PSYCHOPHYSICAL AND PSYCHOSOCIAL HUMOUR JUDGEMENTS AS A FUNCTION OF INTERACTIVE INCONGRUITY HUMOUR.

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PSYCHOPHYSICAL AND PSYCHOSOCIAL HUMOUR JUDGEMENTS

AS A FUNCTION OF INTERACTIVE INCONGRUITY HUMOUR

by

Ann Marie Gallagher-Guilmette

A Dissertation
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in Partial Fulfillment of the
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of Doctor of Philosophy at
The University of Windsor

Windsor, Ontario, Canada

1980
DEDICATION

to the memory of

the late Professor Lawrence La Favre

who was my mentor and friend
ABSTRACT
PSYCHOPHYSICAL AND PSYCHOSOCIAL HUMOUR JUDGEMENTS
AS A FUNCTION OF INTERACTIVE INCONGRUITY HUMOUR

by
Ann Marie Gallagher Guilmette

Based on a theoretical reconceptualization of incongruity humour theory, an interactive approach (in which humour occurs as a joint function of the stimulus situation and the mental experience of the organism) is posited in this investigation. Essential theoretical properties, considered in this interactive incongruity humour investigation, focus on conceptual functioning, a belief--attitude distinction, syntactic versus semantic formulations of "violation of expectancy", and a belief switching--belief change distinction. Studies by Mull (1949), Nerhardt (1970;1975;1976;1977), Deckers and Kizer (1974;1975), Hoppe (1976), Issar (1976), Mutuma (1976), and Tsang (1976) demonstrate that psychophysical and psychosocial humour judgements can be manipulated in various experimental contexts. In the present study, five major hypotheses were experimentally tested: 1) Whether violation of belief expectancy occurs as a function of a range of expectation (Nerhardt, 1970, 1975) or as a mean of expectation (Deckers and Kizer, 1974, 1975); 2) Whether heavy-to-light weights or light-to-heavy weights will generate contrast effect (Sherif-Hovland, 1961; Helson, 1964); 3) Whether subjects respond differentially to the violation of a narrow range of belief expectancy as opposed to the violation of a broad range of belief expectancy (Sherif et al., 1958; La Fave, 1977); 4) Whether subjects who are exposed frequently to beliefs
respond differently from subjects who are exposed infrequently to beliefs (Sherif-Hovland, 1961; Sherif et al., 1965); and 5) Whether a heavy discrepant weight will be judged more incongruous than a light discrepant weight (Spencer, 1860; Gerber and Routh, 1975).

Five dependent measures (amusement, threat, surprise, playful, and discrepant) were established for each of the five main hypotheses, generating twenty-five hypotheses in all. Hypotheses 1, 6, 11, 16, and 21 were all substantiated (p < .01): conditions in which range was varied (while mean was invariant) were more amusing, less threatening, more surprising, more playful, and more discrepant than conditions in which mean was varied (while range was invariant), lending support to Nerhardt's (1970;1975) findings in the context of a Sherif-Hovland social-judgment framework. Hypotheses 2, 7, 12, 17, and 22 failed to be substantiated: no contrast effects between the end-of-series weights and the discrepant weights occurred for either amusement, threat, surprise, playfulness, or discrepancy. This study was not designed to detect the role of assimilation and contrast effects which may occur in the initial formulation and establishment of social norms, however, further research in that direction is recommended.

The violation of a narrow range of belief expectancy generated significantly (p < .01) more amusement and playfulness (p < .05) for subjects than the violation of a broad range of belief expectancy, providing support for hypotheses 3 and 8. While hypotheses 13, 18, and 23 (threat, surprise, and discrepancy) failed to be substantiated, the evidence indicates that these effects occur in the direction of the narrow range. A MANOVA (combining the five dependent variables
of amusement, threat, surprise, playfulness, and discrepancy) did significantly ($p < .01$) provide support for hypotheses 3, 8, 13, 18, and 23. Nerhardt (1970; 1975) has shown that the greater the degree of discrepancy, the more likely amusement will result; and amusement at a narrow range is more likely to occur (under conditions of non-threat) as the degree of discrepancy experienced by the subject becomes exaggerated (La Fave, 1977).

Subjects, who were frequently exposed to the initial series of weights, judged the same discrepant weight as significantly ($p < .01$) more amusing, surprising, playful, and discrepant than subjects who were infrequently exposed to the initial series of weights (substitution for hypotheses 4, 9, 19, and 24). For hypotheses 14, subjects, who were frequently exposed to the initial series of weights, also judged the same discrepant weight to be less threatening than subjects who were infrequently exposed to the initial series of weights, but this effect was not significant. Nevertheless, a MANOVA was significant ($p < .05$) for these frequency of exposure hypotheses (4, 9, 14, 19, and 24). As Sherif et al. (1958) suggest, subjects' responses were found to be more intense, when their level of commitment or degree of ego-involvement is aroused. However, this enlarged effect is usually only postulated for attitudinal norms (Sherif et al., 1965); the findings in this study demonstrate that it is possible to exact a similar effect with beliefs.

For the last set of hypotheses (5, 10, 15, 20, and 25), a discrepant weight, heavier than any of the other weights previously lifted, was judged to be significantly ($p < .05$) more playful and surprising than a light discrepant weight (hypotheses 10 and 20).
Hypotheses 5 and 15 (amusement and threat) failed to be substantiated, although the direction of difference favoured a heavy discrepant weight. For hypothesis 25, a light discrepant weight was more likely to be judged discrepant than a heavy discrepant weight, although this effect was insignificant. Further, the MANOVA, for this direction of discrepant weight hypothesis, was insignificant (p < .10). Interpretation of this data suggests that a quantification of Spencer's ascending/descending incongruity distinction may be illegitimate. This aspect of incongruity humour remains relatively unexplored, and further research on this important topic is suggested.
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CHAPTER I
INTRODUCTION

During recent years (1970's), humour and humour theory, as witnessed by the first and second international conferences on humour and laughter, have become recognized as phenomena which warrant serious, scientific study. Humour has been found to serve both humane and inhumane functions (La Fave, 1977). Humour has even been recognized as a peace-keeping force; for instance, Wilson claims:

Humour may do more than a League of Nations to keep peace in the world. Insofar as we have learned to laugh at the right things, we shall have freed ourselves from an immense burden of anxiety, confusion, cruelty, and suffering and shall have taken a significant step towards attaining that godlike clarity of vision that will enable us to distinguish what is truly good from what is truly evil.
(Wilson, 1927, cited in Flugel, 1954, p. 732)

Yet, a rigorous examination of humour represents a recent and fairly novel enterprise; and novelty emerges only with difficulty (Giorgi, 1969). Psychological phenomena cannot be understood in terms of atoms or elements; for the elements of the psychologists, whether mental or physiological, rather than being simple components of experience are, in reality, the product of sophisticated attitudes and highly specialized human operations (Merleau-Ponty, 1963). McGhee (1979) notes that some theorists focus on the stimulus events that serve as sources of humour (either those objectively represented in the real world, such as jokes and cartoons, or those in one's own head) whereas others may emphasize the intellectual process of evaluating those events, personality factors related to humour appreciation, social influences, and so forth. Experimentation in humour generally
takes the form of the presentation of 'humorous' stimuli (auditory or visual) to the subject being asked to rank the items in order of funniness (Flugel, 1954). The study of incongruity humour and incongruity humour theory has, until recently, also copied this format. However, Giorgi argues:

Psychology is not fulfilling its unique possibilities. Instead of adopting and adapting the already established techniques of other sciences, psychology also should have the courage to be a pacesetter. Psychology should be working on problems that are indigenous; it would only be fair after so many years of borrowing.

(Giorgi, 1969, p. 431)

The serious, scientific study of the psychology of humour and humour theory is an indigenous problem which this investigation addresses.

Incongruity Humour

The structure of humour is characterized by incongruity (Kant, 1790; Maier, 1932; Koestler, 1964). The ludicrous quality depends upon a contrast between that which conforms to current social norms and that which does not (Bergson, 1911). For Bergson (1911), comedy, as a corrective social force, makes people aware of socially unadapted automatisms; and in dealing with the typical, it makes this correction over as wide an area as possible. A humorous incident encourages a certain direction or point of view but concludes (that is, organizes the facts presented) differently than expected (Maier, 1932). The ludicrous quality depends upon a contrast between that which represents conformity in society and that which does not (Piddington, 1933). Humour is based on our ability to reconcile the possible with the impossible (Shaw, 1960). Humour involves bisociation—an abrupt transfer of the train of thought from one matrix to another governed by a
different logic or rule (Koestler, 1964). Incongruity involves matching the true and pretended values, leading to a revelation of the counterfeit; recognizing the unusual and the unexpected (Keith-Spiegel, 1972). Incongruity has been defined as:

Incongruity is the conflict between what is expected and what actually occurs in a joke. Incongruity is never a single object or event but rather a relationship between two objects or events, such that the first sets up expectations which are disconfirmed by the second.

(Shultz, 1976, p. 11)

Incongruity humour is viewed as a consequence of the discrepancy between two mental representations—one of which is an expectation and the other is some idea or percept (Nerhardt, 1977).

**Objective incongruity.**

However, McGhee (1979, p. 10) argues "many theorists have simply taken the quality of incongruity for granted". Or, as La Pave (1979, p. 294) contends "most humour researchers treat such terms as joke and incongruity as properties of the stimulus situation; for instance, they talk as if a joke really exists objectively and external to the observer qua "humor stimulus"—independent of his/her culture". Levine and Abelson (1959) treat incongruity objectively, as a property of the stimulus situation; as reflected in the title of their article, *humor as a disturbing stimulus*. Powell (1977, p. 53) finds such philosophers of humour as Bergson and Kant as implying that incongruity humour is almost always objectively comic. For Godkewitsch (1972, p. 144), "an individual whose activation state is at a moderate level is best able to enjoy humorous stimuli". Berlyne (1972) also appears to represent incongruity objectively as one of his collative variables:
Arousal potential is a term covering all the stimulus properties (including intensity, inherent or conditioned biological significance, and other collative properties such as degree of novelty, surprisingness, complexity, ambiguity, incompatibility) that tend to drive arousal upward. (Berlyne, 1972, p. 46)

Jones (1970), Nerhardt (1970), Shultz (1972;1976), and Suls (1972) vacillate between objective and subjective perspectives; sometimes representing incongruity as stimulus discrepancy and sometimes as violation of expectancy. In one instance, Berlyne (1972) appears to advocate a subjective view by arguing that the cognitive processing of cognitive stimulus properties may lead to arousal fluctuations. However, Berlyne (1972) does not provide any explanation of these cognitive processes and instead, focuses his discussion on the collative stimulus properties.

La Fave et al. (1976) demonstrate that objective incongruity is neither a necessary nor a sufficient condition for amusement. Jokes or incongruities are seen as unnecessary to amusement because a person could mentally experience an incongruity even when objective incongruity is absent (a type of mistaken belief). Further, Nerhardt (1970;1976) and Deckers and Kizer (1974;1975), who measured humour and laughter as a function of discrepancy of weights from weights previously lifted, demonstrate that amusement can be generated by "nonhumorous stimuli" as neither these authors, nor anyone else, conceives of weights as jokes or objective incongruities. As well, objective incongruity is an insufficient condition to generate amusement. Superiority humour experimental evidence demonstrates that a 'joke' or 'incongruity' may fail to amuse when one's own proverbial ox is getting gored; when the individual feels victimized by the so-called incongruity (La Fave et al., 1974;1976). Also a 'joke' or 'incongruity' may not amuse because
one fails to get its point, i.e., fails to perceive the incongruity (a second type of mistaken beliefs) (Clark, 1970). Suppose, for instance, that an objective incongruity is really present in a situation, but the individual fails to notice that incongruity (or mistakenly believes it is not there), then it is quite inconceivable that the individual could be amused by it.

**Incongruity and resolution.**

In spite of this problem, some essence of incongruity appears to remain essential to the humorous experience. Jones (1970) argues that incongruity must be cognitively resolved for humour to result. Beattie (1776) and Willmann (1940) postulate that incongruity itself is insufficient to account for the structure of humour. Also, Shultz (1972) contends that a cognitive theory of humour would need to specify incongruity and resolution as the structural aspects of a joke; which a subject would have to understand in order to fully appreciate the intended humour. Humour is an abrupt disconfirming incongruity which is reconciled by problem-solving (Suls, 1972). And Shultz (1976) adds that humour appreciation involves a biphasic sequence; first, the discovery of incongruity, followed by the resolution of that incongruity. McShee (1979, p. 37) argues, "there does not seem to be any doubt among those studying humour that it is meaningful to distinguish between the perception of an incongruity and its resolution".

Opposition to these two-stage models for incongruity humour appreciation is found in the following:
Within a joking or humorous situation, a person can take pleasure in the sound and rhythm or nonsense words, can accept an incongruity without making complete sense of it and can indeed suspend to a greater or lesser extent the rules of logic and rational thought. (Rothbart, 1976, p. 52)

McGhee (1972) and Shultz (1976) do concede that it is unnecessary to posit a second stage for incongruity, but only for children who are under the age of seven. Before the age of seven, they argue, children can be amused at 'pure incongruity'. However, Pien and Rothbart (1977) report that under certain circumstances, young children (pre-seven) are capable of perceiving resolution as well as incongruity; they found that four- and five-year olds were capable of appreciating the resolution of a cartoon or joke, if the cartoon or joke is simplified. Further, Rothbart (1976) indicates that in a situation involving pictorial incongruities, problem-solving was found to detract from, rather than enhance humour appreciation. Also, from experience, it appears that the appreciation of the ludicrous is too immediate as to allow for explicit or elaborate judgement of incongruity (Piddington, 1933).

