). Differences between play fighting and serious fighting among Zapotec children. Ethology and Sociobiology, 8, 4, 285-306.

Fry, D. (1988). Intercommunity differences in aggression among Zapotec children Child Development, 59, 1008-1019.

Geen, R. I. (1975). The meaning of observed violence: Real vs fictional violence and consequent effects on aggression. Journal of research in Personality, 9, 270-281.

Geen, R. I. (1990). Human Aggression. Milton Keynes: Open University

Geen, R. I. & Donnerstein, E. I. (Eds.) (1983) Aggression: Theoretical and Empirical Reviews. Vol 1: Theoretical and Methodological Issues New York: Academic Press.

Gelles, R. & Straus, M. (1979). Determinants of violence in the family: Toward a theoretical intergration in W. Burr, R. Hill, F. Nye & I. Reiss (Eds.) Contemporary theories about the family. New York: Free Press.

George, C. & Main, M. (1979). Social interactions of young abused children. Approach, avoidance and aggression. Child Development 50, 306-318.

- Gerbner, G., Gross, L., Morgan, M. & Signiorelli, N.
(1980). The "mainstreaming" of America: Violence
profile no. 11. Journal of Communication, 30
(3), 10-29.
- Gergen, M. (1990). Beyond the Evil Empire: Horseplay
and Aggression. Aggressive Behavior, 116, 381-
398.
- Gibson-Grant, J. (1985). War is not child's play.
History and Social Science Teacher, 20 (3), 78-
79.
- Giddings, M. & Halverson, C. F. (1981). Young
children's use of toys in home environments.
Family Relations, 30, 69-74.
- Goldstein, A. P. (1981). Psychological Skill Training
New York: Pergamon Press.
- Goldstein, A. P. (1989). Aggression reduction: Some
vital steps. In J. Groebel & R. Hinde (Eds.)
Aggression and War. Cambridge: Cambridge
University Press.
- Goldstein, J. H. (1972). Preference for aggressive
movie content. The effects of cognitive
salience. Unpublished manuscript. Temple
University, Philadelphia.
- Goldstein, J. H. (1986). Aggression and Crimes of
Violence. New York: Oxford University Press.
- Goldstein, J. H. (1988). Children and Aggressive
Toys. London: British Toy and Hobby

Manufacturers Association.

- Goldstein, J. H. (1989). Beliefs about human aggression. In J. Groebel & R. Hinde (Eds.) Aggression and War. Cambridge: Cambridge University Press.
- Goodenough, F. L. (1931). Anger in Young Children Minneapolis: University of Minnesota Press.
- Green, M. R. (Ed.) (1980). Violence and the Family, Washington DC: American Association for the Advancement of Science.
- Groebel, J. & Hinde, R. (1989). Aggression and War. Cambridge: Cambridge University Press.
- Gunter, B. (1982). Dimensions of television violence: An experimental analysis of violent television content based on viewers' perceptual differentiation of brief programme episodes. Independent Broadcasting Authority. Unpublished Report.
- Gunter, B. (1983). Do aggressive people prefer violent television? Bulletin of the British Psychological Society, 36, 166-168.
- Gunter, B. & McAleer, J. (1990). Children and Television: The one eyed monster? London: Routledge.
- Grujec, J. & Kuczynski, L. (1980). Direction of effect in socialization : A comparison of the parents versus the child's behaviour as

determinants of disciplinary tactics.

Developmental Psychology 16,1-9.

Hall, W. (1973). Observational and interactive determinants of aggressive behavior in boys. Unpublished Doctoral Dissertation, Indiana University.

Hammar, S. (1970). Children and War Games. International Journal of Early Childhood 21,74-77.

Hartup, W. (1974). Aggression in Childhood: Developmental Perspectives. American Psychologist, 29,336-341.

Hassett, J. (1978). A Primer of Psychophysiology. San Francisco: W. H. Freeman & Company.

Hay, D. & Ross, H. (1982). The social nature of early conflict. Child Development, 53, 105-113.

Hersov, L.A. & Berger, M. (Eds.) (1978). Aggression and anti-social behaviour in childhood and adolescence. Oxford: Pergammon Press.

Hicks, D. J. (1965). Imitation and retention of film-mediated aggressive peers and adult models. Journal of Personality and Social Psychology 2, 97-100.

Hinde, R. & Groebel, J. (Eds.) (1989). Aggression and War. Cambridge: Cambridge University Press.

Hollenbery, E. & Sperry, M. (1951). Some Antecedents

of Aggression and Effects of Frustration in Doll Play. Child Development, 23, 32-43.

Hook, E. (1973). Behavioural Implications of the human XYY genotype. Science, 179, 139-150.

Howell, D. (1987). Statistical methods for Psychology Boston: PWS-Kent.

Huesmann, L. R. (1982). Television violence and aggressive behavior. In D. Pearl, L. Bouthilet & J. Lazar (Eds.), Television and Behavior: Ten Years of Scientific Progress and Implications for the Eighties, vol 2 Technical Reviews Washington, DC: United States Government Printing Office.

Huesmann, L. R., Eron, L., Lefkowitz, M., & Walder, L. (1984). Stability of aggression over time and generation. Developmental Psychology, 20, 6, 1120-1134.

Humphreys, A. P. & Smith, P. K. (1984). Rough and tumble in preschool and playground. In P.K. Smith (Ed.) Play in animals and humans. London: Blackwell.

Hyde, J. S. (1984). How large are gender differences in aggression? A developmental meta-analysis. Developmental Psychology, 20, 722-736.

Jenvey, V, (1988). What do we know really about the effects of toys on children's behavior and development. Paper given at Australian Development Conference, Victoria, Australia,

August 1988.

- Josephson, W. (1987). Television violence and children's aggression: Testing the priming, social script and disinhibition predictions. Journal of Personality and Social Psychology, 53, 5, 882-890.
- Joslyn, W. (1973). Androgen-induced social dominance in infant female rhesus monkeys. Journal of Child Psychology and Psychiatry 14, 137-145.
- Kagan, J. & Moss, H. (1962) Birth to Maturity New York: Wiley.
- Klama, J. (1988). Aggression: Conflict in animals and humans reconsidered. Harlow: Longman Scientific & Technical.
- Kohn, M., & Rosman, B. L. (1973). Cross-situational and longitudinal stability of social-emotional functioning in young children. Child Development, 44, 721-727.
- Knobloch, H. & Pasamanick, B. (1966). Retrospective studies on the epidemiology of reproductive casualty: Old and new. Merrill Palmer Quarterly of Behavior and Development, 12, 7-26.
- Kreuz, I. & Rose, R. (1972). Assessment of aggressive behavior and plasma testosterone in a young criminal population. Psychosomatic Medicine 34, 321-332.
- Lagerspetz, K. (1989). Media and the social

environment In J. Groebel & R. Hinde (Eds.)
Aggression and War. Cambridge: Cambridge
University Press.

Landau, S. (1984). Trends in violence and aggression:
A cross cultural analysis. International Journal
of Comparative Sociology, 24, 133-158.

Lange, A. (1972). Possible determinants of
aggression. In H. Musaph & P. Mettrop (Eds.) The
Role of Aggression in Human Pathology. Basel:
S.Karger.

Leahy, R. (Ed.) (1983). The child's construction of
social inequality. London: Academic Press.

Lefkowitz, M. M., Eron, L. D., Walder, L. O. &
Huesmann, L. R. (1977). Growing up to be
violent: A longitudinal study of the development
of aggression. New York: Pergamon Press.

Leifer, A. & Roberts, D. (1972). Children's responses
to television violence. In J. Murray, E.
Robinstein, & G. Comstock (Eds.) Television and
Social Behavior: II Television and Social
Learning Washington: US Government Printing
Office.

Loeber, R. & Dishion, T. (1984). Boys who fight at
home and school: Family conditions influencing
cross-setting consistency. Journal of Consulting
and Clinical Psychology, 52, 759-768.

Lorenz, K. (1966). On Aggression. New York:
Harcourt, Brace & World.

- Lovaas, O. I. (1961). Effect of Exposure to Symbolic Aggression on Aggressive Behavior. Child Development, 32, 37-44.
- Maccoby, E. & Jacklin, C. (1980). Sex differences in aggression : A rejoinder and reprise. Child Development, 5, 969-980.
- Mallick, S. & McCandless, B. (1966). A study of catharsis of aggression. Journal of Personality and Social Psychology 4, 6, 591-596.
- Manning, M., Heron, J. & Marshall, T. (1978). Styles of hostility and social interactions at nursery, at school, and at home: An extended study of children In L. A. Hersov & M. Berger (Eds.) Aggression and Anti-social Behaviour in Childhood and Adolescence. Oxford: Pergamon Press.
- Mark, V. & Ervin, F. (1970). Violence and the Brain New York: Harper Row.
- Martin, B. (1975). Parent-Child Relations. In F. Horowitz (Ed.) Review of Child Development Research. Chicago: University of Chicago Press.
- Maudry, M. & Nekula, M. (1939). Social relations between children of the same age during the first two years of life. Journal of Genetic Psychology, 54, 193-215.
- Mendoza, A. (1972). The effects of exposure to toys conducive to violence. Unpublished doctoral dissertation. University of Miami.

