Utah Cost of Crime

Drug Court (Adults): Technical Report

December 2012

THE UNIVERSITY OF UTAH

Utah Criminal Justice Center

COLLEGE OF SOCIAL WORK
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
UTAH COMMISSION ON CRIMINAL AND JUVENILE JUSTICE
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Drug Court (Adults): Technical Report

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Drug courts are specialized courts that combine treatment with court supervision, using a non-adversarial model, in order to reduce offenders' substance abuse and criminal behavior (General Accounting Office (GAO), 1997). The main components of a drug court are: use of a judge to preside over monthly status hearings, mandatory drug testing, court monitoring of individualized drug treatment, and use of immediate sanctions and incentives to ensure compliance with court demands. While eligibility requirements vary across jurisdictions, the majority of programs restrict eligibility to non-violent offenders with an identified substance abuse problem. Drug courts often further restrict eligibility to offenders who have committed felony and/or misdemeanor drug or property offenses. The court processing model used by drug courts includes pre-plea (diversion), post-plea (post-adjudication), or a combined model that includes elements of both. Offenders typically participate in drug court for one to two years; those who complete court requirements generally have their charges dismissed or reduced, while those who do not complete often receive jail or prison sentences.

Drug courts were first implemented in the United States (U.S.) in the 1980s, primarily in response to increasing rates of incarceration of nonviolent drug offenders. The first 'official' drug court was established in 1989 in Dade County, Florida. As of 2009, there were 2,459 operational drug courts in the United States. Huddleson and Marlowe (2011) quantified this as "a six percent increase in the total number of drug courts since 2008 and a 40% increase over the past five years." In keeping with the increased number of drug courts, research examining the impact of drug courts on criminal behavior and substance abuse has also proliferated in recent decades.

Prior Research

Since 2006, multiple meta-analyses have been conducted on the drug court model (GAO, 2011; Latimer, Bourgon, Chretien, 2006; Lowenkamp, Holsinger, & Latessa, 2005; MacKenzie, 2006; Mitchell, Wilson, Eggers, & MacKenzie, 2012; Wilson, Mitchell, & MacKenzie, 2006). Overall, results support the conclusion that drug court programs are associated with statistically significant reductions in criminal recidivism. Wilson, Mitchell, and MacKenzie (2006) were somewhat tentative in reporting findings from a review of 55 drug court evaluations. While the authors concluded that offenders who participated in drug court demonstrated lower subsequent recidivism rates when compared to similar offenders who did not receive the intervention, they noted the generally weak methodological rigor of the included evaluations. More recently, Mitchell, Wilson, Eggers, and MacKenzie (2012) conducted a meta-analysis that analyzed 92 independent evaluations of adult drug courts and found that participation in drug court was associated with a 24% reduction in general recidivism (from 50% to 38%). The authors noted that the effects of drug court participation persisted for at least three years after program entry. Despite these positive findings, the authors emphasized that the effects of drug court participation on recidivism were highly variable. Drug court structure, implementation, and participant characteristics were related to the effects; however, research identifying specific aspects of the drug court model that are associated with positive outcomes is limited.

Methods

Inclusion Criteria

A systematic review was conducted, in accordance with the protocol outlined by PRISMA (Moher, Liberati, Tetzlaff, & Altman, 2009), to identify studies for inclusion in this meta-analysis. The study authors identified eligibility criteria for population, intervention, setting, outcome, and methodology (see Methods Report for further explanation of inclusion criteria and search strategies). The search was restricted to studies written in English and conducted between 1987 and 2011. Studies had to meet the following criteria to be eligible:

a) The study must evaluate a criminal justice intervention. Primary prevention programs and programs serving non-court involved populations were excluded. Drug court was defined as a specialized, non-adversarial court that included the following components: use of judges presiding over monthly status hearings; use of mandatory drug testing; compliance monitoring of individualized drug treatment; and employment of sanctions and incentives to encourage compliance with court demands. Other specialized courts, such as DUI/DWI courts, speedy case processing drug courts, and evaluations of the Breaking the Cycle (BTC) demonstration project were not eligible for inclusion in this study.

