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Valuing families' preferences for drug treatment: a discrete choice experiment

Running head: Families preferences for treatment: A DCE

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Abstract

Background and Aims

The burden on family members of those who are dependent on illicit drugs is largely unidentified despite the presence of significant negative financial, health and social impacts. This makes it difficult to provide appropriate services and support. This study aimed to assess the preferences for treatment attributes for heroin dependence among family members affected by the drug use of a relative and to obtain a measure of the intangible economic benefit.

Design

Discrete choice experiment. Data were analysed using mixed logit which accounted for repeated responses.

Setting

Australia

Participants

Eligible participants were Australian residents of 18+ years of age with a relative with problematic drug use. Complete data on 237 respondents were analysed; 21 invalid responses were deleted.

Measurements

Participant preference for likelihood of staying in treatment, family conflict, own health status, contact with police and monetary contribution to a charitable organisation providing treatment.

Findings

All attributes were significant, and the results suggest there was a preference for longer time in treatment, less family discord, better own health status, less likelihood of their relative encountering police, and while they were willing to contribute to a charity for treatment to be available, they prefer to pay less not more. In order of relative importance, participants were willing to pay an additional $4.46 (95% CI 3.33-5.60) for treatment which resulted in an additional 1% of heroin users staying in treatment for longer than 3 months, $42.00 (95% CI 28.30-55.69) to avoid 5 days per week of family discord, $87.94 (95% CI 64.41-111.48) for treatment options that led to an improvement in their own health status, and $129.66 (95% CI 53.50-205.87) for each 1% decline in the chance of police contact.

Conclusions

Drug treatment in Australia appears to have intangible benefits for affected family members. Families are willing to pay for treatment which reduces family discord, improves their own health, increases time in treatment and reduces contact with police.

Background:

Family members are often the main source of support for those who are dependent on illicit drugs or alcohol, but they have to a large extent remained a 'hidden' or neglected population(1). Family members have remained hidden in terms of a lack of awareness of both the amount of support they provide and the impact of their relative's drug and alcohol use (hereafter the word drug refers to both drugs and alcohol). Family members are often overlooked at both a policy and service level, with few services designed to support family members who have a drug using relative. This is despite the fact that providing this support can lead to significant financial, psychological and physical health improvements (2, 3). Other research has highlighted the emotional and psychological impact of drug use for family members as a result of fear, shame, guilt and anger(3), often resulting in isolation, anxiety, depression and poor health(4-6). Although difficult to quantify the precise number of family members directly affected, given that around 1 in 20 Australians are dependent or have substance abuse problems(7) and every person with substance misuse issues will affect, on average, two close family members to the extent that they require support from primary healthcare services(8), this suggests a sizeable burden associated with the substance abuse of a relative. While there have been cost of illness studies (see (9) for a review) and studies investigating the impact of drug use on the quality of life of family members (10, 11), the data and methods to quantify how family members value successful drug treatment have to date been limited. Much of the research to date has focused on using qualitative methods to explore the impact of drug use on family members(3, 12). However, the data and methods to quantify and value the impact for family members of successful drug treatment are limited(13, 14)and there are no clear recommendations on how best to support family members(15). Clearly, if we are to better support family members then more needs to be done to fully understand the benefits drug treatment has not only for the drug user but also for their family members.

One way to understand those benefits to family members is to measure how they might choose between alternative treatment programs for their drug dependent relative; programs that might vary in their implementation and efficacy at treating drug dependency. Discrete choice experiments (DCE) are one way in which such an assessment can be conducted, allowing comparisons to be made between existing treatment programs and those which might be conceivably introduced.