- Menninger, W. (1984). Guns and Violence: An American Phenomenon. The American Journal of Social Psychiatry, IV, 3, 37-40.
- Milgram, S. (1963). Behavioural studies of obedience. Journal of Abnormal and Social Psychology, 67, 371-378.
- Miller, N. (1941). The frustration-aggression hypothesis. Psychological Review 48, 337-342.
- Montagu, A. (1976). The nature of human aggression New York: Oxford University Press.
- Montagu, A. (Ed.) (1978). Learning non-aggression. the experience of non-literate societies. New York: Oxford University Press.
- Nielzel, M. (1979). Crime and its modification: A social learning perspective. New York: Pergamon Press Inc.
- Nouri, S. & Beer, J. (1989). Relations of moderate physical exercise to scores on hostility, aggression, and trait anxiety. Perceptual and Motor Skills, 68, 1192-1194.
- Olweus, D. (1979). Stability and aggressive reaction patterns in males: A review. Psychological Bulletin, 86, 852-875.
- Olweus, D. (1980). Familial and Temperamental determinants of aggressive behavior in adolescent boys: A causal analysis. Developmental Psychology 6, 644-666.

Olweus, D. (1982). Development of stable aggressive reaction patterns in males. In R. Blanchard & C. Blanchard (Eds.) Advances in the study of aggression. Vol 1. New York: Academic Press.

O'Neal, E. C., & Kaufman, L. (1972). The influence of attack, arousal and information about one's arousal upon interpersonal aggression. Psychonomic Science, 26, 211-214.

Parke, R. (1978). Children's home environments. In I. Altman & J. Wolfhill (Eds.) Children and the Environment. New York: Plenum.

Parke, R. & Lewis, N. (1981). The family in context : A multi-level interactional analysis of child abuse. In R. Henderson (Ed.) Parent-Child Interaction. New York: Academic Press.

Parke, R. & Slaby, R. (1986). The development of aggression. In P. Mussen (Ed.) Carmichael Manual of Child Psychology vol 2, New York: Wiley.

Patterson, G. (1976). The aggressive child: Victim and architect of a coercive system. In E. J. Mash, L. A. Hamerlynck & L. C. Handy (Eds.) Behaviour modification in families. New York: Bruner/Mazel.

Patterson, G. (1980). Mothers: The unacknowledged victims. Monographs of the Society for Research in Child Development, 45.

Patterson, G., Littman, R. & Bricker, W. (1967).

Assertive behavior in children: A step toward a theory of aggression. Monographs of the society for research in Child Development, 32.

Pellegrini, A. (1987). Rough and tumble play: Developmental and educational significance. Educational Psychologist 22, 1, 23-43.

Pellegrini, A. (1988). Elementary school children's rough and tumble play and social competence. Developmental Psychology, 24, 802-806.

Pelligrini, A. (1989). Elementary school children's rough and tumble play. Early Childhood Research Quarterly 4 (2), 245-260.

Perry, D. & Bussey, K. (1977). Self-reinforcement in high and low aggressive boys following acts of aggression. Child Development, 48, 653-657.

Perry, D., Kusel, S. & Perry, L. (1988). Victims of Peer Aggression. Developmental Psychology 24, 6, 807-84.

Persky, H., Smith, K. & Basu, G. (1971). Relation of psychological measures of aggression and hostility to testosterone production in man. Psychosomatic Medicine, 33, 265-277.

Phillips, D. (1978). Airplane accident fatalities increase just after newspaper stories about murder and suicide. Science, 210, 748-749.

Piaget, J. (1936). The Origin of Intelligence in the Child. London: Routledge & Kegan Paul.

- Piaget, J. (1951). Play, Dreams and Imitation in Childhood. London: Routledge & Kegan Paul.
- Pitcher, E. & Schultz, L. (1985). Boys and Girls at play: The development of sex roles Brighton: Harvester Press.
- Plotnik, R. (1974). Brain stimulation and aggression: Monkeys, apes and humans. In R. Holloway (Ed.) Primate Aggression, Territoriality and Xenophobia. New York: Academic Press.
- Potts, R., Huston, A. C. & Wright, J. C. (1986). The effects of television form and violent content on boys' attention and social behavior. Journal of Experimental Child Psychology, 41, 1-17.
- Robinson, J. & Bachman, J. (1972). Television viewing habits and aggression. In G. A. Comstock and E. A. Rubinstein (Eds.) Television and Social Behaviour, vol. 3. Television and Adolescent Aggressiveness. Washington DC: US Government Printing Office.
- Rubin, K. (Ed.) (1980). New Directions for Child Development: Children's Play. San Fransisco: Jossey Bass.
- Rule, B.G. & Percival, E. (1971). The effects of frustration and attack on physical aggression. Journal of Experimental Research in Personality, 5, 111-118.
- Russell, G. W. (1983). Crowd size and density in relation to athletic aggression and performance.

Rutter, M., Tizard, B. & Whitmore, K. (1970).
Education, Health and Behaviour. London:
Longman.

Schaefer, C. E. & O'Connor, K. J. (1983). Handbook of
play therapy. New York: Wiley.

Schwartz, L. A. & Markham, W. T. (1985). Sex
stereotyping in children's toy advertisements.
Sex Roles, 12, 157-170.

Scott, J. P. (1958). Aggression. Chicago: University
of Chicago Press.

Sears, R. (1961). Relation of Early Socialization
Experiences to Aggression in Middle Childhood.
Journal of Abnormal and Social Psychology, 63,
3, 466-492.

Shantz, D. W. & Vogdanoff, D. A. (1973). Situational
effects on retaliatory aggression at three age
levels. Child Development, 44, 149-153.

Siann, G. (1985). Accounting for Aggression:
Perspectives on Aggression and Violence.
London: Allen Unwin.

Singer, J. L. (Ed.) (1973). The Child's World of
Make-Believe: Experimental studies of
imaginative play. New York: Academic Press.

Singer, J.L. & Singer, D. (1986). Family experience
and television viewing as predictors of

children's imagination, restlessness, and aggression. Journal of Social Issues, 42, 3, 107-124.

Slife, B. & Rychlak, J. (1982). Role of affective assessment in modeling aggressive behavior. Journal of Personality and Social Psychology, 43, 4, 861-868.

Slukin, A. (1981). Growing up in the playground. London: Routledge & Kegan Paul.

Snow, R. P. (1974). How children interpret T.V. violence in a play context. Journalism Quarterly, 51, 13-21.

Sorenson, E. R. (1958). Cooperation and freedom among the Fore tribe of New Guinea. In A. Montagu (Ed.) Learning Non-Aggression. New York: Oxford University Press.

Steinmetz, S. K. (1977). The cycle of violence: Assertive, aggressive and abusive family interactions. New York: Praeger.

Steuer, F. B., Applefield, J. M. & Smith, R. (1971). Television aggression and the interpersonal aggression of preschool children. Journal of Experimental Child Psychology, 11, 442-447.

Straus, M. A. (1980). A sociological perspective on the causes of family violence. In M. R. Green (Ed.) Violence and the Family, Washington DC: American Association for the Advancement of Science.

Sutton-Smith, B. (1980). Children's play some sources of play theorizing. In K. Rubin (Ed.) New Directions for Child Development: Childrens Play, No. 9. San Fransisco: Jossey Bass.

Sutton-Smith, B. (1986). Toys as Culture. New York: Gardner Press.

Sutton-Smith, B. (1988). War toys and childhood aggression. Play and Culture, 1, 57-69.

Tannenbaum, P. H. (1971). Studies in film- and television-mediated arousal and aggression: A progress report. In G. Comstock, E. Rubinstein, & J. Murray (Eds.) Television and Social Behavior, vol. 5. Washington, DC: U.S. Government Printing Office.

Tieger, T. (1980). On the biological basis of sex differences in aggression. Child Development, 51, 943-963.

Tinbergen, N. (1968). On war and peace in animals and man. Science, 160, 1411-1418.

Tisak, M. & Turiel, E. (1988). Variation in seriousness of transgressions and children's moral and conventional concepts. Developmental Psychology, 24, 3, 352-357.

Tulving, E. & Thomson, D. M. (1973). Encoding specificity and retrieval processes in episodic memory. Psychological Review, 80, 352-373.

Turner, C. W. & Simons, L. (1974). Effects of subject

sophistication and evaluation apprehension on aggressive responding to weapons. Journal of Personality and Social Psychology, 30, 341-348.

Turner, C. W. & Goldsmith, D. (1976). Effects of toy guns and airplanes on children's anti-social behavior. Journal of Experimental Child Psychology, 21, 303-315.

Turner, C. W., Hesse, B. & Peterson-Lewis, S. (1986). Naturalistic studies of the long term effects of t.v. violence. Journal of Social Issues, 42,3, 51-73.

