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ALTERNATIVES AND ATTRIBUTION OF RESPONSIBILITY:

ATTRIBUTION FOR UNINTENDED NEGATIVE EFFECTS

by

© GORDON JOHN MACMILLIE

A THESIS

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The undersigned certify that they have read, and recommend
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To Priscilla, Cheryl, and Janice

who have taught me the meaning

of responsibility.

ABSTRACT

This thesis examined attribution of responsibility to a victim
of unintended negative effects when a victim had alternative actions
to the one(s) he performed. Two kinds of alternative actions that
may influence attribution were specified. One was actions which are
alternative modes of effecting a person's goal (alternative modes,
or AM). The other was actions which are means of effecting alterna-
tive ends to the end, or goal, chosen by a person (alternative ends,
or AE).

It was reasoned that the presence of alternatives may cause
responsibility to be assigned to an actor for a negative outcome
because a more positive outcome was not effected. Because an ob-
server may judge that a person ought to perform the action(s) with
the highest expected utility, responsibility for specific negative
effects in an outcome may be determined by the risk of the effects
engaged by the most positive alternative, relative to the risk en-
gaged by the action(s) performed. Thus, responsibility for specific
negative effects in an outcome may vary as a function of the expected
reduction in risk of the effects produced by an AM, or an AE, that
is more positive than the actions performed. When AM and AE are
both present they may interact in such a way that only the more
positive of the two alternatives will differentially determine
responsibility.

These expectations were tested by having subjects assign respon-
sibility for a negative effect to a stimulus person presented in a

video-tape recording. The person had received a severe negative ef-
fect, but had available an AM and an AE that could have reduced the
risk of the negative effect. Three levels of AM, and three levels
of AE, were presented in a 3 X 3 factorial design. AM consisted of
additional, but unused, means that were expected to produce a risk
either no lower (Low AM), somewhat lower (Medium AM), or consider-
ably lower (High AM), than the risk of the negative effect incurred
by the person's actions. AE consisted of an available end that did
not contain certain positive effects sought by the person in his
goal, but was expected to engage a risk either no lower (Low AE),
somewhat lower (Medium AE), or considerably lower (High AE), than
the risk of the negative effect incurred by the person's actions.
Since the risk of a severe negative effect should lower the expected
utility of an outcome, it was assumed that High AM and AE were more
positive than Medium AM and AE, and Medium AM and AE were more posi-
tive than Low AM and AE.

The results of the experiment offered support for the expecta-
tion that attributed responsibility would vary as a function of AM
and AE. Responsibility assigned to the stimulus person increased
between the levels of AM ($F = 12.45$, $df = 2/99$, $p < .001$), and
between the levels of AE ($F = 7.38$, $df = 2/99$, $p < .005$). A two-
way, AM X AE, interaction ($F = 4.75$, $df = 4/99$, $p < .005$) offered
support for the expectation that only the more positive of the two
alternatives would differentially determine responsibility.

ACKNOWLEDGEMENTS

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INTRODUCTION

People frequently assign responsibility to others when outcomes occur. This phenomenon, and its implications for freedom and determinism, has been of interest to theologians and philosophers for a long time. More recently, some psychologists have become interested in attribution of responsibility as an area for scientific investigation.

Although there are only a few direct psychological investigations of attribution of responsibility, the results of existing studies have advanced theoretical notions and identified important variables. However, little attention has been paid directly to attribution for unintended negative effects, except as such attribution is a defense against the threatening implications of severe effects. The reason for this neglect may be the assumption that a person must intend effects before he is normally held responsible.

The aim of the present thesis was to identify additional variables that influence attribution of responsibility for unintended negative effects. It was reasoned that considerable responsibility may be assigned to a person for unintended effects if the risk of the effects could have been avoided, or reduced, by another mode of effecting the goal, or by choosing another goal. Thus assignment of responsibility for unintended effects may vary as a function of the reduction in risk engaged by the most positive alternative relative to the risk engaged by the actions performed in the situation.

These notions lead to some important, and perhaps not obvious, predictions about attribution of responsibility for unintended negative effects. A review of the existing theory and research that has relevance for attribution of responsibility for unintended negative outcomes will be provided under the headings of Intentional Causation, and Defensive Attribution.

Intentional Causation

One of the more comprehensive psychological theories of attribution of responsibility is Heider's (1958) analysis of naive psychology. The notion of intentional, or personal, causation is central in Heider's theory. His analysis may be summarized as follows. A person is held responsible for an effect when the person is perceived as having caused the effect (perception of causality) because the person and the effect belong together (unit formation). When a person is perceived as having caused an effect intentionally (personal causation), greater responsibility is attributed because the person and the effect are linked more intimately than when the person is perceived as having caused the effect unintentionally (impersonal causation). An effect can be attributed to a person, to environmental factors, or to both. The more environmental factors influence the effect, the less the person is held responsible. Successive stages can be distinguished in which attribution to the person decreases, and attribution to the environment increases.

Thus for Heider (1958), attribution of responsibility arises

out of the perception of causality. Why the observer should infer causality between the actions of a person and environmental effects is not fully explained. It is assumed that the dynamics are controlled by the stimulus field. De Charms (1968) has argued that the historical antecedents of Heider's concept are the studies of Michotte (1963) which were published in French in 1946. Michotte investigated the conditions under which the movement of two simple squares would lead to the perception of causality. He found that the critical stimulus component was the temporal relationship between the two objects. Given certain temporal sequences between two stimuli, the perception of a causal relationship between the stimuli occurs in a convincing way for all subjects.

An important distinction in the perception of causality was used by Heider (1958). In naive psychology, causality can be either personal or impersonal. Personal causality, unlike impersonal causality, is characterized by an invariant end, or goal, and variable means to the goal (equifinality) which are due to a person who remains the persistent cause (local causality). The intention of the person in bringing about the effect through his actions is the central factor in personal causality. P tries to cause X, where X is his goal.

Heider hypothesized that responsibility is attributed to a person who is perceived as having caused an effect, because in some way the person and the effect belong together. This is the process of unit formation. Two things which go together tend to be united

in thought. "Unit forming factors particularly relevant to group-
ings involving persons can be seen in the following: things that are
made by a person, or that are his property belong to him. Changes
that are attributed to a person as effects of his actions also belong
to him in a certain sense." (Heider, 1958, p. 178). The more a
person is perceived as the locus of causality for an effect, the
closer the person and the effect will be linked. Therefore, a
person will be assigned more responsibility for effects caused
intentionally than those caused unintentionally.