The DCE approach uses the choices participants make between hypothetical, but realistic, options to understand the preferences motivating those choices. Underpinning this approach is Lancaster's random utility theory (RUT) which assumes that individuals make choices which give them the

highest level of satisfaction(16) and that individuals derive wellbeing (utility) not from a treatment itself but rather from the attributes (characteristics) of that good (treatment)(17, 18). Thus, in choosing between options in a DCE, the respondent is revealing the alternative they prefer on the basis that it yields the highest utility from among the options on offer. DCEs have been extensively used in health to explore patient preferences for treatment options, evaluate trade-offs between outcomes and experience and to develop priority setting frameworks(19) and to quantify the intangible burden experienced by carers in schizophrenia and Alzheimer's disease(20, 21).

The aim of this study was to 1) conduct a DCE to assess the preferences for the characteristics and outcomes of treatment for heroin dependence among family members affected by the drug use of a relative and 2) to obtain a measure of the intangible economic benefit of treatment.

Methods

Selecting attributes and levels

Steps in a DCE include conceptualising the problem, framing the question, selecting the attributes and the levels over which they are described, developing an experimental design, collecting (via survey) and analysing the data(18, 19, 22-25). Attributes and levels were selected following a literature review focused on studies of family members affected by the drug use of a relative and consultation with experts in the field of drug family support. The applicability, wording and levels of potential attributes were tested in a semi-structured qualitative focus group discussion with family members (N=4) affected by the drug use of a relative. The discussions with family members were recorded and the key points collated with those obtained from consultations with the experts, and the wording of attributes were refined accordingly. This involved small changes in wording.

In any DCE the choice of the number of attributes (and their levels) is key – too many, especially in a complex situation, and the cognitive burden may result in the use of simplifying heuristics. However, too few and the participants may discount the survey as being unrealistic(23) and important attributes remain unquantified. Ultimately, five attributes were selected: days per week of family conflict, health status of the person (family member) completing the survey, the likelihood of the relative who requires treatment for drug use staying in treatment for three months, change in the amount of the relative's contact with police, and the family members' willingness to donate to a charity for treatment to be available (Tables 1 and 2).

Having selected the attributes (5) and their levels (2-4) and the number of alternatives (3) which comprise the scenarios, the next step was to generate the statistical design. The full design of all

possible combinations of attributes and their levels was deemed too large to administer to participants, therefore a fractional blocked design of 64 (8 blocks of 8 scenarios) with 3 alternatives (two unlabelled hypothetical alternatives and a neither alternative) was generated using the NGENE software(26).

Insert Tables 1 and 2 about here

Within the survey, participants were asked to complete two sets of scenarios: one where the person to receive the treatment was their relative and the other where the person to receive treatment was a stranger. While the wording of the attributes changed slightly to accommodate these differences, the choice sets seen by the respondents were identical for the two sets of scenarios. Prior to seeing their first-choice set, each respondent saw a description of the context (see Supplementary material for the context and background story).

The demographics and characteristics collected on participants included: age, relationship to person using drugs, gender, education, health status, income, marital status, Family Member Impact Questionnaire(12) and their quality of life (AQoL4)(27). The choice of the AQoL 4 follows from concerns over the insensitivity of the EQ-5D and SF-6D in detecting changes in HRQOL in people with mental health and drug dependencies (28,29). The AQoL 4 (Assessment of Quality of Life 4) is a short, easy to administer and well validated tool for estimating Qol (28). This tool, in addition, to addressing physical health dimensions includes non-physical dimensions such as relationships, mental health and the senses. It also applies a greater weight to social disabilities which is an important consideration in this population.

Information collected from participants about their relative included: age, main drug of concern, years of drug use, treatment, overdose, and known criminal histories. The text was piloted during the focus group. The survey tool, hosted on the UNSW website was KeySurvey, and the analyse were conducted using NLogit (Limdep, Econometric Software Inc).

Participant recruitment

Participants were recruited through family drug support agencies and advertising through their social media (e.g. Twitter, Facebook) and completed the survey on-line. To be eligible, participants were required to be at least 18 years of age, reside in Australia, and to have a relative with problematic drug use. The original intent was to focus on families where heroin was the main drug of concern. However, following consultation with family members, support agencies and experts in the drug field

it was decided to broaden the focus to recruit from those affected by any drug use as families often did not know which drug was most of concern, or it changed with availability of the drug.