Another problem is that children could be amused by incongruities which they perceive, rather than those actually intended by the experimenter (Shultz, 1972). For instance, children were asked: "Why did the cookie cry?" and provided with the answer: "Because it's mother had been a wafer (read, away for) so long." The children were found to be more amused by the idea of a cookie crying and a cookie having a mother than by the pun which Shultz had generated for them. Shultz (1976, p. 26) reconciles this problem by suggesting that "the studies indicate that there is a stage during which the child can appreciate
'pure' incongruity, without resolution". However, psychophysical experiments provide ample evidence for the argument that resolution is unnecessary to the appreciation and comprehension of incongruity (Nerhardt, 1970, 1974; Deckers and Kizer, 1974, 1975; Gerber and Routh, 1975). As well, this psychophysical evidence suggests that if 'pure incongruity' exists, amusement at such is not limited to children.

Another argument offered by Rothbart and Pien (1977) is that the two stages get confused when the perception of an incongruity at one level resolves a more ego-involving or relevant incongruity at another. The problem is that resolution is poorly defined or ambiguous, where resolution itself generates another incongruity for which there is no resolution or for which after resolution the incongruity continues to exist (Rothbart and Pien, 1977). For example, the question is asked: "Why did the elephant sit on the marshmallows?" The answer provided is: "To keep from falling into the hot chocolate". Even after the point has been resolved, the incongruity, of an elephant sitting on marshmallows or falling into a cup of hot chocolate, persists (Rothbart and Pien, 1977, p. 37). The evidence seems to suggest that only one stage—incongruity is central to humour. However, the exact nature of incongruity has yet to be determined.

Interactive Incongruity

Finding a terminological handle for the type of incongruity which an adequate theory of humour requires, nevertheless, is not achieved easily. While most humour researchers appear to treat incongruity
as a property of the stimulus situation, Clark (1970) suggests that humour involves perceived incongruity. As well, La Fave et al. (1976) label this type as epistemic incongruity. A problem here is that epistemic may be interpreted as meaning knowledge (i.e., correct belief) which would not allow for the mistaken beliefs often found with incongruity. Further, epistemic could conceivably be understood as endorsing the stance of phenomenalism; the extremely subjective view which argues that (wo)man's judgements completely ignore the stimulus situation. At the same time, however, the view that incongruities can be treated objectively seriously impedes the understanding of humour by encouraging the epistemological fallacy of na"ive realism; the extremely objective view which argues that events exist in external reality, independent of an observer.

La Fave (1979) advocates that a more appropriate treatment would be to consider incongruity interactively; i.e., as a joint function of the stimulus situation and the mental state of the organism. Evolutionary biology, which suggest that homo sapiens would not have survived as a species without mental experiences more veridical to external reality than dictated by chance, provides support for an interactive approach, one which incorporates objective and subjective perspectives.

Yet, interactive incongruity, by itself, may not be viewed as humorous under all conditions. An additional restriction is suggested in Rothbart (1973) who postulates that a discrepancy (incongruity) must be perceived as non-threatening in order to be amusing. Similarly, humour results when the individual is confronted with an
incongruous or surprising situation which is to be taken lightly (Maier, 1932). Laughter at the incongruous can be regarded as essentially a pleasant adjustment to an unpleasant situation (Piddington, 1933). Even Descartes (1970 translation) contends that laughter (amusement) supervenes when we recognize that an attempted injury is incapable of doing damage. Taking into account the above considerations, it is postulated here (in agreement with La Faye, 1977; La Faye et al., 1976) that humour occurs as a result of a sudden, happiness increment due to an interactive incongruity.

Conceptual functioning and surprise.

The controversy regarding one-stage versus two-stage models of incongruity could also be clarified by defining incongruity in an interactive manner. Precision could be gained by employing a narrower conception of interactive incongruity. Consider that type of interactive incongruity which would result in the mental experience of surprise. And what, more specifically, generates surprise? "Surprise" seems to occur when one believes what is happening contradicts what one thought was going to transpire. In other words, "surprise" presupposes that an earlier belief is now believed mistaken.

For instance, when a person is observing reversible figure-ground relationships in an introductory psychology text, one moment that person perceives Napoleon; the next, while still observing the same figure, the person is surprised to see the trees. Another figure: one detects a vase, and instead, later notices profiles of two faces. Is that an ugly old hag? Or, now, is it a beautiful
young lady?

The possibility that these incongruous, surprising, Gestalt (i.e., belief) switches are amusing reflects the more-or-less uniquely human capacity to escape stimulus boundlessness. "Humor requires a certain level of cognitive, or intellectual, development. It is precisely the intellectual superiority of human beings over other animals that makes them alone capable of humor" (McGhee, 1979, p. 46). Were (wo)man limited to the perceptual level, it seems unlikely that reversible figure-ground relationships or anything else would be found amusing. To be able to perceive both a figure and then its reverse do not suffice for amusement to occur. It is the advanced level of development of the human brain that permits the symbolic functioning required to experience humour (McGhee, 1979). (Wo)man must have the capacity to somehow juxtapose both perceptions in the mind simultaneously (cf., Kaplan and Kris, 1947; Greenwald, 1976). But to accomplish such a feat, one must not be limited to perceptual functioning, one must be capable of uniting these incongruous fleeting perceptions with the temporal simultaneity enabled by conceptual glue. And only homo sapiens is symbol-minded enough to rise consistently to this more abstract conceptual cognitive level (La Fave, 1973). Conceptual functioning occurs or is possible in (wo)man because of language (Greenwald, 1976).

Violation of expectancy.

Having reviewed the problems inherent to incongruity humour, and having suggested that interactive incongruity provides some solution for these problems, the issue of what incongruity involves remains
to be examined. The most widely accepted definition of incongruity appears to involve "violation of expectancy" (Beattie, 1776; Bergson, 1911; Lewis and Goldberg, 1969; Clark, 1970; Nerhardt, 1970, 1975, 1976, 1977; Keith-Spiegel, 1972; Shultz, 1972; Issar, 1976; Mutuma, 1976; Rothbart, 1976; Tsang, 1976; La Fave, 1977). However, ambiguity exists with respect to both terms violation and expectancy.

Expectancy can refer to beliefs or attitudes. McGhee and Goldstein (1972) argue that the major obstacle to an understanding of the psychology of humour lies in the inadequate definitions and inconsistent usage of many humour terms. Two terms essential to a theoretical comprehension of humour and incongruity are belief and attitude. Interactive incongruity would lack the precision mandated in any scientific investigation unless beliefs and attitudes are precisely defined.

At least since Plato, philosophers have customarily differentiated knowing or believing from wanting or valuing (Scheibe, 1970). Philosophy has hence come to distinguish epistemology and ethics, facts and values, beliefs and values (attitudes), is and ought.

The current majority view in psychology in general and social psychology in particular, however, seems to be that no dichotomy between beliefs and attitudes can be maintained. Scheibe (1970) makes a bold effort to defend the partitioning of these two concepts in a manner that goes to the heart of the problem and spreads itself across an impressively large domain. Unfortunately, on pages 102-103 Scheibe seems to cave-in to the majority view that beliefs and attitudes are not mutually exclusive.
Fishbein and Ajzen (1975) and Rokeach (1968) apparently think beliefs and attitudes are disjoint. Unfortunately, however, their definitions of attitudes and beliefs can only obscure key conceptual issues involved, considered below. La Fave (1977) does sharply distinguish beliefs from attitudes in a way which gets to essentials, and will be discussed here.

McGuire (1969) is among the majority who do not find this distinction useful, because attitudes and beliefs are almost invariably interdependent. Sherif et al. (1965) argue sans reservation that attitudes and beliefs are interdependent, and, therefore, incapable of being dichotomized. Nonetheless, the argument of Sherif et al. certainly (and of McGuire quite probably) commits the elementary philosophical blunders of confounding structure with function and equivalence with equality.

As Fodor (1968) exhibits, some terms (such as mousetrap) require functional definitions; others (e.g., camshaft) demand structural. Since belief and attitude are structural, not functional, terms (as McGuire, 1969, inadvertently acknowledges by discussing their definitions under "attitude structure"), the fact that attitudes and beliefs influence each other creates no necessary encumbrance in distinguishing them. One wonders if McGuire would argue that a husband and wife interlocked in complementary status and role relations such that they invariably influence each other are thereby indistinguishable one from another?

The illogic by Sherif et al. (1965) of equating interdependence (i.e., a significant correlation) with overlap not merely confounds
structure with function but **equivalence** with **equality**. If interdependence = overlap, then a perfect correlation = co-extensiveness. However, if two sets or variables are co-extensive, they are equal.

Yet a perfect correlation between two variables (although establishing other properties also), does not **ipso facto** establish set equality; mere set equivalence is established thereby (i.e., a one-to-one function from and onto). Set equivalence is a weaker relation than set equality; even disjoint sets can conceivably be equivalent, and co-extensive sets invariably are. Not only would a perfect correlation between attitudes and beliefs **per se** fail to refute the fact that attitudes and beliefs are structurally different; the data never provide correlations which do not significantly depart from ± 1.00 (e.g., La Faye and Sherif, 1968).

The confusion resulting in psychology from a confusion of beliefs with attitudes is ubiquitous. To illustrate, consider the three following important technical terms in social psychology: 1) **opinion**; 2) **expectation**; and 3) **judgement**. Now consider the following sentences:

1) What is your opinion as to who will win February's election?

2) What is your opinion regarding the APA meeting in Canada this year? Do you think it's a good idea or not?

The word **opinion** in question 1) above is employed in the service of belief. However, in 2) above opinion refers to an attitude. Note further that the terms **expectation** and **judgement** readily replace either use of the term **opinion**.

It seems doubtful in the extreme that social psychology in particular and psychology in general can be regarded as sciences if
such key concepts as attitudes or beliefs (or their numerous approximate synonyms) are intersubstituted. A sharp distinction between beliefs and attitudes is mandatory to experimental work on humour (La Fave, 1977). La Fave (1977) and La Fave et al. (1979) appear to offer the first theoretical treatment (based on Frege's 1893 distinction between contribution and assertion, Chomsky's 1961 deep versus surface semantics, and Von Wright's 1967 formulations in deontic logic) which does successfully distinguish between a belief and an attitude.

Essentially, every belief is either correct or mistaken; no attitude can be either correct or mistaken. That is, every belief is expressible as a declarative sentence; no attitude is expressible as a declarative sentence holding a truth value. As well, La Fave and Shew (1973) developed a new rule of inference for psychology interrelating a belief statement with its associated attitude statement, thus generating an identification class system which provides the emasculated verbs and relations in mentalistic psychology with some needed deductive power.

Additionally, empirical work which demonstrates that different humour judgement predictions can be made by treating unidimensional belief social norms as distinct from unidimensional attitude social norms is provided by Issar (1976).

Syntactic and semantic violations.

Belief and attitude social norms represent the essential semantic ingredients of interactive incongruity. Berlyne (1972) also formulates
incongruity in a social-normative context by suggesting that the
behaviour of a human being depends upon his/her anticipations of what
is to come and on his/her recollections or reconstructions of what
went before. In humour, semantic factors may play no part at all
(Berlyne, 1972). Counter to Berlyne, however, social-normative
interactive incongruity is both structural (syntactic) and thematic
(semantic) in nature. Amusement results when some semantic (either
belief or attitude) norm is violated. And the violation (mistaken
belief) itself represents the structural (syntactic) belief component
of interactive incongruity.

Conceptual functioning allows an individual the ability to
recognize when his/her beliefs are mistaken. For Berlyne (1972, p. 45)
"humor depends on the incongruous juxtapositions of sights and sounds".
Kaplan and Kris (1947, p. 419) identify this capacity by suggesting
that "wit and humour arise only if several meanings are simultaneously
responded to". In Piddington (1933, p. 176) "the laughable situation
is one in which we are called upon to simultaneously affirm and deny
the same proposition". Conceptual functioning is represented by
Greenwald's (1976) term *duplicity*, which involves the ability to hold
two structures or formatives in mind simultaneously.

There is, however, some similarity between this structural
aspect of incongruity and surprise, in that both involve an instantaneous
breaking up of the routine course of thought or action (Keith-
results in surprise at an object that we encounter. The surprise
response occurs when something new or discrepant is presented". Humour
and laughter involve an element of incongruity as manifested in the juxtaposition of things, situations, or meanings which are not usually experienced (Flugel, 1954). A necessary ingredient for humour is that two incongruous ways of viewing something (a person, a sentence, a situation, etc.) be juxtaposed (Paulos, 1977). Conceptual functioning enables (wo)man this ability to simultaneously juxtapose two seemingly incompatible events resulting in mistaken beliefs (La Fave, 1973).

Charlesworth (1969) suggests four ways in which surprise differs from novelty. The essential difference is that in novelty, the child has no particular expectancy (belief) about a forthcoming event—it is unexpected; whereas, in surprise, there are rather precise expectations about the forthcoming event—it is misexpected. Similarly, children must understand the real order of things before incongruities and exaggerations become a source of pleasure (McGhee, 1979). Interactive incongruity may occur more as a function of the misexpected (surprise) than of the unexpected (novelty). A more precise handling of the differences between surprise and novelty involves a distinction between belief change and belief switching.

Belief change occurs when the extensional component of a belief is transformed. For instance:

A) Reg is lifting weights of 85 to 210 gms.

B) Reg is now lifting desks.

In examples A) and B) above, Reg would not experience mistaken beliefs (surprise); rather, the belief expressed in B) may be novel (unexpected) for Reg relative to A) in that the extensional information transmitted by B) represents a changed belief expectancy for Reg. Under these circumstances, no simultaneous juxtapositions of A) and B) need occur.
Similarly, Nerhardt (1977) postulates that if the divergence (violation of expectancy) is so far removed as to become too dissimilar to be referred to the expected class at all (shares no defining properties with the expected class) and hence not subject to the expectations as a member of that class, that it would not represent any divergence at all. Also, Helson (1971) reports several studies that show that when anchors differ too greatly in size and shape from the series stimuli, they do not influence them. The point made by these two authors can be more precisely expressed by belief change.

Alternatively, belief switching occurs when the intensional component of a belief is transformed. Consider:

C) Reg is lifting weights of 120 to 170 gms.
D) Reg is now lifting a weight of 260 gms.

Belief statement C) represents a belief expectancy for Reg. D) represents an equivalent belief statement to C); however, the information (intensional component) transmitted by D) transforms Reg's previously established belief expectancy such that the simultaneous juxtaposition of C) and D) by Reg would result in amusement.