An outcome is not always attributed to a person. It may be
attributed to environmental factors, such as luck, task difficulty,
etc. Generally, personal responsibility varies inversely with the
relative contribution of the environment to the effect. The differ-
ent ways in which responsibility is attributed may be considered as
five successive levels in which attribution to the person decreases,
and attribution to the environment increases. 1. At the most pri-
mitive level a person is held responsible for any effect with which
he is connected. 2. At the next level a person is held responsible
for any effect that he caused by his actions. 3. At the third
level a person is held responsible for any effect of his actions
that he might have foreseen. 4. At the next level a person is held
responsible for any effect that he caused intentionally. 5. At the
highest level a person is held only partially responsible for effects
that he caused intentionally. Responsibility is shared with a coer-
cive environment which is viewed as a source of a person's intention,
or motive.

The levels proposed by Heider (1958) are quite similar to Piaget's (1932) moral development sequence in which there is a precausal, objective, and subjective stage. Heider's classification maintains this series, but subdivides the objective stage into two levels. One is a level in which responsibility is ascribed only on the basis of the effects of a person's actions, and one is a level in which foreknowledge of the effects partly determine attribution. Heider added a further level to Piaget's subjective stage in which the motives of a person may be partly assigned to a coercive environment.

Other theorists have proposed similar classification schemes. Kohlberg (1963), for instance, has suggested a classification for moral judgements that has three levels with two stages at each level. The three levels, premoral, conventional, and principled, are very similar to Piaget's developmental series. The difference lies in that Piaget saw morality primarily in terms of cognitive orientations, while Kohlberg considered moral development as a trend from external sources of motivation to internal, with each stage representing an increasing degree of internalization of motivation (Percival, 1968). Kohlberg's focus was not on attribution of responsibility, so research has not been directed toward this area.

An experiment by Shaw and Sulzer (1964) confirmed Heider's (1958) expectation that a potent determinant of attribution of responsibility is relative environmental contribution to the effect. Students in both second grade and college increased the responsibility of the central character in a story as Heider's levels represented

by the story's situation advanced from level one to level four.

The notion that the levels represent a progression from undif-ferentiated to highly differentiated attribution was supported by the fact that young children showed more attribution of responsibi-lity at the lower levels, and less at the higher levels than adults. However, the expectation that adults would assign less responsibility at level five was not supported by the data. One possible interpre-tation of this fact is that the college-student subjects in the ex-periment had not reached the sophistication of level five.

Jones and Davis (1965) extended Heider's (1958) notions by specifying additional factors that influence attribution of dis-positional properties to a person from his actions. Like Heider, they emphasized the importance of intentional causation in the attribution process. Unintended consequences of actions are con-sidered irrelevant by a perceiver in attributing personal characteris-tics to an actor. The problem a perceiver faces is to discern if an actor intended the effects of his actions. Actions are informative to the extent that they arise out of a context of choice and reflect a selection of one of several alternatives. Personal choice is perceived more clearly when an action causes only one, or a few, noncommon effects, and when these effects are less culturally desirable, or out of keeping with role expectations. Two other variables that may affect attribution are a thwarting or fulfilling of the perceiver's intentions (hedonic relevance), and effects produced for the consumption of the perceiver (personalism). Presumably, hedonic relevance and personalism make the intentions

and dispositions of the actor more important for the perceiver. Thus, Jones and Davis (1965) maintained Heider's (1958) notions that an actor's intentions play a central role in determining attribution, and they attempted to specify some of the factors that influence the perception of intentional causation.

Kelly (1967) suggested an elaboration of Heider's (1958) attribution notions to explain the attribution of particular effects to one of several available factors. Basically, he offered an Analysis of Variance analogy to account for attribution. The Entities, Persons, Time (sometimes situations or targets), and Modalities, of a person's environment are the "factors". The overall variability of effects is the "error variance", and the distinctiveness of effects between cells is the "true variance". A perceiver analyzes the variance of his environment and tests the significance of attribution by an internal "F distribution". The inference of intention is made when a particular effect produced by an actor deviates from the data trend for Time/Modality, Persons, Entities, and the Actor, i.e. a particular effect is produced by an actor consistently across Entities only in the cells for a particular Time/Modality. Thus, Kelly (1967) attempted to formalize attribution notions by drawing a comparison between the process of attribution and an Analysis of Variance. While such a comparison may have heuristic value, it is not evident that any theoretical advance is achieved.

De Charms (1968) outlined a theory of personal causation in which personal causation is conceptualized as an overarching

motivational propensity that finds expression in motives for more
specific goals. Man strives for personal causation. He desires to
be the primary locus of causation for his behavior, and to be
effective in producing changes in the environment. A person
attributes motivation to others because he has experienced himself
as being motivated. More specifically, a person infers that the
locus of causation for an effect is more or less internal to a
person, or external to a person, because he has subjective know-
ledge of himself as a causal agent (Origin), and as a person sub-
servient to stronger agents (Pawn). Basically, personal causation
for De Charms (1968) is a motive for motives. The advantage that
could be obtained by being able to account for specific goal-seek-
ing behaviors by a super motive is evident, but it remains to be
convincingly demonstrated that personal causation accounts for much
of the variability of human behavior.

Defensive Attribution

Walster (1966) formulated a notion that it is reassuring to
believe that outcomes are largely the results of predictable,
controllable human actions. If responsibility for an unpleasant
outcome is attributed to someone, a person should feel somewhat
more able to avert a similar fate. This notion was tested by
examining the effects of negative outcome intensity on the attribu-
tion of responsibility. Subjects were required to assign respon-
sibility to a young man for an automobile accident that resulted
in either serious or mild consequences. Walster hypothesized that
as the severity of a misfortune increases it becomes more unpleasant

to acknowledge that this kind of consequence could happen to anyone. Therefore, attribution of responsibility to a person should increase as a function of the severity of the consequences. The results of the experiment supported this expectation, subjects assigned more responsibility to the young man when the accident was severe than when it was inconsequential. The data also indicated that the standards by which subjects judged the behavior of the actor were harsher when the consequences were serious than when the effects were mild, but no change occurred in the perceived carelessness of the actor.

The finding that attribution of responsibility increases with the severity of the consequences of an outcome is consistent with an earlier observation of Shaw and Sulzer (1964). A qualitative examination of the data in their experiment suggested that very good, or very bad, effects resulted in greater attribution of responsibility. There are, however, a number of reported failures to replicate Walster's (1966) findings (Walster, 1967; Shaver 1970a, 1970b; Shaw and Skolnick 1971).

Walster (1967) in a series of two experiments tested the notion that the more consequential an outcome, the more perceivers will believe that they would have anticipated the outcome. In both experiments subjects received information about a person who had gained or lost varying amounts of money through purchasing a house. After hearing of the incident, subjects assigned responsibility to the person and rated their own confidence that they would have anticipated the outcome. The results in both experiments supported

Walster's notions: the more momenteous an outcome, the more sub-
jects were confident that they would have anticipated the gain or
loss. However, in the first experiment, the stimulus person was
judged less responsible when the gain, or loss, was large than when
it was small. In the second experiment, there was no significant
relationship between outcome intensity and attribution of res-
ponsibility.