Analysis

Within the RUT framework, the utility that an individual *i* derives from choosing alternative *j* (treatment program A, B or Neither) can be expressed as

$$U_{ij} = X_{ij}\beta + \varepsilon_{ij}; i = 1, 2, \dots, n^i$$

where U_{ij} is the observed utility, X_{ij} is a vector of variables representing attributes of alternative *j*, and β is a vector of coefficients. $X_{ij}\beta$ is the deterministic component, ε_{ij} is the random component(29) and n^i is the number of participants. In this study, the deterministic component is represented as:

$$X_{ij}\beta = \beta_{1(treatment)} + \beta_{2(family\_conflict)} + \beta_{3(own\_health)} + \beta_{4(criminality)} + \beta_{5(contribution)}$$

The dependent variable represents the probability of choosing one alternative over another, given their respective attributes and levels. The independent variables are the attributes and their levels. The attributes with categorical levels (own health status and days per week of family conflict) and demographic variables were effects coded, which means the constant is not confounded with the grand mean(30). All other attributes were treated as continuous. The drug of concern of the relative was classified as either: 1) opioids, including heroin; 2) alcohol; 3) stimulants; or 4) cannabis.

A constant was specified for the 'neither' option permitting the measurement of the average effect on utility for the tendency of choosing the '*Neither'* option over treatment program A or B (note: an alternate specific constant was applied to treatment B, to explore for response differences between treatment A and B; it was not significant thus removed in further analyses).

Initial MNL(17) models were estimated using a panel specification to account for correlated choices by individuals, as each person completed eight choice tasks (or 16 when the relative and stranger data sets were pooled). Separate analysis was conducted on the responses pertaining to a relative (family) and then for those pertaining to a stranger (stranger). They were then analysed as a single data set, with a dummy variable to account for the survey version. As there were only small differences between the results from the two versions (and the survey version dummies were not significant), the results presented below focus on the outcomes for the combined analysis (family and stranger version specific results are provided in Supplementary material).

Given the nature of the topic, heterogeneity of responses across the sample would be expected. This was explored using a mixed logit (MX) model with all attributes and the constant specified as a normal distribution, 1000 Halton draws and a panel specification(29, 31). (The constant was treated as a random parameter as it captures preferences between treatment (A/B) and neither (it is the alternative specific constant) and these are expected to vary between individuals). We tested for the sources of heterogeneity, potentially as exhibited by similarities between respondent characteristics and how they responded to the programs on offer. To identify potential covariates, a MX model with no covariates was estimated and the resulting choice probabilities at the individual level were regressed on relevant covariates using an ordinary least squares (OLS) specification. The sociodemographic characteristics (e.g. age, income etc) and other covariates were then list wise excluded(32). Following work by others, a decision was made to estimate a parsimonious model which retained only those variables with a $p< 0.20$ (32).

When a monetary attribute is included in a DCE, as was the case here, it is possible to estimate the marginal willingness to pay (WTP) values for any given attribute by estimating its marginal rate of substitution (MRS) with respect to cost(25, 33, 34). The MRS is estimated as the ratio of the coefficients of the attributes of interest to the negative of the coefficient of the cost attribute(30). This was estimated for all statistically significant non-monetary attributes. The WTP estimates and the 95% confidence intervals were calculated using the delta method(35, 36).

The study was approved by the Human Research Ethics Committee of UNSW Sydney (UNSW HREC reference: # HC14129). As survey participation was anonymous consent was implied based on each individual's completion of the survey.

Results

The survey was conducted July through November 2014. A total of 579 people logged onto the website and completed the consent, with 258 participants completing the survey. Data from 237 participants were analysed; 21 were excluded due to data discrepancies (such as invalid answers to open ended questions, ages which were not plausible combined with choosing the same treatment option for all questions). Care was taken to assess each person's total responses before a decision was made to remove any data. Participants did not receive any compensation.