Ample evidence for belief switching appears in the reversible figure-ground relationships reported by Gestalt psychologists. The same picture (extensional equivalency) can be perceived (intensionally) as two different images. As the Gestalt position is typically non-phenomenological (perceptual rather than conceptual) these images cannot be perceived simultaneously; however, an individual can recognize (cognitively) that by manipulating figure and ground, two
distinct images are generated. Nelson (1971, p. 11) argues "we need to broaden the concept Gestalt to include cognitive and affective as well as perceptual wholes". A conceptual functioning framework for belief switching provides an adequate explanation for the phenomenon involved.

The Gestalt psychologists were the first to recognize the far ranging significance of the principle that certain structures, particular relations between elements of a perceived pattern, can prove disharmonious or disturbing (Berlyne, 1972). Gestalt psychology thereby provides a theoretical base for interactive incongruity humour theory—that man imposes structure upon an unstructured situation such that sense or meaningfulness is perceived in the nonsensical or incongruous. The achievement of such closure appears, under appropriate circumstances to be a pleasant, amusing mental experience.

Beliefs and attitudes (as expectancy) represent only the semantic content of incongruity. Interactive incongruity (as suggested earlier) also involves beliefs (more accurately mistaken beliefs) on the violational level. But these beliefs represent the syntactic component of incongruity. Hence, in a recursive reformulation, "violation of expectancy" can be reclassified as mistaken beliefs about beliefs or mistaken beliefs about attitudes.

Humour experiments, which treat incongruity as mistaken beliefs about beliefs, have been performed by Nerhardt (1970;1975), Deckers and Rizer (1974;1975), and Gerber and Routh (1975). The beliefs (semantically defined) in their experiments consisted of psycho-physical weights. Further humour experiments, which treat incongruity
as mistaken beliefs about attitudes, have been performed by Mull
(1949), Hoppe (1976), Mutuma (1976), and Tsang (1976). The attitudes
(semantically defined) in their experiments consisted of such psycho-
social phenomena as music appreciation, language usage and social
norms, respectively. Issar (1976) performed the only humour experi-
ment dealing with mistaken beliefs about both belief and attitude
social norms. All of the above experiments represent psychophysical
and psychosocial approximations to interactive incongruity humour
judgements.

Psychophysical and Psychosocial Evidence

Humans perceive objects not only as figures against backgrounds,
but as possessing various attributes in varying degrees (some sensory,
some cognitive, some affective) which position them in various social-
normative classes. "The norms men live by, the manner in which they
arise and develop is one of the most important areas for psychological
investigation" (Nelson, 1971, p. 16). Similarly, the individual's
psychological scale is formed by repeated encounters with a series
of stimuli (Sherif et al., 1965). Additionally, the formation and
use of standards depends upon the range of experiences a person has
with the universe of stimuli (Sherif and Hovland, 1961). Eiser and
Stroebe suggest:

Social judgement experiences are relative. A person's
reaction to any object of judgement, be it a life-style
or a lifted weight, depends upon the standards against
which the object is compared. Experience is not only
relative but selective. It involves not only a process
of comparison but a complementary process of categorization.
(Eiser and Stroebe, 1972, p. 1)

In the humour literature, incongruity experiments (which measure
discrepancy of weights from either an expected range or geometric mean of weights previously lifted) provide evidence for the relativization and categorization of psychophysical phenomena (Nerhardt, 1970; 1975; Deckers and Kizer, 1974; 1975). The psychophysical weights employed in the above experiments would be considered motivationally neutral by Sherif et al. (1965). A connecting link between psychophysical and psychosocial judgement can be provided by considering psychophysical weights as motivationally-neutral psychosocial beliefs.

Nerhardt's (1970; 1975) experiments differ significantly from Deckers and Kizer (1974; 1975) in terms of the techniques employed to establish social-normative expectancies and the predictions regarding laughter (presumably amusement) as a function of the degree of discrepancy.

Nerhardt (1970; 1975) employed the Method of Absolute Judgement in the establishment of subjects' psychophysical belief expectancies. As Eiser and Stroebe argue:

The Method of Absolute Judgement was devised so as to distinguish it from the Method of Comparative Judgement; but absolute judgement involves comparing each individual stimulus which has to be judged with others in the series. Absolute judgement, then, is relative to the total series.

(Eiser and Stroebe, 1972, p. 8)

Thus, on any given trial in Nerhardt's (1970; 1975) study, the subject was presented with a single weight from the series to be established.

Alternatively, Deckers and Kizer (1974; 1975) employed the Method of Comparative Judgement such that on each trial, a subject would be presented with a weight from a series to be established accompanied by a comparison weight. According to Corso (1971), Deckers and Kizer (1974; 1975) were really testing Comparative Adaptation-Level (CAL)
rather than Adaptation-Level (AL). As Corso explains:

When using the Comparative Method of Judgement, the Comparative Adaptation-Level (CAL) is defined as the weighted geometric mean of the series and the standard (s). However, when using the Absolute Method (when no standard is present), Adaptation-Level (AL) is defined as the physical value of the stimulus which is judged to be neutral or in the middle scale category (i.e., mean value).

(Corso, 1971, p. 35)

Nerhardt (1970;1975) predicted that laughter would occur as a monotonically increasing function of the degree of divergence from the expected range; i.e., the greater the degree of discrepancy (represented by the violational weight), the greater the degree of laughter subjects would express. Counter to Nerhardt, Deckers and Kizer (1974; 1975) found a curvilinear relationship between laughter and the degree of discrepancy from a geometric mean (rather than a range). The differences in these findings will become relevant again later in this review.

Nerhardt's (1970;1975) and Deckers and Kizer's (1974;1975) experiments are similar, however, in that they demonstrate, consistent with a Gestalt psychological approach, that incongruity can be established outside the 'joking' context. Such experiments appear reminiscent of 'slapstick' comedy (if laughter in this context does measure amusement); i.e., no jokes per se are needed to amuse. A highly discrepant weight could hardly be called a joke--containing neither a "point" nor an ambiguity. Yet highly discrepant weights apparently can amuse.

Other experiments also measured incongruity humour judgements using psychophysical norms to manipulate relative divergence from
belief expectations (Shurcliff, 1968; Dodd and Lewis, 1969; Lewis and Goldberg, 1969). Additionally, Mull (1949) and Hoppe (1976) cite music appreciation and language usage, respectively, as sources of incongruity humour in the psychosocial context (i.e., the effects found with physical stimuli can be reproduced with social stimuli). However, one must look closer into these studies to understand why certain situations appear sufficient to elicit amusement. The above studies tested incongruities or violations of belief norms from an expected range or geometric mean in various psychophysical or psychosocial tasks. Such tasks do not involve ego-involving, attitude norms; belief norms of this type rarely prove to be ego-involving. The recognition of a violation of ones attitudinal social norms would probably be threatening, rather than amusing. The above researchers found unidimensional violation (anti-conformity) amusing probably because they were employing nonthreatening belief, rather than attitude, norms.

In order for an experience to be amusing, it must be considered as nonthreatening by the subject (Rothbart, 1973). A violation of an attitude social norm of a subject would generally be expected to be judged as threatening rather than amusing. (Generally, a subject will perceive a nonthreatening, incongruous situation as most humorous. While a threatening, incongruous situation may be more amusing than a nonthreatening, congruous one; a threatening, congruous incident would clearly be judged nonamusing.) If, however, a conversion from one dimension (unidimensional) to many dimensions (multidimensional) of anticonformity were to generate a serious-to-playful belief
transformation for the subject, the incongruity would be perceived as nonthreatening and hence become amusing.

Based on theoretical insights provided by La Pave et al. (1976), a series of cross-cultural humour experiments were performed to demonstrate both the cultural relativity of humour judgements and a concomitant serious-to-playful transformation. The first experiment tested three hypotheses: picture-stories displaying multidimensional value cultural normative incongruity were found to be judged as more 1) amusing, 2) jokes, and 3) strange than picture-stories not anticonforming to the subject's culture. In this first experiment, Nutuma (1976) used three attitude social norms in each anticonformity item. These items may have been considered threatening and ego-involving if presented unidimensionally, but when they were put together as three in one item (multidimensionally), he reported that the subjects, to whom these norms collectively anticonformed, found them humorous. This effect was postulated to occur because although singly a violation may be threatening, three combined anticonforming attitude social norms proved to be ridiculous and thus amusing as the result of a serious-to-playful belief transformation.

The second study by Tsang (1976) was designed to determine whether three dimensions of social-normative anticonformity were necessary to generate amusement; she found that anticonformity stories failed to be judged 1) more amusing but were judged 2) in poorer taste, and 3) more playful than nonanticonformity items.

Perhaps only unidimensional anticonformity is needed to generate amusement as Nerhardt (1970;1975), Deckers and Kizer (1974;1975) and Gerber and Routh (1975) suggest. But these researchers did not need more than one dimension of anticonformity because they were dealing
with non-threatening beliefs rather than threatening attitudes. Thus a third study was designed to determine if anticonformity to unidimensional belief social norms would be amusing while anticonformity to unidimensional attitude social norms would not.

In this third study, Issac (1976) found that items which anticonformed to the subjects' unidimensional belief norms were judged as amusing, surprising and nonhostile; while the items which anticonformed to the subjects' unidimensional attitude norms were judged hostile, and more often judged as less amusing and less surprising.

The findings of these three studies demonstrate the cultural relativity of interactive incongruity humour. Interactive incongruity is a significant determinant of social-normative incongruity humour judgements. One (wo)man's 'joke' may be another (wo)man's insult (and/or nonamusing nonjoke) if the two have internalized different cultures in the socialization process.

Studies in social judgement have become extremely relevant and important to the understanding of interactive incongruity humour theory. However, as Eiser and Stroebe indicate:

These theories are correct in assuming some relationship between social and psychophysical judgement but when it comes to defining the precise nature of this relationship, the accounts which they offer are either inaccurate or incomplete. (Eiser and Stroebe, 1972, p. 143)

For instance, returning to Nerhardt's (1970;1975;1976;1977) and Deckers and Kizer's (1974;1975) studies, evidence for the imprecise formulation of these psychophysical and psychosocial relationships can be found. It is not always clear which features of the stimulus
context are responsible for the effects produced. In Nerhardt's (1970;1975;1976;1977) study, the range of the stimulus series was regarded as the essential element in determining violation; while for Deckers and Kizer (1974;1975) geometric mean was designated as essential for violation determination.

Nerhardt's (1970;1975;1976;1977) position articulates Sherif and Hovland's (1961) approach to social-judgement. Sherif and Hovland (1961) were among the first to insist that the social norm which emerges between individuals is not simply the average of individual norms. Further, they argue that subjects may adopt both extremes of the stimulus series as "subjective standards" with which to define the end categories of a scale. It appears that the end points of a judged series of stimuli serve as anchors in the formation of judgement. Earlier, Stouffer wrote:

> It is the viewpoint of this paper that the range of approved or permissible behavior as perceived by a given individual is an important datum for the analysis of what constitutes a given social norm in any group. (Stouffer, 1949, p. 708)

As well, Sherif and Hovland (1961) suggest that the distance of an item from the judge's own position as well as the subject's latitudes (range) of acceptance, rejection and noncommitment determine how an item will be judged.

Alternatively, Nelson (1964) argues that judgement is relative to prevailing norms or adaptation-levels. Further, Nelson maintains:

> The central assumption of adaptation level is that every stimulus is perceived and hence judged in relation to some psychological zero or point of perceived neutrality which represents the level of adaptation of the organism to the stimuli presented. (Nelson, 1971, p. 10)
There has not been any interactive incongruity humour experiment designed to test the difference between adaptation level (treating the social norm as a mean point) and social-judgment (treating social norm as a range) theories. As Eiser and Stroebe (1972) suggest, these differences remain inaccurate or obscure. McGuire (1962) warns that there lurks a danger in the drawing of analogies between psychophysical and psychosocial scales. To be avoided is the tendency to become so enamored of the provisional analogue that one is inclined to dismiss, rather than heuristically expoit, the obtained deviations from it.

Swabey's (1961) theoretical treatment handles a variety of norms and divergences from them as ranges. Also, Stouffer (1949) suggests that it is common and convenient to think of a social norm as a point, or at least a very narrow band on either side of a point, however, in doing so, the probability is quite unrealistic as to most of (wo)man's social behaviour. It has been suggested that relative contrasts have accentuated the dissatisfactions and disequilibria that are found in society today (La Fave, 1963;1965;1969). The facts learned about the role of anchors, and much else concerned with internal norms, carry over to our perceptions of social, economic and political conditions (Helson, 1971).

Bergson (1911) may have been the first modern philosopher to emphasize the social character of laughter (humour). Bergson (1911,p. 2) asserts that "the comic does not exist outside the pale of what is strictly human". And for him, the word human meant essentially what today might be labelled social. Social norms provide a connecting link between psychology and sociology (Stouffer, 1949). A social-
science truism seems to say that as a society develops and crystallizes its cultural norms, is becomes ought. That is, the customs become sanctified and impregnated with religious significance. The duty of the citizenry next becomes to help achieve the politically conservative function of maintaining the status quo. Behaviour which deviates from such standards gets labelled as incongruous or bizarre and is judged pejoratively as either criminal or mentally ill or (if nonthreatening) perhaps comical. Such behaviour tends to invalidate its performer (that is, lower his/her status toward that of an 'untouchable')—unless, as a comic, (s)he makes clear that (s)he's "only joking".

Arousal, Ego-Involvement and Frequency

Additional concepts, central to an understanding of interactive incongruity, need to be examined. Sherif et al. (1965) postulate that correct opinions and accurate appraisals of ability are likely to lead to satisfying or rewarding behaviour; whereas incorrect beliefs and/or inaccurate appraisals of ability lead to unpleasant consequences. This argument appears to reflect the cognitive consistency hypothesis which maintains that inconsistency is unpleasant and tension-producing (Fishbein and Ajzen, 1975).