b) Both experimental and quasi-experimental evaluations were eligible for inclusion. Quasi-experimental studies had to use matching or statistical methods to demonstrate equivalence between the treatment and comparison group. The comparison group could receive treatment as usual or no treatment (e.g., probation with or without treatment); however, the comparison group could not be made up of offenders receiving intensive drug treatment (treatment-treatment comparisons). Treatment dropouts were not considered an appropriate comparison group; comparison groups consisting of offenders who refused treatment were included only if the authors conducted analyses that demonstrated that the groups were similar.

c) Both the treatment group and the comparison/control group must consist of adult offenders (ages 18 years and older). The intervention must target the criminal behavior of substance abusing offenders.

d) The study must include a measure of recidivism—which could be arrest, conviction, or incarceration—as an outcome. The measurement period had to be longer than 6 months following the start of the program. Recidivism data from official sources was preferred, but studies using only self-report recidivism measures were also eligible. Non-criminal outcome measures—such as measures of drug use—were excluded from this analysis. The study must report quantitative results than could be used to calculate an effect size. Given the interest in recidivism, dichotomous data were preferred (e.g., odds ratios). If the study only included continuous measures, effect sizes were calculated and converted into odds ratios (Lipsey & Wilson, 2001) using log odds (see Methods Report).

Retrieving and Screening Studies
The initial literature search identified 1,085 citations, from which researchers pulled 118 studies for further evaluation. Full articles were screened by one researcher, which resulted in 42 studies that met inclusion criteria. Twenty-one of the included studies reported results on duplicate samples and were therefore excluded. Five of the remaining 42 studies included multiple comparison groups, which resulted in 51 effect sizes that were included in the analysis. Twenty-percent (20%) of the full articles (k=25) were double-screened for inclusion by a researcher (see Appendix A for PRISMA chart).

Extracting Data
The authors developed a detailed code sheet and manual, which included variables related to study quality, program characteristics, participant characteristics, and treatment variables (see "Methods" Report for a full description of coding variables). One author coded all of the included studies and entered the data into an Excel spreadsheet. Ten percent (10%) of included studies were double-coded (k=4), by a researcher assistant. To assess study quality, the authors used a modified version of The Maryland Scale of Scientific Rigor (Aos, Phipps, Barnoski, & Lieb 2001; Gottfredson, MacKenzie, Reuter, & Bushway, 1997). Studies that received a rating lower than "3" (unmatched comparison group or no comparison group) on a scale of one to five were excluded. Where studies reported multiple measures of recidivism, researchers selected the broadest measure (e.g., arrest over conviction and conviction over incarceration). Outcome data were collected on general recidivism and drug-related recidivism. The definition of drug-related recidivism varied among studies, but commonly included proxy measures of drug use behavior such as charge, arrest, conviction, or incarceration for a drug-related offense. No direct measures of drug use/relapse, such as self-report or drug testing outcomes, were included in this analysis.

Follow-up period was coded according to the length of time during which participants were tracked and also according to whether the measurement period included time during program participation or after program completion. In-program measurement period was defined as one that begins at the onset of program participation, and may begin at arrest, intake, or program entry. A post-program measurement period is defined as one that begins after drug court graduation or failure. In many studies, the follow-up period included both in-program and post-program time.

Two drug court eligibility requirements were also coded: offender type and offense level. Offender type referred to whether the program restricted eligibility to drug offenders (those whose offense was directly or indirectly related to drug use) or included general offenders who had a documented substance abuse problem. Offense level referred to program eligibility criteria limiting program admission to the classification of the index offense: categories included misdemeanor only, felony only, misdemeanor and felony, or not specified.

Analysis
Data were coded into an Excel spreadsheet, which allowed researchers to calculate descriptive statistics for the full sample. The authors then recoded variables, to condense

data into comparable units wherein each study contributed only one effect size, and entered those into *Comprehensive Meta-Analysis* (CMA, version 2). Using CMA, the authors assessed heterogeneity using the *Q* and I-squared statistics (see Results section). The *Q* statistic is a test of the null hypothesis: a significant value ($p<.05$) indicates that the variation between studies was greater than one would expect if the difference could be explained entirely by random error (Borenstein, Hedges, Higgins, & Rothstein, 2009). Because the *Q* statistic is not a precise measure of the magnitude of dispersion between studies, the authors conducted additional analyses to quantify the proportion of variance that could be attributed to differences in study characteristics (such as setting, population, and intervention). The I-squared statistic (values range from 0% to 100%) provides an estimate of how much of the variation between studies can be explained by random error: values near 0 indicate that all of the difference can be explained by random error. Values at 25%, 50%, and 75% are, respectively, considered low, moderate, and large heterogeneity (Piquero & Weisburd, 2010). Given the range of study characteristics present in this sample, a random effects model, which assumes heterogeneity between studies is a product of study level differences (Piquero & Weisburd, 2010), was used to generate a summary effect size for each outcome measure. All data was coded and transformed into odds ratios, with values above one (1) indicating a negative intervention effect and values below one (1) indicating a positive intervention effect (i.e., reduced recidivism rates for offenders who participated in the intervention).