Sample descriptive characteristics

The mean age of participants was 46.0 (SD 14.87) years, they were predominantly female (86.1%) (of which 52% were mothers), most were married/de facto (64.6%), 44% had a university degree, and most were employed (67%) or retired (13%) with only 5.5% reporting being unemployed. In

comparison, in the general population is 50.7% female, 48.1% married or in a defacto relationship; 19.7% have completed year 10 or less, 20% completed a diploma, while 22% have a university degree. The sample was not selected to be representative of the general population, but rather recruit family members affected by the drug use of a relative. Half of the participants (49.8%) were parents of a person who was using drugs, while 15.2% were partners and 5.9% were siblings (the remainder were grandparents or other family members) (Table 3). There were no significant differences in respondent demographics across the eight blocks.

Insert Tables 3 & 4 about here

In terms of the characteristics of the relative who was using drugs (Table 4), the mean number of years of use was 13.0 (SD 9.46), 63% had at least one treatment episode, less than a quarter had a known criminal history, most either lived in their own accommodation (35%) or in the same household as the respondent (36%). The drugs of main concern were stimulants (34.2%), alcohol and cannabis (22.8% respectively), and opioids (20.3%). Almost one third of respondents (28.3%) reported their relative had previously had an overdose, while a similar number (31.2%) reported they did not know if their relative had suffered an overdose.

Analysis of the DCE

In the initial MNL model the constant on the 'neither' option was positive and significant, this suggested that participants would rather not choose either treatment A or B. All coefficients were statistically significant (Table 5 and Supplementary material). The signs on the coefficients for the attributes were generally as expected. That is, participants preferred: that the person using heroin had a greater likelihood of staying in treatment longer than three months; fewer days of family conflict than more; that their own health status improves; that the person using drugs was less likely to come into contact with police; and to donate less rather than more to charities for drug treatment. The one unexpected finding was that participants preferred two days per week of family conflict compared to one day (base).

Insert Table 5 about here

As expected, the MX models demonstrated significant heterogeneity with highly significant standard deviations on the attribute coefficients. In the model with no covariates included, the constant was not significant (Model 2). Notably, all coefficients remained highly significant on all attributes. Significant covariates identified in the linear analysis of choice probabilities (not shown) were stimulants, alcohol and opioids as main drugs of concern, relative ever been in treatment for drug or

alcohol dependence, respondent never married, and number of dependent children in the respondent's household.

Model 3 included these covariates. Here, the coefficient on the constant was highly significant and negative, indicating that treatment choices A and B were preferred to no treatment option. In addition, there was a strong preference for treatment longer than three months, and all else equal, two days per week of family conflict was preferred to one, but four days were less preferred and the larger (negative) coefficient on six days suggested it was marginally less preferred than four. Once again, an improvement in respondent's own health status was preferred, as was less contact by the relative with police. Four covariates were significant (main drugs of concern are stimulants or opioids, those who have never been married, and number of dependent children). The positive and significant coefficient on stimulants would indicate that compared to cannabis (base), those for whom stimulants are a main drug of concern would choose a treatment option over the neither option, whereas for those whose relatives' main drug of concern was opioids, it was less likely a treatment option was chosen. Similarly, those family members with more dependent children are less likely to choose a treatment option, whereas those who have never been married are more likely.

