Solution-focused group therapy for drug users in Japanese prison: nonrandomized study

Kenji Yokotani 1) 2) Katsuhiro Tamura 2)

1) Niigata Seiryo University, Faculty of Social Welfare
2) Niigata Prison, Treatment Section

ABSTRACT. Objective: Solution-focused brief therapy (SFBT) has shown treatment effects for a range of clients but not specifically for drug users in Asian populations. We exploratively examine the treatment effects of SFBT on drug use. Methods: Participants were 60 inmates in a Japanese prison who were convicted of a drug-related offense. They were non-randomly assigned to the SFBT group, treatment as usual (TAU) group, or mail feedback (Mail) group. They completed the Stimulant-Relapse Risk Scale and the Center for Epidemiologic Studies Depression Scale before the start and after the end of these programs. Results: The SFBT and TAU group showed more improvement on the Stimulant-Relapse Risk Scale than the Mail group did. However, the two groups did not show improvement on the depression scale. Conclusions: SFBT is applicable to Asian drug users. The practical application of SFBT in Asian populations is discussed.

KEY WORDS: Japan, methamphetamine, prison, solution-focused brief therapy, substance abuse

Core Concept of Solution-focused Brief Therapy

Solution-focused brief therapy (SFBT) was developed inductively by two social workers, Steve De Shazer and Insoo Kim Berg (de Shazer et al., 1986). The technique focuses on solutions rather than problems. To help clients develop their own solutions, therapists utilize clients’ strengths and set achievable future goals in a collaborative manner (Berg & Miller, 1992). Goal achievement scores are frequently used in SFBT and regarded as a treatment index (e.g., Berg & Reuss, 1998). However, evidence about the treatment effects for drug users is limited except for a few remarkable studies (Froeschle, Smith, & Ricard, 2007; Li, Armstrong, Chaim, Kelly, & Shenfeld, 2007; Smock et al., 2008). Hence, the present study aims to clarify the treatment effects for drug users exploratively using non-randomized control trials.

Effectiveness of SFBT

Many studies have supported the effectiveness of SFBT for several clinical problems (see review, Corcoran & Pillai, 2009; Gingerich & Peterson, 2013). For example, randomized control trials have shown that a single session of SFBT improves positive emotions of university students (Grant, 2012) and general treatment outcomes for clinical participants (Richmond, Jordan, Bischof, & Sauer, 2014). A meta-analysis also suggests that
SFBT is especially effective in decreasing emotional problems, such as depressive symptoms (Kim, 2008). These studies suggest that SFBT is especially effective for depressive symptoms.

**SFBT for Adult Substance Abusers**

Even though SFBT has provided many practical approaches for substance abusers (Berg & Reuss, 1998; Yokotani & Tamura, 2014), the treatment effects for them were limited. Naturalistic studies without control groups have implied that individual SFBT might be effective in reducing drinking (de Shazer & Isebaert, 2004). Two randomized control studies also found that group SFBT improves depressive symptoms (Smock et al., 2008) and marital satisfaction (Li et al., 2007) in people who abuse substances, but these studies did not report treatment effects relating specifically to substance abuse. One randomized control study found treatment effects of SFBT on drug use through questionnaires (Froeschle et al., 2007), but the participants in this study were limited to healthy female eighth-grade students.

**Abusers Limitations of Previous SFBT Studies**

Previous SFBT studies had four limitations. First, the participants were generally from Western communities, even though SFBT could be effective regardless of cultural differences (Lee & Mjelde-Mossey, 2004). Second, the experimental design did not include a positive control group, which made it difficult to compare efficacy of SFBT with alternative therapies. Third, goal achievement scores were not analyzed, although many therapists used these measures (e.g., Gingerich & Peterson, 2013; Smock et al., 2008). Fourth, depressive symptoms and drug-relapse risks were not assessed as outcome measures together, even though depressive symptoms are a key measure in SFBT (Kim, 2008) and common comorbidity in substance abusers (e.g., Grant, 1995). The present study aims to overcome these four limitations.