The imbalance produced by discrepant stimuli is found to be pleasant rather than unpleasant (Roberts and Johnson, 1957). Also, an increase in cognitive inconsistency (i.e., incongruity) was found to be amusing (Gerber and Routh, 1975). A central problem in interpreting these findings is that incongruity is not always synonymous with inconsistency.
Three levels of inconsistency can be established. The first level would be objective inconsistency, defined as logical contradiction or analytic falsehood; the second, belief inconsistency (which may parallel incongruity) would be defined as subjective or conventional contradiction; and the third, attitude inconsistency would be defined in terms of ambivalence or polyvalence, devoid of subjective contradiction.

However, cognitive consistency models fail to hold for most humour theory predictions due to a confounding of beliefs and attitudes (La Fave, 1977). For instance, Rothbart (1976) assumes that extremely sudden, intense or highly incongruous stimuli, or stimuli found to be dangerous, are likely to lead to expressive reactions of distress and behavioural reactions of avoidance or aggression. Rothbart's (1976) assumption would only hold when unidimensional attitudes are threatened. In the Mutuma (1976) and Tsang (1976) experiments, multidimensional attitude social norms were violated to such an extreme as not to be taken seriously by their subjects, hence, rendering these incongruities playful. Additionally, where nonthreatening belief social norms are involved, Nerhardt (1970; 1975) found that the more extreme the discrepancy, the greater the resultant laughter.

The suggestion that incongruity may be related to an increase in arousal level is also inherent in Rothbart's (1976) postulate. She suggests that arousal increases of any size will be accompanied by pleasureable affect when they are associated with the subject's judgement that the situation is a 'safe' or 'nonthreatening' one. The disruption of an orderly pattern may be discomforting (Sherif et al., 1965). When the discovery of an incongruity produces an
increase in cognitive arousal, the production of resolution serves to decrease that arousal (Shultz, 1972). This finding is consistent with Berlyne's (1972) formulation that increases as well as decreases in arousal can be pleasureable. Berlyne (1972) postulates that arousal boosts (moderate rise in arousal) and arousal jags (where arousal is reduced after climbing to an uncomfortably high level) can generate amusement. The arousal Berlyne is talking about might come from any of a number of sources, including intellectually arousing qualities such as incongruity and complexity. An especially important aspect of Berlyne's position is that a curvilinear relationship exists between arousal level and amount of pleasure; that is, moderate levels of arousal are more enjoyable than either very high or very low levels.

Zillmann and Cantor (1972) argue, however, that Berlyne's theory is tautological in nature—tautological in that the points where the arousal level velocity changes are left unspecified such that for each hypothesis derivable, its negation is also derivable.

Predictions which suggest an alternative to Berlyne's (1972) formulation are described in Nerhardt (1976;1977). The relationship between degree of discrepancy and humour is viewed as a monotonically increasing function. Shurcliff (1968) and Suls (1972) also found that the relationship of surprise (incongruity) to funniness was monotonic rather than curvilinear.

Yet, consistent with Berlyne (1972), Godkewitsch (1972) maintains that the relationship between arousal level and the appreciation of humour is curvilinear, rather than monotonic; an individual whose
activation state is at a moderate level is best able to enjoy humorous stimuli. Godkewitsch (1972, p. 148) later defeats his own argument by adding "a given amount of stimulation may be called moderate by one author and highly or little arousing by another".

The problem regarding the relationship between arousal level, incongruity and humour appreciation remains unresolved due to the imprecise or vague handling of this domain. Adding ambiguity to this dilemma is the terminological bias to equate arousal level with motivational or ego-involving attitudes.

This problem may begin to be resolved by returning to the distinction between syntactic and semantic conceptions of interactive incongruity, suggested earlier. A curvilinear relationship would be found, in all probability, when incongruity is conceptualized as belief violation of attitudinal social norms and this condition may even be accompanied by physiological levels of arousal. While, consistent with Nerhardt (1976; 1977), monotonically increasing functions could be predicted for belief violation of belief social norms.

However, some notion of ego-involvement continues to persist for belief violation of belief social norms. For instance, Sherif et al. (1965) argue that the greater the degree of commitment and personal involvement, the more discrepant a weight will be judged. Further, subjects who experience a narrow range should displace more a discrepant weight than subjects who experience a broader range (La Pave and Sherif, 1968). On a similar note, La Pave (1977) indicates that incongruities embedded within a tightly-knit Gestalt will more likely be found amusing than if embedded within a mosaic.
The repeated exposure of novel stimuli may enhance affect due to repetition (Suls, 1972).

Most of the work dealing with psychosocial attitude norms has focussed on ego-involvement (cf., Sherif et al., 1965; Sherif and Cantril, 1947; Sherif and Hovland, 1961; Sherif and Sherif, 1969). There has yet to be a study involving psychosocial belief norms which focusses on the frequency of exposure notion suggested here. The amount of exposure to an expected range prior to the presentation of a violation could be used to test ego-involving beliefs. The amount of time that an individual spends on a particular issue will tend to increase the degree of commitment (level of ego-involvement) associated with that issue (Sherif and Hovland, 1961). Thus, psychophysical weights could become ego-involving beliefs for subjects who are frequently exposed to a series of weights.

Another distinct issue in interactive incongruity is provided by Spencer (1860), who attempts to distinguish between ascending and descending incongruity. In Spencer's (1860) classification, movement from the sublime to the ridiculous (descending incongruity) would generate amusement as 'strained expectation unawares transforms into nothing' (p. 401). Alternatively, movement from the ridiculous to the sublime (ascending incongruity), rather than resulting in amusement, results in a sense of wonder or amazement. For example, in Spencer's (1860) description, a large man is holding a small infant. Spencer argues that if one first notices the smallness of the infant and then moves to concentrate on the largeness of the man, amusement results; if one first notices the largeness of the man and then moves
to the smallness of the infant, a sense of wonder or amazement results.

Spencer's (1860) ascending/descending incongruity distinction has not been tested experimentally, however; Gerber and Routh (1976) found that a heavy discrepant weight which violates an established series of light weights is more amusing than a light discrepant weight which violates an established series of heavy weights. A heavy-to-light transition appears to reflect ascending incongruity while a light-to-heavy transition appears to reflect descending incongruity. If this distinction proves testable, it may be possible to establish an important connecting link between the psychology of humour (amusement) and the psychology of aesthetics (amazement).

Humour and Laughter

Well known humour theorists treat humour and laughter interchangeably (Bergson, 1911; Eastman, 1936; Flugel, 1954). However, Langevin and Day (1972) suggest that there is no one-to-one function between laughter and humour. Laughter can be irrelevant to the study of humour, and vice versa, because each can be experienced independently (Dewey, 1894; Potter, 1954). "A distinction can (and indeed should)be drawn between theories of humour and theories of laughter" (Chapman and Foot, 1976, p. 3).

In some instances, laughter is a reasonably accurate guide to humour. Laughter seems to be a desirable scientific construct in that it is so 'operational'. However, one cannot assume a priori that whenever laughter occurs, humour is uncovered. Clearly, amusement is a mental experience (i.e., organismic variable or O) in a Stimulus-Organism-Response (S-O-R) model—unlike laughter, which is a response (R). "Laughing is essentially a parasympathetic efferent reaction"
(Stearns, 1972, p. 44). Obviously, then, amusement and laughter are not identical. They would be equivalent if amusement were both a necessary and sufficient condition of laughter. On the contrary, a person may laugh under many conditions of non-amusement. Human neurological disorders can precipitate laughter unaccompanied by amusement (Reynolds, 1971) and Stearns (1972) provides numerous examples. Druckman and Chao (1957) summarize the pathological conditions that can accompany inappropriate laughter (i.e., cerebral arteriosclerosis, frontal lobotomy, and some kinds of seizures). Reynolds (1971) notes that gelolepsy (a form of epilepsy) is such a seizure.

Amusement, then, is neither a necessary nor sufficient condition of laughter. If laughter were to be used as the dependent variable in humour experiments, as Nerhardt (1970;1975) and Deckers and Kizer (1974;1975) did, it would be useful to investigate further between types of laughter (i.e., to distinguish amused laughter from embarrassed laughter). La Gaipa (1971) and associates did investigate such distinctions via video and audio tapes of cohesive groups. It might also be possible, in some future research, to distinguish voluntary laughter (nonamusement accompanied by laughter) from involuntary laughter (amusement accompanied by nonlaughter) from voluntary laughter (amusement accompanied by laughter).

An alternative solution would be to employ humour judgement scales as valid indicators of subject's amusing mental experiences. Experiments, employing subject's ratings on various humour scales, by Issar (1976), Mannell (1976), Mutuma (1976), and Tsang (1976) provide convincing evidence that humour judgement scales can serve as disguised
measures of interactive incongruity. Humour research and theory should move in the direction of what Sherif and Sherif (1969) describe as validity cross-checks and Webb et al. (1966) refer to as multioperationalism.

Statement of the Problem

The definition of interactive incongruity and related terms, such as belief switching, beliefs, attitudes, and conceptual functioning, are essential to an understanding of humour in the social-normative context. It is proposed that interactive incongruity humour will occur if a subject perceives (on a conceptual level) the violation of psychosocial (belief) norms. In the study presently suggested, attempts will be made to determine which parameters (psychophysical mean or psychosocial range) of a weight distribution are responsible for determining when amusement will occur as a function of interactive incongruity. To do so, it would be necessary to generate conditions under which the end-points (stimulus range) of two distributions are held constant while the means of the distributions are varied; and also conditions under which the means of the distributions are held constant while the ranges vary.

La Fave (1965; 1969; 1976) suggests that the violation of a social norm can be related to the Sherif-Hovland (1961) social-judgment model. La Fave (1965; 1969; 1976) advocates that a psychophysical (interpreted as psychosocial belief) item 'way out' in a subject's latitude of rejection (i.e., very
discrepant from his/her own position or latitude of acceptance) will be judged amusing. Further, on the basis of work by Nerhardt (1970; 1975) and Gerber and Routh (1975), it can be assumed that very discrepant weights (weights which violate a subject's range of expectancy) more often amuse than less discrepant; and that the narrower the range, the more likely discrepancy (and hence amusement) will be generated.

Alternatively, Deckers and Kizer (1974;1975) found that very discrepant weights (weights which violate a subject's mean expectancy) more often amuse than less discrepant. Deckers and Kizer (1974;1975) were testing laughter (and presumably amusement) as a function of a central tendency measure (point of subjective equality or adaptation-level). Adaptation level theorists maintain that with changes in stimulation, accompanying focal stimuli (internal anchors or norms), the quality, magnitude, and other dimensions of the stimuli also change (Nelson, 1971). Further, Nelson (1964) suggests that adaptation-level may be considered as a theory of contrasts, however, background and anchor effects contribute to both contrast and assimilation. Thus, Nelson (1964;1971) argues that with very heavy anchor weights, judgements are predominantly on the light side; while with very light anchor weights, judgements are predominantly on the heavy side.

In psychophysical parlance, if discrepancy, viewed as violation of a subject's mean expectation, contributes more to amusement, this finding would provide support for Nelson's (1947;1964;1971) adaptation-level model which Deckers and Kizer (1974;1975) appear to articulate in the humour literature. As well, the greater the contrast between
a background stimulus and the violation, the more likely a subject will experience amusement. Alternatively, in psychosocial parlance, if discrepancy, viewed as violation of a subject's range of expectation, contributes more to amusement, this finding would provide support for the Sherif-Hovland social-judgment model which Nerhardt (1970;1975) appears to articulate in the humour literature. As well, a narrow range would be expected to generate more amusement than a broad range.

Two conditions have to be established in which the violation weights are discrepant from the end-points of two different ranges (one broad and one narrow), while the means for the ranges remain invariant. As well, two conditions have to be established in which the violation weights are discrepant from two means (one inner and one outer) of a series of weights, while the width of the ranges remain invariant. Thus, in the first two conditions, the violation weights are highly discrepant from the narrow range and less discrepant from the broad range; while in the last two conditions, the violation weights are highly discrepant from both means, but less discrepant from the end-points of the range. Hence, the first two conditions are assumed to reflect Nerhardt's (1970;1975) range of expectancy model while the last two conditions are assumed to reflect Decker's and Kizer's (1974;1975) mean of expectancy model.

A second problem, which this investigation addresses, focusses on interactive incongruity in relation to ego-involving versus non-ego-involving beliefs. With an increase in the frequency of exposure to an initial series of weights, the degree of ego-involvement or commitment that a subject experiences is also likely to increase,
resulting in increased amusement.

Sherif et al. (1965) suggest that psychosocial evidence has typically concentrated on the nature of ego-involvement in attitudes, while beliefs (as psychosocial phenomena) remain ignored or confounded. It has been Nerhardt's (1970; 1975; 1976; 1977) contention that the greater the degree of discrepancy between an established range and a weight which violates this range, the greater the degree of amusement experienced. What Nerhardt (1970; 1977) failed to elucidate was that his hypothesis only holds for violations of belief expectancies but not for violations of attitudinal expectancies. For instance, Issar (1976) demonstrates that the violation of unidimensional attitude social norms was considerably less amusing than the violation of unidimensional belief social norms. The violation of the unidimensional attitude social norms, which were regarded as ego-involving or 'sacred' by members of society, represented threatening rather than amusing mental experiences for the subjects. Sherif and Cantril (1947) have postulated that individuals are more defensive with respect to their ego-involving attitudes which tend to be taken quite seriously.

In the humour literature, Rothbart (1973) suggests a safety-arousal mechanism which might account for the Issar (1976) findings. A theoretical distinction is needed between arousal (operative at the physiological level) and motivational attitude (operative at the conceptual level). However, it might appear plausible that Rothbart's (1973) safety-arousal mechanism would, under humorous conditions, function analogously for motivational attitude.

In the study presently suggested, psychophysical weights (interpreted as psychosocial beliefs rather than psychosocial attitudes) are to be manipulated. Subjects are not expected to feel threatened
by the extremity of the discrepancy, rather, consistent with Nerhardt's (1976; 1977) findings, the more discrepant weights should be regarded as playful violations and generate amusement. Frequency of involvement with an established range of weights (beliefs) is to be manipulated as a means of simulating ego-involvement (usually found with attitudes) yet bypassing the feelings of threat or seriousness typically engendered by ego-involvement. Instead, with frequent exposure to an established range, the subject's degree of commitment to that range will intensify such that a violation will be subjectively experienced as an extreme discrepancy capable of generating amusement.