Insert Figure 1 about here

Insert Table 6 about here

Willingness to pay

Before examining the marginal willingness to pay, Figure 1 presents the distribution of the values for 'contribution to a charity' among all the choices made by respondents. The median choice is $30. The marginal WTP for each treatment attribute was estimated based on the results from Model 3 and are shown in Table 6. Participants were willing to pay an additional $4.46 (95% CI 3.33-5.60) per week for treatment which resulted in an additional 1% of heroin users staying in treatment for longer than 3 months, an additional $42.00 (95% CI 28.30-55.69) to avoid 5 days per week of family discord (from 6 days to 1) and $87.94 (95% CI 64.41- 111.48) for treatment options that led to an improvement of their own health status. The most valued treatment attribute was that of decreasing police contact, with participants willing to pay an additional $129.66 (53.50-205.87) for a 1% decrease.

Discussion

The aim of this study was to determine which characteristics and outcomes from treatment for heroin dependence are important for family members and to estimate their WTP for associated

improvements. To our knowledge, this study is unique in both its focus and in its use of a DCE to quantify the preferences of family members for treatment for heroin dependence. While the perspective of the person using drugs is, of course highly relevant, there is a need to also understand the perspective of family members who provide support to them(1, 6). In addition to direct costs to family members in relation to costs of crime, other day-to-day costs and any negative impact on their employment(37) there is evidence that a lack of recognition and support may result in poor health status of family members(4, 5).

Our analysis finds that among those who have a relative who is (or has been) drug dependent, there is a preference for longer time in treatment, less family discord, better own health status, less likelihood of coming in contact with police, and while they are willing to contribute to a charity for treatment to be available, they would prefer to pay less not more. While we explored whether those preferences differed for own family members or a stranger, our analysis found little difference between them. It may be that for some families having had protracted experiences with their own family member's dependency meant they were willing to contribute for others to benefit, indicating an implied positive externality. Alternatively, it may be that participants did not understand/ read the instructions and interpreted the survey as always pertaining to treatment for their family member.

The results suggest differences across respondents in the impact of attributes on treatment choices, but it was not possible to identify all the factors which explained those differences. Covariates of significance included the drug of concern, the number of dependent children and having never married. In terms of drug of concern, the coefficient on stimulants was positive, suggesting that participants preferred treatment A or B compared to the neither option. However, the results suggest the opposite for those where opioids were the main drug of concern. The reasons for this difference are not apparent, however these data were collected at a time of increasing community concern around the perceived harms of methamphetamine(38) including frequent reports of violent behaviours and psychosis. This may have resulted in a preference for treatment. Nevertheless, it is the lack of preference for treatment for opioid use which is puzzling. It may be that if families have had a lengthy experience with opioids they no longer view current treatment as effective, although it was not possible to explore this.

The significance of the number of children, and never being married may reflect the role of family structure in influencing preferences for treatment options. While there was a clear preference for one day of family discord compared to four or six days, an unexpected finding was the apparent preference for two days per week compared to one day. It may be that this was a proxy for engagement with

family (given not all relatives resided with the family member participants), i.e. that it is better to see the family member even if there is discord during the contact.

Despite evidence in the literature that a longer duration in treatment is more likely to result in a positive treatment response (39) whether it be abstinence or continuing medicated treatment (opioid agonist treatment or medicated treatment for alcohol dependence) the WTP for increasing the number of people staying in treatment longer was the smallest.

Reflecting the disutility of having a drug dependent relative, participants were willing to pay a substantial amount ($87.94 (95% CI 64.41-111.48)) for a program which resulted in an improvement in their own health status. This is in line with previous research which has found that there is poorer health and greater utilisation of healthcare services among family members affected by the drug use of a relative(4, 5). A program which results in less contact with law enforcement is highly preferred and valued at a WTP of $129.68 (95% CI 53.50-205.87) to have a 1% decrease in police contact. In light of the fact that weekly opioid substitution treatment may cost $35 to $70 per week(40), residential rehabilitation can cost upwards of $150 per day for stays that may range between 30 days to 12 months, and legal fees and court costs may be substantial these WTP amounts appear reasonable if somewhat conservative given that they are bounded by the ranges on the cost attribute provided to the respondents. Additionally, contingent valuation studies have found that families are willing to pay €307 (AUD 485) per month (indefinitely treatment for alcohol dependence which is 50% effective (41) and CHF 449 (AUD 625) (42) for treatment for alcohol dependence.