**Aims of the Present Study**

To overcome the first limitation and extend SFBT studies to Asian participants, we recruited inmates convicted of drug-related crimes in a Japanese prison. SFBT has been utilized in many correctional facilities (Lee, Uken, & Sebold, 2007; Walker, 2009), including adult prisons (Lindfors & Magnusson, 1997); thus, SFBT could be feasible in a Japanese prison. To overcome the second limitation, we compared the treatment efficacy of SFBT to positive and negative control groups. A treatment as usual (TAU) group was included as a positive control, which involved 6 months of anonymous group meetings and skills training. These programs are popular and have shown treatment effects for drug users (Gossop, Stewart, & Marsden, 2008; Hawkins, Catalano, & Wells, 1986). Mail feedback was included as a negative control. The mail feedback (Mail) group completed 3 months of feedback through letters without face-to-face communication. Although mail
feedback has shown treatment effects for addictive behavior (Walters & Neighbors, 2005; Yokotani & Tamura, 2015), the shorter 3-month treatment duration could weaken the effects of mail feedback on drug use when compared to a 6-month treatment (McLellan, Lewis, O’Brien, & Kleber, 2000). To overcome the third limitation, we measured goal achievement scores within the SFBT group. To overcome the fourth limitations, we measured participants’ drug-related relapse risk and depressive symptoms together.

The present study was designed to test three hypotheses: group SFBT will be effective in decreasing drug use (Froeschle et al., 2007). Hence, like in the TAU group, the drug-related relapse risk should improve in the SFBT group more than in the Mail group (1). Furthermore, a previous study suggested that SFBT is effective especially for depressive symptoms (Kim, 2008; Smock et al., 2008). Thus, SFBT should improve clients’ depressive symptoms more than the Mail feedback (2). Finally, SFBT is expected to promote clients’ personal goal achievements (Berg & Miller, 1992). Therefore, the goal achievement scores for the SFBT group at the final stage will be higher than the scores at the initial stage (3).

**Methods**

**Participants**

We recruited inmates in a Japanese prison convicted of a drug-related offense. People imprisoned for drug-related offenses in Japan are (1) mostly individual users (97% from 2001 to 2005; Research and Training Institute of the Ministry of Justice, 2006) and (2) repeat offenders. This is because first-time drug-use offenders usually receive only suspended prison sentences (95% from 1948 to 2006), whereas repeat drug-related offenders receive sentences without parole (79% of second-time reoffenders and 93% of third-time reoffenders; Research and Training Institute of the Ministry of Justice, 2009). As a result, inmates in Japanese prisons convicted of drug-related offenses are typically repeat illegal drug users with severe drug-related problems.

The 187 male inmates convicted of a drug-related offense in a Japanese prison received instruction of the Mail group when they entered prison. During our group therapies, 54 participants were randomly assigned to the Mail group and received the mandatory mail (see Figure 1 for details). Five of these 54 could not receive feedback because of an ongoing criminal investigation, so they were excluded. Seven and five participants also received TAU and SFBT, respectively, so these 12 participants were excluded. The remaining 37 participants were analyzed as the final Mail group.

One month before the start of TAU and SFBT, all 187 male inmates received information about the SFBT and TAU as professional therapy meetings and Narcotics Anonymous group meetings. Twenty participants voluntarily applied for the SFBT (see Figure 1 for details). Three were excluded because of limited seating and their schedule; the remaining 17 received SFBT. Five of these 17 received mail feedback at the same time, so they were excluded from analysis, leaving 12 participants
in the final SFBT group. Similarly, 27 participants voluntarily applied for TAU. Nine we excluded because of limited seating and their schedule; the other 18 received TAU. Seven of these 18 received mail feedback at the same time, so they were excluded from analysis, leaving 11 participants in the final TAU group. In sum, 60 participants were included in our analysis (Figure 1).