Shaver (1970a) in two experiments tested the notion that
severity-dependent attributed responsibility reflects a greater
necessity for compensation of the victim of an accident. In both
experiments subjects assigned responsibility to a person who was
potentially at fault for an automobile accident. In the first ex-
periment, the accident resulted in either severe consequences in
which a victim was injured, or mild consequences in which no one
was hurt. The person either had insurance that would compensate
a victim, or no insurance. Contrary to Walster's (1966) findings,
there was no difference in assigned responsibility based on sever-
ity of consequences, but less responsibility was attributed to a
person when he carried insurance than when he had no insurance. The
second experiment attempted to differentiate between carrying insur-
ance and providing compensation by creating a situation in which a
stimulus person had caused a severe automobile accident in which a
victim was injured, and the person either had insurance that pro-
vided compensation to the victim, no insurance and the victim re-
ceived no compensation, or no insurance and the victim's insurance
provided compensation. The data indicated that when the person had

no insurance, compensation did not affect attribution of responsibility, but when the person had insurance that provided compensation, attribution of responsibility was lower than when the person had no insurance. This finding was interpreted as evidence for punitive attribution in which assigned responsibility increased to heighten a person's psychological burden when a victim's insurance paid for the accident.

Shaver (1970b), in three experiments, attempted to test the notion that relevance would increase the tendency for attributed responsibility to vary as a function of the severity of consequences. Relevance took the form of personal similarity between the observer and a stimulus person who caused an accident. In all three experiments subjects assigned responsibility to a person who caused an accident that resulted in severe or mild consequences. In the first experiment age and status were employed to increase similarity, in the second and third experiments imagined personal similarity and sex-role similarity were used. The data in the three experiments showed no relationship between attributed responsibility and outcome intensity. The only systematic relationship between relevance and responsibility occurred in the second experiment, but attribution of responsibility decreased with increased imagined personal similarity. In all three experiments, the greater the relevance, the more lenient were evaluative judgements of the actor. A category of response, defensive attribution, was proposed to encompass this, and similar attributional errors.

Shaw and Skolnick (1971) proposed a notion of defensive attri-

tution in which a person prefers to believe that a positive out-
come could happen by chance because this belief preserves the possi-
bility that a similar fortune could happen to him. This notion was
tested by having subjects assign responsibility to a college student
who, in the course of a laboratory assignment, caused either a nega-
tive, or a positive, effect that was either mild, or severe. The
results of the experiment did not replicate Walster's (1966) findings,
assignment of responsibility for the negative outcome was independent
of severity. However, as predicted, less responsibility was attribut-
ed to the person when the positive outcome was severe than when it
was mild.

Lerner and his colleagues (Lerner, 1965; Lerner and Simmons,
1966; Lerner and Matthews, 1967) advanced a notion similar to
Walster's (1966). Lerner proposed that people believe in a world
where wanted things can be obtained through appropriate actions,
and threatening events can be avoided. Belief in a world where no
fit existed between actions and outcomes is too threatening for
most people. This hypothesis of belief in a just world is an ex-
pansion of Festinger's notion (1957) that it is functional and less
dissonance arousing to believe that actions will lead to desirable .
outcomes.

In its most general form the just world cognition is a belief
that people get what they deserve, and deserve what they get. There
are, however, two senses in which people are considered to be deserv-
ing. One is on the basis of their actions, the other is on the basis
of their personal desirability. The belief in a just world has two

corresponding forms of expression. There is an appropriate fit between actions and outcomes, or there is an appropriate fit between personal characteristics and outcomes. The preference is to believe in the effectiveness of appropriate actions rather than personal characteristics because behavior is easier to control and change than is intrinsic worth. The cognition that outcomes are the results of personal traits is engaged by an observer if a victim is seen in a situation in which his fate was not merited by his actions.

In the first of two studies (Lerner and Simmons, 1966) subjects rated the attractiveness of a victim (a confederate) under the guise of an experiment on the perception of emotional cues. Experimental conditions included one in which a victim's receipt of painful shock was ended, and another in which a victim, who had agreed to accept shocks so that subjects could obtain credits for observing the experiment, was expected to receive a second session of shock. The notion of belief in a just world was expressed in a hypothesis that a victim who agrees to suffer for the sake of others will be judged less attractive than a victim whose suffering is ended. The data supported this hypothesis, but this finding is ambiguously related to the just world notion. A comparison should have been made between a victim whose fate was caused by his actions, and a victim whose fate was independent of his actions.

In the second experiment (Lerner and Matthews, 1967) a more rect test of the just world notion was undertaken. The perception responsibility either to a victim (a confederate), or to the

critical subject, for the victim's receipt of painful shocks in
a paired-associate learning task was elicited in an indirect man-
ner. Subjects believed they were responsible for the victim's suf-
fering when they picked a slip of paper that contained their own
fate (control, or reward) and the fate of the victim (shock), or
that the victim was responsible for her own suffering when she
picked the slip that determined her negative fate. Consistent
with the notion of a just world, subjects did not devalue a victim
when the victim was responsible for her own suffering. However,
no condition was present that provided a comparison between a person
who is responsible for his own suffering and a person who is not
responsible, but whose fate is also independent of the action of
the critical subject.

Theoretical Extensions

Present theoretical notions do not adequately account for
assignment of responsibility for unintended negative outcomes.
The attribution notions of Heider (1958), Jones and Davis (1965),
Kelly (1967), and De Charms (1969) imply that in mature attribution
a person must intentionally choose effects from a number of alter-
natives before he is closely identified with the effects, or
held highly responsible for them. Although a person's intention in
causing effects may increase attribution of responsibility (Shaw and
Sulzer, 1964), considerable responsibility is assigned when negative
outcomes are not intended. In experiments which presented situations
where an accident occurred, observers assigned responsibility even
though the negative outcome was not intended, and they increased

attribution on the basis of factors that did not obviously increase
intentional causation of effects (Walster, 1966; Shaver, 1970a,
1970b).