As in any research there are limitations. The sample size of 237 may seem small however, there is no agreed rule on the sample size required for a DCE(43-45). Research has shown that model estimate precision increases rapidly at sample sizes greater than 150 and then flattens out at around 300 respondents. This study, with a sample of 237 respondents completing eight scenarios, is well within this estimate. Moreover, simulation studies have shown that model stability and estimate precision requires 20 observations per choice set(45). Our DCE comprised 64 choice sets, requiring 1,280 observations for model estimation. With 237 respondents completing 8 choice sets each we had 1,896 total observations, or just under 30 per choice set. In addition, our sample was large enough to allow us to estimate the relationships of interest with sufficient power.

The representativeness of the sample - in terms of the participants and their relatives - is unknown. The sample was recruited through agencies that have been established by and for families affected by the drug dependence of a relative and through their social media methods. As such they may have

been more motivated to complete the survey and the results may not be generalisable to all family members of those dependent on drugs. Further, any limiting recruitment to only heroin use was not possible given the frequent lack of knowledge of family members as to the main drug of concern, the extent of polydrug use and the switching of drugs contingent on availability.

There were other attributes highlighted as important during the literature review, such as stigmatisation and impact to own social life but these variables were not as salient in the focus group discussion. It was also difficult to develop meaningful levels for those attributes. While financial concerns were very common among family members it was felt that including both a WTP attribute and attempting to directly capture financial burden would be confusing for the respondent thus a decision was made to include only the willingness to contribute to a charity.

Conclusion

There is clear evidence that family members experience significant negative effects as a result of the drug or use of a relative(2, 3). To date, drug treatment has often only been considered beneficial for the individual receiving treatment. This study shows that drug treatment also has intangible benefits for affected family members. Moreover, family members are willing to pay for treatment that results in certain outcomes, such as less family discord, an improvement to one's own health, longer time spent in treatment and reduced contact with the police.

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Table 1: Attributes and the levels

Attribute	Explanation	Levels
Likelihood of staying in treatment ≥ 3 months	Number of heroin users who stay in treatment longer than 3 months	40 out of 100 50 out of 100 60 out of 100 70 out of 100
Conflict	Days of conflict per week between drug user and their family	1 day per week 2 days per week 4 days per week 6 days per week
Health	The health status of the family member of the person using drugs	Stays the same Improve
Criminality	Percentage decrease in relative's contact with police as a result of criminal behaviour	10% 20% 30% 40%
WTP	The weekly contribution amount the participant is willing to donate to charity	$10 $30 $60 $100

Table 2: Example of a profile presented to respondent.

Characteristic	Option A	Option B
Number of heroin users who stay in treatment longer than 3 months	40 out of 100	70 out of 100
Days of conflict per week with drug using relative	4	2
Own health status	Stays the same	Improves
Percentage decrease in relative's contact with police	20%	40%
Your weekly payment to a charity for drug treatment	$50	$100

Please select the option that represents your most preferred choice

Option A □
Option B □
Neither A or B □

Table 3: Characteristics of the survey respondent

	All (N=237)	Percent / (SD)
Age (mean/SD)	46.0	(14.87)
Gender Female N/%	221	86.1
Marital Status N/%		
Single	33	13.9
Married/de facto	153	64.6
Divorced/Sep	42	17.7
Not stated	9	3.8
Level of education		
= < year 10	33	13.9
Year 12	28	9.7
TAFE/Diploma/ other	69	29.1
University	105	44.3
Employment		
FT/ PT	159	67.1
Student	17	7.2
Retired	28	13
Unemployed	13	5.5
Homemaker	20	8.4
Number of dependent children	0.75 (range 0 to 6)	(1.2)
Relationship the drug user is to the respondent		
Parent	14	5.9
Child	118	49.8
Spouse/Partner	36	15.2
Other	69	29.1