Table 1 shows the basic demographic characteristics of the 60 male inmates. On average, they were 44 (SD = 11.8) years old, had received a sentence of 3.2 (1.6) years, and had entered 4.1 (2.6) adult prisons. In a Japanese prison, inmates cannot access illegal drugs. Hence, they were regarded as sober during imprisonment. Most of them had completed only junior high school or had dropped out of high school. Among the 60 participants, two were from Iran and the other 58 were from Japan. Fifty (83.3%) were imprisoned mainly because of drug-related offenses (for violating the Stimulants Control Act [n = 47], Narcotic and Psychotropic Drugs

![Figure 1. Flow of participants through each stage of the study. *Total number of application forms. †Total number of worksheets. Some participants received several programs, so the number of these forms and worksheets exceeds the number of applicants. SFBT = solution-focused brief therapy; TAU = treatment as usual; Mail = mail feedback.](image-url)
The other 10 participants were imprisoned for non-drug-related offenses (such as theft) committed under the influence of drugs. The most common illegal drugs in Japan are thinners, cannabis, and stimulants (methamphetamine and/or amphetamine) but not heroin and other opiates (Research and Training Institute of the Ministry of Justice, 2009). Hence, we measured their usage about these drugs. The participants’ average age when starting to use paint thinners, cannabis, and stimulants was 14.7 (SD = 1.4), 20.6 (6.1), and 21.5 (6.4) years, respectively. Their mean frequency of using paint thinners, cannabis, and stimulants was 33.4 (SD = 37.5), 19.7 (48.0), and 47.4 (41.4) times per month, respectively.

The resulting duration of drug use is around 23 years (current age – starting age of stimulants use). Taking into account their heavy use, they could have used these drugs repeatedly, rather than temporarily, during the duration (e.g., McLellan et al., 2000).

**Design and Procedures**

The prison we sampled is located in the Hokuriku (Northeast) area of Japan, designed for repeat offenders, and houses approximately 750 prisoners. The 12 biweekly SFBT sessions were conducted from March 2014 to August 2014, and the 12 biweekly TAU sessions were conducted from March 2014 to September 2014.

### Table 1

**Participants’ Demographic and Drug Use Characteristics**

|                | SFBT (n = 12) | TAU (n = 11) | Mail (n = 37) | Statistic |
|----------------|--------------|--------------|--------------|-----------|
| **Age**        | 38 ± 8.9     | 42.7 ± 11.3  | 47.6 ± 12.1  | 3.4**     |
| **Present sentence (years)** | 3.0 ± 1.1     | 4.9 ± 2.3    | 2.9 ± 1.4    | 7.2**     |
| **Number of prison terms** | 3.1 ± 2.1      | 4.4 ± 3.7    | 4.4 ± 2.4    | 1.0        |
| **Years of education** | 9.7 ± 1.8      | 10.3 ± 2.1   | 10.0 ± 1.5   | 0.3**      |
| **Number of sessions attended** | 9.2 ± 4.0      | 10.4 ± 2.2   | 5.8 ± 0.7    |           |
| **Drug use**   |              |              |              |           |
| Paint thinner  | 75%          | 55%          | 68%          | 1.2       |
| Cannabis       | 75%          | 82%          | 51%          | 4.0       |
| Stimulants     | 92%          | 91%          | 95%          | 0.2       |
| **Starting age** |              |              |              |           |
| Paint thinner  | 14.5±        | 14.3±        | 14.8±        | 0.4+      |
| Cannabis       | 18.3±        | 19.4±        | 22.1±        | 1.3±      |
| Stimulants     | 20.1±        | 20.9±        | 22.1±        | 0.4±      |
| **Average drug use per month** |              |              |              |           |
| Paint thinner  | 19±          | 30.2±        | 43.2±        | 0.8+      |
| Cannabis       | 2±           | 38.5±        | 82.3±        | 1.1±      |
| Stimulants     | 65.2±        | 47.3±        | 47.0±        | 1.3+      |

**Note.** SFBT = solution-focused brief therapy; TAU = treatment as usual; Mail: mail feedback. *n = 8, b = 11, c = 7, a = 6, e = 9, f = 10, g = 25, h = 19, i = 35, j = 23, k = 17, l = 34, m = 36, n = 2, o = 2, p = 2, q = 2, r = 36, s = 2, t = 2, u = 2, v = 2, w = 2, x = 2, y = 2, z = 2, A = 2, B = 2, C = 2, D = 2, E = 2, F = 2, G = 2, H = 2, I = 2, J = 2, K = 2, L = 2, M = 2, N = 2, O = 2, P = 2, Q = 2, R = 2, S = 2, T = 2, U = 2, V = 2, W = 2, X = 2, Y = 2, Z = 2.