Results

Sample Characteristics

All but one study evaluated U.S. drug courts. Thirty-one of the reports were unpublished technical reports, conducted by government or private entities, and the remaining 11 articles were published in peer-reviewed journals. Eight studies (19%) used 1:1 matching to construct a comparison group. Thirty-seven studies (88%) used a convenience sample with statistical controls. Four studies (9.5%) were random control trials and received a "5" (on a scale of one to five) on study quality and the remaining studies (90.5%) received a score of "3" or "4." The majority of studies had been conducted since 1998. The follow-up period ranged from one year to eight years. The total sample size ranged from 62 to 4,575 and the entire sample describes 12,184 offenders in drug court groups and 18,315 offenders in comparison groups (see Appendix B for characteristics of included studies).

Table 1 Characteristics of studies included in meta-analysis (N=42)

Characteristics	Frequency	(%)
Publication type		
Peer-reviewed journal	11	26
Unpublished technical report	31	74
Sample location		
U.S.	41	98
Canada	-	-
Other	1	2
Methodological Quality		
5. Random Control Trial (RCT)	4	10
4. High quality quasi-experimental[1]*	1	2
3. Quasi-experimental with testing or matching	37	88
Outcome Measure		
General Recidivism	42	100
Drug Recidivism	15	36
Dropouts enumerated	25	60

[1]Employs a quasi-experimental research design with a program and matched comparison group, controlling with instrumental variables or Heckman approach to modeling self-selection. May also include RCT with problems in implementation.

Meta-analysis

General recidivism was examined in 51 comparisons. In 47 of those, results favored the intervention (32 were significant at $p<0.05$). The odds-ratios for general recidivism ranged from .09 to 1.88. The random effects mean odds-ratio was 0.60 (95% CI of 0.54 to 0.67, $p<0.001$), indicating that the treatment groups had significantly lower rates of general recidivism than the comparison groups (see Appendix C). The *Q* test revealed significant heterogeneity between studies ($Q=168.24$, $df=50$, $p<0.001$, $I^2=70.28$), which means that the studies did not share a common effect size. This finding was expected given the range of offenders and interventions included in the meta-analysis. Following the omnibus meta-analysis, studies were grouped by follow-up period, offense type, offense level, and recidivism type for further moderator analysis.

General recidivism. All of the studies included a measure of general recidivism (which includes drug-related recidivism).

General recidivism by follow-up period. In-program measurement of recidivism was the most common outcome (37 comparisons) and included both time in-program and post-program. The random effects mean odds-ratio was 0.60 (95% CI 0.54 to 0.66, $p<0.001$) indicating a significant reduction in recidivism for the intervention group. The Q test revealed significant heterogeneity ($p<0.001$). These results suggest that drug courts can produce an immediate impact in preventing or reducing criminal behavior. A post-program measurement period was reported in eight comparisons. The random effects mean odds-ratio was 0.79 (95% CI 0.52 to 1.20, $p=0.27$) indicating small but statistically non-significant reduction of recidivism when assessed post-drug court involvement; this

finding contradicts previous research that found a more durable effect of drug court on long-term effects on criminal behavior. The *Q* test revealed significant heterogeneity (p<0.001). The between-groups *Q* test was not significant (*Q* =2.84, *df*=2, p=0.24), suggesting that there is no statistical difference in the effect of drug court on in-program and post-program recidivism, although our findings show stronger effects during drug court involvement.