Table 4: Characteristics of the person using drugs

Drug user information as provided by respondent	**All**	**Percent / SD**
Age	32.45	SD 11.18
Years used drugs	13.0	SD 9.46
Drugs of main concern		
Opioids	48	20.3
Alcohol	54	22.8
Stimulants	81	34.2
Cannabis	54	22.8
Ever received Treatment: Yes	160	63.3
Overdosed Yes		
Yes	67	28.3
No	96	40.5
Don’t know	74	31.2
Previously committed non-drug offences	57	24.1
Where family member resides		
Same household	93	36
Own accommodation	92	35
Homeless	2	7
Parental home	18	6
Other	30	11
Deceased	5	1

Table 5: Models (n= 237, 16 responses per person)

	Model 1 MNL		*Model 2 MX*		***Model 3 MX***	
	Coeffic	*p*	*Coeffic*	*p*	***Coefft***	***p***
Constant (neither)	0.825	**<0.0001**	-0.05868	0.8539	-2.11585	**<0.0001**
Stay in treatment > 3 months	0.048	**<0.0001**	0.04428	**<0.0001**	0.05986	**<0.0001**
2 Days/wk of conflict (base=1)	0.17	**0.0008**	0.35021	**0.0002**	0.20763	**0.0203**
4 Days/wk of family conflict	-0.22	**<0.0001**	-0.51519	**<0.0001**	-0.43914	**<0.0001**
6 Days/wk of family conflict	-0.34	**<0.0001**	-0.55711	**<0.0001**	-0.56319	**<0.0001**
Own health status (base is same)	0.84	**<0.0001**	1.34852	**<0.0001**	1.17934	**<0.0001**
Contact with police	0.90	**0.0002**	1.91394	**0.0002**	1.73905	**0.0002**
Donations to charity	-0.009	**<0.0001**	-0.01541	**<0.0001**	-0.01341	**<0.0001**
Non-random parameters in the utility function						
Stimulants – drug of concern (cannabis base)					0.52078	**0.0405**
Opioids – drug of concern					-0.90329	**<0.0001**
Alcohol– drug of concern					-0.27808	0.2304
Treatment Ever (yes)					-0.00151	0.9916
Never Married					1.60015	**<0.0001**
N of Dependent Children					-0.46585	**<0.0001**
Dummy (1= family)	0.006	0.9547	0.01167	0.9391	0.01233	0.9374
Distribution of Random Parameter Standard Deviations						
Constant (neither)			0.01662	0.9086	2.82213	**<0.0001**
Stay in treatment > 3 months			0.04551	**<0.0001**	0.04238	**<0.0001**
2 Days/wk of conflict (base=1)			0.60032	**<0.0001**	0.62508	**<0.0001**
4 Days/wk of family conflict			0.60032	**<0.0001**	0.62508	**<0.0001**
6 Days/wk of family conflict			0.60032	**<0.0001**	0.62508	**<0.0001**
Own health status (base is same)			1.339	**<0.0001**	1.12753	**<0.0001**
Contact with police CJS			4.0759	**<0.0001**	3.53855	**<0.0001**
Weekly donations to charity			0.02	**<0.0001**	0.01683	**<0.0001**
AIC	1.57		1.26		1.26	
K	9		15		21	
LLF	2986		2379		2365	
Adjusted R2	0.15		0.43		0.43	

Table 6: Willingness to contribute to charity per week

Attribute	Model 3	95% confidence intervals	
For a 1% increase in the number of heroin users staying in treatment longer than 3 months	$4.46	3.33	5.60
To avoid 5 days per week of family discord (from 6 days to 1)	$42.00	28.30	55.69
For an improvement in their own health status	$87.94	64.41	111.48
For a 1% decrease in police contact	$129.68	53.496	205.87

Figure 1: Distribution of chosen willingness to contribute to charity values