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Telepsychological Services With Criminal Justice and Substance Abuse Clients: A Systematic Review and Meta-Analysis

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Recent years have seen the incorporation of telepsychology into poorly accessed, rural, and underserved settings, including criminal justice and substance abuse treatment. A systematic search of the literature on telepsychological and related services with justice-involved and substance abuse clients revealed numerous descriptive reports, but few empirical studies. The results of 3 studies of criminal justice participants and 2 studies of substance-abuse participants were subjected to a series of 5 outcome-specific meta-analyses (mental health symptoms, therapeutic processes, program engagement, program performance, and service satisfaction). These 5 studies, all of which utilized a comparison group, contributed a total of 342 participants and 14 total effect sizes. Summary data on 3 additional uncontrolled studies are also presented. Results indicated that telepsychological outcomes were at least comparable with in-person outcomes. This review serves as an initial reference for clinicians and policymakers working with criminal justice and substance abuse clients, but also highlights the need for more rigorous scientific investigation into the nuances of telepsychological practice.

Keywords: criminal justice, forensic, substance abuse, telepsychology, videoconferencing

Approximately 1 in every 35 adults in the United States is either incarcerated in a local, state, or federal correctional facility, or on probation or parole (Glaze & Kaeble, 2014). Many of these individuals have been sentenced for drug- or alcohol-related crimes (Carson, 2014; Herbermann & Bonczar, 2014). Although not all individuals involved in crime are also involved in substance misuse, and vice versa, substance abuse has been identified as a primary risk factor for both general and violent criminal recidivism (Andrews & Bonta, 2010; Dowden & Brown, 2002). Additionally, individuals with substance use problems, like offenders in general, have high rates of co-occurring antisocial personality disorder (Brooner et al., 2010), demonstrate similar patterns of cognitive thinking errors (Walters, 2012), and are often described as difficult to engage in the treatment process (Elliott, 2002; Little & Robinson, 1988; Shaffer & Simoneau, 2001). Given the substantial overlap between clients who are served by the criminal justice and substance abuse treatment systems, some (e.g., Gendreau, 1995)

have questioned why the literature on offender assessment and treatment has been largely overlooked by substance abuse treatment professionals.

Furthermore, criminal justice and substance abuse clients often present with a range of challenging psychiatric issues. Among adult substance abuse clients, it has been estimated that 2.3 million have a co-occurring serious mental illness (SMI; e.g., psychotic disorder, mood disorder). Mental health problems are even more common among incarcerated populations (Sarteschi, 2013). Among jailed inmates in the United States, Steadman et al. (2009) reported an estimated SMI prevalence rate (including PTSD) of 17.1% for men and 34.3% for women in 2007, whereas James and Glaze (2006) earlier indicated that more than half of all jail and prison inmates across the country reported experiencing a mental health problem. Unfortunately, psychosocial programming for inmates often lacks sufficient funding and resources (Manfredi, Shupe, & Batki, 2005). Individuals involved in crime or substance misuse represent highly prevalent, often intersecting, groups with high needs that include mental health services.

The rising costs of health care in general, and the potential for burnout among providers who deliver mental health services to resistant or challenging clients, are some of the major barriers to treatment access among underserved populations. This is particularly true in correctional settings, where many facilities are sparsely located in remote areas, often leading to undesirable, lengthy commute times for providers (Manfredi et al., 2005). Conversely, transferring inmates from their secured environment to community-based mental health treatment is costly (Zollo, Kienzle, Loeffelholz, & Sebillie, 1999; Magaletta, Fagan, & Ax,

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1998) and can compromise the safety of the public, escorting correctional staff, and the inmate patient (Zaylor, Nelson, & Cook, 2001). The prevalence of substance misuse in rural communities is also concerning, particularly given that detoxification and intensive recovery centers tend to be located elsewhere (Lenardson, Hartley, Gale, & Pearson, 2014). In an effort to remedy some of these challenges to service delivery and receipt, telehealth has been gaining attention in correctional and substance abuse contexts (Benavides-Vaello, Strode, & Sheeran, 2013; Manfredi et al., 2005).

Telehealth is a broad term for data transmission systems used by health care providers to deliver treatment over distances. It includes discipline-specific variants, such as telemedicine, telepsychology, and telepsychiatry. In the current state of technology, these services typically involve real-time, audiovisual monitors that connect agencies in need of services (remote sites) to agencies that render such services (hub sites; Ax et al., 2007). The existing literature specifically on telepsychological and related mental health services suggests that it is cost-effective, perceived by clients as acceptable, and is associated with assessment and treatment outcomes that are comparable with traditional in-person service modalities (Antonacci, Bloch, Saeed, Yildirim, & Talley, 2008; Backhaus et al., 2012; Batastini, McDonald, & Morgan, 2013; Khalifa, Saleem, & Stankard, 2008; United States Department of Justice, Office of Justice Programs, National Institute of Justice, 2002). Therefore, the use of telepsychology may be a key strategy for reducing relapse and recidivism among substance abuse and offender clients.

