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The effect of selectively reviewing
behavioural risk factors on HIV risk perception

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ABSTRACT

Research suggests that review of risk factors increases optimism about health. The present experimental study explored the effects of reviewing risk increasing and risk decreasing factors on HIV risk perception (own risk, others' risk, optimism), self efficacy and behavioural intentions. 164 heterosexual subjects completed a questionnaire concerning their beliefs about HIV and their sexual behaviour. Subjects were allocated to either the risk increasing condition (eg. since being sexually active how often have you asked your partners HIV status?), the risk decreasing condition (eg. since being sexually active how often have you tried to select your sexual partners carefully?), or a control group. The results suggest that review of risk decreasing factors increased optimism and that this change in optimism was related to an increase in perceived others' risk. The results are discussed in terms of theories of selective focus and egocentricism in risk perception and the implications for health promotion.

Key words: perceived risk, optimism, HIV, sexual behaviour, egocentricism.

At present, the only available method of curtailing the continued spread of HIV infection is behaviour change. One factor believed to be pivotal in the adoption of health protective behaviour is the perception of personal vulnerability to harm. Perceived vulnerability is a significant predictor of intentions to change HIV risk behaviour (Gladis, Michela, Walter & Vaughan, 1992) and as a construct, perceived vulnerability has been incorporated into most theoretical explanations of health behaviour (for a review see Marteau, 1992). Although, perceiving oneself to be susceptible to harm may not in itself be sufficient for risk reduction to occur (Gerrard, Gibbons, Warner & Smith, 1993), it is generally assumed that individuals are unlikely to take precautions if they believe they are not at risk (Kirscht, 1988). Indeed, much of health education and health promotion is centred around the identification and alteration of risk behaviour.

However, research indicates that judgements of health risks are generally biased in an optimistic direction with individuals tending to believe that their own risk of experiencing a variety of negative events is below average (eg., Lee, 1989; Weinstein, 1989; Kalichman, Hunter & Kelly, 1992). Whereas optimism on an individual level may be legitimate, optimism when defined on a group level can be deemed unrealistic since not everyone can be below average in risk (Weinstein, 1987). Why do risk perceptions appear to go wrong?

In an attempt to address the issue of inaccurate risk perception, Weinstein (1983) argued that optimism may be a consequence of selective focus. This suggests that individuals tend to ignore their own risk increasing behaviour (eg., having unsafe sex and smoking cigarettes)

and focus primarily upon attributes that decrease their risk (eg., using condoms and being a non-smoker). This tendency to focus selectively on reassuring information is compounded by egocentricism with individuals failing to take into account others' risk decreasing behaviour (Weinstein & Lachendro, 1982; Weinstein, 1989). Research suggests that risk decreasing factors are cited more often than risk increasing factors when estimating susceptibility to health risks (Weinstein, 1984). Moreover, subjects appear to underestimate the threat posed by risk increasing behaviour and overestimate the value of risk decreasing behaviour (Bauman & Siegel, 1987).

But what happens when subjects are required to review risk relevant information? Do risk increasing factors which have been previously ignored, become salient? Research shows that in comparison to a no-review control group, optimism actually increases after review of risk behaviour for a variety of health problems (Weinstein, 1983). For example, Gerrard, Gibbons & Warner, (1991) examined the effects of reviewing both risk increasing behaviour (eg., frequency of sexual intercourse) and risk decreasing behaviour (eg., contraceptive use) on perceived risk to unplanned pregnancy. The results revealed that in comparison to a control group optimism increased after review of behavioural risk factors. Regression analysis suggested that this increase in optimism was due to the influence of reviewing risk decreasing, as opposed to risk increasing behaviour, thereby providing support for the hypothesis that selective focus on risk decreasing behaviour is a source of invulnerability. However, the effect of separately manipulating the review of risk increasing and risk decreasing factors has not been empirically tested.

The aim of the present experimental study was to evaluate separately the effects of selective review of both risk increasing and risk decreasing factors on HIV risk perception in terms of own risk, others' risk and relative optimism. In addition the study aimed to examine the effects of this review on self efficacy and behavioural intentions. This is particularly salient in the light of the recent proliferation of counselling services for HIV which aim to promote healthy sexual behaviour by encouraging individuals to examine their own sexual histories.