The notion that attribution is affected by a need to maintain
important cognitions (Walster, 1966; Lerner and Simmons, 1966; Lerner
and Matthews, 1967; Shaver 1970a, 1970b; Shaw and Skolnick, 1971) does
not adequately specify the factors that control normal attribution.
Therefore, it is difficult to know if, or when, defensive attribution
is being engaged. Shaver's (1970a) study attempting to replicate
Walster's (1966) results found that less responsibility was attri-
buted to a person who had insurance than a person who had no insur-
ance, and this attribution depended on the carrying of insurance
rather than the providing of compensation. A simpler explanation
of these findings than Shaver's punitive attribution interpretation
may be that a person's responsibility is normally partially deter-
mined by the expected utility of his actions rather than by the
utility that actually results in a situation. Carrying insurance
should influence the expected utility of an outcome in the event of
an accident, while payment of compensation should influence the
utility of the actual outcome that occurred.

Walster's (1966) findings that severity of consequences affect-
ed attribution, was interpreted as supporting a notion of defensive
attribution. She also found that the standards by which behavior
is judged were more stringent when the consequences were serious
than when they were mild. The interpretation of this finding may be
that observers expected the utility of the person's actions to be

lower when the consequences were more severe. An alternative explana-. tion of the severity-dependent attribution may be that an increase in responsibility for the negative effects was caused by an increase in the perception of the risk engaged by the person's actions be- cause the potential risk of severe consequences was more salient when effects were severe than when they were mild.

The availability of alternatives to a person's actions may be a necessary condition for the inference of intentionality (Jones and Davis, 1965; Kelly, 1967). However, the presence of alternatives may not simply increase the perception of intentional causation, but may cause responsibility to be attributed to a person and/or to environ- mental factors because a more positive outcome was not effected. A person may be held responsible for any loss of utility that could have been predicted and prevented. Thus, a person's responsibility for the negative utility of an outcome may be determined by the expected utility of the most positive alternative action(s) relative to the expected utility of the one(s) performed. If the utility of an outcome is more negative than could have been predicted from a per- son's actions, the locus for this loss may be perceived as outside the person and in the environment. Because an observer may judge that a person ought to perform the action(s) with the highest ex- pected utility, responsibility for specific negative effects in an outcome may be determined by the risk of the negative effects en- gaged by the most positive alternative action(s) relative to the risk engaged by a person's actions. The lower the risk of the negative effects engaged by the most positive alternative action,

the more a person will be held responsible for the effects.

If alternative actions influence how, or if, responsibility is assigned to a person, it is necessary to specify the alternatives that exist in a situation in order to make predictions about attribution. MacWillie (1969) found that observers attributing responsibility can distinguish between actions that produce a risk of negative effects because they are particular modes of effecting a goal and actions that engage a risk of negative effects because they are means of effecting particular goals. Thus, observers in assigning responsibility may consider the expected utility of actions that are alternative modes of effecting an actor's goal, and the expected utility of actions that are means of effecting alternative ends to the one(s) chosen by an actor. Since it is expected that only the most positive alternative to the actions performed will determine attribution, when both alternative modes of effecting a goal and means of effecting alternative ends are present, the alternative with the highest expected utility will determine attribution, and render the other alternatives ineffective.

The notion that observers in assigning responsibility consider the expected utility of alternative modes of effecting a goal, and the expected utility of means of effecting alternative ends to the goal, but utilize only the more positive alternative to differentially determine responsibility may lead to important, and perhaps not obvious, predictions. Consider that a person goes swimming and drowns. An observer may compare the utility of various outcomes that can be effected to enjoy oneself on a summer day. The specific

goal of swimming may be achieved by two modes, by going alone or
with a friend, the latter being the more positive mode of swimming
safely. Thus, if the actor went swimming alone, and the more posi-
tive mode of swimming with a friend were available, he should be
assigned more responsibility for drowning than if he went alone but
no more positive mode of swimming were obviously available. Or, an
observer may compare specific ends in a situation. To enjoy oneself
on a summer day one could choose between swimming or golfing, the
latter being the more positive end. Thus, if the actor went swimm-
ing and the more positive end of golfing which contains little risk
of drowning were available, he should be held more responsible for
drowning than if he went swimming but no more positive end were
available. While the availability of alternative modes of effecting
a goal and alternative ends to the goal may appear to independently
affect attribution, only the outcome with the highest expected
utility will differentially determine attribution. Therefore if
the actor went swimming alone, and golfing is expected to result
in a more positive outcome than swimming with a friend, the avail-
ability of swimming with a friend will not affect attribution, but
the availability of golfing will increase attribution of respon-
sibility. Likewise, if the person went swimming alone, and swimming
with a friend is expected to result in a more positive outcome than
golfing, the availability of swimming with a friend will increase
attribution, but the availability of golfing will not affect
attribution.

The Present Study

The purpose of the present study was to demonstrate that observers assign responsibility by considering the utility of alternatives available to an actor that are either alternative modes of effecting his goal (alternative modes, or AM), or means of effecting alternative ends to his goal (alternative ends, or AE). The actor will be held more responsible for an unintended negative effect, the more the alternatives reduce the risk of the effect relative to the risk engaged by the person's actions. Since it was expected that only the most positive alternative will determine attribution, when both AM and AE are present, the alternative with the higher expected utility will determine attribution, and render the other alternative ineffective.

In preparation for this study a preliminary study was conducted to test the present notions by measuring the degree of responsibility assigned to a person who while earning a small reward received a relatively severe negative effect. The person had the option of earning the reward in which case the alternative of not earning the reward was available (AE present), or the person was coerced into earning the reward in which case no alternative end was available (AE absent). The person had the means of averting the negative effect while earning the reward (AM present), or no means of averting the negative effect in obtaining the reward (AM absent). Both AE and AM involved minimal risk of the negative effect, therefore, the expected utility of these alternatives should be greater than the person's action which contained a high

risk of the negative effect. Since only AM resulted in a reward and no negative effect it should have a somewhat higher expected utility than AE. Therefore, both AE and AM should determine attribution when they are present alone, but when they are present together they should interact in such a way that only AM will determine attribution of responsibility. The results of the preliminary study supported these expectations.[1]

Although the preliminary study offered support for the present notions, a more satisfactory test would be provided if AM and AE were varied at more than two levels. Therefore, an attempt was made to test the present notions by measuring the degree of responsibility assigned to a person who received a severe negative effect while pursuing his goal, but who had available actions that were alternative modes of effecting his goal (AM), and means of effecting an alternative end (AE). AM was presented at one of three levels and consisted of additional means that were expected to produce a risk either no lower (Low AM), somewhat lower (Medium AM), or considerably lower (High AM) than the risk incurred by the person's actions. AE was also presented at one of three levels, and consisted of an available end which did not contain positive effects sought by the person in his goal, but was expected to engage a risk either no lower (Low AE), somewhat lower (Medium AE), or considerably lower (High AE), than the risk incurred by the person's actions. The risk incurred by a person's actions could have been equally reduced by High AM or AE, Medium AM or AE, or Low AM or AE. Since the risk

1: See Appendix A for a table of attributed responsibility mean scores and a summary of an Analysis of Variance performed on these scores.

of a severe negative effect should affect the expected utility of
an outcome, and because the gain afforded by the additional posit-
ive effects contained in AM was small compared to the loss engaged
by negative effects, it was assumed that High AM and AE were more
positive than Medium AM and AE, and Medium AM and AE were more
positive than Low AM and AE. Because AM contained positive effects
not present in AE, AM should be somewhat more positive than AE
when they both equally reduce the risk of the negative effects.
It was expected that attribution of responsibility for the negative
effects would vary as a function of the reduction in risk of the
effects engaged by an alternative. It was also expected that AE
and AM would interact in such a way that only the more positive of
the two alternatives would determine responsibility.