Although the current research base for telepsychology is promising (see Batastini et al., 2013), it is also limited in many important respects. For instance, to our knowledge, there are currently no systematic or quantitative reviews that examine the impact of telepsychology on mental health, behavioral functioning, and service-related variables (e.g., satisfaction) with either substance abuse clients or those involved in the justice system. A meta-analytic approach is well suited for clarifying the state of the empirical evidence in this area for clinicians and administrators contemplating whether telepsychology is worth investing in, and for highlighting missing pieces in the current evidence base for researchers to address in future studies.

Therefore, the purpose of the present study was to quantitatively summarize all identified empirical evaluations of telepsychological services that involve videoconferencing equipment (i.e., technology with audio and visual inputs and outputs) and criminal justice-involved or substance abuse clients. Specifically, we sought to examine the extent to which telepsychology (and related mental health services) compares with traditional in-person services on the following variables, which were derived from an initial review of identified primary studies: (a) satisfaction of service delivery; (b) perception of therapeutic process; (c) program involvement (i.e., engagement and performance); and (d) detection of mental health symptoms. It was hypothesized that services delivered to criminal justice or substance abuse clients via videoconferencing would not differ significantly from those delivered in-person across these outcome domains, and that pooled effect sizes within each outcome domain would be small.

Method

Data Sources and Study Selection

Keywords related to *telehealth*, *telemedicine*, *telepsychology*, and *telepsychiatry* were entered into 38 electronic databases and Internet search engines (e.g., PsycINFO, Medline, Criminal Justice Abstracts, Google Scholar, PsycCRITIQUES, and Science & Technology Collection). Reference lists of review articles (e.g., Antonacci et al., 2008; Backhaus et al., 2012; Young, 2012) and chapters in an edited book on telemental health services (Myers & Turvey, 2013) were also examined. In total, five research assistants conducted 43 independent searches. In addition, an updated literature search was conducted prior to the submission of this study for publication.

To be included in the meta-analysis, studies had to (a) be published in English, (b) use a between-groups comparison design, (c) evaluate a mental health (i.e., psychological or psychiatric) assessment or treatment service, (d) target justice-involved or substance abuse clients, and (e) use a telecommunication service delivery system that transmitted live audio and visual information simultaneously. Studies also had to (f) report sufficient information to allow for a calculation of effect size estimates. When data were insufficiently described in a published report, the study's primary author was contacted in an attempt to ascertain needed details. Studies that only examined a nonmental health service (e.g., medical services) were excluded from the review.

Initially, a total of 504 articles related to telehealth services in general were identified for further review. The first (A.B.B.) and second (C.M.K.) authors, along with four trained research assistants, preliminarily categorized all studies as either "meets criteria," "does not meet criteria," or "uncertain." An examination of interrater reliability for this stage of the sorting process, using 50 randomly selected articles (10%), yielded an intraclass correlation of 0.87. The first and second authors then verbally discussed each article categorized as "uncertain" to determine whether it satisfied the inclusion criteria. A total of 14 articles (2.7%) were identified through a review of their titles and abstracts as specific to forensic, correctional, or substance abuse clients. After using a coding form to systematically review each of these articles, only five were determined to be appropriate for inclusion in the meta-analyses (1.0%). The other studies either lacked adequate methodological features (e.g., did not use a comparison or control group), measured outcomes in a way that could not be meaningfully combined to calculate effect size estimates, or reported insufficient statistical details (in conjunction with study authors not returning our requests for additional information). The final inclusion rate in this study was found to be lower than two other meta-analyses of telepsychological services among patients with posttraumatic stress (cf. 6.7%; Sloan, Gallagher, Feinstein, Lee, & Pruneau, 2011) and depression (cf. 9.7%, Osenbach, O'Brien, Mishkind, & Smolenski, 2013).

Article Coding

Once identified as meeting inclusionary criteria, each article was randomly assigned to three independent coders trained in the use of a standardized study coding form created by the authors. Coders included the first (A.B.B.), second (C.M.K.), and fourth (B.M.)

authors, as well as five other graduate and undergraduate research assistants. The following items were coded: reference information (e.g., article title, authors, publication year, population of interest); site descriptors (i.e., where services were provided vs. where they were received); technology used (e.g., software program, data transmission network, quality of video resolution); sample descriptors (e.g., sample size, attrition rate, demographic and clinical composition of sample); therapist descriptors (e.g., gender, ethnicity, educational level); treatment descriptors (e.g., type of service, number of sessions, length of sessions); research design (e.g., within- or between-subjects, method of group assignment); and research results (i.e., outcomes of interest and the corresponding descriptive and inferential statistics). All variables required two thirds coding agreement. Across the initial 14 studies identified as relating to criminal justice or substance abuse populations, the rate of two thirds agreement among coders for all variables in the aggregate was approximately 91%. When two thirds agreement did not occur (i.e., about 9% of the time taking all variables together), doctoral-level graduate student coders discussed each discrepancy and came to a final consensus on the appropriate coding decision. The discrepancy process was limited to graduate student participation given their advanced training in research methodology and statistical analysis.