General recidivism by offense type. Twenty-nine comparisons examined drug courts that restricted participation to drug offenders (those arrested on drug possession or drug-related offenses). The random effects mean odds-ratio was 0.61 (95% CI 0.52 to 0.72, p<0.001), indicating a significant positive effect of the intervention on drug offenders. The *Q* test revealed significant heterogeneity between studies (p<0.001). The remainder (22) of the courts included both drug offenders and general offenders with an identified substance abuse problem. The random effects mean odds-ratio was 0.59 (95% CI 0.52 to 0.67, p<0.001), indicating a significant positive treatment effect associated with the intervention on both drug and general offenders. The *Q* test revealed significant heterogeneity between studies (p<0.01). The between-groups *Q* test was not significant (*Q* = 0.07, *df*=1, p=0.80), which suggests that drug courts have similar effects on general offenders and drug offenders.

General recidivism by offense level. Twenty-one evaluations analyzed courts that limited eligibility to offenders who had committed felony-level offenses. The random effects mean odds-ratio was 0.57 (95% CI 0.50 to 0.66, p<0.001), indicating a significant positive intervention effect. The *Q* test revealed significant heterogeneity (p<0.001). Ten evaluations were of courts that accepted both misdemeanor- and felony-level offenders. The random effects mean odds ratio was 0.62 (95% CI 0.46 to 0.85, p<0.01), indicating a significant positive intervention effect. The *Q* test again reveals significant heterogeneity between studies (p<0.001). Nineteen studies did not specify the level of offense required for participation. The random effects mean odds-ratio was 0.62 (95% CI 0.52 to 0.73, p<0.001), indicating a significant positive treatment effect. The *Q* test revealed significant heterogeneity between studies (p<0.001).The between-groups *Q* test was not significant (*Q*=1.50, *df*=3, p=0.68), which suggests that drug courts have similar effects with both felony- and misdemeanor-level offenders. Only one study looked at a drug court that restricted inclusion to misdemeanor offenses.

Drug-related recidivism. Nineteen comparisons examined drug-related recidivism, of which 12 showed results that favored treatment (8 were significant at p<0.05). The random effects mean odds-ratio was 0.80 (95% CI .69 to .94, p<0.01), indicating a small but significant positive treatment effect. The *Q* test revealed significant heterogeneity between studies (p=0.001). The between-groups Q test was significant (p=0.003), which suggests there was no statistically significant differences between the effects of drug courts on reducing general recidivism verse drug related recidivism.

Limitations

The strength of a meta-analysis rests on the comprehensiveness of the search of primary studies. While the authors sought to identify all eligible studies, the possibility exists, nonetheless, that these efforts failed to identify all the extant research on adult drug courts.

In some cases, the researchers were unable to obtain studies that had been identified as evaluations that appeared to meet inclusion criteria. Furthermore, the results of a meta-analysis depend on the quantity and quality of the available primary research. Overall, the included studies contain few randomized studies and a high proportion of weaker study designs.

In several studies, drug court participants were compared to drug offenders who were eligible for participation but declined ("refusers") or were referred to the program but were declined by administrators ("rejects"). While these studies were included only if the study authors conducted analyses to demonstrate group equivalence; using refusers as comparison groups increases the chances that group differences are simply an artifact of pre-existing group differences rather than intervention effects. Finally, the studies included here reflect significant heterogeneity in terms of offenders, settings, dosage, study quality, and outcome measures. While the researchers created narrow inclusion criteria to account for study-level differences, future research should examine those study characteristics in moderator analyses, to identify specific treatment characteristics that are associated with the biggest treatment effects.

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Note: The studies marked with an asterisk (*) were included in the analyses. Studies without an asterisk are eligible but statistically dependent.