METHOD

Subjects and Design

$\underline{S}$s were 108 male undergraduate students at the University of Alberta who participated in the experiment as part of an introductory course requirement. The sign-up booklet for this experiment was placed with those for other psychological studies at a designated location on campus.

The design was a 3 X 3 factorial Analysis of Variance with 12 $\underline{S}$s between each of three levels of AM and three levels of AE. The dependent variable was the degree of responsibility assigned to a male actor for getting a lung disease. Responsibility was measured on an 11-point scale labelled at the ends, with 1 indictating No Responsibility and 11, Complete Responsibility.

AM was presented at three levels, Low, Medium, and High. The manipulations were designed to cause the perception that in effecting a goal, available, but unused, means could lower the probability of a severe negative effect by either 0 (Low), .10 (Medium), or more than .49 (High). AE was also presented at three levels, Low, Medium, and High. The manipulations attempted to create the perception that the actor's choice of relinquishing certain positive effects could lower the probability of a severe negative effect by either 0 (Low), .10 (Medium), or more than .49 (High).

Procedure

$\underline{S}$s were tested in groups that varied in size from three to nine, but generally each condition contained one larger group

(7 to 9) and one smaller group (3 to 5). After all $\underline{S}$s arrived for a group, they were given written instructions (see Appendix B) which were also read to them. These instructions contained a statement that the Department of Psychology in the course of investigating causes of industrial accidents had conducted a number of interviews with employees in selected industries. The stated purpose of the experiment in which subjects participated was to obtain opinions about one of the interviews that had been recorded on video-tape. The instructions also contained a statement that the information reported by the person in the interview had been checked and found correct.

One of nine video-tape interviews was then shown. In all interviews the $\underline{E}$ was also the interviewer, and the actor was a 55 year-old man who was represented in the interview as being age 40. The following information in the interview was constant in all nine conditions. The actor had a serious lung disease caused by breathing fumes at a lead foundry. He had worked in a lead foundry for 23 years and was aware that the probability of his getting the disease was .50. The only employment opportunites he had were to work at a lead foundry or a zinc foundry, and he chose to work at the lead foundry because his friends worked there. A face-mask was available at the lead foundry, but the actor had not worn the mask. No mask was available at the zinc foundry because a mask was ineffective in reducing the risk of lung disease caused by zinc fumes.

The interviews were varied in the following ways to present the three levels of AM and the three levels of AE (see Appendix C).

Low AM: Although the lead foundry had face-masks, they were ineffective, and the probability of getting the disease if a mask were worn was still .50. The actor was aware of this fact.

Medium AM: The lead foundry had masks for employees, and if the masks were worn the probability of getting the disease was .40. The company had checked to see if masks were being worn, and the actor acknowledged that, "when they came looking, I put it on". The reason given for not wearing a mask was, "I guess I was just a bit careless". The actor was aware of the probabilities associated with wearing, and not wearing, a mask.

High AM: The interview was the same as Medium AM, except that the probability of getting the disease if a mask were worn was less than .01.

Low AE: The probability of getting lung disease at the zinc foundry was reported as .50, and the actor was aware of this fact.

Medium AE: The interview was the same as Low AE, except that the probability of getting the disease at the zinc foundry was reported as .40.

High AE: The interview was the same as Low and Medium AE, except that the probability of getting the lung disease at the zinc foundry was less than .01.

Following the presentation of the interview, Ss were informed once again that the information reported by the actor had been checked and found correct, and in their considerations they were to take the reported information as factual (see Appendix D). Ss were then given booklets which contained the scale for the dependent measure,

and scales intended to check the effectiveness of the manipulations (see Appendix E). $\underline{S}$s were asked to answer all questions, and to answer questions in the order in which they appeared in the booklet.

RESULTS

The design of the experiment was a 3 X 3 factorial Analysis

of Variance with three levels of AM and three levels of AE.[1]   The

dependent variable was the degree of responsibility assigned to a

victim for getting a severe lung disorder.

The effectiveness of the AM manipulations was checked by

having $\underline{S}$s rate the increase in risk that occurred because the actor

did not wear a mask. As expected, an increase in the perception of

increased risk occurred between the levels of AM ($F = 191.28$, df =

2/99, $p < .001$). Mean scores are reported in Table 1, and a summary

of an Analysis of Variance is presented in Table 2.

Table 1

Mean Scores for Increase in Risk Because Mask Not Used

	Low AE	Medium AE	High AE
Low AM	1.83	1.5	1.75
Medium AM	4.83	4.42	4.
High AM	10.17	9.	10.33

1: Since subjects received manipulations in groups, an additional
analysis on all data was performed using groups nested within
treatments. Summary Tables are presented in Appendix F. In no
instance did the nested group factor approach significance.
Therefore, groups within treatments and subjects within groups
were used as a pooled error term.

Table 2

Analysis of Variance for Increase in Risk Because Mask Not Used

Source	df	SS	MS	F
AM	2	1235.91	617.95	191.28 *
AE	2	7.46	3.73	1.16
AM X AE	4	10.09	2.52	.78
Error	99	319.83	3.23	

* $p < .001$

The effectiveness of the AE manipulations was checked by having Ss rate the increase in risk that occurred because the actor did not choose to work at the zinc foundry. The expectation that an increase in the perception of increased risk would occur between the levels of AE is supported by the data ($F = 103.02$, $df = 2/99$. $p < .001$). Mean scores are presented in Table 3 and an Analysis of Variance is summarized in Table 4.

Table 3

Mean Scores for Increase in Risk Because Zinc Foundry Not Chosen

	Low AE	Medium AE	High AE
Low AM	1.5	3.83	9.67
Medium AM	1.83	3.17	9.67
High AM	1.25	3.83	8.33

Table 4

Analysis of Variance for Increase

in Risk Because Zinc Foundry Not Chosen

Source	df	SS	MS	F
Am	2	5.57	2.79	.50
AE	2	1140.35	570.18	103.02*
AM X AE	4	14.26	3.57	.64
Error	99	547.92	5.53	

* $p < .001$

$\underline{Ss}$ were also asked to rate the risk of disease when a mask was not used. It was expected that no effects would occur because this risk should be constant across conditions, but apparently the perception of risk increased between levels of AM ($F = 4.31$, $df = 2/99$, $p < .05$). Mean scores are presented in Table 5, and an Analysis of Variance is summarized in Table 6.