Calculation of Effect Sizes and Analysis Methods

The five identified studies that were rated as having sound scientific integrity either used random assignment (King, Brooner, Peirce, Kolodner, & Kidorf, 2014; King et al., 2009; Manguno-Mire et al., 2007) or a comparison group that, although nonrandom and nonmatched, had minimal demographic differences with the telepsychology group (Brodey, Claypoole, Motto, Arias, & Goss, 2000; Morgan, Patrick, & Magaletta, 2008). Three additional studies were identified as relevant to this review, meaning that they were more than just descriptive studies, but used designs of lesser scientific quality. One used a repeated-measures design (Zaylor, Nelson, & Cook, 2001); another was correlational in nature (i.e., the association between psychiatrist and patient ratings of symptomatology during videoconferencing sessions; Nelson, Zaylor, & Cook, 2004); and the third would violate the assumption of independence if it were treated as a group contrast (written communication with the primary author confirmed that some participants were assessed across multiple years of the study; Fox, Connor, McCullers, & Waters, 2008). Mindful of the concern of comparing apples with oranges in meta-analysis (Lipsey & Wilson, 2001), these three studies were excluded from further quantitative analysis. However, because so few nondescriptive, empirical studies have been published in this area, the results of these three studies are described in Table 1. Only between-subjects studies that compared the effects of telepsychological and in-person service delivery modalities were quantitatively combined.

The standardized mean difference (d) was selected as the measure of effect size (ES), interpreted by reference to the conventions of 0.20 (small), 0.50 (medium), and 0.80 (large; Cohen, 1988; Lipsey & Wilson, 2001). Means and standard deviations were used whenever reported to calculate ES s using a formula described by Lipsey and Wilson (2001, p. 48). When descriptive statistics were not reported by primary studies, ES s were estimated using formulas available for significance-testing statistics (see Lipsey & Wil-

son, 2001, Appendix B). A small samples correction (Hedges, 1981) was applied to all ES s, which has been recommended as a matter of course in meta-analysis using the standardized mean difference due to the tendency of small samples to yield inflated values (Wilson, 2011; see also Lipsey & Wilson, 2001). ES s were coded so that a positive value indicated that telepsychology services outperformed comparable in-person services.

The relied-upon primary studies examined a variety of different outcomes. Including all of these studies in a single meta-analysis would have been inappropriate; however, available outcome variables could be grouped together into five thematic domains: mental health symptoms, therapeutic processes/instrumental outcomes, program engagement, program performance, and service satisfaction (see Table 3). Therefore, separate univariate meta-analyses were conducted for each outcome.

Some studies reported multiple ES s that could be classified under one or more of these general outcomes. Accordingly, ES s of the same outcome class within a given study were averaged so that each study only contributed a single ES to the outcome domain. For example, postsession positive mood and postsession arousal level were collapsed into a single mental health ES for the Morgan et al. (2008) study. In other cases, some studies (e.g., King et al., 2014) contributed an ES to more than one outcome domain (see Table 3). Furthermore, if studies broke out ES s by type of provider or service (e.g., psychological or psychiatric; Morgan et al., 2008), a single averaged ES was calculated.

Procedures outlined in Lipsey and Wilson (2001) were used to conduct a random effects meta-analysis for each outcome domain. First, to account for the sample sizes (or precision) of contributing studies, the small-samples-corrected ES s within each respective outcome class were weighted by the inverse of their estimated variance. The variance estimates were calculated consistent with a random effects model via the method-of-moments approach because of the methodological variability of the primary studies, and the inability to test for systematic factors (discussed below) that might account for any remaining variability in the distribution of ES s beyond participant-level sampling error. Thus, each variance calculation consisted of two components: an estimate of the variance attributable to participant-level sampling error plus the estimated variance attributed to random, between-studies sources (i.e., random effects variance). The associated 95% confidence intervals for the mean ES s were then calculated. Next, homogeneity of the ES distributions was assessed using the Q statistic (significant values indicate a heterogeneous distribution) and I^2 statistic (interpreted using the benchmarks of 25, 50, and 75% as indicative of low, medium, and high heterogeneity, respectively; Cochran, 1954; Higgins, Thompson, Deeks, & Altman, 2003; Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006). Exploratory Software for Confidence Intervals (ESCI; Cumming, 2011) was used to calculate random-effects mean ES s, 95% confidence intervals, and homogeneity statistics. Although we suspect that publication bias is not a major concern in this area of research given that nonsuperiority findings would likely be published in support of the feasibility of telepsychological services, Orwin's (1983) fail-safe N procedure was used to examine the potential impact of publication bias. This approach determines how many hypothetical unpublished studies—studies placed in the file drawer because they found no effect ($ES = 0$)—it would take to substan-