METHODOLOGY

Subjects

A total of 300 questionnaires (100 of each of the three experimental conditions) were randomly distributed to social science undergraduates from a London University. The questionnaire was returned by 168 subjects. In answer to questions in the questionnaire, 2 subjects were identified as having only had sex with same sex partners and 2 reported intravenous drug use. These subjects were excluded from the present analysis giving a total sample of 164 heterosexual subjects. 87 subjects were female and 49 were male (28 subjects did not complete the gender question). The age range was 17-35 inclusive (mean age 24 ± 7.25). The sample were distributed across the experimental conditions as follows; the risk increasing condition, $n=54$, the risk decreasing condition, $n=59$ and the control condition, $n=51$. All subjects reported having penetrative vaginal intercourse in the last 12 months and 22% had always used condoms.

Design

An independent groups design was employed with three conditions: i) risk increasing review condition, ii) risk decreasing review condition and iii) a no review control condition.

Subjects completed a questionnaire with the order of item presentation determining the condition.

Procedure

Subjects were invited to participate in an anonymous study into sexual behaviour and beliefs about HIV. They were randomly assigned to one of the three conditions and completed 1) profile questions, 2) questions about their sexual behaviour and other possible risk factors (the experimental manipulation, with the position of these items within the questionnaire determining the condition) and, 3) a set of rating scales.

1) Profile questions

Subjects were asked: i) age, ii) gender, iii) whether they had a primary sexual partner, iv) whether they knew someone with HIV, v) HIV risk factors. The information regarding HIV risk factors, was accessed via the questions included in the experimental manipulation and used to profile respondents' sexual histories. Subjects completed questions on the following; i) vaginal intercourse, ii) anal intercourse, iii) sex with same sex partner, iv) condom use in last year, v) total condom use, vi) presence of STD's, and vii) intravenous drug use.

2) **Experimental manipulation**

i) **Risk increasing condition**

Prior to completing the rating scales, subjects in the risk increasing condition completed questions which were designed to make the subjects feel that their present behaviour was unsafe. For example: i) have you ever had oral sex, ii) have you had vaginal intercourse in the last 12 months, if yes, did you always use a condom, iii) since being sexually active, how often have you known your partner's sexual history before you had sexual intercourse, and iv) since being sexually active how often have you asked your partner's HIV status.

ii) **Risk decreasing condition**

Prior to completing the rating scales, subjects in the risk decreasing condition completed questions which were designed to make the subjects feel that their present behaviour was safe. For example: i) have you ever had a blood transfusion, ii) have you ever had sex with someone of the same sex, iii) have you ever injected drugs, and iv) since being sexually active how often have you tried to select your sexual partner's carefully.

iii) **No review control condition**

Subjects in the no review control condition answered all the above questions about their sexual behaviour after completing the rating scales.

All responses not requiring a yes/no answer were made on a 7 point scale, ranging from

'never' to 'always' and were scored so that the higher the score the greater the risk.

3) **Rating scales**

Subjects rated the following using visual analogue scales ranging from 'not at all' (0mm) to 'extremely' (100mm):

i) **Perceived risk**

All subjects rated i) perceived own risk for contracting HIV and ii) perceived risk for an average other for contracting HIV. Degree of optimism, was then calculated by subtracting own risk score from risk score for others (Van der Velde, Hooykaas & van der Pligt, 1992).

ii) **Self efficacy and future behavioural intentions**

All subjects rated i) how confident they were that they could use condoms in the future (self efficacy) and ii) how likely they were to change their sexual behaviour in the future (behavioural intentions). These ratings were included to assess the effects of perceptions of risk on future behaviour. Research has indicated that self efficacy specific to a given behaviour (eg., condom use) predicts intentions to perform the behaviour (McKusick, Coates, Morin, Pollack & Hoff, 1990), whilst intentions predict actual behaviour (Fishbein & Middlestadt, 1989).

RESULTS

Profile characteristics and sexual behaviour

The profile characteristics and sexual behaviour of subjects by condition are shown in Table 1.

-Insert Table 1 about here-

Analysis of the profile characteristics and sexual behaviour showed that subjects in the three conditions were comparable in terms of age, gender (where known), HIV experience, sexually transmitted diseases (STD's), anal intercourse, condom use over the last year, total condom use since being sexually active and the presence of a primary sexual partner.

Rating scales

Statistical analysis of the rating scales used independent groups ANOVA (Minitab), alpha 0.05. Post hoc t-tests used Fisher's Least Significant Difference, alpha 0.05. The data was analysed to examine the effect of condition on perceived risk (own and others' risk), optimism, self efficacy and behavioural intentions. The means for these variables by condition are shown in Table 2.