An additional feature of this study concerns the establishment of support for Spencer's (1860) ascending/descending incongruity distinction. For Spencer, laughter results when 'strained expectation is unawares transformed into nothing'. Further, Spencer advocates distinguishing between ascending and descending incongruity. Ascending incongruity (movement from the ridiculous to the sublime) results in wonder (amazement) whereas descending incongruity (movement from the sublime to the ridiculous) results in laughter (amusement). Nerhardt (1970) suggests that an extreme discrepancy will be found ridiculous for subjects and hence laughter (amusement) will occur. Gerber and Routh (1975) found that the presentation of a heavy stimulus to subjects whose established range was relatively light produced more amusement than the presentation of a light stimulus to subjects whose established range had been relatively heavy.

An attempt will be made, in the study presently suggested, to replicate Gerber and Routh's (1975) finding, thereby demonstrating
support for Spencer's ascending/descending incongruity distinction. Although Spencer's view of incongruity is based upon physiological or arousal level assumptions; some conceptual functioning analogies will be drawn for the psychosocial belief framework advocated here.

Finally, in previous psychophysical and psychosocial humour experiments by Mull (1949), Nerhardt (1970), Deckers and Kizer (1974;1975), Gerber and Routh (1975), and Hoppe (1976), behavioural indices, such as laughter, smiling, grinning, etc., have been employed as indicators of subject's humour experiences. Alternatively, La Fave (1961), Issar (1976), Mannell (1976), Mutuma (1976), and Tsang (1976) successfully constructed valid humour judgement scales which serve as disguised measures of subject's internalized beliefs and attitudes. In the present study, designed to measure psychophysical and psychosocial humour judgements as a function of interactive incongruity, five (five-point) scales of amusement, surprise, playfulness, discrepancy, and threat are to be utilized.

Statement of Hypotheses

Hypothesis 1: The greater the degree of discrepancy from an established series of weights, the more likely a violation weight will be judged amusing.

\[ H_1: \lambda_{VW}^{\uparrow D} > \lambda_{VW}^{\downarrow D} \]

Where \( \lambda \) = amusement; \( VW \) = violation weight; \( \uparrow \) = great; \( \downarrow \) = small; \( D \) = discrepancy.

Hypothesis 2: The greater the difference between the out-of-range stimulus and the within-range stimulus closest to it, the more likely the out-of-range stimulus will be judged amusing.
$H_2$: $A_{\text{or/wr}} \uparrow > A_{\text{or/wr}} \downarrow$

Where $\text{or/wr} = \text{difference between out-of-range and within-range stimulus};$

$\uparrow = \text{great; } \downarrow = \text{small}$.

**Hypothesis 3:** If the difference in Hypothesis 2 is held constant, the narrower the range (in a proportional sense) the more likely the out-of-range stimulus will be judged amusing.

$H_3$: $A_{\text{NR}} > A_{\text{BR}}$ and $\text{or/wr} = c$

Where $\text{NR} = \text{narrow range}; \text{ BR} = \text{broad range}; \text{ c} = \text{constant}$.

**Hypothesis 4:** The out-of-range stimulus will be judged more amusing if the within-range stimuli are lifted frequently.

$H_4$: $A_{\text{wrf}} > A_{\text{wrinf}}$

Where $\text{WRF} = \text{within range stimuli frequently lifted}; \text{ WRINF} = \text{within-range stimuli infrequently lifted}$.

**Hypothesis 5:** The out-of-range stimulus will be judged more amusing if heavier rather than lighter than any within-range stimulus.

$H_5$: $A_{\text{or HV}} > A_{\text{or LV}}$

Where $\text{or HV} = \text{out-of-range heavy violation}; \text{ or LV} = \text{out-of-range light violation}$.

**Hypotheses 6 through 10** are the same as Hypotheses 1 through 5, substituting **playful** for **amusement**.

**Hypotheses 11 through 15** are the same as Hypotheses 1 through 5, substituting **non-threatening** for **amusing**.

**Hypotheses 16 through 20** are the same as Hypotheses 1 through 5, substituting **surprising** for **amusing**.

**Hypotheses 21 through 25** are the same as Hypotheses 1 through 5, substituting **discrepant** for **amusing**.
CHAPTER II

METHOD

Independent Variables

The first independent variable—violation, consisted of four levels. Two very different ranges with the same mean and identical ranges with very different means were established to test an adaptation-level hypothesis against a social-judgment hypothesis. Subjects performed one of four weight-lifting tasks in a method or single stimuli format.

In the first violation condition (Broad Range), subjects lifted 15 weights which ranged from 65 grams to 210 grams (where the mean equalled 150 grams). Subjects, in the second violation condition (Narrow Range) were exposed to 15 weights which ranged from 120 grams to 170 grams (where the mean equalled 150 grams). The third violation condition (Inner Mean) consisted of 15 weights whose mean equalled 140 grams (in a range of 125 grams to 175 grams) while the fourth violation condition (Outer Mean) involved 15 weights with a mean of 160 grams (in a range of 125 grams to 175 grams).

The second independent variable—frequency of exposure, concerned the frequency with which subjects were exposed to the initial series of weights. In the frequent (F) condition, subjects lifted 30 weights to establish an initial range or mean of ego-involving belief expectancy; for subjects in the infrequent (INF) condition, range or mean of non-ego-involving belief expectancy was established by the lifting of 15 weights.

Following the initial presentation of a series of weights, subjects were presented with a discrepant weight violating their established range or mean of belief expectancy. For the third independent variable—direction, half of the subjects were presented with a discrepant weight
Heavier (H) than any of the weights previously lifted; the other half lifted a discrepant weight lighter (L) than any of the previously lifted weights.

In Figure 1, the sixteen experimental conditions, representative of all levels of the three independent variables, are presented.

Dependent Variables

Following the presentation of the discrepant weight, subjects were asked to rate their humour experiences on seven five-point scales (cf., Appendix A). Two of these scales (heavy or light, difference) were used as part of the cover story by which to disguise the purpose of the experiment from the subjects. The other five scales, amusement, threat, surprise, playful, and discrepant, represent the dependent variables in this study.

The dependent variable of amusement consisted of a five-point scale which ranged from 1—not at all amused to 5—moderately amused. The playful dependent variable ranged from 1—not at all playful to 5—moderately playful; the threat dependent variable ranged from 1—not at all threatening to 5—moderately threatening; the dependent variable of surprise ranged from 1—not at all surprising to 5—moderately surprising; and the dependent variable of discrepancy ranged from 1—not at all discrepant to 5—very discrepant.

Subjects and Experimental Conditions

A total of one hundred and sixty undergraduate students (71 males and 89 females) at The University of Windsor were tested. Ten subjects were randomly assigned to each of the sixteen experimental conditions.
Range Versus Mean

<table>
<thead>
<tr>
<th>Violation 1</th>
<th>Violation 2</th>
<th>Violation 3</th>
<th>Violation 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Narrow Range</td>
<td>Inner Mean</td>
<td>Outer Mean</td>
</tr>
<tr>
<td>Broad Range</td>
<td>85-210 gms.</td>
<td>125-175 gms.</td>
<td>125-175 gms.</td>
</tr>
<tr>
<td>Mean</td>
<td>150 gms.</td>
<td>140 gms.</td>
<td>160 gms.</td>
</tr>
<tr>
<td>Discrepancy</td>
<td>260 or 35gms</td>
<td>210 or 90 gms</td>
<td>210 or 90 gms.</td>
</tr>
<tr>
<td>No. of Ss.</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Sex of Ss.</td>
<td>21 males</td>
<td>16 Males</td>
<td>20 males</td>
</tr>
<tr>
<td></td>
<td>19 females</td>
<td>24 females</td>
<td>20 females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>27 females</td>
</tr>
</tbody>
</table>

Frequency of Exposure

Number of Lifts (Frequent or Infrequent)

| 30 | 15 | 30 | 15 | 30 | 15 | 30 | 15 |

Direction of Discreant Weight

Heavy (H) or Light (L)

H H L L H H L H L H L H H L L
260 35 260 35 260 35 260 35 210 90 210 90 210 90

Weight in Grams

Figure 1

Experimental Design: Sixteen Experimental Conditions
In the first violation condition, one group of 10 subjects lifted 30 weights which ranged from 85 to 210 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 260 gms.; one group (10 subjects) lifted 30 weights which ranged from 85 to 210 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 35 gms.; another group (10 subjects) lifted 15 weights which ranged from 85 to 210 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 260 gms.; a fourth group (10 subjects) lifted 15 weights which ranged from 85 to 210 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 35 gms.

In the second violation condition, one group of 10 subjects lifted 30 weights which ranged from 120 to 170 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 260 gms.; one group (10 subjects) lifted 30 weights which ranged from 120 to 170 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 35 gms.; another group (10 subjects) lifted 15 weights which ranged from 120 to 170 gms. (where the mean equalled 150 gms.) and a single discrepant weight of 35 gms.

In the third violation condition, one group of 10 subjects lifted 30 weights having a mean of 140 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 210 gms.; one group (10 subjects) lifted 30 weights having a mean of 140 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 90 gms.; another group (10 subjects) lifted 15 weights having a mean of 140 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 210 gms.; a fourth group (10 subjects) lifted 15 weights having a mean of 140 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of
90 gms.

In the fourth violation condition, one group of 10 subjects lifted 30 weights having a mean of 160 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 210 gms.; one group (10 subjects) lifted 30 weights having a mean of 160 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 90 gms.; another group (10 subjects) lifted 15 weights having a mean of 160 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 210 gms.; a fourth group (10 subjects) lifted 15 weights having a mean of 160 gms. (which ranged from 125 to 175 gms.) and a single discrepant weight of 90 gms.

Stimulus Materials

The weights used in this experiment were created by filling film cannisters with lead pellets. These cannisters were uniform in exterior appearance to prevent subjects from prejudging the weights to be lifted.

In the first violation condition (Borad Range), the 15 cannisters which were randomly presented, once each (Infrequently) or twice each (Frequently), weighed 85, 105, 120, 120, 120, 130, 140, 150, 160, 170, 170, 180, 190, 200, and 210 grams, respectively. In the second violation condition (Narrow Range), the 15 cannisters, which were randomly presented, weighed 120, 125, 130, 140, 140, 145, 150, 155, 155, 160, 160, 165, 165, 170, and 170 grams, respectively. For violation conditions one and two, the discrepant weights were 260 (Heavy Direction) and 35 (Light Direction) grams.
For violation condition 3 (Inner Mean), the 15 weights in the cannisters were 125, 125, 125, 125, 130, 130, 135, 135, 145, 150, 155, 155, 165, and 175 grams, respectively. In violation condition 4 (Outer Mean), the 15 weights in the cannisters were 125, 135, 145, 150, 150, 160, 160, 165, 165, 170, 175, 175, 175, 175, and 175, respectively. For violation conditions three and four, the discrepant weights were 210 (Heavy Direction) and 90 (Light Direction) grams.

Procedure

Experimental control.

Carefully, the film cannisters were filled with lead pellets, until their weights corresponded to those described in the stimulus material section. In this experiment, there were a total of twenty-two distinct weights. Tags, randomly numbered from 1 to 22, were placed on each cannister; so that during a testing session, the experimenter would not be aware of the actual weight of the cannister presented to the subject. A separate test sheet was prepared for each subject (Appendix B). The list of weights to be presented for a given subject appeared on this sheet. The 160 lists were prepared by randomizing the weights within each of the sixteen experimental conditions. Ten subjects were randomly assigned to each of the sixteen experimental conditions (Appendix C).

Additionally, an apparatus, which concealed the weights from the subject's visual field, was constructed. This apparatus was composed of two lecterns (each molded to the top of a desk) fitted back to back. One person (the experimenter) sat at one end of the apparatus,
while another person (the subject) sat at the other end. The two people were facing each other but were unable to see each other when seated. A ring, attached to a nylon string, was led through a hole in the joined panel between the two lecterns, back to a second ring. A weight was placed in one of the rings by the experimenter. At this time, the subject pulled on the other ring, and determined how heavy or light the weight was.

Recruiting subjects.

One hundred and sixty subjects (71 males and 89 females), naive to the purpose of the experiment, were recruited for participation in a perception experiment. The subjects were told that 1) the task would require ten to fifteen minutes of their time; 2) that the task involved the lifting and assessment of several weights; and 3) that afterwards they would be expected to rate their performance on several judgemental scales.

Experimental setting.

Subjects were tested individually. When a subject entered the laboratory, (s)he was seated at one end of the apparatus. The experimenter began by explaining the task to the subject. Two practice trials were provided for each subject. Then the experiment began. The experimenter placed one weight at a time in the ring attachment. The subject was told to lift the weight, then to judge the weight in terms of how heavy or light (s)he felt the weight to be. The subject's judgement was recorded by the experimenter (Appendix B).
Following the presentation of the discrepant weight, the subject opened the booklet, and rated his/her performance on the several five-point scales contained within. At the conclusion of the experiment, a de-briefing session was provided for the subjects.

**Experimental Design**

A 4x2x2 complete factorial design with independent groups was used to test hypotheses 1, 4, and 5; 6, 9, and 10; 11, 14, and 15; 16, 19, and 20; 21, 24, and 25. The first independent variable had four levels. Two of the levels were created by establishing two social-judgement ranges (one broadrange of 85 to 210 gms. and one narrow range of 120 to 170 gms.) with the same mean (150 gms.); two of the levels were created by the establishment of two adaptation-level means (one inner mean of 140 gms, and one outer mean of 160 gms.) with identical ranges (125 to 175 gms.). Two levels of the second independent variable, one level frequent (F) and one level infrequent (INF), focus on the frequency of exposure to an established range or mean. The third independent variable concerns the directionality of a range or mean discrepancy; the discrepant weight was heavier (H) or lighter (L) than any of the weights to which subjects were initially exposed.

A 2x2x2 complete factorial independent groups design tested hypotheses 3, 8, 13, 18, and 23. Only two levels of the first independent variable were employed; the two levels where range was variant and mean was invariant.