Table 1
Methodological Features of Relevant Studies That Were Not Meta-Analyzed

Study	Sample type	Sample size; research design	Connection mode; software used	Hub site; remote site	Questions investigated	Outcome category; measures; results	Summary of findings
Fox et al. (2008)	Criminal justice	190; Partially Longitudinal and Partially Cross-Sectional (i.e., Not All Participants Were Unique at Each Study Wave)	Unknown; unknown	General medical center; correctional facility	Was the introduction of a telepsychological service associated with improved attainment of individual's program goals?	Program performance; GAS; proportion of goals attained at baseline (pre-telepsychological service) and year 1 and year 2 (during telepsychological service); education (80, 82, 88), family (10, 15, 48), health (7.5, 5.5, 42), personality (70, 65, 80), social skills (78, 80, 94)*; year 2 versus year 1* and baseline* in multivariate analysis of number of goals attained	Significant increases in the proportion of juveniles who attained goals in the areas of family, health, and social skills from pre-implementation of a telepsychological service to year 2 of the service; Multivariate analysis yielded a consistent result
Nelson et al. (2004)	Criminal justice	103 psychiatric consultations completed by 62 unique inmates; cross-sectional	ISDN; unknown	General medical center; correctional facility	How do clients' ratings of their mental health functioning compare with clinicians' ratings in the context of a telepsychological service?	Mental health symptoms; SCL-90-R and CGI; $R = .35^*$	A significant, medium-strength correlation was found between self-reported overall symptoms and clinician rated illness severity
Zaylor et al. (2001)	Criminal justice	45; repeated measures	ISDN; unknown	General medical center; correctional facility	Does A telepsychological service lead to symptom improvement over time from both the clinician's perspective and the client's perspective?	Mental health symptoms; SCL-90-R and CGI; M s and SD s for SCL-90-R at baseline (pre-telepsychological service) and time 1 and time 2 (during telepsychological service): 2.42 (0.67), 2.21 (0.69), 2.07 (0.72); ANOVA time effect*; polynomial contrasts*; M s and SD s For CGI at baseline and time 1 and time 2: 3.06 (1.43), 2.79 (1.25), 2.22 (1.09); ANOVA time effect*; polynomial contrasts*	Client distressed decreased over time following repeated receipt of a telepsychological service, both from the clinician's perspective and the client's perspective

Note. CGI = Clinical Global Impression Scale—Severity Index; GAS = Goal Attainment Scale; ISDN = Integrated Services Digital network; SCL-90-R = Symptom Rating Checklist-90-Revised.
 * $p \leq .05$.

tially reduce a mean *ES* (operationally defined as a small *ES* of 0.20; Zakzanis, 2001).

Moderator analyses were not conducted because of the small number of *ESs* available for each outcome domain. More specifically, the limited variation in potential moderator variables, on top of unequal cell sizes due to missing moderator variable data, would have severely limited the inferential validity of moderator analyses (see Field & Gillett, 2010).

Results

Summary of Reviewed Studies

The methodological features, unadjusted *ESs*, and corresponding standard errors for each of the five meta-analyzed studies are provided in Tables 2 and 3. Publication dates ranged from 2000 to 2014. The studies examined a variety of outcomes using a variety of different measures. Sample sizes ranged from relatively small to relatively large. There was also relatively large variability in *ESs* within and across outcome domains. All studies were published in peer-reviewed journals.

Outcome Measures and Research Designs

The type of mental health service that was evaluated varied across studies. One study involved a general psychiatric consultation services (Brodey et al., 2000); another involved either psychiatric or psychological services (Morgan et al., 2008); still another involved competency assessment services (Manguno-Mire et al., 2007); and 2 others involved Internet-based videoconferencing treatment groups (King et al., 2014; King et al., 2009). Although all of the studies utilized a comparison group, only three employed a random assignment procedure (King et al., 2014; King et al., 2009; Manguno-Mire et al., 2007).