Table 5

Mean Scores for Risk When Mask is Not Used

	Low AE	Medium AE	High AE
Low AM	7.17	6.08	7.25
Medium AM	7.	7.25	7.
High AM	7.36	7.58	8.5

Table 6

Analysis of Variance for Risk When Mask is Not Used

Source	df	SS	MS	F
AM	2	27.17	13.58	4.31*
AE	2	6.89	3.44	1.09
AM X AE	4	8.94	2.24	.71
Error	99	311.92	3.15	

* p < .05

The expectation that attribution of responsibility would increase as a function of the reduction in risk provided by either AM or AE was supported by the data. Attribution of responsibility increased between the levels of AM (F = 12.46, df = 2/99, p < .001), and between the levels of AE (F = 7.39, df = 2/99, p < .005). The expectation that AM and AE would interact in such a way that only the more positive alternative would determine responsibility was supported by an AM X AE interaction (F = 4.75, df = 4/99, p < .005). As expected, the difference between Low and Medium, and the difference between Low and High, scores for AM, or AE, was greater when the level of the other variable was Low than when it was Medium. Also, the difference between Medium and High scores for AM, or AE, was greater when the level of the other variable was Medium than when it was High. Mean scores for attributed responsibility are presented in Table 7, and a summary of an Analysis of Variance performed on responsibility scores is given in Table 8.

Table 7

Mean Scores for Attributed Responsibility

	Low AE	Medium AE	High AE
Low AM	3.25	6.17	8.50
Medium AM	5.42	6.25	7.42
High AM	8.92	8.67	8.17

Note.- Higher values indicate greater attribution of responsibility.

Table 8

Analysis of Variance for Attributed Responsibility

Source	df	SS	MS	F
AM	2	142.89	71.44	12.45**
AE	2	84.67	42.33	7.38*
AM X AE	4	109.11	27.28	4.75*
Error	99	568.25	5.74	

* $p < .005$
** $p < .001$

DISCUSSION

The results of this experiment supported the notion that responsibility for unintended negative effects varies as a function of the reduction in risk of the effects engaged by alternatives. Apparently, in assigning responsibility observers consider the expected utility of both alternative modes of effecting a goal, and means of effecting alternative ends, but determine responsibility only by the more positive alternative.

Some caution is advisable in interpreting the present findings because the research was not designed to distinguish between the effects of a reduction in risk and an increase in expected utility. In the present research it was assumed that alternatives would increase in expected utility as they reduced the risk of a severe negative effect. Therefore, the research does not provide information about attribution for unintended negative effects when the greatest reduction in risk of the effects is provided by an alternative other than the one with the highest expected utility. It is conjectured, however, that responsibility is determined by the reduction in risk of negative effects provided by the alternative with the highest expected utility. This conjecture, of course, needs to be tested by further research.

The finding that the alternative with the higher expected utility rendered the effects of another alternative inoperative in assignment of responsibility may have important social implications. Attribution of responsibility appears to be controlled not

only by the perception and judgement of causality, but also by
the value system of an observer. If, for example, an observer
believes that a person should be in church on Sunday morning, and
a person was elsewhere and caused an accident, the observer's
assignment of responsibility may be quite unaffected by the per-
son's ability, or inability, to avoid the accident other than by
going to church. Anyone interested in reducing his responsibility
for unintended negative effects may have to persuade others that
his goal has the highest expect utility before any arguments about
modes of effecting the goal will have any affect on responsibility.

The finding in the experiment that the perception of the
risk engaged by a person's actions increased as the expected
utility of an alternative mode of effecting a goal increased,
was unexpected. No effects were expected because an attempt was
made to keep the information about the level of risk engaged by
the person's actions constant in all conditions. One possible in-
terpretation of the present finding is that the perception of risk
was lowered to defend a belief in justice and fairness. The per-
ception of a high risk of severe negative effects that is unavoid-
able in the pursuit of a reasonable and legitimate goal may threaten
a cognition about the justice of the world. Such a threat to a
person's belief should become less as the expected utility of an
alternative modes of effecting the goal increases.

In summary, the present research identifies the expected
utility of alternatives, controlled by a perception of reduction
in risk, as an important determinant of attribution of responsibility

for unintended negative effects. Moreover, when alternative modes of effecting a goal and alternative ends to a goal are present, responsibility is differentially determined only by the more positive alternative.

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APPENDIX A

Tables from a Preliminary Study

Table 9

Mean Scores for Attributed Responsibility in a Preliminary Study

	AE Absent	AE Present
AM Absent	2.66	6.33
AM Present	7.42	7.58

Table 10

Analysis of Variance for Attributed Responsibility

in a Preliminary Study

Source	df	SS	MS	F
AM	1	108.	108.	16.21***
AE	1	44.08	44.08	6.62**
AM X AE	1	36.75	36.75	5.52*
Error	44	293.17	6.66	

* $p < .05$,
** $p < .01$
*** $p < .001$

APPENDIX B

INSTRUCTIONS

Department of Psychology

University of Alberta

The Department of Psychology is investigating factors that contribute to industrial accidents and illness. This past summer (1970) an investigation was carried out in selected industries in Nova Scotia. Many interviews were conducted with employees of the industries concerned. You will watch one such interview.

The interview is with a Mr. Charles MacLeod of Stellarton, N.S. Mr. MacLeod was aware that the interview was being video-taped. Conversation had taken place before the taping began to help put Mr. MacLeod at ease before the camera.

At the time of the interview Mr. MacLeod was an out-patient at a hospital in the neighbouring town of New Glasgow, N.S. He was diagnosed as having a lung disease which is known locally as Stellarton Lung Disease. The disease will permanently impair his health.

The information reported by Mr. MacLeod in the interview has been checked with a study made by the N.S. Commission of the industries concerned and with his social case work file, and is correct. You are asked to watch the interview carefully because your opinion will be needed at the end of the interview.

Since each individual's opinion is wanted, you are asked to refrain from talking with anyone in the room, or indicating in any way your reactions.

APPENDIX C

Dialogue of Video-tape Recorded Interview

The actor (A) and the interviewer (I) were seated facing each other across a table.

All Conditions

I: The doctor has told me, Mr. MacLeod, that you are aware that you have Stellarton Lung disease and of its consequences.

A: Yes, I'm aware.

I: How did you get the disease?