Unesco (1981). Violence and its causes. Paris: Unesco

Vasta, R. & Copitch, P. (1981). Stimulating conditions of child abuse in the laboratory. Child Development, 52, 164-170.

Walder, L. O., Abelson, R., Eron, L., Banta, T. J. & Laulicht, P. (1961). Development of a peer-rating measure of aggression. Psychological Reports, 9, 497-556.

Walters, R. H. & Demkow, L. (1963). Timing of punishment as a determinant of response inhibition. Child Development, 34, 207-214.

Watson, M. & Peng, W. (1990). Toy Gun Play, Unpublished manuscript, Brandeis University.

Wegener-Spohring, G. (1986). Die Bedeutung von 'Kriegsspielzeug' in der lebenswelt von Grundschulkindern. Zeitschrift fur Padagogik, 6,

- Wegener-Spohring, G. (1987). Draculas Grab:
Aggressive Spiele / Kriegsspiele bei Kindern -
ein freizeitpädagogisches Problem?
Freizeitpädagogik, 9, 1-2.
- Wegener-Spohring, G. (1989). War toys and aggressive
games. Play and Culture, 2, 35-47.
- Welch, R. L., Huston-Stein, A., Wright, J. C. &
Plehal, R. (1979). Subtle sex-role cues in
children's commercials. Journal of
Communication, 29, 202-209.
- Wolff, C. (1976). The effect of aggressive toys on
aggressive behavior in children. Unpublished
doctoral dissertation. University of Montana.
- Wright, S. F. (1967). The effects of military toys on
peer aggression. Unpublished master's thesis.
University of Iowa.
- Younger, A. & Piccinin, A. (1989). Children's recall
of aggressive and withdrawn behaviors:
Recognition, memory and likability judgments.
Child Development, 60, 580-590.
- Zillman, D. (1971). Excitation transfer in
communication-mediated aggressive behavior.
Journal of Experimental Social Psychology, 7,
419-434.
- Zillman, D. (1983). Arousal and Aggression. In R. G.
Geen & E. Donnerstein (Eds.) Aggression: Theoretical

and empirical reviews. Vol 1: Theoretical and
methodological issues. New York: Academic Press.

Zillman, D. (1984). Connections between sex and
aggression. Hillsdale NJ: Lawrence Erlbaum
Associates.

Zillman, D., Katcher, A. & Milasky, B. (1972).
Excitation transfer from physical exercise to
subsequent aggressive behavior. Journal of
Experimental Social Psychology, 8, 247-259.

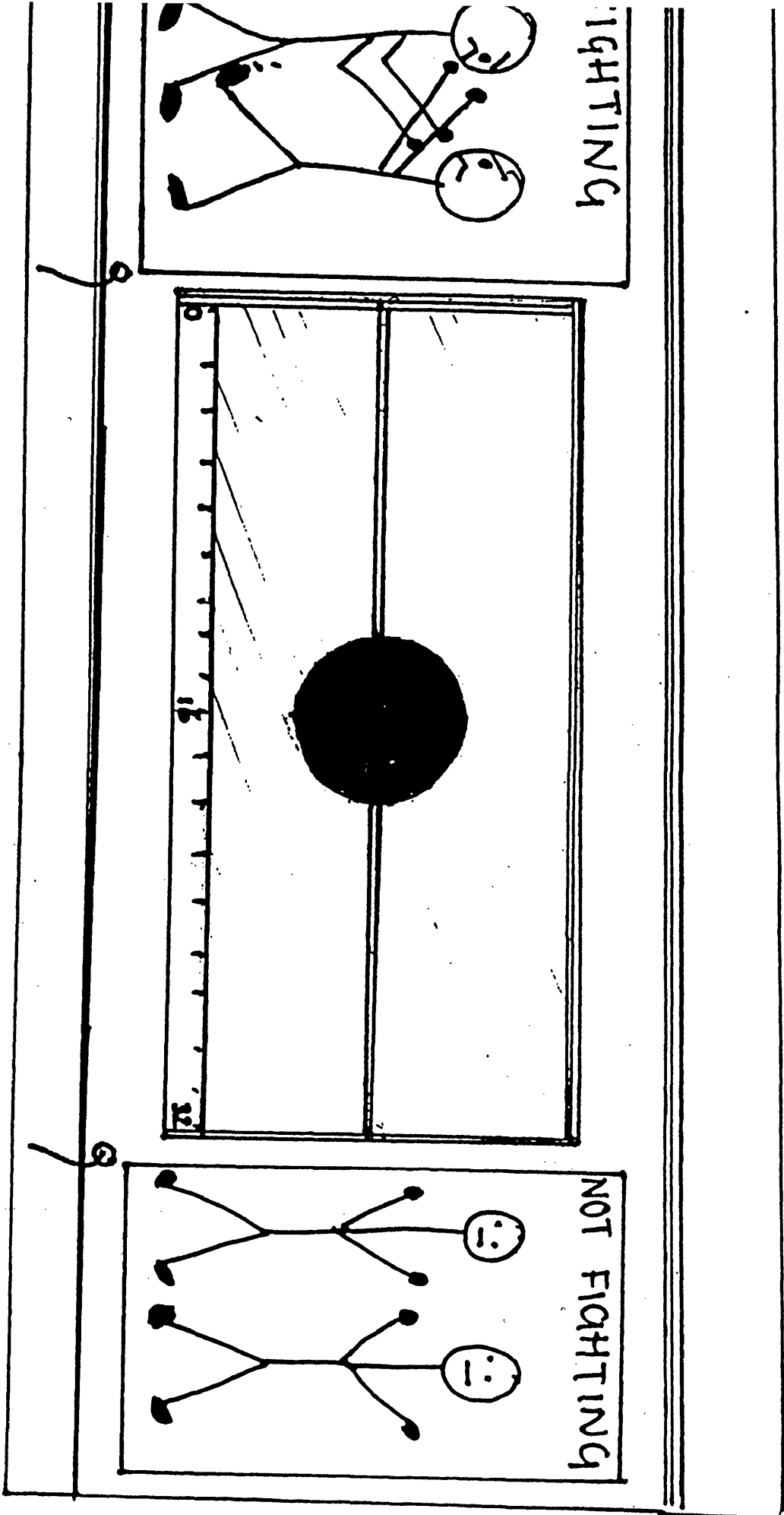
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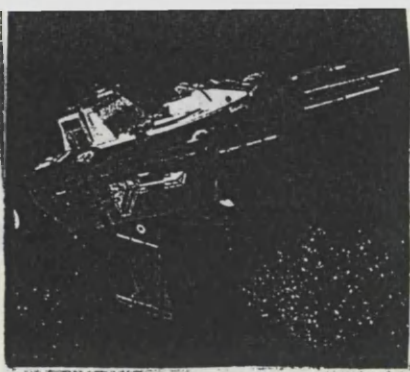
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APPENDICES

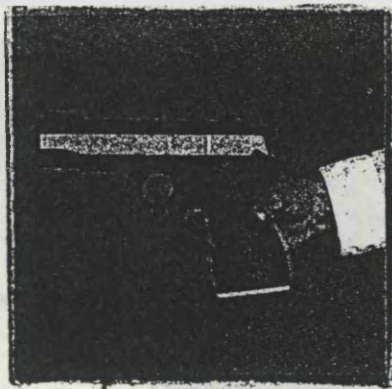
APPENDIX 1

FIGURE 1: RATING SCALE



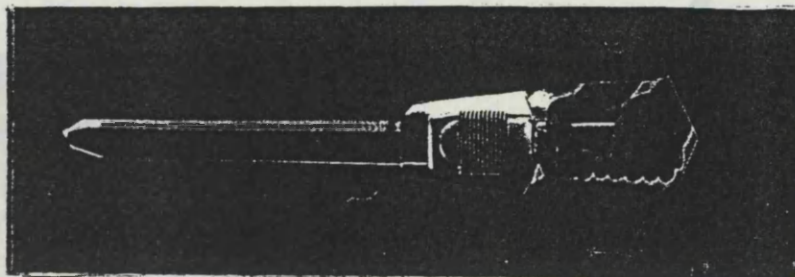
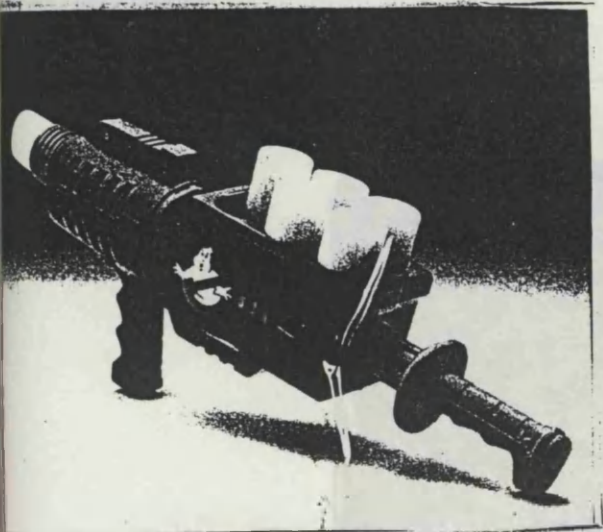