A 4x2x2 complete factorial independent groups design tested hypotheses 2, 7, 12, 17, and 22. These hypotheses involved the difference between the last weight presented in a series and the
contrast resulting from the presentation of the discrepant weight which followed the end-of-series weight. Four levels of the first independent variable were employed. The second variable, for these hypotheses, involved two values (heavy or light) of the end-of-series weight which was presented to the subject. The last two-valued variable (heavy or light) concerned the direction of the discrepant weight that a subject received following the end-of-series weight.

Analysis

The data for each subject was coded and transcribed on IBM computer sheets. To test hypotheses 1, 4, 5; 6, 9, and 10; 11, 14, and 15; 16, 19, and 20; 21, 24, and 25, a 4x2x2 ANOVA was performed for each of the dependent variables (amusement, playfulness, threat, surprise, and discrepancy) in a Statistical Analysis System (SAS) computer program. Significance levels were determined for the three main effects in this experiment: adaptation-level mean versus social-judgment range, frequency versus infrequency of exposure, and directionality of violation. To test hypotheses 3, 8, 13, 18, and 23, a 2x2x2 ANOVA was performed for each of the dependent variables and significance levels were determined for main effects. Further, a MANOVA was performed to assess dependent variable relationships.

To test hypotheses 2, 7, 12, 17, and 22, a 4x2x2 ANOVA, and two 2x2x2 ANOVA's were performed for each of the dependent variables and significance levels were determined for any contrast effects.
CHAPTER III

RESULTS

A 4x2x2 ANOVA was performed on the raw data (Appendix D) to test for type of violation, frequency of exposure, and direction of discrepant weight as a function of each of the dependent variables—amusement, threat, surprise, playful, and discrepant. The F values and significance levels for this 4x2x2 ANOVA are presented in Table 1. Inspection of Table 1 suggests that for amusement, threat, surprise, playful, and discrepant, there was a significant violation effect; for amusement, surprise, playful, and discrepant, there was a significant frequency of exposure effect; and for surprise and playful, there was a significant direction effect. The interaction of violation and frequency was significant for surprise; the interaction of violation and direction was significant for surprise, playful, and discrepancy.

The Duncan's Multiple Range Means for significant main effects, identified in Table 1, are presented in Table 2. For the first independent variable (type of violation) main effect, the conditions in which range was varied and mean was invariant were significantly more amusing, surprising, playful, and discrepant, but less threatening, than conditions in which mean was varied and range was invariant. For the second independent variable (frequency of exposure) main effect, the frequent condition was significantly more amusing, surprising, playful, and discrepant that the infrequent condition. The frequent condition was not significantly less threatening than the infrequent condition. For the third independent variable (direction of discrepant weight) main effect, the heavy condition was significantly
TABLE 1

Analysis of Variance Amusement, Threat, Surprise, Playful, and Descrepant F values and Significance

Levels for Type of Violation, Frequency of Exposure, and Direction of Discrepant Weight

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Source of Variation</th>
<th>DF</th>
<th>Amusement</th>
<th>Threat</th>
<th>Surprise</th>
<th>Playful</th>
<th>Discrepant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Violation</td>
<td>3</td>
<td>19.56 **</td>
<td>5.79 **</td>
<td>8.40 **</td>
<td>18.05 **</td>
<td>9.33 **</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>1</td>
<td>9.55 **</td>
<td>0.24</td>
<td>7.21 **</td>
<td>4.02</td>
<td>4.42 *</td>
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<tr>
<td></td>
<td>Direction</td>
<td>1</td>
<td>0.87</td>
<td>1.40</td>
<td>3.28 *</td>
<td>5.86 **</td>
<td>0.36</td>
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<tr>
<td></td>
<td>Violation X Frequency</td>
<td>3</td>
<td>0.40</td>
<td>0.02</td>
<td>2.12 *</td>
<td>1.16</td>
<td>1.79 +</td>
</tr>
<tr>
<td></td>
<td>Violation X Direction</td>
<td>3</td>
<td>0.29</td>
<td>2.06 +</td>
<td>2.76 *</td>
<td>3.08 *</td>
<td>3.11 *</td>
</tr>
<tr>
<td></td>
<td>Frequency X Direction</td>
<td>1</td>
<td>0.05</td>
<td>0.01</td>
<td>0.19</td>
<td>0.58</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>Violation X Frequency X Direction</td>
<td>3</td>
<td>1.40</td>
<td>1.13</td>
<td>0.13</td>
<td>1.47</td>
<td>1.30</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Violation</strong></td>
<td>Amusement</td>
</tr>
<tr>
<td>Broad Range</td>
<td>3.50 A</td>
</tr>
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<td>Narrow Range</td>
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</tr>
<tr>
<td>Inner Mean</td>
<td>2.40 B</td>
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<tr>
<td>Outer Mean</td>
<td>2.50 B</td>
</tr>
<tr>
<td><strong>Frequency of Exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Frequent</td>
<td>3.36 A</td>
</tr>
<tr>
<td>Infrequent</td>
<td>2.83 B</td>
</tr>
<tr>
<td><strong>Direction of Discrepant Weight</strong></td>
<td></td>
</tr>
<tr>
<td>Heavy</td>
<td>3.18 A</td>
</tr>
<tr>
<td>Light</td>
<td>3.01 A</td>
</tr>
</tbody>
</table>

Where: Means with the same letter are not significantly different at $p < .05$. 
more surprising and playful than the light condition; but the heavy condition was not significantly more amusing, less threatening, and more discrepant than the light condition.

The Duncan's Multiple Range Means for the significant interaction effects, identified in Table 1, are presented in Table 3. For the interaction of type of violation and frequency of exposure, the narrow range-frequent combination was significantly more surprising and discrepant than any of the other combinations for this interaction. For the interaction of type of violation and direction, the narrow range-heavy combination was significantly more surprising and playful, but less threatening, than any of the other combinations for this interaction. The broad range-light combination was significantly more discrepant than any of the other combinations for this interaction. For the frequency X direction interaction, and the type of violation X frequency X direction of discrepant weight interactions, no significant differences occurred.

A 4x2x2 MANOVA was performed on the raw data (Appendix D) to test for type of violation, frequency of exposure, and direction of discrepant weight as a function of the interaction of the dependent variables. The Hotelling-Lawley Trace F values and significance levels for this 4x2x2 MANOVA are presented in Table 4.

For the interaction of the dependent variables (amusement, threat, surprise, playful, and discrepant), there was a significant violation main effect, frequency main effect, and violation X direction interaction effect. The direction main effect was significant at the p < .10 level. None of the other interaction effects (violation X
### TABLE 3

Duncan's Multiple Range Means for Significant Type of Violation, Frequency of Exposure, and Direction of Discrepant Weight Interaction Effects

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Violation X Frequency of Exposure</strong></td>
<td><strong>Surprise</strong></td>
</tr>
<tr>
<td>Broad Range and Frequent</td>
<td>3.90</td>
</tr>
<tr>
<td>Broad Range and Infrequent</td>
<td>3.05</td>
</tr>
<tr>
<td>Narrow Range and Frequent</td>
<td>4.25 *</td>
</tr>
<tr>
<td>Narrow Range and Infrequent</td>
<td>3.25</td>
</tr>
<tr>
<td>Inner Mean and Frequent</td>
<td>2.35</td>
</tr>
<tr>
<td>Inner Mean and Infrequent</td>
<td>2.65</td>
</tr>
<tr>
<td>Outer Mean and Frequent</td>
<td>3.10</td>
</tr>
<tr>
<td>Outer Mean and Infrequent</td>
<td>2.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Violation X Direction</strong></th>
<th><strong>Threat</strong></th>
<th><strong>Surprise</strong></th>
<th><strong>Playful</strong></th>
<th><strong>Discrepant</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad Range and Heavy</td>
<td>1.40</td>
<td>3.65</td>
<td>3.50</td>
<td>3.95</td>
</tr>
<tr>
<td>Broad Range and Light</td>
<td>1.95</td>
<td>3.30</td>
<td>3.10</td>
<td>4.60 *</td>
</tr>
<tr>
<td>Narrow Range and Heavy</td>
<td>1.30</td>
<td>4.40 *</td>
<td>4.40 *</td>
<td>4.05</td>
</tr>
<tr>
<td>Narrow Range and Light</td>
<td>1.80</td>
<td>3.10</td>
<td>3.15</td>
<td>4.45</td>
</tr>
<tr>
<td>Inner Mean and Heavy</td>
<td>2.30</td>
<td>2.40</td>
<td>2.45</td>
<td>3.60</td>
</tr>
<tr>
<td>Inner Mean and Light</td>
<td>2.65</td>
<td>2.60</td>
<td>2.05</td>
<td>2.90</td>
</tr>
<tr>
<td>Outer Mean and Heavy</td>
<td>2.45</td>
<td>2.80</td>
<td>2.10</td>
<td>3.55</td>
</tr>
<tr>
<td>Outer Mean and Light</td>
<td>1.90</td>
<td>2.80</td>
<td>2.40</td>
<td>3.60</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
frequency; frequency X direction; violation X frequency X direction) were significant.

TABLE 4

Hotelling-Lawley Trace MANOVA F values and Significance Levels for Type of Violation, Frequency of Exposure, and Direction of Discrepant Weight

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violation</td>
<td>8.07 **</td>
</tr>
<tr>
<td>Frequency</td>
<td>2.38 *</td>
</tr>
<tr>
<td>Direction</td>
<td>1.48 +</td>
</tr>
<tr>
<td>Violation X Frequency</td>
<td>1.08</td>
</tr>
<tr>
<td>Violation X Direction</td>
<td>1.83 *</td>
</tr>
<tr>
<td>Frequency X Direction</td>
<td>0.36</td>
</tr>
<tr>
<td>Violation X Frequency X Direction</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Where:  ** = p < .01; * = p < .05; + = p < .10.

The second set of calculations for this study involved a 2x2x2 ANOVA, performed to test for type of range, frequency of exposure, and direction of discrepant weight as a function of each of the dependent variables (amusement, threat, surprise, playful, and discrepant). The F values and significance levels for this 2x2x2 ANOVA are presented in Table 5. Inspection of Table 5 suggests that for amusement and playfulness, there was a significant range violation effect; for amusement, surprise, playful, and discrepant, there was a
### TABLE 5

**Analysis of Variance** Amusement, Threat, Surprise, Playful, and Discrepant F values and Significance Levels for Type of Range, Frequency of Exposure, and Direction of Discrepant Weight

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Source of Variation</th>
<th>df</th>
<th>Amusement</th>
<th>Threat</th>
<th>Surprise</th>
<th>Playful</th>
<th>Discrepant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>1</td>
<td>5.79 **</td>
<td>0.35</td>
<td>1.09</td>
<td>4.19 *</td>
<td>0.01</td>
</tr>
<tr>
<td>Frequency</td>
<td>1</td>
<td></td>
<td>13.49 **</td>
<td>0.13</td>
<td>12.31 **</td>
<td>2.61 +</td>
<td>7.41 **</td>
</tr>
<tr>
<td>Direction</td>
<td>1</td>
<td></td>
<td>0.79</td>
<td>6.17 **</td>
<td>9.79 **</td>
<td>12.65 **</td>
<td>5.23 *</td>
</tr>
<tr>
<td>Range X Frequency</td>
<td>1</td>
<td></td>
<td>0.02</td>
<td>0.01</td>
<td>0.08</td>
<td>4.19 *</td>
<td>2.67 *</td>
</tr>
<tr>
<td>Range X Direction</td>
<td>1</td>
<td></td>
<td>0.79</td>
<td>0.01</td>
<td>3.25 *</td>
<td>3.36 *</td>
<td>0.30</td>
</tr>
<tr>
<td>Frequency X Direction</td>
<td>1</td>
<td></td>
<td>1.30</td>
<td>0.69</td>
<td>0.01</td>
<td>0.94</td>
<td>1.43</td>
</tr>
<tr>
<td>Range X Frequency X Direction</td>
<td>1</td>
<td></td>
<td>2.71 *</td>
<td>0.13</td>
<td>0.01</td>
<td>0.29</td>
<td>3.43 *</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
significant frequency of exposure effect; and for threat, surprise, playful, and discrepant, there was a significant direction effect. The interaction of range X frequency was significant for playfulness and discrepancy; the interaction of range X direction was significant for surprise and playfulness; and the interaction of range X frequency X direction was significant for amusement and discrepancy.

The Duncan's Multiple Range Means for significant main effects, identified in Table 5, are presented in Table 6. For the first independent variable (type of range) main effect, the narrow range condition was significantly more amusing and playful than the broad range condition. The narrow range condition was less threatening, more surprising, and more discrepant than the broad range condition, but these main effects were not statistically significant. For the second independent variable (frequency of exposure) main effect, the frequent condition was significantly more amusing, surprising, and discrepant than the infrequent condition. The frequent condition was less threatening, and more playful than the infrequent condition, but these main effects were not statistically significant. For the third independent variable (direction of discrepant weight) main effect, the heavy condition was significantly less threatening and more surprising and playful than the light condition. The light condition was significantly more discrepant than the heavy condition. The heavy condition was more amusing than the light condition, but this effect was not statistically significant.
### TABLE 6

Duncan's Multiple Range Means for Type of Range, Frequency of Exposure and Direction of Discrepant Weight Main Effects

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Range</strong></td>
<td>Amusement</td>
</tr>
<tr>
<td>Broad Range</td>
<td>3.50 B</td>
</tr>
<tr>
<td>Narrow Range</td>
<td>3.98 A</td>
</tr>
<tr>
<td><strong>Frequency of Exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Frequent</td>
<td>4.10 A</td>
</tr>
<tr>
<td>Infrequent</td>
<td>3.38 B</td>
</tr>
<tr>
<td><strong>Direction of Discrepant Weight</strong></td>
<td></td>
</tr>
<tr>
<td>Heavy</td>
<td>3.83 A</td>
</tr>
<tr>
<td>Light</td>
<td>3.65 A</td>
</tr>
</tbody>
</table>

Where: Means with the same letter are not significantly different at $p < .05.$
The Duncan's Multiple Range Means for the significant interaction effects, identified in Table 5, are presented in Table 7. For the interaction of type of range and frequency of exposure, the narrow range-frequent combination was significantly more playful and discrepant than any of the other combinations for this interaction effect. For the range X direction interaction, the narrow range-heavy combination was significantly more surprising and playful than any of the other combinations for this interaction effect. For the range X frequency X direction interaction, the narrow range-frequent-heavy combination was significantly more amusing and discrepant than any of the other combinations for this interaction effect.