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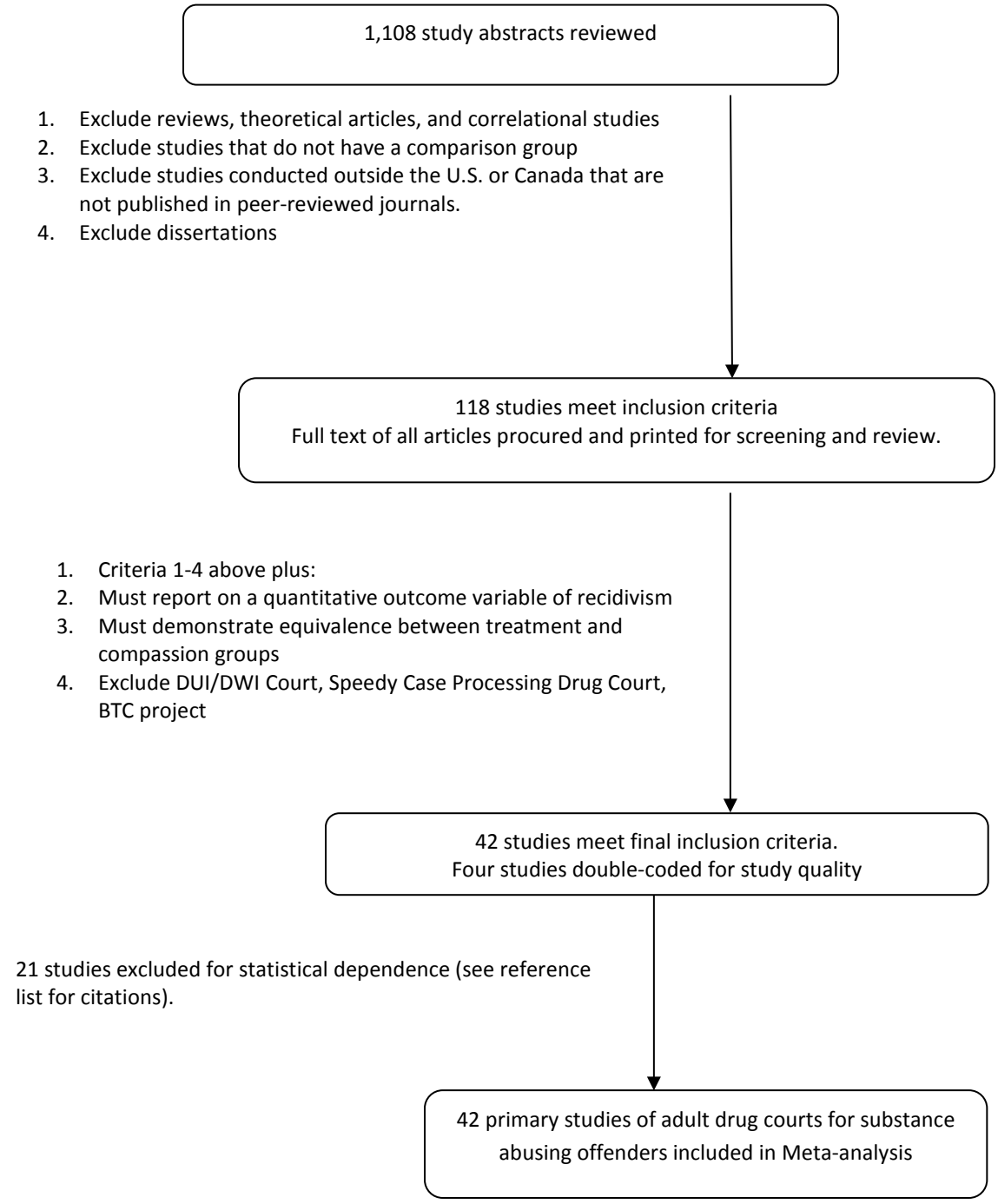
APPENDIX A: Search Results