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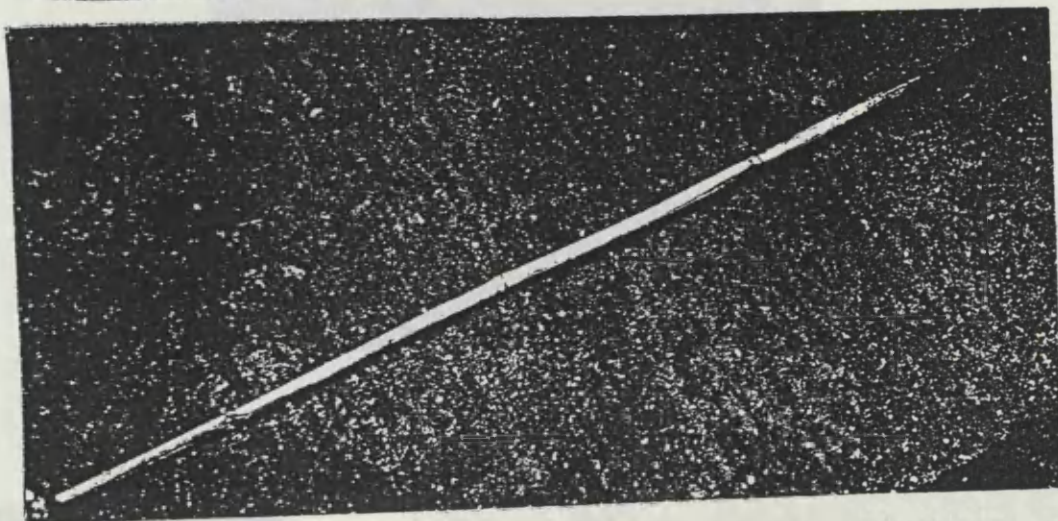


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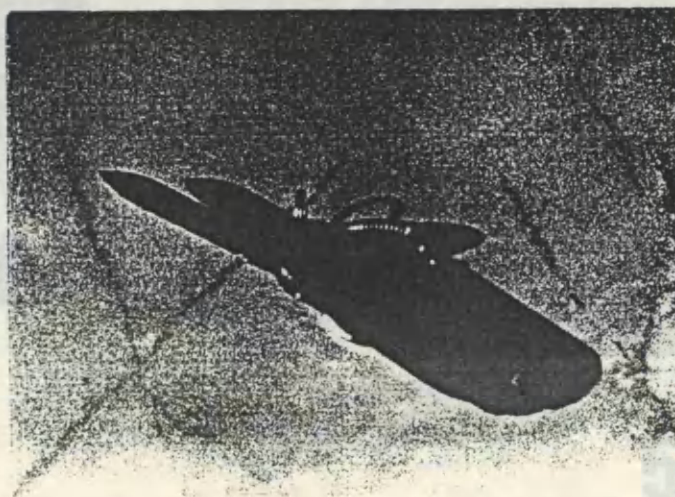
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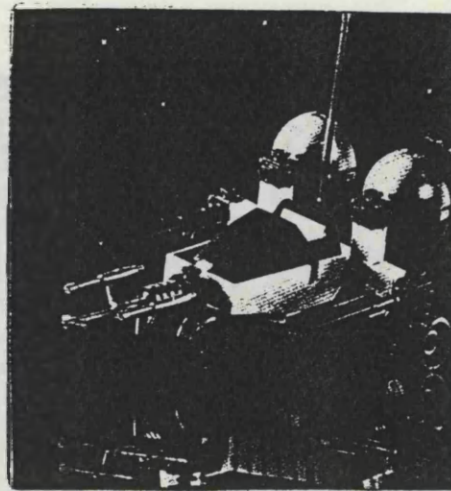
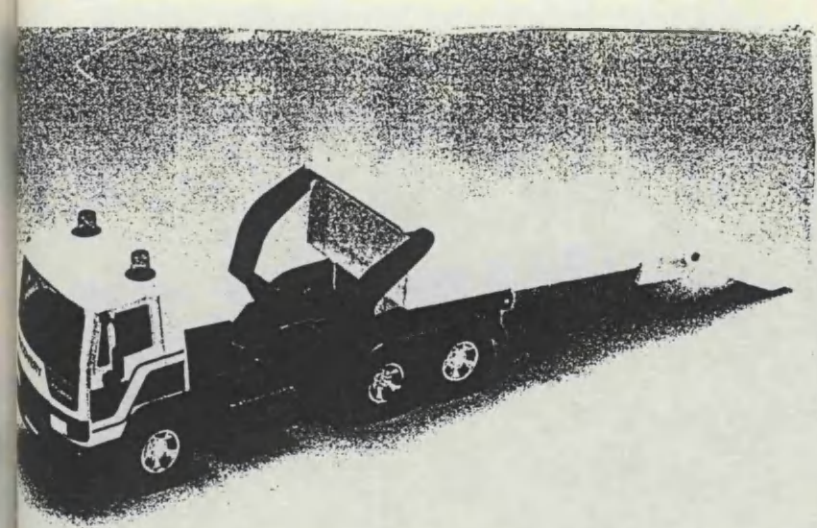
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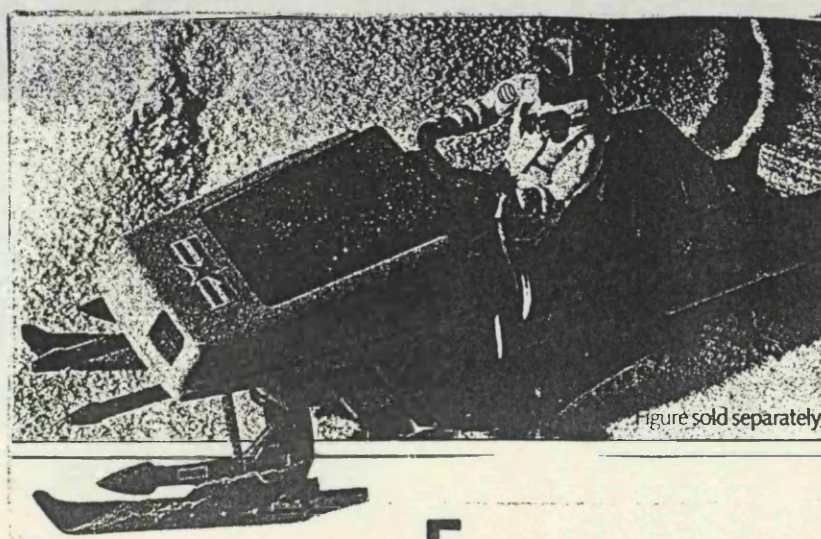
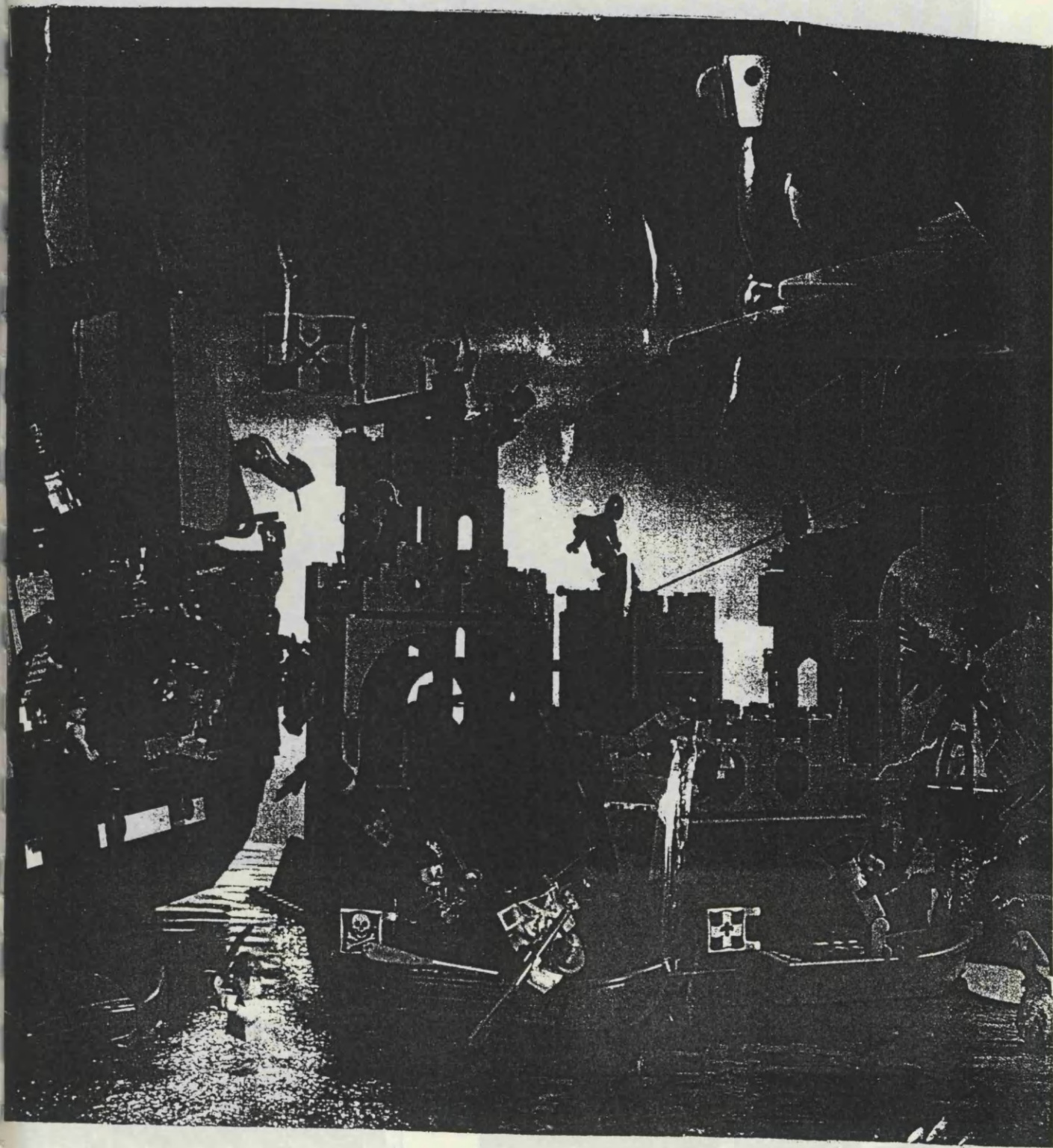
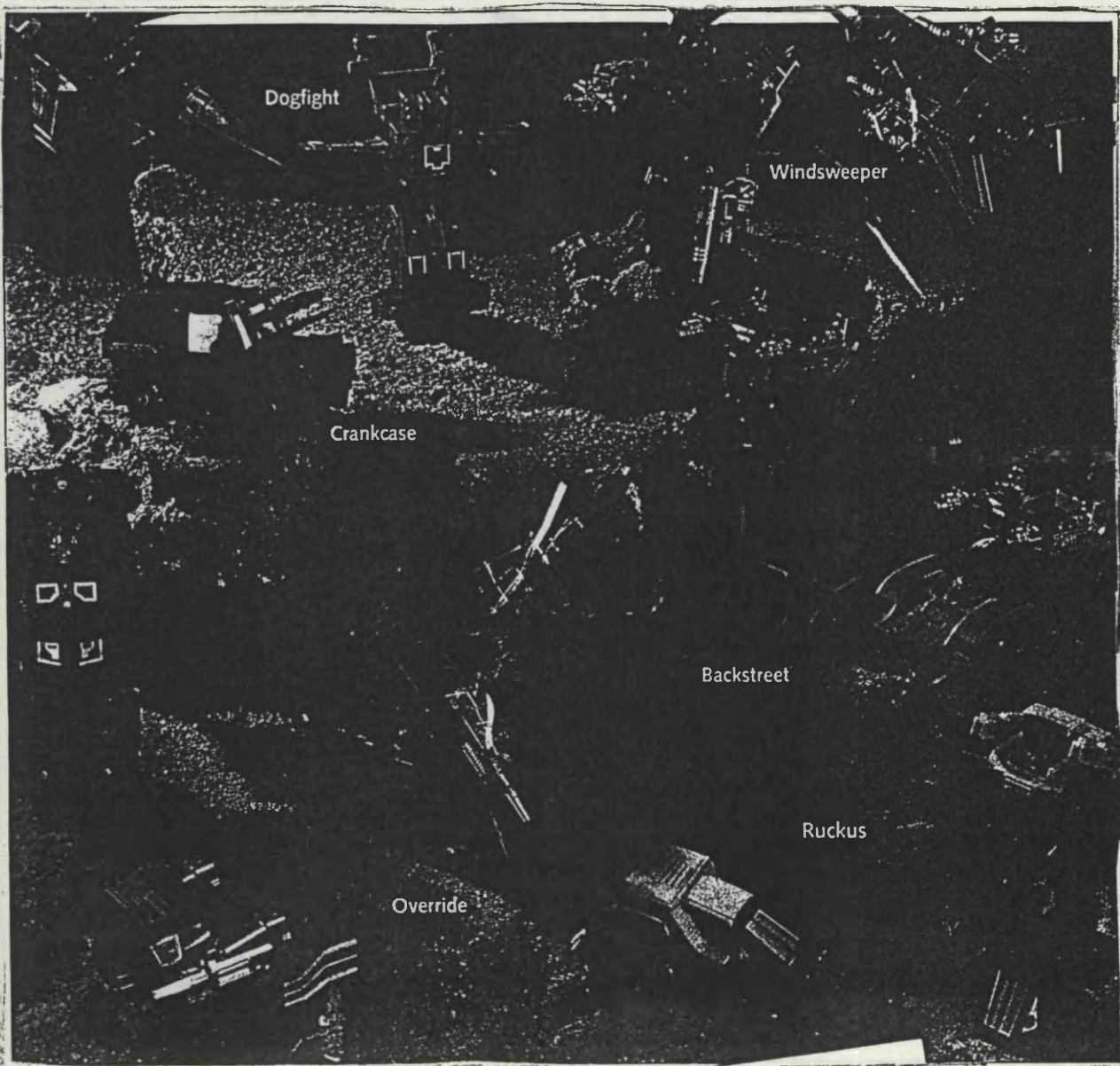