Act [n = 2], or Cannabis Act [n = 1]).
Solution-focused group therapy for drug users

The SFBT and TAU groups each had morning and afternoon sessions. Hence, four group therapies were conducted in the prison during this period. Each session lasted for approximately 90 minutes. The Mail group included a former ($n = 34$) and latter group ($n = 20$). The former group received six biweekly mailings from March 2014 to May 2014. The latter group received the same letters from June 2014 to August 2014. Eighty-three percent of participants ($n = 10$) in the SFBT group and 81% ($n = 9$) in the TAU group took part in more than 70% (8) of the sessions. Ninety-four percent of participants ($n = 35$) in the Mail group received more than 70% (5) of mailings. The institutional board of the prison and the ethics committee of a local university in Japan approved the study. Participants completed the following questionnaires before the start and after the end of their treatment program.

**Measures**

**Assessing past frequency of illegal drug use (baseline only).**

Participants responded to three questions that assessed their frequency of stimulant use: (1) Have you ever used stimulants before? (Yes or No): If yes, (1.1) at which age did you start using stimulants? (1.2) And how often did you use stimulants in a month (a continuous measure: if you use stimulants daily, the number would be 30; if you use stimulants once a week, the number would be 4; and if you use stimulants once in two months, the number would be 0.5). Participants also responded to similar questions about paint thinner and cannabis use.

**Outcome measures (before start and after end of each program).** Participants answered the following measures within one week before the start of the program. They also answered the same measures within one week after the program ended.

The Correctional Stimulant Relapse Risk Scale (C-SRRS) is used to assess drug-related relapse risks (Yamamoto, Todoriki, & Nishida, 2011). This scale has been modified from the original SRRS (Ogai et al., 2007) for use in prisons. The C-SRRS is a 41-item questionnaire in Japanese. The responses are scored on a 5-point scale (strongly disagree [1], disagree [2], neutral [3], agree [4], and strongly agree [5]). The C-SRRS comprises 6 subscales: anxiety and intention to use drugs [AI] (11 items; e.g., If I have a large sum of money, I want to buy drugs), emotional problems [Emotion] (10 items; e.g., I cannot control my feelings), positive expectancy about drugs [PE] (5 items; e.g., If I use drugs, I would feel invigorated), compulsivity toward drugs [Compulsion] (4 items; e.g., I want to get drugs even through illegal activities), awareness of drug dependence [Aware] (4 items; e.g., I never think about using drugs), and denial of drug harm [Denial] (7 items; e.g., If I use drugs, the drugs might negatively affect my job performance [converted item]). This scale has been extensively validated in Japanese prisons in a study involving 60 Japanese correctional institutions and 712 drug-related prisoners (Yamamoto et al., 2011). Moreover, it has been reported that the AI and Emotion subscales are positively correlated with number of
drug-related offenses, and that PE is negatively correlated with age of first drug-use (Yamamoto et al., 2011). The baseline score in our sample showed satisfactory alpha coefficients for total C-SRRS (α = .93), AI (.91), Emotion (.93), PE (.87), Compulsion (.92), and Awareness (.84), but not Denial (.58). Therefore, we interpreted the results of the Denial scale with caution.

The Center for Epidemiological Studies Depression Scale (CES-D) is used to assess depressive symptoms. Radloff (1977) developed the original version of the CES-D, and Shima, Kano, Kitamura, and Asai (1985) developed the Japanese version. It is a 20-item scale with items such as: “You felt depressed.” Responses are scored on a 4-point scale (less than one day [0], 1–2 days [1], 3–4 days [2], 5–7 days [3]). The CES-D can be used to assess both healthy and depressive people and has been validated internationally (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995). The baseline score in our sample showed a satisfactory alpha coefficient (α = .83).