-Insert Table 2 about here-

i) Perceived risk

Own risk: As this variable was not normally distributed it was log transformed using the formula $\log E(x+1)$. The data was analysed using ANOVA. The results showed no

significant effect of condition on perceived own risk.

Others' risk: The data was analysed using ANOVA. The results revealed a significant effect of condition on perceived others' risk ($F [2,160]=6.23, p<0.01$). Post hoc t-tests revealed that subjects who reviewed risk decreasing factors rated the risk of others as greater, in comparison both to subjects who reviewed risk increasing factors ($p<0.05$) and subjects in the no review control condition ($p<0.05$).

Degree of optimism: Degree of optimism was calculated by subtracting own risk from others' risk. The data was analysed using ANOVA. The results revealed a significant effect of condition ($F [2,160]=5.01, p<0.01$). Post hoc t-tests revealed that subjects who reviewed risk decreasing factors exhibited greater optimism in comparison both to subjects who reviewed risk increasing factors ($p<0.05$) and subjects in the no review control condition ($p<0.05$).

ii) Self efficacy and behavioural intentions

As the variable self efficacy was not normally distributed it was log transformed using the formula $\log E(x+1)$. ANOVA for self efficacy and behavioural intention failed to reveal a significant effect of condition.

DISCUSSION

The aim of the present study was to investigate the effects of selective review of risk

increasing and decreasing factors on HIV risk perception, self efficacy and future behavioural intentions.

The results indicate that subjects who reviewed risk decreasing factors showed increased optimism, in comparison with subjects who reviewed risk increasing factors and the control subjects. This suggests that the experimental manipulation was in part successful and that reviewing risk decreasing factors (whether risk factors which individuals either don't possess, such as intravenous drug use, or preventative measures which they do take, such as not having sex with someone they hardly know) appears to lead to an increase in optimism and perceived invulnerability. However, the results also suggest that reviewing risk increasing factors, (whether risk factors which individuals either do possess such as having sexual intercourse or preventative measures which they don't take such as using condoms), does not appear to lead to a decrease in optimism and invulnerability. This finding provides experimental support for the results obtained by Gerrard et al. (1991) who used a correlational methodology. Thus, although previous research has indicated that review of risk relevant factors increases optimism (Weinstein, 1983), the results of the present study suggest that it may not be review per se, but review of risk decreasing factors which leads to an increase in perceptions of invulnerability. This provides support for the hypothesis that selective focus on risk decreasing behaviour is a source of invulnerability.

Furthermore, the present study also provides insights into this optimism. The results suggest that the increased optimism exhibited by subjects who reviewed risk decreasing

factors, was due to an increase in the perception of others' risk, rather than a decrease in the perception of own risk. Similar findings have been obtained for vulnerability to victimization (Perloff & Fetzer, 1986). One possible interpretation of the present results is that when making self-other comparisons, risk decreasing and risk increasing factors may be processed differently. Perhaps, whereas risk decreasing factors which are attributed to oneself may not be attributed to others, risk increasing factors which are attributed to oneself may also be attributed to others. This interpretation supports the view that comparative risk judgements are made egocentrically (Weinstein et al., 1982; Weinstein, 1989) suggesting that when making judgements about risk, individuals fail to take into account others' risk decreasing behaviour. Hence, in the context of the present study, optimism may have increased when subjects were reminded of factors which reduced their risk, but being egocentric, subjects did not consider that others may also share these risk decreasing factors.

The results also indicate that although selective review may influence optimism, this effect was not illustrated by differences in self efficacy and behavioural intentions. There are a number of theoretical and methodological explanations for this. Firstly, the assumption that a change in optimism will lead to a change in self efficacy and future intentions may be untenable in the light of research which suggests that the relationship between these variables is not straightforward (Gerrard et al., 1993). Secondly, it may be especially difficult to assess future intentions in the context of HIV infection due to the social desirability of particular responses (Catania, Gibson, Chitwood & Coates, 1990). Finally, since future intentions are not static but are dependent on the behaviour of the respondent

(Weinstein, 1988) the failure of the present study to control for individual differences in sexual behaviour may have obscured any effects of review on future intentions.

In summary, the present results suggest that review of risk decreasing factors increases optimism, whilst review of risk increasing factors does not decrease optimism.

