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THE HAPPINESS OF EXTRAVERTS

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Summary—Previous studies have found that happiness correlates strongly with extraversion, but the explanation is not known. The present study explores the hypothesis that it is due to the greater participation of extraverts in social activities. One hundred and thirty subjects were given the 29-item Oxford Happiness Inventory, the E-Scale of the EPQ, and 37-item scales for enjoyment and participation in social and other activities. Factor analysis of the last two scales found 4 and 5 factors respectively including two social factors in each case. It was found that extraverts enjoy and participate more in social activities, that happiness is correlated with extraversion and enjoyment and participation in social activities. Multiple regression showed about half of the greater happiness of extraverts can be explained by their greater participation in social activities.

INTRODUCTION

Happiness can be measured by a number of self-report scales, and has been found to have three main components—positive affect, satisfaction and the absence of distress. Studies of individual differences in happiness consistently find that extraversion is the strongest predictor, especially the sociability part of it. And happiness is also one of the strongest correlates of extraversion. However, the explanation for this correlation is not yet understood. If it was this might suggest the features of extraverted behaviour which others could adopt to obtain the same benefits (Argyle, 1987).

Many investigators have found a correlation between extraversion and happiness. We found a correlation of 0.48 between the E-scale of the EPQ and our measure of happiness, the Oxford Happiness Inventory (OHI). Costa and MacCrae (1980) found that Extraversion predicted positive affect 10 yr later ($r = 0.27$). Costa, MacCrae and Norris (1981) found that extraversion predicted happiness 13 yr later ($r = 0.24$), and satisfaction ($r = 0.35$). Other studies have found that it is the sociability not the impulsiveness component of extraversion that is correlated with positive affect (Emmons & Diener, 1986a), and that extraversion is related to positive affect, neuroticism to negative affect (Costa & McCrae, 1980).

Headey and Wearing (1990) carried out a repeated panel study of 600 Australians, in 1981, 1983 and 1985. They found that extraversion predisposed people, especially young people, to have favourable life events, especially in the domains of friends and work; these in turn led to a high level of positive well-being, and to increases in extraversion. Emmons, Diener & Larson (1986) found that positive affect correlated with extraversion particularly in social situations like sororities, parties, and team sports. A number of studies have found that extraverts are more likely to take part in social activities, and in physical activities like sport (Furnham, 1981; Emmons & Diener, 1986a, b). In pilot studies we have found that extraverts enjoy meeting strangers in the laboratory more than introverts do, but introverts enjoyed more sitting alone in a room, listening to music and looking at art magazines.

However, the happiness of extraverts remains to be explained. There are a number of possibilities.

(1) Eysenck. There is no doubt that there is a strong genetic component to extraversion, as twin studies have shown (Eaves, Eysenck & Martin, 1989). Eysenck has proposed that extraverts have lower cortical arousal than introverts, in which case they might seek greater arousal by means of social activity. However, this does not explain why extraverts seek positive encounters and relationships, since competitive or aggressive ones would be even more arousing.

(2) Gray (1972) put forward a neurological theory, part of which postulates that extraverts magnify rewards while introverts magnify punishments, because of differences in brain structure.

It would be expected that this would be reflected in levels of neurotransmitters in such a way that extraverts would have higher levels of nor-epinephrine, introverts higher levels of serotonin. This was not found by Ballenger, Post, Jimerson, Lake, Murphy, Zuckerman and Cronin (1983), though experiments on sensitivity to rewards and punishments have frequently obtained the predicted results.

(3) Choice of more enjoyable activities. As mentioned above, extraverts choose more social activities and physical pursuits when they have a free choice—both are sources of joy. Headey and Wearing (1990) found that extraverts experienced more positive events with friends and at work. However, this fails to explain why extraverts should choose these kinds of activity.