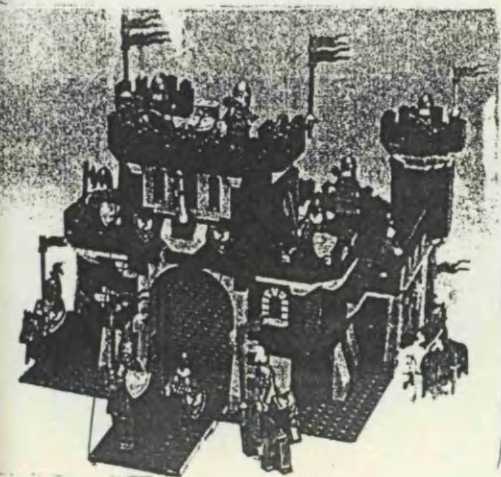
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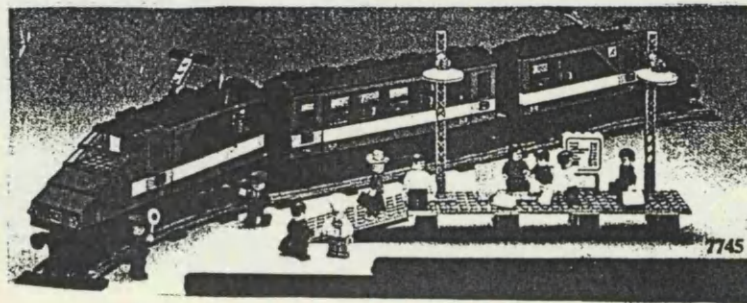




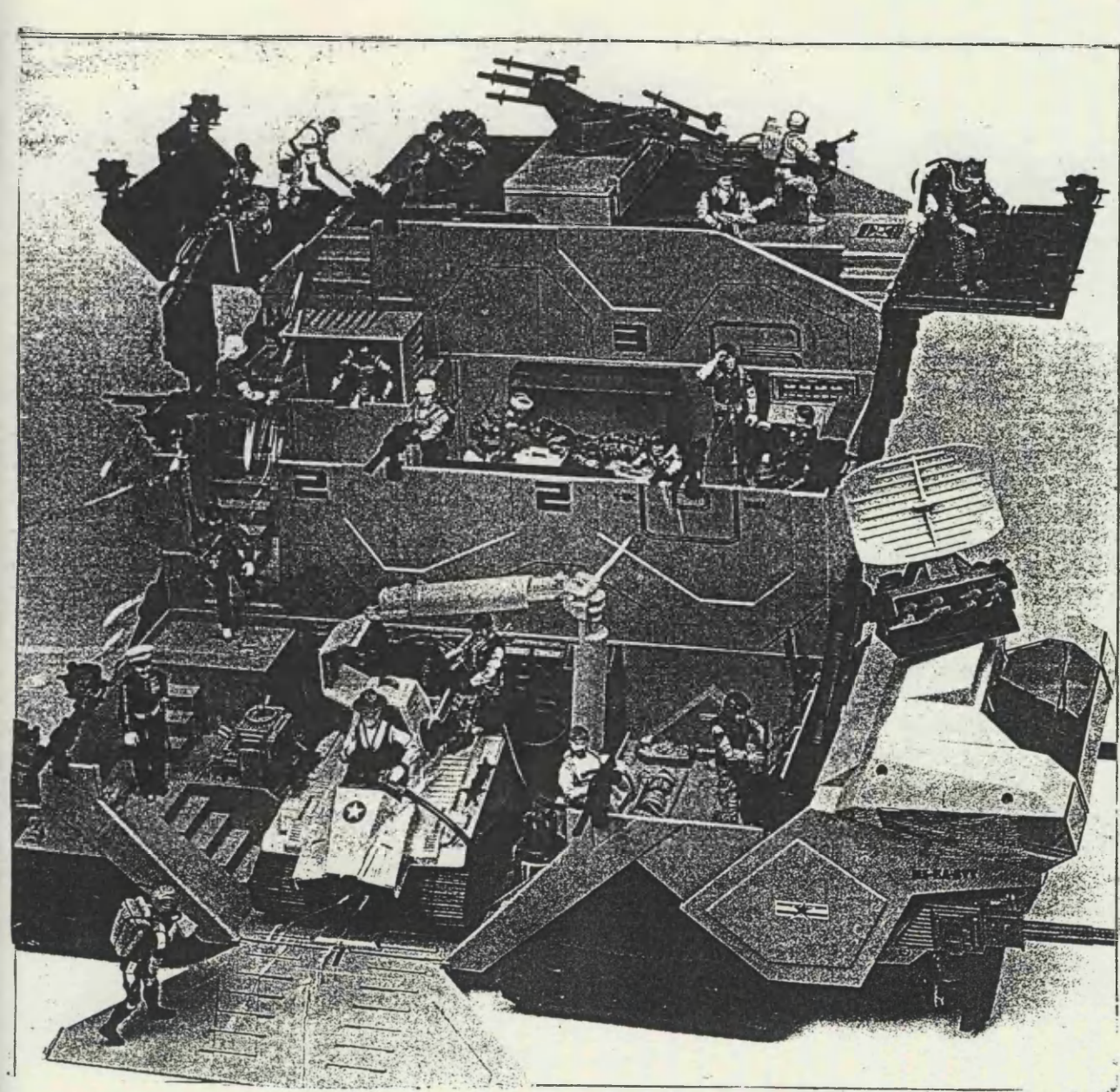
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APPENDIX 2