Participant Descriptors

Three studies used criminal justice samples (either pre- or posttrial; Brodey et al., 2000; Manguno-Mire et al., 2007; Morgan et al., 2008), and two others used samples of non-justice-involved clients with substance use problems (King et al., 2014; King et al., 2009). All studies used adult samples, with the average reported age of participants ranging from 32 to 42 years. Participant sex was mixed (i.e., neither sex > 80%) in three studies (King et al., 2014; King et al., 2009; Manguno-Mire et al., 2007), exclusively male in one (Morgan et al., 2008), and unreported in another (Brodey et al., 2000). Four studies had multicultural samples (i.e., no race or ethnicity > 80%; King et al., 2009, 2014; Manguno-Mire et al., 2007; Morgan et al., 2008); the other did not report race/ethnicity information (Brodey et al., 2000). A majority of studies reported information about participants' psychiatric diagnoses: mood disorders predominated in one (Morgan et al., 2008), substance use disorders in two others (King et al., 2014; King et al., 2009), and psychotic disorders in another (Manguno-Mire et al., 2007). Attrition rates were reported in three studies, ranging from 0.02 (Brodey et al., 2000) to 26 (King et al., 2009) and 31% (King et al., 2014).

Sites and Services

The remote site in two studies was a jail or prison (Brodey et al., 2000; Morgan et al., 2008); the other remote sites were a psychiatric hospital (Manguno-Mire et al., 2007) and participants' homes (King et al., 2014; King et al., 2009). General medical centers (Brodey et al., 2000; Morgan et al., 2008) and outpatient substance abuse clinics (King et al., 2014; King et al., 2009) were the most common hub sites, utilized in two studies each, followed by a medical school (Manguno-Mire et al., 2007). (Although hub site details were omitted in the original Morgan et al. [2008] report, the study's first author, also a coauthor of the present study [R.D.M.], confirms that it was a university medical center.) Telepsychology and in-person participants received services at the same site in three studies (Brodey et al., 2000; Manguno-Mire et al., 2007; Morgan et al., 2008); in-person participants received services at a different location in the other two (King et al., 2014; King et al., 2009).

Technology Utilized

The communication transmission technology that was used varied across studies; reports that included this information indicated use of Internet, local area network (LAN), or satellite connections. Studies did not typically include detailed information about both video input and output setups, but across studies, it was observed that both participants and providers tended to utilize a combination of a computer-connected video recording device (e.g., video camera or dedicated webcam) and either a TV screen or computer monitor. No studies reported resolution details for output devices and only one (King et al., 2009) reported technological problems that were encountered and how they were handled. Specifically, King et al. (2009) reported that some participants initially had trouble accessing the Internet and registering and downloading the necessary program. However, in a subsequent 2014 study by King and colleagues, the authors apparently anticipated such problems by making a technician available to assist participants with technological support.

Relevant Studies Not Meta-Analyzed

Three studies were considered relevant to this review, but did not meet the inclusion criteria for meta-analytic review because of limitations with regard to their research designs. Important methodological features and outcomes for these three studies are provided in Table 1.

Meta-Analytic Results

Tables 2 and 3 provide summaries of the methodological features and individual results of the meta-analyzed studies, whereas the results of the meta-analyses are provided in Table 4.

Very small mean *ESs* favoring in-person services were observed for mental health symptoms and service satisfaction, whereas small mean *ESs* favoring telepsychology services were observed for therapeutic processes and program engagement. However, all of the 95% confidence intervals around these four mean *ESs* contained 0. Thus, there was a lack of clear evidence of the superiority of telepsychology or in-person services for these outcomes. One potential interpretation, then, is that both service

Table 2
Methodological Features of Meta-Analyzed Studies

Study	Sample type	Sample size (telepsychological service group/in-person service group); research design	Connection mode; software used	Hub site; remote site	Questions investigated	Outcomes
Brodey et al. (2000)	Criminal justice	23/20; comparison group (non-random, non-matched)	Unknown; unknown	General medical center; correctional facility	How did the service satisfaction of telepsychological examinees (single evaluation session) compare with in-person examinees? Did the severity of mental health symptomatology differ between the two groups? Was a telepsychological service (12-weeks of individual counseling) associated with higher rates of counseling attendance and greater treatment satisfaction? How did drug-positive urine samples and therapeutic alliance compare between telepsychological service recipients and in-person service recipients?	Mental health symptoms; service satisfaction
King et al. (2014)	Substance abuse	50/35; comparison group (random assignment)	Internet; unknown	Outpatient substance abuse program; same as hub site	Would telepsychological service (therapy groups meeting twice per week) recipients and in-person service recipients appear comparable with respect to the outcomes of counseling adherence, drug use, returns to less-intensive care, and treatment satisfaction?	Therapeutic processes; program performance; program engagement; service satisfaction
King et al. (2009)	Substance abuse	50/17; comparison group (random assignment)	Internet; unknown	Outpatient substance abuse program; client's home	Would telepsychological service (therapy groups meeting twice per week) recipients and in-person service recipients appear comparable with respect to the outcomes of counseling adherence, drug use, returns to less-intensive care, and treatment satisfaction?	Program performance; program engagement; service satisfaction
Manguno-Mire et al. (2007)	Criminal justice	11/10; comparison group (random assignment)	LAN; Polycom	Higher education (college); forensic mental health center	Would the results of a competence assessment tool be comparable when rated via telepsychology technology versus in person?	Mental health symptoms; service satisfaction
Morgan et al. (2008)	Criminal justice	86/100; comparison group (non-random, non-matched)	Satellite; unknown	University medical center; correctional facility	Would therapeutic alliance, post-session reactions, and service satisfaction be comparable for inmates receiving a single-session telepsychological service versus a single comparable in-person service?	Mental health symptoms; therapeutic processes; service satisfaction