A: From breathing lead fumes, I've worked in the lead foundry for 23 years.

I: Why did you work for the lead foundry?

A: In Stellarton there are only the two industries, the lead foundry and the zinc foundry, and you either work for one or the other.

I: In your social case work file, that you gave permission for me to read, it stated that the only choice you really had was to work for one of the two foundries. Couldn't you have moved away and worked somewhere else?

A: I didn't have the education or a trade to move. You see, Dad passed away when I was 16, and I had to support Mother and the family.

I: So you couldn't get a job outside of Stellarton?

A: No, I tried several times. Once I even wasted a couple of weeks pay going up to Montreal and Toronto to look for work,

but I just couldn't find anything.

I: When did you start at the lead foundry?

A: When I was 17.

I: You say that you've worked in the lead foundry for 23 years, and you started when you were 17, that would make you...40 now.

A: I'm 40 years of age.

I: When you started at the lead foundry did you know that the breathing of the lead fumes was dangerous?

A: Yes, I did, a big study by the Nova Scotia Commission was published the year I started, they said that breathing lead fumes over a period of 20 years would cause 50 out of every 100 men to get the disease.

I: Did you believe that?

A: I suppose I did, but you know, you think that it might happen to the other guy, but you never really believe that it will happen to you.

Condition: Low AM, Low AE

I: You said that 50 out of every 100 men who breathed lead fumes for 20 years were expected to get the disease, was there no protection?

A: No, the company has a face-mask, but it doesn't work.

I: You mean it wasn't effective.

A: The Nova Scotia Commission said that if a mask were worn 50 out of every 100 men would still get the disease.

I: Did you wear the mask?

A: No I didn't.

I: So by not wearing a mask your chances of getting the disease were 50 out of 100, but if you had worn the mask your chances would still be 50 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes, they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that 50 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc either.

I: So your chances of getting the disease at the zinc foundry would have been 50 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about

lung disease, at the lead factory where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn 50 out of every 100 men were still expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, 50 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: Low AM, Medium AE

I: You said that 50 out of every 100 men who breathed lead fumes for 20 years were expected to get the disease, was there no protection?

A: No, the company has a face-mask, but it doesn't work.

I: You mean it wasn't effective.

A: The Nova Scotia Commission said that if a mask were worn 50 out of every 100 men would still get the disease.

I: Did you wear the mask?

A: No I didn't.

I: So by not wearing a mask your chances of getting the disease were 50 out of 100, but if you had worn the mask your chances would still be 50 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes, they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that 40 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc either.

I: So your chances of getting the disease at the zinc foundry would have been 40 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead factory where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn 50 out of every 100 men were still expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, 40 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much, Mr. MacLeod. Do we have your per-
mission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: Low AM, High AE

I: You said that 50 out of every 100 men who breathed lead fumes
for 20 years were expected to get the disease, was there no
protection?

A: No, the company has a face-mask, but it doesn't work.

I: You mean it wasn't effective.

A: The Nova Scotia Commission said that if a mask were worn
50 out of every 100 men would still get the disease.

I: Did you wear the mask?

A: No I didn't.

I: So by not wearing a mask your chances of getting the disease
were 50 out of 100, but if you had worn the mask your chances
would still be 50 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes, they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that less than 1 out of every 100 men would get it
there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc either.

I: So your chances of getting the disease at the zinc foundry would have been less than 1 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead factory where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn 50 out of every 100 men were still expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, less than 1 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: <u>Medium AM, Low AE</u>

I: You said that 50 out of every 100 men who breathed lead fumes for 20 years were expected to get the disease, was there no protection?

A: Yes, the company has a face-mask they insist you wear.

I: Did you wear it?

A: No, I didn't.

I: Why not?

A: I guess I was a bit careless, you only have to wear it about once an hour when the lead is being poured.

I: How effective was the mask?

A: They said that if a mask were worn 40 out of every 100 men would get the disease.

I: Did the company check to see if the mask was being worn?

A: Yes they did, and when they came looking I put it on.

I: So by not wearing a mask your chances of getting the disease were 50 out of 100, but if you had worn the mask it would have been only 40 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that 50 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc, it's too fine or something, so they don't use one there.

I: So your chances of getting the disease at the zinc foundry
    would have been 50 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if
    you're with your friends it makes it a little better.

I: Okay, let me make sure I have this right now, the only
    choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission
    about lung disease, at the lead foundry where you worked if
    no mask were worn 50 out of every 100 men were expected to get
    the disease, but if a mask were worn 40 out of every 100 were
    expected to get the disease. And at the zinc foundry where a
    mask was ineffective for zinc, 50 out of every 100 men were
    expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your per-
    mission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: Medium AM, Medium AE

I: You said that 50 out of every 100 men who breathed lead fumes for 20 years were expected to get the disease, was there no protection?

A: Yes, the company has a face-mask they insist you wear.

I: Did you wear it?

A: No, I didn't.

I: Why not?

A: I guess I was a bit careless, you only have to wear it about once an hour when the lead is being poured.

I: How effective was the mask?

A: They said that if a mask were worn 40 out of every 100 men would get the disease.

I: Did the company check to see if the mask was being worn?

A: Yes they did, and when they came looking I put it on.

I: So by not wearing a mask your chances of getting the disease were 50 out of 100, but if you had worn the mask it would have been only 40 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that 40 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc, it's too fine or something, so they don't use one there.

I: So your chances of getting the disease at the zinc foundry would have been 40 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay, let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead foundry where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn 40 out of every 100 were expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, 40 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: Medium AM, High AE

I: You said that 50 out of every 100 men who breathed lead fumes for 20 years were expected to get the disease, was there no protection?

A: Yes, the company has a face-mask they insist you wear.

I: Did you wear it?

A: No, I didn't.

I: Why not?

A: I guess I was a bit careless, you only have to wear it about once an hour when the lead is being poured.

I: How effective was the mask?

A: They said that if a mask were worn 40 out of every 100 men would get the disease.

I: Did the company check to see if the mask was being worn?

A: Yes they did, and when they came looking I put it on.

I: So by not wearing a mask your chances of getting the disease were 50 out of 100, but if you had worn the mask it would have been only 40 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that less than 1 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc, it's too fine or something.

so they don't use one there.

I: So your chances of getting the disease at the zinc foundry would have been less than 1 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay, let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead foundry where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn 40 out of every 100 were expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, less than 1 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: High AM, Low AE

I: You said that 50 out of every 100 men who breathed lead fumes
for 20 years were expected to get the disease, was there no
protection?

A: Yes, the company has a face-mask they insist you wear.

I: Did you wear it?

A: No, I didn't.

I: Why not?

A: I guess I was a bit careless, you only have to wear it about
once an hour when the lead is being poured.