EXPERIMENTER INSTRUCTIONS

Pre-test trials

"I want to know what you think about some pictures.
There are no right or wrong answers."

YELLOW-GREEN DIMENSION

(Present yellow card)

"What colour is this? Move the ball towards the
answer."

(Return ball to centre)

(Present green card)

"What colour is this? Move the ball towards the
answer."

DARK-LIGHT DIMENSION

"Here are 4 shades of blue. Where on the scale from
dark to light is this colour?" (Repeat with other 3
cards.)

FIGHTING/NOT FIGHTING DIMENSION

(Present picture of gun)

"How would you play with this toy?"

(Present picture of teddy bear)

"How would you play with this toy?"

Experimental phaseEXPERIMENTER QUESTIONS

1. FIGHTING/NOT FIGHTING DIMENSION

"How would you play with this toy?"

2. REAL/PRETEND FIGHTING DIMENSION

"What sort of fighting would it be?"

3. HAPPY/UNHAPPY DIMENSION

"How happy would you be?"

4. CROSS/NOT CROSS DIMENSION

"How cross would you be?"

APPENDIX 3

CHILDREN'S RESPONSES TO QUESTIONS ABOUT TOYS

Selected verbatim comments. Figure in parenthesis is the toy referred to.

(A1) "This is made for fighting, there's nothing else to do with it."

(A1) "That would only be for pretend fighting as it doesn't look real."

(A2) "That's the most fighting because lasers are for real fighting."

(A2) "I like playing fighting because I can make up stories and make a lot of noise and run around."

(A3) "That shoots things and hits people."

(A5) "I wouldn't play fighting with that as I might get hurt."

(V3) "This is the most fighting as it is big and looks frightening."

(C1) "I can play fighting with that in the bath and on my own."

(C5) "This has got more guns than the others."

(C5) "That's the most fighting beause they look like real soldiers and it's fun."

APPENDIX 4



2



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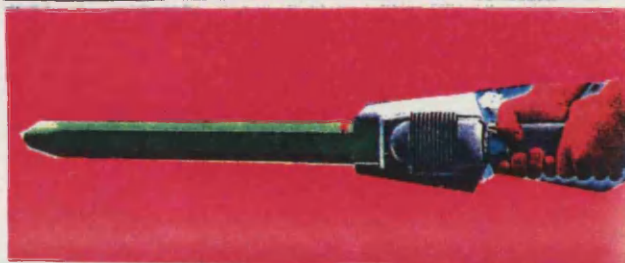
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10



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APPENDIX 5

I would like to play with this toy: 1

very much ☐ a bit ☐ not sure ☐ not much ☐ not at all ☐

I would like to play with this toy: 2

not at all ☐ not much ☐ not sure ☐ a bit ☐ very much ☐

I would like to play with this toy: 3

very much ☐ a bit ☐ not sure ☐ not much ☐ not at all ☐

I would like to play with this toy: 4

not at all ☐ not much ☐ not sure ☐ a bit ☐ very much ☐

I would like to play with this toy: 5

very much ☐ a bit ☐ not sure ☐ not much ☐ not at all ☐

I would like to play with this toy: 6

not at all ☐ not much ☐ not sure ☐ a bit ☐ very much ☐

I would like to play with this toy: 7

very much ☐ a bit ☐ not sure ☐ not much ☐ not at all ☐

I would like to play with this toy: 8

not at all ☐ not much ☐ not sure ☐ a bit ☐ very much ☐

I would like to play with this toy: 9

very much ☐ a bit ☐ not sure ☐ not much ☐ not at all ☐

I would like to play with this toy: 10

not at all ☐ not much ☐ not sure ☐ a bit ☐ very much ☐

APPENDIX 6

I would like to play with this toy: 1

very much ☐5 a bit ☐4 not sure ☐3 not much ☐2 not at all ☐1

I would like to play with this toy: 2

not at all ☐5 not much ☐4 not sure ☐3 a bit ☐2 very much ☐1

I would like to play with this toy: 3

very much ☐5 a bit ☐4 not sure ☐3 not much ☐2 not at all ☐1

I would like to play with this toy: 4

not at all ☐5 not much ☐4 not sure ☐3 a bit ☐2 very much ☐1

I would like to play with this toy: 5

very much ☐1 a bit ☐2 not sure ☐3 not much ☐4 not at all ☐5

I would like to play with this toy: 6

not at all ☐5 not much ☐4 not sure ☐3 a bit ☐2 very much ☐1

I would like to play with this toy: 7

very much ☐1 a bit ☐2 not sure ☐3 not much ☐4 not at all ☐5

I would like to play with this toy: 8

not at all ☐1 not much ☐2 not sure ☐3 a bit ☐4 very much ☐5

I would like to play with this toy: 9

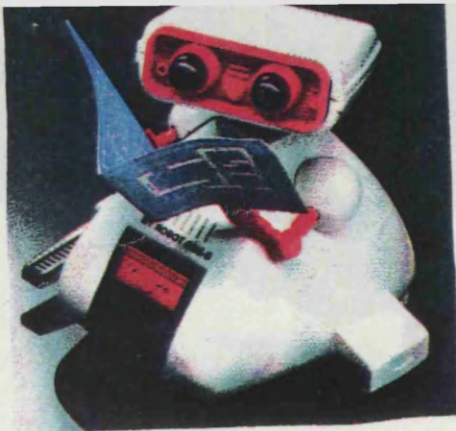
very much ☐5 a bit ☐4 not sure ☐3 not much ☐2 not at all ☐1