Note. LAN = local area network. For the Morgan et al. (2008) study, reported telepsychological service and in-person sample sizes include both psychological and psychiatric services (*n*s for telepsychology = 36, telepsychiatry = 50, in-person psychology = 50, in-person psychiatry = 50).

Table 3
ES Statistics by Meta-Analyzed Study and Outcome

Outcome categories and measures	Studies	N	ES	95% CI
Mental health symptoms				
1. GCCT-MSH (difference score between two clinical raters when both raters were present in person versus when one was present in person and the other via remote connection)	Manguno-Mire et al. (2007)	21 (11/10)	0.59	[-0.29, 1.46]
2. GSI from BSI	Brodey et al. (2000)	43 (23/20)	-0.21	[-0.81, 0.39]
3. SEQ (average of positivity and arousal subscales for psychology and psychiatry conditions combined)	Morgan et al. (2008)	186 (86/100)	-0.09	[-0.38, 0.20]
Therapeutic processes				
1. HAQ-II (patient version)	King et al. (2014)	56 (22/34)	0.63	[0.08, 1.18]
2. WAI and SEQ (average of depth and smoothness subscales for psychology and psychiatry conditions combined)	Morgan et al. (2008)	186 (86/100)	-0.21	[-0.50, 0.08]
Program performance				
1. Drug-positive urinalysis and % returned to less intensive level of care (combined)	King et al. (2009)	37 (20/17)	0.36	[-0.30, 1.01]
2. Drug-positive urinalysis	King et al. (2014)	59 (24/35)	0.62	[0.09, 1.15]
Program engagement				
1. Counseling attendance (M sessions attended)	King et al. (2009)	37 (20/17)	0.03	[-0.62, 0.68]
2. Counseling attendance (M sessions attended)	King et al. (2014)	59 (24/35)	0.69	[0.15, 1.22]
Service satisfaction				
1. CSQ-8	King et al. (2014)	59 (24/35)	0.11	[-0.41, 0.63]
2. CSQ-8 (average total scores for psychology and psychiatry conditions combined, calculated using the original raw data)	Morgan et al. (2008)	186 (86/100)	-0.17	[-0.46, 0.12]
3. M of 10 researcher-developed patient satisfaction questions	Manguno-Mire et al. (2007)	21 (11/10)	-0.17	[-1.03, 0.69]
4. Overall satisfaction question from Group Health Association of American Consumer Satisfaction Survey	Brodey et al. (2000)	43 (23/20)	-0.09	[-0.69, 0.51]
5. Overall satisfaction question from Patient Satisfaction Survey	King et al. (2009)	37 (20/17)	0.06	[-0.59, 0.71]

Note. BSI = Brief Symptom Inventory; CSQ-8 = Client Satisfaction Questionnaire; Georgia Court Competency Test—Mississippi State Hospital revision (GCCT-MSH); GSI = Global Severity Index; SEQ = Session Evaluation Questionnaire; HAQ-II = Helping Alliance Questionnaire II; WAI = Working Alliance Inventory. N = total sample size (telepsychological service/comparison subgroup sizes); ES = standardized mean difference (before small samples correction); 95% CI = ninety-five-percent confidence interval. Positive values indicate that results favored telepsychological services over in-person services.

Table 4
Random-Effects Meta-Analyses of Telepsychological Services Versus In-Person Services

Outcome	<i>d</i>	95% CI	<i>t</i>	<i>p</i>	<i>Q</i>	<i>I</i> ²	<i>n</i>	<i>k</i>	Fail-safe <i>N</i>
Mental health symptoms	-0.04	[-0.34, 0.27]	-0.23	.82	2.40	16.5%	250	3	—
Therapeutic processes	0.18	[-0.64, 0.99]	0.42	.67	7.10*	85.9%	242	2	—
Program performance	0.50	[0.10, 0.91]	2.44	.01	0.38	0.0%	96	2	3
Program engagement	0.38	[-0.26, 1.02]	1.16	.25	2.43	58.8%	96	2	2
Service satisfaction	-0.09	[-0.30, 0.12]	-0.81	.42	1.02	0.0%	342	5	—

Note. Fail-safe *n* values are only reported for *ESs* > .2 because the *ES* criterion value was set at .2 (a small *ES*). *d* = standardized mean differences (with small samples correction applied to contributing *ESs*); 95% CI = ninety-five-percent confidence interval; *t* = null hypothesis test statistic; *Q* = weighted sum of squares between studies; *I*² = proportion of total variance attributable to true variation in *ES*; *n* = total number of participants across studies; *k* = number of studies. Positive values indicate that telepsychological services were associated with better outcomes than were in-person services.