Further, a 2x2x2 MANOVA was performed to test for type of range, frequency of exposure, and direction of discrepant weight as a function of the interaction of the dependent variables. The Hotelling-Lawley Trace F values and significance levels for this 2x2x2 MANOVA are presented in Table 8. For the interaction of the dependent variables (amusement, threat, surprise, playful, and discrepant), there was a significant range violation main effect, frequency main effect, and direction main effect. The range X frequency interaction effect was significant at the $p < .10$ level. None of the other interaction effects (range X direction; frequency X direction; range X frequency X direction) were significant.

The final set of calculations involved a 4x2x2 ANOVA, performed on the raw data (Appendix D) to test for a type of violation, endscale weight and actual discrepant weight contrast effect as a function
TABLE 7
Duncan's Multiple Range Means for Significant Type of Range, Frequency of Exposure and Direction of Discrepant Weight Interaction Effects

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Playful</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range X Frequency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad Range and Frequent</td>
<td>3.25</td>
<td>4.40</td>
</tr>
<tr>
<td>Broad Range and Infrequent</td>
<td>3.35</td>
<td>4.15</td>
</tr>
<tr>
<td>Narrow Range and Frequent</td>
<td>4.20 *</td>
<td>4.75 *</td>
</tr>
<tr>
<td>Narrow Range and Infrequent</td>
<td>3.35</td>
<td>3.75</td>
</tr>
<tr>
<td><strong>Range X Direction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad Range and Heavy</td>
<td>3.65</td>
<td>3.50</td>
</tr>
<tr>
<td>Broad Range and Light</td>
<td>3.30</td>
<td>3.10</td>
</tr>
<tr>
<td>Narrow Range and Heavy</td>
<td>4.40 *</td>
<td>4.40 *</td>
</tr>
<tr>
<td>Narrow Range and Light</td>
<td>3.10</td>
<td>3.15</td>
</tr>
<tr>
<td><strong>Range X Frequency x Direction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad Range, Frequent, and Heavy</td>
<td>3.80</td>
<td>4.00</td>
</tr>
<tr>
<td>Broad Range, Frequent, and Light</td>
<td>3.90</td>
<td>4.80</td>
</tr>
<tr>
<td>Broad Range, Infrequent, and Heavy</td>
<td>3.20</td>
<td>3.90</td>
</tr>
<tr>
<td>Broad Range, Infrequent, and Light</td>
<td>3.10</td>
<td>4.40</td>
</tr>
<tr>
<td>Narrow Range, Frequent, and Heavy</td>
<td>4.80 *</td>
<td>4.90 *</td>
</tr>
<tr>
<td>Narrow Range, Frequent, and Light</td>
<td>3.90</td>
<td>4.60</td>
</tr>
<tr>
<td>Narrow Range, Infrequent, and Heavy</td>
<td>3.50</td>
<td>3.20</td>
</tr>
<tr>
<td>Narrow Range, Infrequent, and Light</td>
<td>3.70</td>
<td>4.30</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
TABLE 8

Hotelling-Lawley Trace MANOVA F values and Significance Levels
for Type of Range, Frequency of Exposure, and Direction of Discrepant Weight

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>8.18 **</td>
</tr>
<tr>
<td>Frequency</td>
<td>3.59 **</td>
</tr>
<tr>
<td>Direction</td>
<td>5.22 **</td>
</tr>
<tr>
<td>Range X Frequency</td>
<td>1.70 +</td>
</tr>
<tr>
<td>Range X Direction</td>
<td>0.98</td>
</tr>
<tr>
<td>Frequency X Direction</td>
<td>0.50</td>
</tr>
<tr>
<td>Range X Frequency X Direction</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.

of each of the dependent variables (amusement, threat, surprise, playful, and discrepant). The F values and significance levels for this 4x2x2 ANOVA are presented in Table 9. Inspection of Table 9 suggests that endscale-to-actual contrast effects were significant for threat and discrepancy at p < .10 level. No other contrast effects (endscale X actual: type of violation X endscale X actual) occurred.

Subsequently, a 2x2x2 ANOVA was performed for type of range, endscale weight and actual discrepant weight contrast effects as a function of each of the dependent variables. The F values and significance levels for this 2x2x2 ANOVA are presented in Table 10. No contrast effects
<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Df</th>
<th>Amusement</th>
<th>Threat</th>
<th>Surprise</th>
<th>Playful</th>
<th>Discrepant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violation</td>
<td>3</td>
<td>18.07 **</td>
<td>5.87 **</td>
<td>7.40 **</td>
<td>17.43 **</td>
<td>8.71 **</td>
</tr>
<tr>
<td>Endscale</td>
<td>1</td>
<td>0.01</td>
<td>1.41</td>
<td>0.52</td>
<td>1.06</td>
<td>0.21</td>
</tr>
<tr>
<td>Actual</td>
<td>1</td>
<td>0.43</td>
<td>2.42 *</td>
<td>3.91 **</td>
<td>4.75 **</td>
<td>3.21 **</td>
</tr>
<tr>
<td>Violation X Endscale</td>
<td>3</td>
<td>1.06</td>
<td>1.24</td>
<td>0.14</td>
<td>0.88</td>
<td>0.48</td>
</tr>
<tr>
<td>Violation X Actual</td>
<td>3</td>
<td>0.29</td>
<td>1.88 +</td>
<td>1.40</td>
<td>2.28 +</td>
<td>1.37</td>
</tr>
<tr>
<td>Endscale X Actual</td>
<td>1</td>
<td>0.44</td>
<td>2.01 +</td>
<td>0.13</td>
<td>0.30</td>
<td>2.10 +</td>
</tr>
<tr>
<td>Violation X Endscale X Actual</td>
<td>3</td>
<td>0.50</td>
<td>0.17</td>
<td>0.14</td>
<td>0.37</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
TABLE 10

Analysis of Variance Amusement, Threat, Surprise, Playful, and Discrepant F values and Significance Levels for Range, Endscałe, and Actual Discrepant Weights

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Df</th>
<th>Amusement</th>
<th>Threat</th>
<th>Surprise</th>
<th>Playful</th>
<th>Discrepant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1</td>
<td>4.94 *</td>
<td>0.36</td>
<td>0.90</td>
<td>4.05 *</td>
<td>0.01</td>
</tr>
<tr>
<td>Endscałe</td>
<td>1</td>
<td>0.12</td>
<td>2.69 +</td>
<td>0.01</td>
<td>0.02</td>
<td>0.34</td>
</tr>
<tr>
<td>Actual</td>
<td>1</td>
<td>0.57</td>
<td>6.95 **</td>
<td>7.80 **</td>
<td>10.69 **</td>
<td>4.21 *</td>
</tr>
<tr>
<td>Range X Endscałe</td>
<td>1</td>
<td>4.29 *</td>
<td>0.01</td>
<td>0.02</td>
<td>0.49</td>
<td>0.19</td>
</tr>
<tr>
<td>Range X Actual</td>
<td>1</td>
<td>0.24</td>
<td>1.09</td>
<td>2.78 *</td>
<td>2.84 *</td>
<td>0.11</td>
</tr>
<tr>
<td>Endscałe X Actual</td>
<td>1</td>
<td>0.04</td>
<td>0.01</td>
<td>0.20</td>
<td>0.24</td>
<td>0.89</td>
</tr>
<tr>
<td>Range X Endscałe X Actual</td>
<td>1</td>
<td>1.17</td>
<td>0.22</td>
<td>0.01</td>
<td>0.63</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
(endscale X actual; type of range X endscale X actual) occurred. Additionally, a 2x2x2 ANOVA was performed for type of mean, endscale weight, and actual discrepant weight contrast effects as a function of each of the dependent variables. The F values and significance levels for this 2x2x2 ANOVA are presented in Table 11. An endscale X actual interaction contrast effect was significant for discrepancy. An endscale X actual interaction contrast effect was significant for threat at the p < .10 level. No other contrast effects were statistically significant.

The Duncan's Multiple Range Means for significant endscale-to actual interaction contrast effects, identified in Tables 9 and 11, are presented in Table 12. For the 4x2x2 interaction of endscale and actual, the no-contrast combination of heavy-to-heavy was significantly less threatening than any of the other no-contrast or contrast combinations; the no-contrast combination of light-to-light was significantly more discrepant than any of the other no-contrast or contrast combinations.

For the 2x2x2 (mean violation) interaction of endscale and actual, the no-contrast combination of heavy-to-heavy was significantly less threatening than any of the other no-contrast or contrast combinations; the contrast combination of light-to-heavy was significantly more discrepant than any of the other no-contrast or contrast combinations.
TABLE II

Analysis of Variance Amusement, Threat, Surprise, Playful, and Discrepant F values

and Significance Levels for Mean, Endscales, and Actual Discrepant Weights

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>df</th>
<th>Amusement</th>
<th>Threat</th>
<th>Surprise</th>
<th>Playful</th>
<th>Discrepant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1</td>
<td>0.12</td>
<td>1.06</td>
<td>0.92</td>
<td>0.01</td>
<td>1.92 +</td>
</tr>
<tr>
<td>Endscale</td>
<td>1</td>
<td>0.14</td>
<td>0.06</td>
<td>1.17</td>
<td>1.84 +</td>
<td>1.85 +</td>
</tr>
<tr>
<td>Actual</td>
<td>1</td>
<td>0.32</td>
<td>0.09</td>
<td>0.04</td>
<td>0.03</td>
<td>1.84 +</td>
</tr>
<tr>
<td>Mean X Endscale</td>
<td>1</td>
<td>0.18</td>
<td>2.39 +</td>
<td>0.01</td>
<td>0.45</td>
<td>0.10</td>
</tr>
<tr>
<td>Mean X Actual</td>
<td>1</td>
<td>0.32</td>
<td>2.86 *</td>
<td>0.23</td>
<td>1.89 +</td>
<td>2.82 *</td>
</tr>
<tr>
<td>Endscale X Actual</td>
<td>1</td>
<td>0.46</td>
<td>2.52 +</td>
<td>0.13</td>
<td>0.24</td>
<td>3.57 *</td>
</tr>
<tr>
<td>Mean X Endscale X Actual</td>
<td>1</td>
<td>0.15</td>
<td>0.14</td>
<td>0.25</td>
<td>0.18</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Where: ** = p < .01; * = p < .05; + = p < .10.
TABLE 12

Duncan's Multiple Range Means for Significant
Endscale-to-Actual Contrast Effects

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<tr>
<td>Light-to Heavy</td>
<td>1.62</td>
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Endscale X Actual (2x2x2--Mean Violation)

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<tr>
<td>Light-to-Heavy</td>
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Where:  ** = p < .01;  * = p < .05;  + = p < .10.
CHAPTER IV
DISCUSSION

McGhee (1979) argues that Nerhardt's is the broadest cognitive theory of humor advanced so far. In Nerhardt's (1977) view, incongruity humor occurs as a consequence of the discrepancy between two mental representations—one of which is an expectation and the other is some idea or percept. In his experimental work, Nerhardt (1970; 1975; 1976) measures discrepancy as deviation from a range of expectancy. Alternatively, Deckers and Kizer (1974; 1975), who also view incongruity as violation of expectancy, measure discrepancy as deviation from a mean point of subjective equality or adaptation level.

In the present study, hypotheses 1, 6, 11, 16, and 21 were designed to test Nerhardt's range of expectancy violation against Deckers and Kizer's mean of expectancy violation. Conditions in which the range of expectancy was varied (either as a broad range or as a narrow range) while the mean was held constant were significantly (p < .01) more amusing, less threatening, more playful, more surprising, and more discrepant than conditions in which the mean was varied (either as an inner or as an outer mean) while the range was held constant.

Nerhardt's (1976; 1977) experiments with weights and other psychophysical dimensions articulate the Sherif-Hovland (1961) social-judgment approach. Sherif et al. (1965) classify psychophysical phenomena as beliefs which are psychosocially neutral. Nerhardt's "discrepancy" could be regarded as violation of belief expectancy which would include belief switching and belief change as two types of mistaken beliefs which
La Faye (1977) identified as essential to the humour experience. Alternatively, Deckers and Kizer (1974; 1975) support for mean violations of expectancy, articulates Helson's psychophysical adaptation-level approach. For Helson (1947; 1964), psychophysical judgements are based on anchors and contrast effects. The findings, in the study reported here, do not support Helson's view of anchors as point of subjective equality (adaptation-level) or mean by which psychophysical judgements are made. However, the violation of belief expectancy which occurred in the present interactive incongruity humour experiment were more representative of psychosocial phenomena than psychophysical and as Eiser and Stroebe (1972) contend, more work on Helson is needed when regarding psychosocial judgement.

Belief expectancies (social norms) were created for subjects by the presentation of an initial series of weights. Assimilation and contrast effects are used in the establishment of social norms (Sherif et al., 1958). Further, Sherif et al. (1965) argue that an individual's psychological scale is formed by repeated encounters with a series of items. Similarly, Helson (1964) argues that adaptation occurs through sensitivity from long-continued stimulation and that adaptation-level is essentially a theory of contrast effects. Brown's (1953) experiment demonstrates that expectations are established only for classes which are defined as perceptually relevant and for Nerhardt (1977), stimulus similarity leads to the development of similar conceptual classes. It was assumed in the present study, that the presentation of an initial series of weights would establish a level of belief expectancy in the subject.
Hypotheses 2, 7, 12, 17, and 22 were designed to test for contrast effects which could occur between a light end-of-series weight and a heavy violation or a heavy end-of-series weight and a light violation. These hypotheses failed to be substantiated. Contrast could still be considered an essential element in the initial establishment of belief expectancies, however, it is beyond the scope of this investigation to affirm such predictions. Future studies could be designed to test the significance of such a contribution. Additionally, it would be plausible to calculate the discrepancies from range or mean in terms of standard units of deviation (standard error) rather than variance values. This assessment might render an alternative explanation--subjects may be responding to discrepancy as a combination of range and mean values. The findings in the present study partially support this interpretation and this type of assessment would be recommended for future studies.