I would like to play with this toy: 10

not at all ☐1 not much ☐2 not sure ☐3 a bit ☐4 very much ☐5



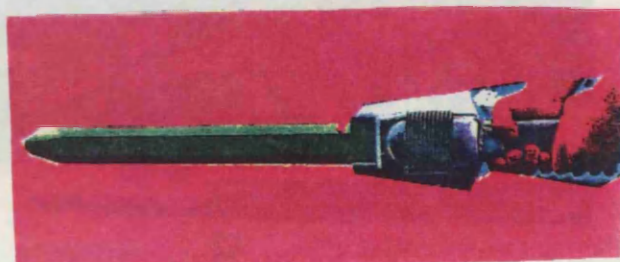
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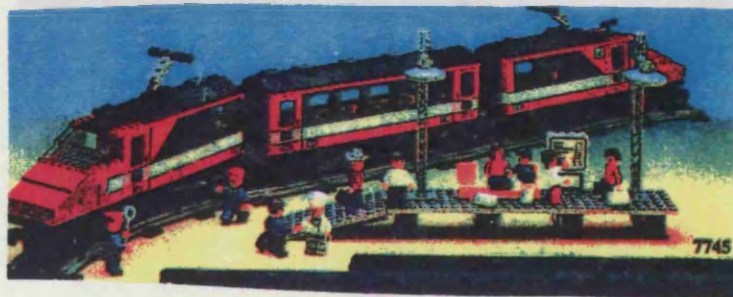
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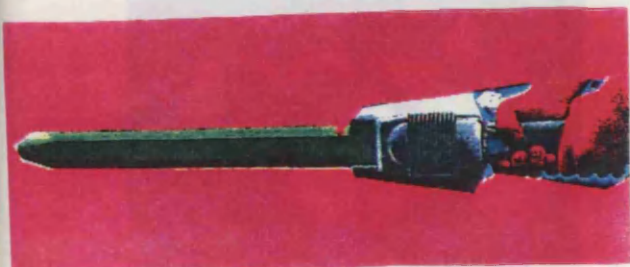
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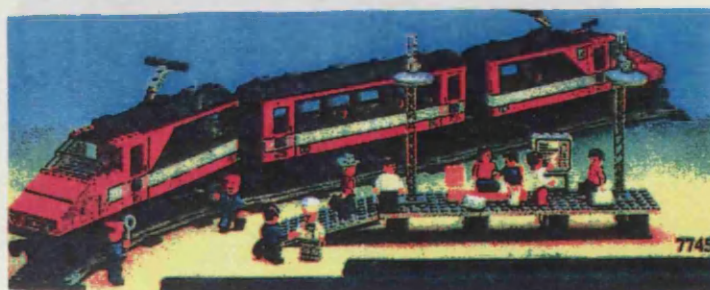
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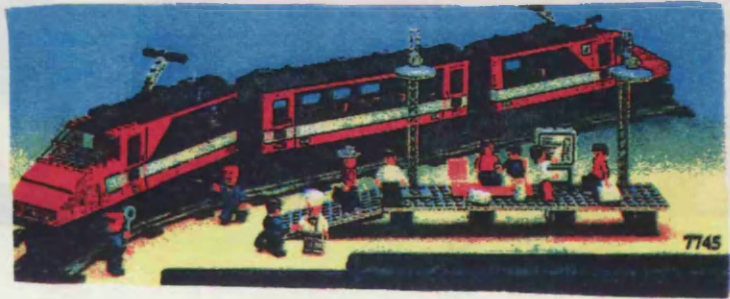
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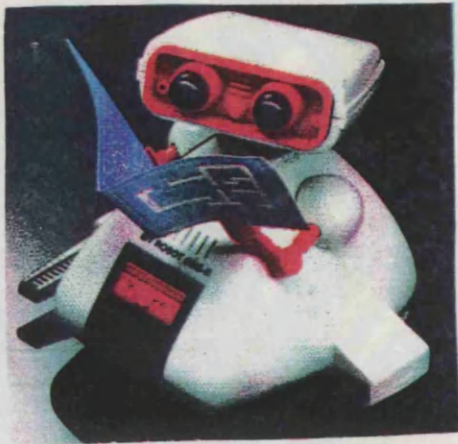
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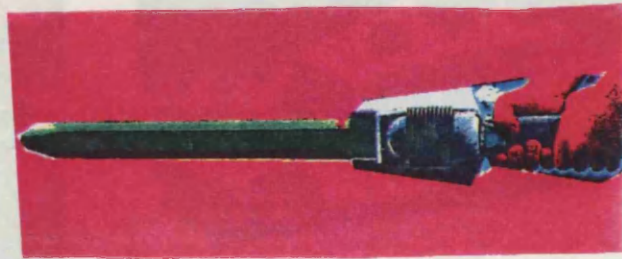
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B



A



B



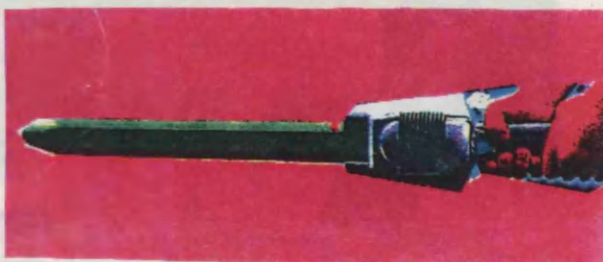
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B



A



B



A



B



A



B



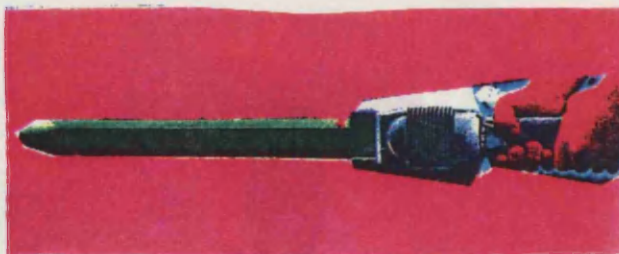
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B



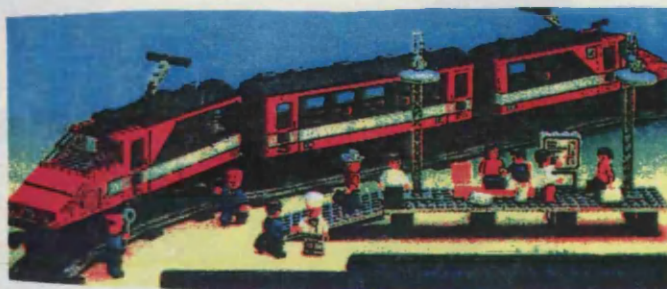
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B



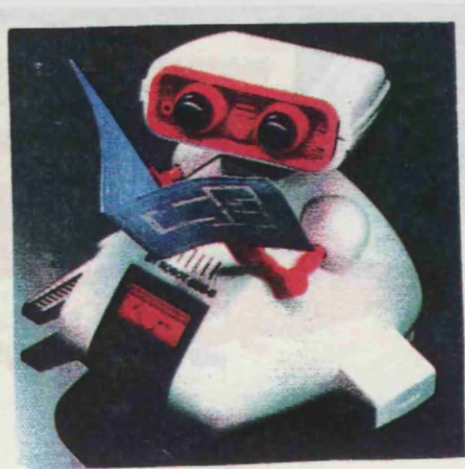
A



B



A



B

20

21



A



B

22



A



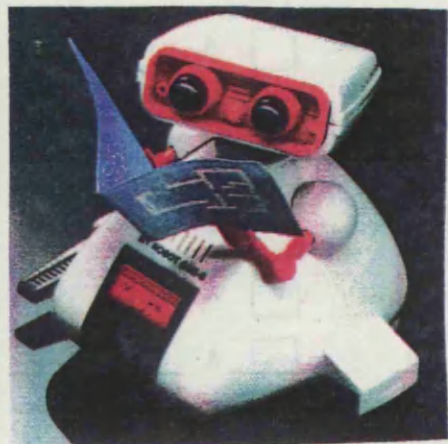
B



A



B



A



B



A



B

BOY ☐

GIRL ☐

266

TICK A BOX TO SHOW WHICH TOY YOU WOULD MOST LIKE TO PLAY WITH :

- | | | | | |
|-----|---|--------------------------|---|--------------------------|
| 1. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 2. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 3. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 4. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 5. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 6. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 7. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 8. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 9. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 10. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 11. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 12. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 13. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 14. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 15. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 16. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 17. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 18. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 19. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 20. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 21. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 22. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 23. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 24. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |
| 25. | A | <input type="checkbox"/> | B | <input type="checkbox"/> |

APPENDIX 8

TRAIT AGGRESSION QUESTIONNAIRE

Sears (1961) developed the Trait Aggression Inventory. The items which measure anti-social aggression were selected. Sears obtained an odd-even reliability of 0.64 on this original questionnaire.

The 9 aggression items and 3 buffer items are shown overleaf with the response sheet. The numbers in the boxes represent the scores obtained by each response.

Please tick one box:

I am a boy ☐ girl ☐

Here are a number of statements. After each one, there are 3 little boxes to show how you feel about that statement. If you agree with the statement, then put an X in the left-hand box. If you disagree, put your X in the right-hand box. If you are not sure how you feel, mark the middle box.

There are no right or wrong answers.

START:

1. It is perfectly natural for boys to want to fight sometimes.

agree ☐ 3 not sure ☐ 2 disagree ☐ 1

2. At my age, girls are more interested in dancing than boys.

agree ☐ not sure ☐ disagree ☐ BUFFER

3. There is too much fighting and arguing shown on T.V.

agree ☐ 1 not sure ☐ 2 disagree ☐ 3

4. Football would be a better game if the fans didn't fight.

agree ☐ 1 not sure ☐ 2 disagree ☐ 3

5. I don't see anything wrong about a fight between two gangs of teenagers; it's their business, and adults should keep out of it.

agree ☐ 3 not sure ☐ 2 disagree ☐ 1

6. At school, teachers should never allow any pushing and shoving among the children because someone might get hurt.

agree ☐ 1 not sure ☐ 2 disagree ☐ 3

7. Farming would be a good job because it gives you a chance to watch things grow.

agree ☐ not sure ☐ disagree ☐ BUFFER

8. Sometimes an actual fight is the only way to settle an argument.

agree ☐ 3 not sure ☐ 2 disagree ☐ 1

9. If an older boy is nasty to a younger boy, the younger boy has a perfect right to get even with him, even in some secret or sneaky way.

agree ☐ 3 not sure ☐ 2 disagree ☐ 1

10. Boys and girls like to read different books.

agree ☐ not sure ☐ disagree ☐ BUFFER

11. You have to stand up for your rights, even to the extent of fighting, if you want to get along in the world.

agree ☐ 3 not sure ☐ 2 disagree ☐ 1

12. A boxing match is more exciting when it's a real grudge fight, and the boxers don't like each other.

agree ☐ 3 not sure ☐ 2 disagree ☐ 1

APPENDIX 9

TEACHER CHECKLIST

Name - - - - -

Tick each behaviour that the above pupil shows often enough for it not to seem unusual.