Search: Title and Abstract
Search Limiters: Published 1/87 to 12/11; English



APPENDIX B: Included Studies

Author	Date	N in Each Group		Study Design	General Recidivism		Drug-related Recidivism	
		Treatment	Control		Odds-Ratio	95% CI	Odds-Ratio	95% CI
Brown	2011	96	192	Convenience	0.50	0.30, 0.85		
Brewster	2001	184	51	Convenience	0.49	0.21, 1.12		
Bavon	2001	157	107	Convenience	0.83	0.42, 1.64		
Barnoski & Aos	2003	313	1985	Convenience	0.78	0.61, 1.01		
Barnoski & Aos	2003	612	3963	Convenience	0.92	0.78, 1.09		
Barnoski & Aos	2003	399	2907	Convenience	0.78	0.63, 0.97		
Carey & Finigan (a)	2007	148	128	Convenience	0.43	0.24, 0.74		
Carey & Finigan (b)	2007	132	144	Convenience	0.42	0.24, 0.74		
Carey & Finigan (c)	2007	130	199	Convenience	0.67	0.42, 1.07		
Carey & Finigan(d)	2007	188	199	Convenience	0.39	0.25, 0.62		
Carey & Marchand	2005	62	62	Matched	0.40	0.16, 1.02		
Carey & Waller	2007	109	112	Matched	0.16	0.06, 0.41		
Craddock	2002	426	449	Convenience	0.65	0.49, 0.85		
Deschenes et al.	1995	176	454	Random	0.94	0.65, 1.37	1.03	0.65, 1.62
Galloway & Drapela	2006	41	30	Convenience	0.09	0.03, 0.30		
Goldkamp et al.	2001	348	220	Convenience	0.77	0.54, 1.09	0.66	0.46, 0.95
Goldkamp et al.	2000	692	401	Matched	0.52	0.41, 0.67		
Goldkamp et al.	2000	499	510	Matched	0.61	0.47, 0.78		
Gottfredson et al.	2005	139	96	Random	0.52	0.25, 1.07		
Gottfredson et al.	2003	139	96	Random	0.45	0.24, 0.84	0.58	0.34, 0.98
Johnson et al.	1998	87	144	Convenience	0.62	0.34, 1.15	1.18	0.69, 2.04
Johnson & Latessa	2000	223	225	Matched	0.65	0.44, 0.97	1.12	0.77, 1.62
Labriola	2009	217	335	Matched	0.37	0.28, 0.49	0.67	0.47, 0.96
Listwan et al. (a)	2001	334	137	Convenience	0.59	0.40, 0.88		
Listwan et al. (b)	2001	38	48	Convenience	0.25	0.10, 0.63	1.56	0.64, 3.76
Listwan et al.	2003	301	224	Convenience	0.75	0.52, 1.07	0.82	0.57, 1.18
Listwan & Latessa	2003	133	123	Convenience	0.63	0.39, 1.04		
Listwan & Latessa	2003	245	156	Convenience	0.36	0.24, 0.55		
Listwan et al.	2008	689	636	Convenience	0.70	0.56, 0.89	0.94	0.76, 1.17
Logan et al.	2001	593	152	Convenience	0.60	0.42, 0.86		

Author	Date	N in Each Group		Study Design	General Recidivism		Drug-related Recidivism	
		Treatment	Control		Odds-Ratio	95% CI	Odds-Ratio	95% CI
Marchand et al. (a)	2006	87	148	Convenience	0.35	0.20, 0.63		
Marchand et al. (b)	2006	241	258	Convenience	0.57	0.40, 0.81		
Miethe et al.	2000	301	301	Matched	1.88	1.26, 2.81	1.84	1.02, 3.31
NPC (a)	2008	151	189	Convenience	1.00	0.63, 1.60		
NPC (b)	2008	166	217	Convenience	0.49	0.30, 0.80		
NPC (a)	2009	45	69	Convenience	0.30	0.12, 0.72		
NPC (b)	2009	33	88	Convenience	0.46	0.20, 1.09		
NPC (a)	2010	36	89	Convenience	0.67	0.31, 1.46		
NPC (b)	2010	39	99	Convenience	0.46	0.22, 0.99		
Peters & Murrin	1998	81	81	Matched	0.54	0.29, 1.02		
Peters & Murrin	1998	31	31	Matched	0.29	0.10, 0.84		
Rempel et al.	2003	141	372	Convenience	0.51	0.37, 0.70	0.58	0.42, 0.82
Rempel et al.	2003	156	143	Convenience	0.37	0.26, 0.52	0.36	0.24, 0.54
Rempel et al.	2003	187	144	Convenience	0.47	0.34, 0.65	0.54	0.36, 0.80
Rempel et al.	2003	208	151	Convenience	0.72	0.53, 0.97	0.56	0.36, 0.86
Rempel et al.	2003	319	266	Convenience	0.77	0.62, 0.95	0.82	0.65, 1.03
Rhyne	2004	101	120	Matched	0.92	0.53, 1.59		
Rossman et al.	2011	1022	512	Convenience	0.66	0.54, 0.83	0.73	0.56, 0.95
Turner et al.	1999	143	363	Random	0.64	0.43, 0.96	0.74	0.43, 1.29
Van Vleet et al.	2005	228	114	Convenience	1.44	0.89, 2.34	1.39	0.80, 2.42
Wolfe et al.	2002	618	75	Convenience	1.09	0.66, 1.79	1.23	0.76, 1.99
				Total Sample = 30, 499				