(4) Sending more positive non-verbal signals. It is consistently found that extraverts smile and look more, seek (a little) closer proximity, and speak louder and at a higher pitch (Argyle, 1988). This positive behaviour is reciprocated, and smiling at least has a second effect of increasing positive mood via facial feedback (Laird, 1984).

(5) Positive social skills. Extraverts have a different style of social behaviour in other ways, especially with other extraverts. They ask more questions, agree, compliment, try to find things they have in common, talk about pleasant things, joke and laugh more (Thorne, 1987, and our own unpublished studies). However, it is not clear whether extraverts are trying to form relationships, have fun, or simply expect that social relations will be positive and enjoyable.

In a series of detailed case studies of happy and unhappy students, one study found that the happy ones had much better relationships with other people, while the unhappy ones' social relations were often "sources of anxiety, anger and guilt that led to cautious withdrawal and empty isolation" (Wessman & Ricks, 1966).

The origins may lie in childhood. Early secure attachment is found to correlate with cooperation and other aspects of sociability (Sroufe, Fox & Pancake, 1983), though this has not been shown to be causal (Clarke-Stewart, 1988). It is interesting that securely attached children are better able to explore strange situations, and that one of the most characteristic social activities of extraverts is enjoying meeting strangers (Fox, 1984).

Happiness has at least three, partly independent components: (1) the frequency and degree of positive affect, or joy, (2) the average level of satisfaction over a period, and (3) the absence of negative feelings, such as depression and anxiety. However, no one measure of happiness has so far found general favour and come into general use, though a number of scales have been found to have reasonable validity (Larson, Diener & Emmons, 1985). Measurement of depression is quite different, since the Beck Depression Inventory (BDI) has come to be generally accepted (Beck, Ward, Mendelson, Mock & Erbaugh, 1961). We decided to develop a new measure of happiness along similar lines. The Oxford Happiness Inventory (OHI) consists of 29 items in format similar to the BDI. It has a Cronbach α of 0.90 and a test–retest reliability of 0.78 over 7 weeks and 0.67 over 5 months. It has an external validity of 0.43 against friends' ratings. The OHI correlates with measures of all three components of happiness. *Positive affect*: current mood (0.54), Bradburn positive affect (0.32). *Satisfaction*: life satisfaction index (0.57). *Negative affect and distress*: B.D.I. (-0.52), Neuroticism (-0.47), Bradburn negative affect (-0.32), current depressed mood (-0.40) (Argyle, Martin & Crossland, 1989).

Several different measures of extraversion have been used in research in this area. The E-scale of the M.P.I. contained two components—sociability and impulsiveness (Eysenck & Eysenck, 1963). However most of the impulsiveness items were transferred to the P factor in the EPQ, so that the new E-scale is nearly entirely about sociability—like other measures of extraversion.

Following theory 3 the present study predicted that the happiness of extraverts could be explained by their greater participation in enjoyable social activities. A set of scales was devised, with 37 different activities, social and non-social. It also includes a number of para- and quasi-social activities, like reading a novel, which it was thought might appeal to introverts. It was expected that factors would appear for (1) social activities, (2) solitary activities and (3) quasi-social activities.

It was predicted that

(1) Extraversion will correlate with happiness.
(2) Extraverts will engage in more social activities and will enjoy them more.
(3) This will explain the correlation between extraversion and happiness.

METHOD

Subjects

In all, 131 *S*s took part in this study. Data were collected on three separate occasions, so there were three sub-samples ($n = 32$, 58 and 41 respectively). All the *S*s were students from Oxford University, but were not psychology students. There were 56 females and 75 males. The age ranged from 20 to 21.

Measurements

Data were collected on happiness, social activities and personality (i.e. extraversion–introversion). Questionnaires used in the study were:

(1) OHI, which was described above.

(2) Social Activity Scale. This questionnaire has two subscales A and B. They consist of an identical list of 37 common daily activities (e.g. 'A quiet chat with a friend' or 'Going to the pub'). In the A scale, *S*s were asked "How much do you enjoy the following activities?"; in the B scale, *S*s were asked "How often do you engage in the following activities?" For each activity, they were instructed to put a cross along a continuous line running from 'Not Much' to 'Very Much'. The scores were then converted to a 0–200 scale.