- ☐ 1. Does not obey the teacher.
- ☐ 2. Gives dirty looks or sticks out tongue at other children.
- ☐ 3. Makes up stories and lies to get other children into trouble.
- ☐ 4. Does things that bothers others.
- ☐ 5. Starts a fight over nothing.
- ☐ 6. Pushes or shoves other children.
- ☐ 7. Always getting into trouble.
- ☐ 8. Says mean things.
- ☐ 9. Takes other children's things without asking.

APPENDIX 10

Verbal Instructions for Trait Aggression Study

Experimenter "You each have a questionnaire with 12 statements. After reading each one mark a box to show how you feel about that statement. If you agree with the statement, tick the left-hand box. If you disagree they tick the right-hand box. If you are not sure how you feel then tick the middle box. Go at your own pace. There are no right or wrong answers."

APPENDIX 11

Verbal instructions for arousal studyFrustration-arousal group

Experimenter: "Here is a puzzle which I would like you to complete as quickly as possible. The puzzle is very easy so it shouldn't take you long." (after 1 minute) "You'll have to hurry up as you're running out of time." (after 2 minutes) "You've only a little while left so you'd better finish it quickly".

Arousal group

Experimenter: "Take a skipping rope each and then show me how quickly you can skip with it. Try and skip as far around the playground as you can."

APPENDIX 12

PRIMING STIMULIAGGRESSIVE PRIME: PETER'S BATTLE

" Peter said nothing, for at that moment a strange noise woke the silence suddenly. It was like a bugle, but richer.

"It's your sister's horn," said Aslan to Peter in a low voice; so low as to be almost a purr, if it is not disrespectful to think of a lion purring.

For a moment Peter did not understand. Then, when he saw all the other creatures start forward and heard Aslan say with a wave of his paw "Back! Let the Prince win his spurs," he did understand, and set off running as hard as he could to the pavilion. And there he saw a dreadful sight.

The Naiads and Dryads were scattering in every direction. Lucy was running towards him as fast as her short legs would carry her and her face was as white as paper. Then he saw Susan make a dash for a tree, and swing herself up, followed by a huge grey beast. At first Peter thought it was a bear. Then he saw that it looked like an Alsation though it was far too big to be a dog. Then he realized that it was

a wolf - a wolf standing on its hind legs, with its front paws against the tree-trunk, snapping and snarling. All the hair on its back stood up on end. Susan had not been able to get higher than the second big branch. One of her legs hung down so that her foot was only an inch or two above the snapping teeth. Peter wondered why she did not get higher or at least take a better grip; then he realized that she was just going to faint and that if she fainted she would fall off.

Peter did not feel very brave; indeed he felt he was going to be sick. But that made no difference to what he had to do. He rushed straight up to the monster and aimed a slash of his sword at its side. That stroke never reached the Wolf. Quick as lightning it turned round, its eyes flaming, and its mouth wide open in a howl of anger. If it had not been so angry that it simply had to howl it would have got him by the throat at once. As it was - though all this happened too quickly for Peter to think at all - he had just time to duck down and plunge his sword, as hard as he could, between the brute's forelegs into his heart. Then came a horrible, confused moment like something in a nightmare. He was tugging and pulling and the Wolf

seemed neither alive nor dead, and its bared teeth knocked against his forehead, and everything was blood and head and hair. A moment later he found that the monster lay dead and he had drawn his sword out of it and was straightening his back and rubbing the sweat off his face and out of his eyes. He felt tired all over.

"Quick! Quick!," shouted the voice of Aslan. "Centaur! Eagles! I see another wolf in the thickets. There - behind you. He had just darted away. After him, all of you. He will be going to his mistress. Now is your chance to find the Witch and rescue the fourth Son of Adam." And instantly with a thunder of hoofs and beating of wings a dozen or so of the swiftest creatures disappeared into the gathering darkness.

Peter, still out of breath, turned and saw Aslan close at hand.

"You have forgotten to clean your sword," said Aslan.

It was true. Peter blushed when he looked at the bright blade and saw it all smeared with the Wolf's hair and blood. He stooped down and wiped it quite clean on the grass, and then wiped it quite dry on

his coat.

"Hand it to me and kneel, Son of Adam." said Aslan.
And when Peter had done so he struck him with the
flat of the blade and said, "Rise up, Sir Peter
Wolf's-Bane. And whatever happens, never forget to
wipe your sword."

684 words

NON-AGGRESSIVE PRIME: TURKISH DELIGHT

Edmund stepped on to the sledge and sat at her feet, and she put a fold of her fur mantle round him and tucked it well in.

"Perhaps something hot to drink?" said the Queen.

"Yes please, your Majesty," said Edmund whose teeth were chattering.

The Queen took from somewhere among her wrappings a very small bottle which looked as if it were made of copper. Then, holding out her arm, she let one drop fall from it on the snow beside the sledge. Edmund saw the drop for a second in mid-air, shining like a diamond. But the moment it touched the snow there was a hissing sound and there stood a jewelled cup full of something that steamed. The dwarf immediately took this and handed it to Edmund with a bow and a smile. Edmund felt much better as he began to sip the hot drink. It was something he had never tasted before, very sweet and foamy and creamy, and it warmed him right down to his toes.

"It is dull, Son of Adam, to drink without eating," said the Queen presently. "What would you like best

to eat?"

"Turkish Delight, please, your Majesty," said Edmund.

The Queen let another drop fall from her bottle on to the snow, and instantly there appeared a round box, tied with green silk ribbon, which, when opened, turned out to contain several pounds of the best Turkish Delight. Each piece was sweet and light to the very centre and Edmund had never tasted anything more delicious. He was quite warm now, and very comfortable.

While he was eating the Queen kept asking him questions. At first Edmund tried to remember that it was rude to speak with one's mouth full, but soon he forgot about this and thought only of trying to shovel down as much Turkish Delight as he could, and the more he ate the more he wanted to eat, and he never asked himself why the Queen should be so inquisitive. She got him to tell her that he had one brother and two sisters, and that one of his sisters had already been in Narnia and had met a Faun there, and that no one except himself and his brothers and his sisters knew anything about Narnia. She seemed especially interested in the fact that there were

four of them, and kept on coming back to it. "You are sure there are just four of you?" she asked. "Two Sons of Adam and two Daughters of Eve, neither more or less?" and Edmund, with his mouth full of Turkish Delight, kept on saying, "Yes, I told you that before," and forgetting to call her "Your Majesty", but she didn't seem to mind.

At last the Turkish Delight was all finished and Edmund was looking very hard at the empty box and wishing that she would ask him whether he would like some more. Probably the Queen knew quite well what he was thinking; for she knew, though Edmund did not, that this was enchanted Turkish Delight and that anyone who had once tasted it would want more and more of it, and would even, if they were allowed, go on eating it till they killed themselves. But she did not offer him any more. Instead, she said to him, "Son of Adam, I should so much like to see your brother and your two sisters. Will you bring them to see me?"

"I'll try," said Edmund, still looking at the empty box.

"Because, if you did come again - bringing them with

you of course - I'd be able to give you some more Turkish Delight. I can't do it now, the magic will only work once. In my own house it would be another matter."

"Why can't we go to your house now?" said Edmund. When he had first got on to the sledge he had been afraid that she might drive away with him to some unknown place from which he would not be able to get back; but he had forgotten about that fear now.

Both extracts from C. S. Lewis 'The lion, the witch and the wardrobe'. 1990 edition, London: Lions

APPENDIX 13

TRANSCRIPT OF SELECTED INTERVIEWSRE: GULF WAR AND WAR PLAY

Q: Do you think that children are playing war games a lot more now that there's a war on?

G1: 'Yes, but it's not good really, because if their Mums watching and their son or husband is in the war then they'll start thinking of them and then they might think that they'll shoot somebody.'

Q: Have any of you been playing war?

B1: 'No, not like guns and war, but the infants have been for the last 2 days.'

Q: What do you think about children playing war games when there's a war on?

B2: 'Not very good - because they're making fun of the gulf war what's going on now and trying to make guns and killing other people.'

B3: 'You should only play war when the war is off'.

Q: Why?

B3: 'Because its dangerous, the bombs might drop and you'll be playing outside and if there's gas you'll have to wear gas masks inside.'

B4: 'I play war games, but it's just for fun. It makes my mum go crazy coz it goes NEENAW, NEENAW, NEENAW.'

B2: I've got a gun that does all different things it can be a bomb or a lazer gun.

Q: What do you think about children playing war games when there's a war on?

G2: Its violent and when you grow up you might be violent.

B5: People might think that you like the war.

B6: It's dangerous because people might think that your toys are real and come and bomb you.

B7: I think that children have watched T.V. and think that it looks fun and think that it would be fun to play. But it's not very nice, it's like having a fun time at the soldiers.