* Significant *p* value (.008) suggests that the null hypothesis of *ES* homogeneity should be rejected.

modalities perform comparably on these outcomes. More studies are needed to substantiate this possibility given the small number of meta-analyzed *ESs* and the medium and high heterogeneity of some of the *ES* distributions.

The largest observed mean *ES* was for program performance; here, telepsychology services were found to outperform in-person services by a medium magnitude. The corresponding 95% confidence interval did not include 0, and low heterogeneity was observed between the two contributing *ESs*. Consequently, some preliminary confidence can be placed in this finding, although more studies are clearly needed to corroborate it since the observation is based on only two *ESs*. Three additional or unpublished studies would hypothetically be needed to reduce this medium *ES* to a small *ES*.

Discussion

Given the rate at which telecommunication systems are being integrated into mental health care in general, and the challenges inherent in treating complex clients such as those with substance abuse problems and criminal justice involvement, this systematic review sought to collect, organize, and (to the extent possible) empirically summarize the current literature base on the use of telepsychology services with these populations. Only studies in which (a) telepsychological (or mental health-related) services were compared with (b) similar services delivered in person were meta-analyzed. Empirical studies that used other research designs (e.g., repeated measures, correlational) were also summarized (see Table 1). Overall, results suggested that the application of videoconferencing to mental health service provision is associated with assessment and treatment outcomes that are grossly equivalent to traditional in-person approaches. That is, being physically present in the room with a client does not appear to be a necessary therapeutic component for gathering adequate clinical information or producing desired treatment effects. In addition, the use of videoconferencing alone does not seem to inhibit clients' willingness to participate and engage in services. In spite of the small number of articles the met inclusionary criteria for statistical comparisons, results of the present study provide cautious optimism for implementing technology-based interventions.

The most compelling discovery from this review was not only the scarcity of scientifically sound evidence, but also the rarity of any evidence whatsoever. Few available studies used randomized or quasi-experimental designs. Only three studies of criminal jus-

tice clients (Brodey et al., 2000; Manguno-Mire et al., 2007; Morgan et al., 2008), and two studies of substance abuse clients (King et al., 2009, 2014), implemented group equivalence procedures. Other identified studies were significantly limited by the lack of a controlled comparison group. Additionally, sample sizes across studies tended to be small, which both reduced the power to detect significant differences, and decreased the precision of effect size estimates. Thus, the possibility remains that more reliable and sizable differences existed between telepsychology and in-person services than were detected via significance difference testing and precision estimation techniques.

Regarding the five outcome domains that were studied—mental health symptoms, therapeutic process, program performance, program engagement, and service satisfaction—findings may have limited generalizability. In interpreting results, it is important to take into account how each domain was operationalized and which studies were included in the meta-analytic comparison. For example, implications for treatment programming are limited to substance abuse clients, as none of the criminal justice-based studies examined the implementation of a comprehensive program for these clients. Although Morgan et al. (2008) evaluated psychological and psychiatric consultations, these service contacts appeared to be brief in nature (one session) and no follow-up data were collected. Thus, there is currently more evidence (though additional data are still greatly needed) that videoconferencing can effectively produce desired changes (e.g., abstinence) for substance abuse clients versus justice-involved clients. Conversely, implications for clinical assessment are limited to criminal justice contexts, as neither of the studies with substance abuse clients examined the detection of mental health symptoms. Although it is likely that this finding would generalize to substance abuse clients, it is possible that diagnostic or treatment-needs assessments may need to consider other factors unique to this group. For example, Farabee and colleagues (1993) found that substance abuse outpatients who were not referred by the criminal justice system rated their drug problems as less severe, and had an increased desire to seek help via treatment, compared with criminal-justice-referred outpatients with substance abuse problems.

Another consideration that impacts the interpretation of the current findings is the fact that this meta-analytic review attempted to “accept” several null hypotheses (i.e., that there were no significant or meaningful differences between service delivery modality). It is traditionally assumed that one can only fail to reject,

rather than accept, a null hypothesis, for the absence of evidence is not the same as evidence of nonexistent differences (Jaykaran, Saxena, Yadav, & Kantharia, 2011). Although efforts to prove the null hypothesis are often seen as controversial, an outright dismissal of this concept is also inconsistent with current practice (Cortina & Folger, 1998; Frick, 1995; Walker & Nowacki, 2011). Frick (1995), for instance, suggests that the null hypothesis can be defensibly accepted if (a) the null is plausible, (b) results are consistent with the null, and (c) a “good [methodological] effort” is made to find a statistically significant effect (p. 137).