(3) The Extraversion Scale (23 items) from the EPQ.

In the first sub-sample ($n = 32$), the EPQ-E was not administered. *S*s were rated as extraverts or introverts by an independent interviewer. In order to keep consistency within the entire sample, the EPQ-E scores were converted into ratings of extraverts and introverts for the rest of the sample. This was done by using the sample mean score on the EPQ-E as the cut-off point.

Table 1. Factor analysis on 'Enjoyment' scale

Items	1	2	3	4
22 pottering about the house	0.73			
32 dressmaking/knitting	0.69			
1 chat with friend	−0.68			
27 reading magazines	0.67			
28 gardening	0.62			
7 card games	0.55			
16 reading detective stories	0.54			
31 DIY	0.52			
21 exercise	0.47			
23 writing to friends	0.46			
26 reading newspaper	0.45			
30 driving	−0.39			
14 TV	0.30			
36 social club		−0.43		
35 walking by yourself		0.70		
15 reading novel		0.68		
4 country walk		0.66		
18 music (classic/jazz)		0.65		
17 reading non-fiction		0.54		
34 sleeping		0.45		
9 quiet family evening		0.44		
37 long bath		0.42		
3 pub			0.66	
2 noisy party			0.65	
29 travelling			0.64	
5 meeting new people			0.59	
20 dancing			0.56	
19 pop music			0.55	
10 debates			0.38	
13 soap opera			0.33	
12 other sports				0.65
11 team sports				0.62
24 film and video				0.54
25 cinema				0.51
8 jokes/funny stories				0.51
33 sunbathing				0.48
6 party games				0.38
Reliability α	0.82	0.74	0.70	0.64
Variance explained	15.8	10.7	8.7	5.9

RESULTS

Factor analysis of activities

A principal components analysis was computed for the A and B scales separately, followed by varimax (orthogonal) rotation. Factor analysis yielded four orthogonal factors accounting for 41% of the variance on the A scale, and five orthogonal factors accounting for 43.2% of the variance on the B scale.

On the Enjoyment Scale, the first two factors consist mainly of solitary activities, while Factors 3 and 4 consist mainly of social activities. Among the two solitary factors, Factor 1 seems to include activities requiring a moderate level of arousal (e.g. 'Gardening'), whereas Factor 2 seems to include activities requiring a low level of arousal (e.g. 'Long bath').

Of the two social factors, 3 is about activities where the sociability is primary, like meeting new people and going to a noisy party. In Factor 4 the activity is more central, as in sports, games, and going to the cinema.

On the Participation scale there are two solitary factors again (1 and 2). There are two social factors, 3 and 5, both rather similar to Factor 4 on the Enjoyment Scale. The primarily social activities like 'Debates', 'Dancing' and 'Meeting new people', all loaded strongly but negatively on Factor 4. Thus, this factor may represent retreat or withdrawal from social activities into solitary ones.

The factor scores were calculated and used along with total scores on A and B scales in later analyses.

The Activity Scale was explored further in its relation to gender and personality. There was only one significant sex difference: females scored higher than males on Factor 3 of the A scale ($t = 2.49$, $P < 0.01$). This seems to suggest that women enjoy party-like socialising more than men do.