**Additional outcome measures (for SFBT group only).** To measure a goal achievement score, the SFBT group received an imagination question (adjusted miracle question: “After you are released from prison, you will continue to live your best in freedom for a long period of time. Three years after your release, you will finally achieve your dream life in society. Please describe your dream life.” Participants wrote about their dream life and then rated their current lifestyle on a scale from 1 (far from the dream life) to 10 (dream life). This score was regarded as their goal achievement score. The SFBT group received the same question in the final session and again wrote a response and gave a numerical rating.

**Intervention**

**SFBT group.** The 12 SFBT sessions aimed to construct participants’ personal goals and to enhance their motivation to achieve their goals (Yokotani & Tamura, 2014). Seven sessions were categorized as goal setting (#2 goal setting, #3 lifestyle when clients quit drugs, #4 coping style when clients quit drugs, #5 social resources that help clients in achieving their goals, #9 personal knowledge about safe and risky situations, #10 ways to overcome risky situations, #11 ways to overcome relapse). The other five sessions were categorized as motivation enhancement (#1 motivation to change, #6 social resources that motivate clients to change, #7 benefits of change (cost of status quo) versus benefits of status quo (cost of change), #8 commitment to change versus commitment to non-change, #12 clients’ resolve and policy for the future). Personal goal setting and enhancement of the motivation to achieve their goals could be linked with achievement of their personal goal.

Furthermore, the sessions were well matched with the core components of SFBT (Berg & Reuss, 1998; Gingerich & Peterson, 2013). For example, the programs include goal setting (#2), scaling question (#2, #12), utilization of exception (#4, #9, and #10), focus on what is better (#3), and compliments (all feedback). Furthermore, the adjusted imagination question (#2) was used. The therapists’ not-knowing
position was also consistent with other manuals (e.g., Pichot & Dolan, 2014; Pichot et al., 2009). The details and rationale for these sessions are described elsewhere (Yokotani & Tamura, 2014).

TAU group (positive control group). Three types of TAU sessions were conducted: (1) Narcotics Anonymous (NA) group meetings on “new life” (#2), “free talk” (#4), “the past year” (#6), “powerlessness” (#8), and “aims” (#10). (2) A personal lecture from a representative of families with addiction (#9). (3) Skills training: conditional reflex control (#1), the Kawakita Jiro method to discuss how to prevent drug use (#3), role playing to stop drug use (#5), and role playing in risky situations (#7, #11, #12). NA group meetings corresponded with open discussion meetings (e.g., Riordan & Walsh, 1994). Skills training corresponded with coping skills (Hawkins et al., 1986).

Mail group (negative control group). The Mail group treatment included several questions and information focused on the merits and demerits of stopping drug use (#1), conditional reflex control (#2), identification of risky situations (#3), environmental coordination to avoid drug use (#4), self-help groups to maintain abstinence from drug use (#5), and coping skills to avoid risky situations (#6). The feedback given corresponds to that used in the Brief Alcohol Screening and Intervention for College Students (#3, #4, #6; Dimeff, Baer, Kivlahan, & Marlatt, 1999) and in other studies (#1; Lee, Neighbors, Kilmer, & Larimer, 2010; #5; Walker, Roffman, Stephens, Wakana, & Berghuis, 2006). Participants wrote down their answer to each question. Positive responses were given following the feedback guidelines developed by Miller and Rollnick (2012). Participants received feedback in the mail only and did not receive in-person feedback.

Therapists. An associate professor of social welfare with a PhD and district leader of SFBT in Japan conducted the SFBT sessions. He had developed a manual for conducting group SFBT with drug-related offenders (Yokotani & Tamura, 2014). TAU was conducted by three types of therapists. The NA meeting was conducted by four people in the Japanese NA group: two were employed by the NA residential care home in Japan and the other two were members of the home. The personal lecture was given by a representative of families with addiction. Skills training was conducted by a staff member who manages nearly all treatment programs conducted in the prison. He regularly receives skills training and presents treatment effects. The mail feedback was also provided by this staff member.