I: How effective was the mask?

A: They said that if a mask were worn less than 1 out of every
100 men would get the disease.

I: Did the company check to see if the mask was being worn?

A: Yes, they did, and when they came looking I put it on.

I: So by not wearing a mask your chances of getting the disease
were 50 out of 100, but if you had worn the mask it would have
been only less than 1 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that 50 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc, it's too fine or something,
so they don't use one there.

I: So your chances of getting the disease at the zinc foundry would have been 50 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay, let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead foundry where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn less than 1 out of every 100 were expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, 50 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: High AM, Medium AE

I: You said that 50 out of every 100 men who breathed lead fumes

for 20 years were expected to get the disease, was there no

protection.

A: Yes, the company has a face-mask they insist you wear.

I: Did you wear it?

A: No, I didn't.

I: Why not?

A: I guess I was a bit careless, you only have to wear it about

once an hour when the lead is being poured.

I: How effective was the mask?

A: They said that if a mask were worn less than 1 out of every 100

men would get the disease.

I: Did the company check to see if the mask was being worn?

A: Yes they did, and when they came looking I put it on.

I: So by not wearing a mask your chances of getting the disease

were 50 out of 100, but if you had worn the mask it would have

been only less than 1 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that 40 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc, it's too fine or something,

so they don't use one there.

I: So your chances of getting the disease at the zinc foundry would have been 40 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay, let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead foundry where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn less than 1 out of every 100 were expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, 40 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

Condition: High AM, High AE

I: You said that 50 out of every 100 men who breathed lead fumes for 20 years were expected to get the disease, was there no protection.

A: Yes, the company has a face-mask they insist you wear.

I: Did you wear it?

A: No, I didn't.

I: Why not?

A: I guess I was a bit careless, you only have to wear it about once an hour when the lead is being poured.

I: How effective was the mask?

A: They said that if a mask were worn less than 1 out of every 100 men would get the disease.

I: Did the company check to see if the mask was being worn?

A: Yes they did, and when they came looking I put it on.

I: So by not wearing a mask your chances of getting the disease were 50 out of 100, but if you had worn the mask it would have been only less than 1 out of 100.

A: That's right.

I: Could you have worked for the zinc foundry?

A: Yes they needed men quite often.

I: What about lung disease at the zinc foundry?

A: They said that less than 1 out of every 100 men would get it there.

I: What about a mask at the zinc foundry?

A: No, a mask doesn't work for zinc, it's too fine or something,

so they don't use one there.

I: So your chances of getting the disease at the zinc foundry would have been less than 1 out of 100.

A: That's right.

I: Are there things that make the lead foundry more attractive?

A: Two of my best friends work at the lead foundry.

I: What about pay, did the lead foundry pay more?

A: No, they both paid the same.

I: I take it working with friends is important for you.

A: Yes, very important, working in a foundry is hell, but if you're with your friends it makes it a little better.

I: Okay, let me make sure I have this right now, the only choice you had was to work at one of the two foundries.

A: That's right.

I: In terms of the predictions by the Nova Scotia Commission about lung disease, at the lead foundry where you worked if no mask were worn 50 out of every 100 men were expected to get the disease, but if a mask were worn less than 1 out of every 100 were expected to get the disease. And at the zinc foundry where a mask was ineffective for zinc, less than 1 out of every 100 men were expected to get the disease.

A: That's right.

I: Well thank you very much Mr. MacLeod. Do we have your permission to use this tape for our research?

A: Yes, if you want to.

I: Thank you very much.

APPENDIX D

Additional Instructions Given to Subjects

As mentioned earlier, the information reported by Mr.
MacLeod has been checked with the Nova Scotia Commission's
Study and with his case work files, and is correct. Therefore,
in your considerations you are asked to take it as factual
that the rate of lung disease is as reported by Mr. MacLeod,
and that his choice of employment was limited to one of the two
foundries.

APPENDIX E

Scales Used by Subjects

PART ONE

This particular study involves an investigation of human responsibility. The purpose is that out of unfortunate circumstances a little knowledge may be gleaned about responsibility.

Part one focuses on the extent, if any, to which the injured party may be personally responsible for his injury.

Please answer all questions.

Questions should be answered in the order in which they appear in this booklet.

How much responsibility does Mr. MacLeod have for getting

Stellarton Lung Disease?

No   Complete
Responsibility:__:__:__:__:__:__:__:__:__:__:Responsibility[1]

1: The intervals in this scale have been reduced in size to meet
   the margin requirements of the Faculty of Graduate Studies.

What _increase_ in the risk of lung disease occurred because Mr. MacLeod did not wear a mask at the lead foundry?

NONE:____:____:____:____:____:____:____:____:____:____:_____:EXTREME

What _increase_ in the risk of lung disease occurred because Mr. MacLeod did not choose to work at the zinc foundry?

NONE:____:____:____:____:____:____:____:____:____:____:_____:EXTREME

What is the risk of getting lung disease from working at the lead foundry and <u>not</u> wearing a mask

NONE:____:____:____:____:____:____:____:____:____:____:____:EXTREME

APPENDIX F

Additional Tables

Table 11

Analysis of Variance for Increase in Risk Because Mask Not Used,
Groups as a Nested Factor

Source	df	SS	MS	F
AM	2	1235.91	617.95	393.60 *
AE	2	7.46	3.73	2.38
AM X AE	4	10.09	2.52	1.61
Groups (within AM,AE)	9	14.17	1.57	.46
Within	90	305.67	3.39	

* p < .001

Table 12

Analysis of Variance for Increase in Risk Because Zinc Foundry Not
Chosen, Groups as a Nested Factor

Source	df	SS	MS	F
AM	2	5.57	2.79	.30
AE	2	1140.35	570.18	62.31
AM X AE	4	14.26	3.57	3.89
Groups (within AM,AE)	9	82.37	9.15	1.77
Within	90	465.55	5.17	

* p < .001

Table 13

Analysis of Variance for Risk When Mask is Not Used,
Groups as a Nested Factor

Source	df	SS	MS	F
AM	2	27.17	13.58	16.17 *
AE	2	6.89	3.44	4.09
AM X AE	4	8.94	2.24	2.81
Groups (within AM,AE)	9	7.55	.84	.25
Within	90	304.37	3.38	

* p < .001

Table 14

Analysis of Variance for Attributed Responsibility
Groups as a Nested Factor

Source	df	SS	MS	F
AM	2	142.89	71.44	13.28 **
AE	2	84.67	42.33	7.87 *
AM X AE	4	109.11	27.28	5.07 *
Groups (within AM,AE)	9	48.42	5.38	.93
Within	90	519.83	5.77	

* p < .05

** p < .01