Accordingly, we recommend that future studies comparing the effects of telepsychology with in-person modalities follow contemporary noninferiority testing recommendations before concluding that obtained results are consistent with a noninferiority hypothesis. These recommendations include ensuring that the study is sufficiently powered, using a larger critical alpha value such as $p > .20$, looking for effect sizes (and corresponding precision estimates) below the conventional “small” threshold (e.g., $d < .20$), and establishing equivalence margins and conducting a two one-sided test (TOST) procedure (Walker & Nowacki, 2011). All of these procedures help to reduce the likelihood of committing a type-II error (incorrectly failing to reject a null hypothesis). None of the studies analyzed in the present review used such criteria, and exact p values were not consistently reported. Although most of the significance values obtained via meta-analytic procedures were consistent with the interpretation that telepsychology was noninferior to in-person services (the significance values for 4 of 5 outcome domains were greater than $p = .20$), ES estimates were imprecise, with 95% confidence intervals typically well beyond $-.20$ to $.20$.

Despite these limitations, this review can serve as an initial reference and starting point for clinicians and administrators who are considering adopting telecommunications in their correctional or substance abuse treatment settings. The results of this review also highlight the need for substantially more research in this area, and especially research using rigorous methodological designs. There are a number of empirical questions that remain unanswered. For instance, what is the extent of services that can be feasibly provided? Although the King et al. (2009, 2014) studies provide some indication for substance abuse treatment, it is unclear whether intensive intervention services could be successfully provided through audio-video equipment, especially for justice-involved clients. Longitudinal studies that examine various longer-term individual and group therapy treatments (e.g., competency restoration, violence prevention, parenting training, 12-steps-style groups), as well as interventions that involve multiple interpersonal systems (e.g., community correction officers, family members, educators, medical practitioners) are also needed. In addition, a variety of behavioral outcomes (e.g., prison disciplinary infractions, community supervision violations, association with antisocial or substance using peers) and technology-related factors (e.g., quality of audio/video inputs, type and frequency of reported problems) would ideally be measured and reported.

Regarding forensic mental health assessment, only one study (Manguno-Mire et al., 2007) looked at the interrater reliability of adjudicative competency evaluations across telecommunication and in-person modalities. Not only is more evidence needed to support the use of videoconferencing for competency determinations, but there is also, as of yet, no evidence to support its use for

other, potentially more complicated and litigious legal questions, such as mental state (e.g., insanity, diminish capacity) and predictions of risk (e.g., violent or sexual recidivism). Future studies might also compare telepsychology and in-person evaluator opinions with respect to ultimate case determinations made by the courts and subsequent treatment outcomes (e.g., length of hospital stay for restoration service). Relatedly, studies that examine legal decision makers’ perceptions of nontraditional service provision would make important contributions. For example, do jurors perceive forensic evaluators who conduct interviews via videoconferencing to be less credible than an evaluator who meets with a defendant in person?

As for clinical assessments more generally, there are currently no studies that have examined the ability of telepsychological evaluations to detect cognitive or psychiatric response styles (e.g., under or over reporting). In addition, telepsychological services likely present more obstructions to nonverbal disturbances than is the case with observing a client in person (Magaletta et al., 1998; Magaletta et al., 2000). For example, depending on a provider’s vantage point and audio-visual clarity, he or she may not be able to detect relevant behaviors such as fidgeting under the table or tearfulness. Likewise, indications of interpersonal deficits may be overlooked. Such barriers may lead to inaccuracies in diagnosis or other clinical opinions. Studies delineating these sorts of microlevel issues are needed.

In addition to understanding the types of telepsychology services that can be feasibly provided, it is important to identify which types of clients are most likely to benefit from these services. The one study of telepsychological treatment with juvenile offenders (Fox et al., 2008) demonstrates some evidence about the interaction of age and service delivery modality. However, none of the studies included in this review stratified their samples by demographic variables, such as gender, age, risk level (e.g., psychiatric or substance use relapse, criminal recidivism), cognitive or intellectual functioning, psychiatric diagnosis, offender type (e.g., sexual, violent, nonviolent), or socioeconomic status. It may very well be, for example, that criminal justice-involved clients with hallucinations or paranoid ideations may have difficulty establishing rapport with a provider who is communicating with them through a TV screen (Magaletta et al., 2000). It is also possible that clients with less familiarity with technology, such as older clients, will feel less comfortable than their more technologically savvy peers. These and other obvious hypotheses need to be subjected to empirical investigation. Ultimately, we anticipate that future research will support the conclusion that telepsychology is an effective modality for reaching underserved populations, and is as clinically appropriate (i.e., effective) for most clients as the more traditional in-person treatment modality.

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