Statistical Analysis
Table 2

Comparison of Treatment Effects across SFBT, TAU, and Mail Groups

|        | SFBT (n = 12) | TAU (n = 11) | Mail (n = 37) |
|--------|---------------|--------------|---------------|
|        | Pre | Post | d   | Pre | Post | d   | Pre | Post | d  |
| AI     | 28.4 | 25.0* | 0.3 | 28.0 | 21.3* | 0.7 | 21.6* | 21.0* | 0.1 |
| SD     | 9.4  | 10.3  |     | 10.5 | 8.4   |     | 11.9  | 10.0  |     |
| Emotion| 26.5 | 24.3* | 0.3 | 20.8 | 17.1* | 0.3 | 17.2* | 17.0* | 0.0 |
| SD     | 11.9 | 12.0  |     | 10.7 | 10.7  |     | 9.7   | 7.8   |     |
| PE     | 16.1 | 14.1* | 0.3 | 13.7* | 12.3* | 0.2 | 11.1* | 10.8* | 0.0 |
| SD     | 6.5  | 7.1   |     | 6.4  | 8.5   |     | 6.1   | 6.2   |     |
| Computer| 8.0  | 7.3*  | 0.1 | 8.0* | 4.5*  | 1.0 | 5.2*  | 5.1*  | 0.0 |
| SD     | 5.5  | 4.5   |     | 5.5  | 1.2   |     | 2.7   | 2.7   |     |
| Aware | 12.1 | 13.2* | -0.3 | 11.3* | 10.1* | 0.3 | 13.6* | 15.0* | -0.3 |
| SD     | 4.3  | 4.1   |     | 4.1  | 4.1   |     | 5.4   | 4.3   |     |
| Denial | 17.3 | 14.4* | 0.4 | 16.6* | 21.6* | -0.7 | 15.2* | 14.2* | 0.2 |
| SD     | 7.4  | 7.3   |     | 5.9  | 8.7   |     | 5.9   | 6.6   |     |
| C-SRRS| 108.6| 98.6* | 0.3 | 98.0* | 87.1* | 0.3 | 84.2* | 83.4* | 0.0 |
| S      | 28.9 | 31.6  |     | 33.6 | 34.0  |     | 24.2  | 23.2  |     |
| CES-D | 17.2* | 14.3* | 0.2 | 17.5* | 14.5* | 0.2 | 12.6* | 9.5*  | 0.4 |
| SD     | 12.0 | 13.1  |     | 15.4 | 15.1  |     | 11.2  | 5.8   |     |
| GAS   | 2.7* | 5.6*  | -0.9 |     |       |     |       |       |     |
| SD     | 4.8  | 1.9   |     |       |       |     |       |       |     |

Note. SFBT = solution-focused brief therapy; TAU = treatment as usual; Mail = mail feedback; AI = anxiety and intention to use drugs; Emotion = emotional problems; PE = positive expectancies about drugs; total C-SRRS = total Correctional Stimulant Relapse Risk Scale; CES-D = Center for Epidemiological Studies Depression Scale; GAS = goal achievement score.

An analysis of covariance (ANCOVA) was used to calculate comparative treatment efficacy across the three treatment groups, controlling for baseline scores and the number of sessions attended. Holm’s adjustment for multiple comparisons was used to compare group differences between the three groups. Paired t-tests were used to compare goal achievement scores between the initial and final stages of SFBT. Pearson’s correlations were used to calculate associations between pairs of variables. Levels of significance and significant tendencies were set at .05 and .10, respectively.

Even though the Mail group was larger than the SFBT and TAU groups, we did not specifically weigh the Mail group in the ANCOVA, because the power analysis could take into account a disproportional amount of the Mail group. We used HAD (no abbreviation) version 12.01 (Shimizu, Murayama, & Daibo, 2006) and G*Power version 3.1.9.2 (Faul, Erdfelder, Buchner, & Lang, 2009) to conduct these analyses.