Furthermore, an examination of separate own and others' risk estimates revealed that this increase in optimism resulted from an increase in ratings of others' risk. Therefore, the present study provides support for both selective focus and egocentrism as possible determinants of optimism in comparative risk judgments. In a wider context, the present findings are compatible with downward comparison theory which suggests that individuals enhance their subjective well-being by focusing on disadvantaged others (Wills, 1981). It may transpire that individuals are not necessarily underestimating their own risk but rather exaggerating the risk of average others (Linville, Fischer & Fischhoff, 1993; Moore & Rosenthal, 1991).

However, the present study also raises a number of issues for future research into risk perceptions to HIV. Both methodologically and theoretically, it would appear that it is important to differentiate between own risk and others' risk, since a change in optimism does not necessarily mean that subjects believe themselves to be more or less at risk in an absolute sense. In the context of the present study, despite a shift in perceived invulnerability, subjects' own risk estimates remained unchanged. However, it is difficult to assess whether absolute or comparative risk is important for health promoting behaviour, as the present

study found no effect of review on self efficacy or behavioural intentions. If individuals fail to take precautions despite reasonably accurate perceptions of own risk (Linville et al., 1993), then perhaps it is ratings of others' risk which is the important factor for health promoting behaviour.

Furthermore, the present findings clearly have implications for the presentation of health education and HIV testing in particular. Over recent years, a number of same day testing centres have been established which use counselling and health education as a means to promote sexual health. Much of this process involves asking individuals to reflect on their own sexual behaviour. However, it is possible that this serves to remind individuals of risk factors which they do not possess (eg. blood transfusion, intravenous drug use and sex with a same sex partner), in which case individuals may interpret such messages as applying to others whom they perceive to be more at risk. It would therefore appear necessary that health promotion campaigns provide group specific information. By simply providing lists of risk factors, perceptions of invulnerability may actually be increased.

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Table 1: Means and percentages for profile characteristics and sexual behaviour by experimental condition

<u>Variable Name</u>	<u>Experimental Condition</u>		
	Risk Increasing (n=54)	Risk Decreasing (n=59)	Control
Age ^a			
Mean*	24.43 [s.d. 6.95]	24.20 [s.d. 8.12]	24.02 [s.d. 6.74]
Sex ^a			
Male	34%	41%	33%
Female	66%	59%	67%
Do you currently have a primary sexual partner?			
Yes	69%	66%	78%
No	31%	34%	22%
Do you know anyone who has HIV/AIDS?			
Yes	25%	10%	22%
No	75%	90%	78%
Have you ever had any of the following sexually transmitted diseases?			
Yes	2%	5%	8%
No	98%	95%	92%
Have you had anal intercourse in the last 12 months?			
Yes	7%	10%	6%
No	93%	90%	94%
In the last 12 months, did you use condoms everytime you had intercourse?			
Yes	19%	22%	24%
No	81%	78%	76%
Since being sexually active, how often have you used condoms? ^b			
Mean*	3.70 [s.d. 1.65]	3.81 [s.d. 1.72]	3.27 [s.d. 1.50]

*Items analysed using ANOVA. All other items were analysed using chi-square. No baseline differences were found between the three experimental groups on any of the measures (p>0.05).

^a Due to missing data, n=136. ^b Scored on a 7 point scale, from never (1) to always (7).

Table 2 Means for rating scales by experimental condition

<u>Variable Name</u>	<u>Experimental Condition</u>			Significance
	Risk Increasing (n=54)	Risk Decreasing (n=59)	Control	
Optimism	19.54 [s.d. 24.10]	33.54 ** [s.d. 24.54]	22.42 [s.d. 26.15]	p<0.01*
Others' Risk	40.22 [s.d. 19.36]	53.41 ** [s.d. 20.44]	45.71 [s.d. 20.08]	p<0.01*
Own Risk	2.71 [s.d. 0.86]	2.49 [s.d. 1.10]	2.80 [s.d. 0.90]	ns
Behavioural intentions	63.69 [s.d. 30.99]	53.93 [s.d. 35.71]	54.18 [s.d. 35.31]	ns
Self efficacy	3.03 [s.d. 1.15]	2.65 [s.d. 1.12]	2.76 [s.d. 1.10]	ns

* Significant ANOVA p<0.01.
 **Significant effect of condition (post hoc t-test following significant ANOVA, p<0.05).