Nonetheless, what has been demonstrated in this investigation is that range violation contributes more to a subject's amusement experience. This finding is consistent with Stouffer (1949) who argues that it may be common and convenient to think of a social norm as a point, but this view is unrealistic with regards to most of our social behaviour, especially where conflicting role obligations exist. Additionally, La Fave (1963) argues that fewer problems are encountered in a society where the social norms is strict (i.e., pinpoint conformity). The most important function of humour (as violation of social norms) is its power to release us from the many inhibitions and restrictions under which we live our daily lives (McGhee, 1979).
Laughter is always the laughter of a group in that the ludicrous implies a system of social values (Piddington, 1933). Given the importance of humour, a better understanding of its nature could make a major contribution to the maintenance of social harmony. For instance, Bergson (1911) views laughter as the consequence of 'something mechanical encrusted upon the living'. The quintessence of his meaning seems to be that when one accidentally (automatically or mechanically) commits a faux pas (incongruously non-conforms to a social norm), (s)he becomes the butt, generating laughter (amusement in others). Combining Bergson, Nerhardt, and the Sherif-Hovland social-judgment approach, the following can be suggested. If an individual non-conforms to a social norm, the likelihood that members of the audience will be amused is enhanced if 1) the norm in question is not so sacred or apparently important for the society's survival (as was the case for the psychophysical weights interpreted as psychosocial beliefs in the present study) that 2) non-conformity to it is 'no laughing matter' (conditions of non-threat) and 3) the non-conformity is very discrepant (surprising and playful) from the norm—an extreme violation from a range of belief expectancy.

The type of range (broad or narrow) to which a subject is exposed should also affect judgment (Sherif and Hovland, 1961). Similarly, La Fave (1977) argues that 'jokes' embedded within a tightly-knit Gestalt should be more amusing than those embedded within a mosaic. Hypotheses 3, 8, 13, 18, and 23 were designed to test a broad range against a narrow range. The narrow range condition generated significantly more amusement (p < .01) and playfulness (p < .05) than the broad range condition. Hypotheses 13, 18, and 23 (threat, surprise and discrepancy) failed to be substantiated. However, a MANOVA (which
incorporates the five-dependent variables) was significant \( (p < .01) \) for this narrow range versus broad range effect.

Sherif et al. (1965) postulate that the greater the degree of personal involvement and commitment, the more discrepant a weight will be judged. In the experiment reported here, the level of belief expectancies for subjects was manipulated by increasing the subjects' levels of ego-involvement. In the present study, it was assumed that subjects, who were frequently exposed to the initial series of weights, would be more ego-involved with the task than subjects whose level of exposure was minimal. Hypotheses 4, 9, 19, and 24 were substantiated \( (p < .01) \). Subjects who were exposed frequently to the initial series of weights judged the violation or discrepant than subjects who were exposed infrequently to the initial series of weights. Hypothesis 14 failed to be substantiated—subjects, who were frequently exposed to the initial series of weights, judged the discrepant weight as less threatening than subjects who were infrequently exposed to the initial series, but this effect was not statistically significant. Issar (1976) already demonstrated the effects of manipulating relevant ego-involving belief norms in a cultural context, and no subject, in the present study, was actually expected to judge the lifting of weights as a threatening task. The main concern in this study was the manipulation of the level of ego-involvement conveyed by subjects relative to their established belief expectancies, and on the basis of the data already presented, this effect was successfully demonstrated. An additional interpretation for this finding is found in McGhee's (1979) notion of mastery. Subjects who were frequently exposed to the initial series of weights may have been more confident as to what value the next weight should
have. The final violation weight, then, would appear more discrepant to these subjects and hence generate more amusement. As well, according to Helson (1947), the discrepant weight may provide more contrast for subjects with a well-established series (frequent condition) and hence render the violation more amusing.

Further, it was hoped that the frequency of exposure aspect of this study would permit a comparison between Berlyne's (1969;1972) and Godkewitsch's (1972) support for a curvilinear hypothesis and Nerhardt's (1976;1977) and Rothbart's (1977) support for a monotonic model. For Berlyne and Godkewitsch, an extremely discrepant violation weight would be judged as threatening and hence less amusing than a moderately discrepant violation weight; whereas, for Nerhardt and Rothbart, an extremely discrepant violation weight would be judged as non-threatening and hence more amusing than a moderately discrepant violation weight. The narrow range-frequent combination was significantly (p < .05) more playful, surprising, and discrepant than any of the other combinations (narrow range-infrequent; broad range-frequent; broad range-infrequent). However, the manipulation of only two levels of ego-involvement makes it difficult to confidently interpret the present findings as supportive of either Berlyne and Godkewitsch or Nerhardt and Rothbart. The multidimensional manipulation of belief ego-involvement would be recommended as a topic for future research. Also, the use of psychosocially relevant norms from the cultural context, rather than psychophysical stimuli, would more readily permit the manipulation of ego-involving versus non-ego-involving beliefs as well as belief versus attitude social norms (cf., Issar, 1976; Mutuma, 1976; Tsang, 1976).
An attempt was made in this study to replicate Gerber and Routh's (1975) finding that a light end-of-series weight followed by a heavy violation was more amusing for subjects than a heavy end-of-series weight followed by a light violation. In the present study, the heavy discrepant weight condition was found to be significantly more surprising and playful than the light discrepant weight condition. Thus, hypotheses 10 and 20 were substantiated at \( p < .05 \) and \( p < .01 \), respectively. The other hypotheses (5, 15, and 25) for amusement, threat, and discrepancy were not substantiated. However, a MANOVA, testing the heavy discrepant weight against the light discrepant weight, was significant at the \( p < .01 \) level for the interaction of the five dependent variables (amusement, threat, surprise, playful, and discrepant).

Nerhardt (1970) also reported that a heavy violation was found more amusing than a light violation, but did not attempt to explain this finding. In Nerhardt's experiment, the heavy violation was often more discrepant or extreme than any of the light violations, so perhaps Nerhardt's finding was spurious. Light-to-heavy violations versus heavy-to-light violations would ordinarily be interpreted as simple contrast effects by Sherif-Hovland (1961) or Helson (1964). Another explanation may be that the light-to-heavy transition represents what Spencer (1860) called "descending incongruity". In Spencer's (1860) view, ascending incongruity or movement from the sublime to the ridiculous (light-to-heavy transition) would be amusing. It is not entirely clear that Spencer intended his meanings to be interpreted quantitatively. The finding in this study does seem to provide partial support for Spencer's ascending/descending incongruity distinction, however, future
research, which would permit both quantitative and qualitative manipulations of incongruity (ascending and descending), would be recommended.

Nerhardt (1970;1975;1976;1977) was the first to demonstrate experimentally that a psychophysical weight, which violates (is discrepant from) a subject's range of expectancy, is capable of generating laughter (and presumably, amusement). The results of the study reported here also clearly demonstrate that the violation of a subject's belief expectancies, under non-threatening conditions, renders these range violations as playful discrepancies, resulting in surprise and amusement. What these findings suggest is that incongruity humour cannot be defined objectively as stimulus violation; nor jokes defined as objective incongruities containing points which require resolution. The psychophysical weights, used in the study reported here, would not be defined as jokes or objective incongruities, yet under appropriate circumstances (when recognized psychosocially as harmless contradiction), were capable of generating amusement for subjects. Further, this perceptual-to-conceptual belief switching, appears to occur independent of resolution. Shultz (1972;1976) would label this phenomenon as 'pure' incongruity. Yet, counter to Shultz, amusement at such, in the present experiment, occurred for adults. Alternative interpretations to Shultz appear in Kaplan and Kris' (1947) "juxtaposed ambiguity", Koestler's (1964) "bisociation", and Greenwald's (1976) "duplicity". All of these concepts focus on the conceptual functioning ability of the human organism to simultaneously switch between two perspectives. La Fave (1979) uses the phrase "interactive incongruity" to suggest that for the symbol-minded, conceptual functioning, human organism, amusement occurs as a joint function of the
stimulus situation and the mental experience of the organism. In the present study, it does appear that subject's recognized psycho-physical and psychosocial humour judgements as a function of interactive incongruity.

Finally, it does appear from this study that humour judgement scales do serve as disguised measures of psychosocial belief expectation. Desai (1939), Tomkins (1962), and Charlesworth (1969) identify surprise as an essential feature of the humour experience. From the findings in this study, surprise is a positive correlate of amusement, along with playfulness and discrepancy. Nevertheless, in the future, an in-depth exploration of the intricate relationship between humour and laughter would be recommended for a comprehensive understanding of humour and humour theory.
APPENDIX A

Humour Judgement Scales
Please, rate your performance on each of the following scales.

How amused were you by this task?

Not at all Amused

[Blank boxes]

Moderately Amused
How heavy or light would you consider the weights that you lifted to be?

Very Heavy

Very Light

How threatening did you find this task?

Not at all Threatening

Moderately Threatening
How surprising did you find this task?

Not at all                     Moderately
Surprising

How discrepant was the last weight from the other weights?

Not at all                     Very
Discrepant                     Discrepant
To what degree do you regard this task as playful?

Moderately

Playful

Not at all

Playful

How different did you perceive the weights to be?

Not at all

Different

Very

Different
APPENDIX B

Experimenter Rating Scale
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APPENDIX C

Random Assignment of Subjects to Experimental Conditions
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Where: Amusement
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Weight
1--Very Heavy to 5--Very Light

Threat
1--Not at all threatening to 5--Moderately Threatening

Surprise
1--Not at all surprising to 5--Moderately Surprising

Discrepant
1--Not at all discrepant to 5--Very Discrepant

Playful
1--Not at all playful to 5--Moderately Playful

Difference
1--Not at all different to 5--Very Different
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Where: Amusement 1—Not at all amusing to 5—Moderately Amusing
Weight 1—Very Heavy to 5—Very Light
Threat 1—Not at all Threatening to 5—Moderately Threatening
Surprise 1—Not at all surprising to 5—Moderately Surprising
Discrepant 1—Not at all discrepant to 5—Very Discrepant
Playful 1—Not at all playful to 5—Moderately Playful
Difference 1—Not at all different to 5—Very Different
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| 31         | 120        | 3         | 4      | 2      | 4        | 3          | 2      | 2          |
| 132        | 155        | 4         | 3      | 1      | 4        | 5          | 4      | 2          |
| 94         | 125        | 5         | 2      | 1      | 5        | 5          | 4      | 2          |
| 116        | 170        | 4         | 5      | 1.     | 4        | 3          | 3      | 4          |
| 30         | 155        | 3         | 2      | 4      | 3        | 5          | 4      | 2          |
| 84         | 170        | 5         | 3      | 1      | 5        | 5          | 5      | 2          |
| 91         | 140        | 3         | 5      | 1      | 3        | 5          | 1      | 2          |

Where:
- Amusement 1--Not at all amusing to 5—Moderately Amusing
- Weight 1--Very Heavy to 5—Very Light
- Threat 1--Not at all threatening to 5—Moderately Threatening
- Surprise 1--Not at all surprising to 5—Moderately Surprising
- Discrepant 1--Not at all discrepant to 5—Very Discrepant
- Playful 1--Not at all playful to 5—Moderately Playful
- Difference 1--Not at all different to 5—Very Different
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**Condition 8:** Violation—Narrow Range; Frequency of Exposure—Infrequent; Direction—Light.

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*Where: Amusement 1—Not at all amusing to 5—Moderately Amusing*

*Weight 1—Very Heavy to 5—Very Light*

*Threat 1—Not at all threatening to 5—Moderately Threatening*

*Surprising 1—Not at all surprising to 5—Moderately Surprising*

*Discrepant 1—Not at all discrépant to 5—Very Discrepant*

*Playful 1—Not at all playful to 5—Moderately Playful*

*Difference 1—Not at all different to 5—Very Different*
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Where:  
- **Amusement**: 1—Not at all amusing to 5—Moderately Amusing  
- **Weight**: 1—Very Heavy to 5—Very Light  
- **Threat**: 1—Not at all threatening to 5—Moderately Threatening  
- **Surprise**: 1—Not at all surprising to 5—Moderately Surprising  
- **Discrepant**: 1—Not at all discrepant to 5—Very Discrepant  
- **Playful**: 1—Not at all playful to 5—Moderately Playful  
- **Difference**: 1 Not at all different to 5—Very Different
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Condition 12: Violation--Inner Mean; Frequency of Exposure--Infrequent; Direction--Light.  

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Where: Amusement 1--Not at all amusing to 5--Moderately Amusing  
Weight 1--Very Heavy to 5--Very Light  
Threat 1--Not at all threatening to 5--Moderately Threatening  
Surprise 1--Not at all surprising to 5--Moderately Surprising  
Discrepant 1--Not at all discrepant to 5--Very Discrepant  
Playful 1--Not at all playful to 5--Moderately Playful  
Difference 1--Not at all different to 5--Very Different
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Where: Amusement 1---Not at all amusing to 5---Moderately Amusing  
Weight 1---Very Heavy to 5---Very Light  
Threat 1---Not at all threatening to 5---Moderately Threatening  
Surprise 1---Not at all surprising to 5---Moderately Surprising  
Discrepant 1---Not at all discrepant to 5---Very Discrepant  
Playful 1---Not at all playful to 5---Moderately Playful  
Difference 1---Not at all different to 5---Very Different
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Where:
- Amusement 1--Not at all amusing to 5--Moderately Amusing
- Weight 1--Very Heavy to 5--Very Light
- Threat 1--Not at all threatening to 5--Moderately Threatening
- Surprise 1--Not at all surprising to 5--Moderately Surprising
- Discrepant 1--Not at all discrepant to 5--Very Discrepant
- Playful 1--Not at all playful to 5--Moderately Playful
- Difference 1--Not at all different to 5--Very Different
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