When we compared extraverts ($n = 80$) with introverts ($n = 46$), the results generally suggest that extraverts enjoy and actually participate more in social activities than their introvert counterparts

Table 2. Factor analysis on 'Participation' scale

Items	1	2	3	4	5
28 gardening	0.75				
34 sleeping	−0.72				
32 dressmaking/knitting	0.65				
7 card games	0.63				
1 chat with friend	−0.62				
16 reading detective story	0.61				
4 country walk	0.56				
31 DIY	0.56				
22 pottering about the house	0.52				
21 exercise	0.51				
30 driving	0.30				
9 quiet family evening		0.56			
26 reading newspaper		0.53			
35 walking by yourself		0.51			
29 travelling		0.51			
27 reading magazines		0.48			
17 reading non-fiction		0.47			
19 pop music		0.47			
18 music (classic/jazz)		0.47			
13 soap opera		0.30			
24 film and video			0.69		
36 social club			0.55		
3 pubs			0.52		
12 other sports			0.46		
11 team sports			0.44		
15 reading novel				0.65	
14 TV				0.58	
2 noisy party				−0.55	
37 long bath				0.48	
10 debates				−0.47	
20 dancing				−0.46	
5 meeting new people				−0.40	
6 party games					0.68
8 jokes/funny stories					0.61
25 cinema					0.59
33 sunbathing					0.43
23 writing letters					0.31
Reliability α	0.80	0.64	0.60	0.60	0.57
Variance explained	14.2	9.5	7.7	6.5	5.3

Table 3. Comparisons between extraverts and introverts

	Introverts		Extraverts				
Sources	Mean	SD	Mean	SD	d.f.	t	P
Happiness	29.9	10.2	40.3	9.5	124	5.7	<0.001
Factor 3 (EN)	856.1	209.5	1003.4	191.9	129	4.1	<0.001
Factor 4 (EN)	722.3	187.5	810.8	177.0	128	2.7	<0.01
Factor 4 (PAR)	800.2	181.8	651.6	182.5	127	4.4	<0.001
Factor 5 (PAR)	336.7	130.3	383.4	124.7	128	2.0	<0.05

All the non-significant variables are omitted in the table.

(see Table 3). Notably, introverts withdraw more from social situations, indicated by the huge difference on Factor 4 of the B scale. Finally, extraverts were happier than introverts.

Predicting happiness from activities and personality

Hypothesis 3 predicted that a higher level of social activities would explain the greater happiness of extraverts. Pearson correlations were computed between the Activity Scale, sex, extraversion and happiness. Results are summarised in Table 4.

Sex only correlated with Factor 3 of the A scale, which confirmed the t-test result reported earlier. Extraversion correlated positively with the two social factors of the A scale (Factors 3 and 4), as well as one of the social factors of the B scale (Factor 5). However, it correlated negatively with the social withdrawal factor of the B scale (Factor 4). Interestingly, these significant factors also had strong correlations with happiness. Thus, the general pattern is that: extraverts enjoy and take part in more social activities, a tendency which in turn correlates positively with happiness; introverts withdraw more from social situations, which in turn correlates negatively with happiness. Furthermore, extraversion did correlate with happiness ($r = 0.46$, $P < 0.001$), but not with sex ($r = 0.15$, NS).

Based on the correlation pattern described above, we conducted a hierarchical multiple regression analysis to predict happiness. Sex was entered into the equation first, followed by extraversion. This is to control the effect of predispositional factors, in order to clarify possible causal effects of activities on happiness. Factors of the A scales were then entered into the equation one by one. Somehow surprisingly, factors of the A scale did not predict happiness; this might hint that mere judgement of enjoying certain activities is not sufficient to have a profound impact on one's happiness.

The entire procedure was repeated using the factors of B as predictors. Results are presented in Table 5.

After the effect of extraversion was controlled, both solitary (Factor 1) and social activities (Factor 3) still contributed to happiness. However, withdrawal from social activities (Factor 4) was the most powerful predictor, and alone accounted for 11% of the variance in happiness.

It seems that there exist at least two explanations for the fact that extraverts are generally happier than introverts: (1) extraverts engage in more social activities, which enhances happiness; (2) introverts withdraw more from social situations, which reduces happiness.

Table 4. Correlations between the Social Activity scale and happiness, personality

Mean	Sex	Extraversion	Happiness (36.6)
Enjoyment (4011.39)	−0.16	0.12	0.26**
Factor 1 (1124.8)	−0.13	−0.07	0.12
Factor 2 (1082.0)	−0.03	−0.15	−0.11
Factor 3 (951.7)	−0.22*	0.34***	0.31***
Factor 4 (779.5)	0.03	0.23**	0.32***
Participation (2931.7)	0.03	0.03	0.15
Factor 1 (600.2)	−0.01	−0.15	0.08
Factor 2 (824.1)	0.01	−0.15	−0.10
Factor 3 (387.3)	0.02	0.14	0.26**
Factor 4 (703.5)	0.06	−0.36***	−0.43***
Factor 5 (367.2)	0.03	0.17*	0.20**

Mean scores are given in the parentheses.
Females are coded as '1', males as '2', introverts as '1', extraverts as '2'.
*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

Table 5. Predicting happiness from personality and social activities

Sources	R^2	R^2 change	d.f.	β	Final model
Sex	0.00	0.00	78	0.02	
Extraversion	0.19	0.19****	77	0.25*	
Factor 1 (PAR)	0.23	0.04	76	0.23*	
Factor 2 (PAR)	0.23	0.00	75	−0.11	
Factor 3 (PAR)	0.28	0.05*	74	0.22*	
Factor 4 (PAR)	0.39	0.11***	73	−0.38***	$F = 6.64$
Factor 5 (PAR)	0.39	0.00	72	−0.02	$P < 0.0001$

β Values are derived from the final model while a particular variable was corrected by all the others entered into the equation in the order indicated in the table.
*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$; ****$P < 0.0001$.

DISCUSSION

Hypothesis 1 predicted that the correlation between happiness and extraversion would be replicated. It was, with a correlation of 0.46.

Hypothesis 2 predicted that extraverts would enjoy and participate more in social activities. On the Enjoyment scale extraverts had much higher scores on the two social activity factors. On the Participation scale extraverts had a much higher score on factor 4 (not avoiding noisy social situations), and a higher mean on Factor 5 (party games, jokes, cinema etc.), but were not significantly higher on Factor 3 (sport, clubs etc.). For both scales extraverts scored much higher on the factors consisting of activities which are primarily sociable.

A previous study had used a list of 38 recreational activities, obtained 5 factors, and found that extraverts participated more in and enjoyed more activities in two social factors—parties/sororities and team sports, but also in stimulus-seeking recreations (Emmons & Diener, 1986b).

Hypothesis 3 proposed that the higher level of extravert sociability would explain the greater happiness of extraverts. The Enjoyment factors made no independent predictions of happiness in the multiple regression, but two of the three social participation factors did. The strongest prediction came from Factor 4 (not avoiding parties, etc.), followed by Factor 3 (sports and clubs—on which extraverts did not differ from introverts on t-test). Factor 5 (games, jokes, cinema etc.) had no effect.

Although social participation partly explains the happiness of extraverts, it also provides further, independent prediction of happiness. As Table 5 shows, social participation factors 3 and 4 account for 5 and 11% respectively of the variance in happiness.

These amounts might not be considered impressive, however the predictive power of social activities was achieved after the effect of extraversion had been partialled out in the regression. The implication is that whatever the reason that extraverts are happier, on top of that participating in social activities still predicts happiness independently. This means while it is unrealistic to change people's temperament or personality, it would be possible to encourage introverts to engage in more social activities, which have a positive impact on happiness. The most important factor is not to avoid social contacts with other people (see Factor 4).

Since this was essentially a correlational study, it is possible that a different direction of causation could explain the results. Could happiness cause extraversion? There is no theoretical rationale for this, while there are several for the extraversion-happiness direction. Could happiness cause social participation? Again there is no present theoretical basis, though one could be constructed, for example via self-esteem, though it is usually supposed that self-esteem causes happiness, rather than vice versa. In the absence of longitudinal or experimental data there are clear theoretical reasons for preferring the causal model which we have proposed.

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