Results

Descriptive Statistics and Selection of
Solution-focused group therapy for drug users

Table 3

Summary of Treatment Effects across the SFBT, TAU, and Mail Groups

| Outcome | Factors         | $F$   | $p$     | $\eta^2$ | $df$ | Multiple comparisons          |
|---------|-----------------|-------|---------|----------|------|------------------------------|
| AI      | Model           | 19.3  | ***     | 4, 43    |      |                              |
|         | Group           | 5.5   | **      | .205     | 2, 43| SFBT < Mail**, TAU < Mail**  |
|         | Attendance      | 11.2  | **      | .208     | 1, 43|                              |
|         | Pre-score       | 69.4  | ***     | .618     | 1, 43|                              |
| Emotion | Model           | 18.7  | ***     | 4, 43    |      |                              |
|         | Group           | 4.0   | *       | .158     | 2, 43| SFBT < Mail*, TAU < Mail*    |
|         | Attendance      | 9.8   | **      | .186     | 1, 43|                              |
|         | Pre-score       | 56.5  | ***     | .568     | 1, 43|                              |
| total   | Model           | 18.66 | ***    | 4, 42    |      |                              |
|         | Group           | 3.8   | *       | .156     | 2, 42| SFBT < Mail*, SFBT < TAU*    |
|         | Attendance      | 7.2   | *       | .147     | 1, 42|                              |
|         | Pre-score       | 67.0  | ***     | .615     | 1, 42|                              |
| Denial  | Model           | 22.5  | ***     | 4, 42    |      |                              |
|         | Group           | 5.7   | **      | .216     | 2, 42| SFBT < TAU*                  |
|         | Attendance      | 3.2   | *       | .073     | 1, 42|                              |
|         | Pre-score       | 74.0  | ***     | .638     | 1, 42|                              |
| PE      | Model           | 10.6  | ***     | 4, 43    |      |                              |
|         | Group           | 1.0   | .048    | 2, 43    |      |                              |
|         | Attendance      | 1.7   | .040    | 1, 43    |      |                              |
|         | Pre-score       | 38.2  | ***     | .471     | 1, 43|                              |
| Compulsion | Model       | 16.4  | ***     | 4, 42    |      |                              |
|         | Group           | 1.0   | .047    | 2, 42    |      |                              |
|         | Attendance      | 1.6   | .039    | 1, 42    |      |                              |
|         | Pre-score       | 56.0  | ***     | .571     | 1, 42|                              |
| Aware   | Model           | 3.2   | *       | 4, 42    |      |                              |
|         | Group           | 1.8   | .081    | 2, 42    |      |                              |
|         | Attendance      | 4.2   | *       | .092     | 1, 42|                              |
|         | Pre-score       | 1.8   | .042    | 1, 42    |      |                              |
| CES-D   | Model           | 8.9   | ***     | 4, 29    |      |                              |
|         | Group           | 0.2   | .016    | 2, 29    |      |                              |
|         | Attendance      | 0.0   | .001    | 1, 29    |      |                              |
|         | Pre-score       | 26.5  | ***     | .478     | 1, 29|                              |

Note. SFBT = solution-focused brief therapy; TAU = treatment as usual; Mail = mail feedback; AI = anxiety and intention to use drugs; Emotion = emotional problems; PE = positive expectancies about drugs; total C-SRRS = total Correctional Stimulant Relapse Risk Scale; CES-D = Center for Epidemiological Studies Depression Scale. *$p < .05$, **$p < .01$, ***$p < .001$.

Covariates

Table 1 shows the characteristics of the participants. There were no significant group differences in age of first illegal drug use for paint thinners, cannabis, or stimulants. Likewise, average use per month of these drugs was not significantly different across the three groups.

The SFBT group was significantly younger than the Mail group (Holm’s adjustment for multiple comparisons, $p < .05$). The TAU group received a longer average sentence than both the SFBT and Mail groups (both comparisons $p < .01$). However, neither age nor sentence
length was significantly correlated with our outcome measures. Therefore, we did not include them as covariates.

In addition, the SFBT and TAU groups attended more frequently than the Mail group. Furthermore, the number of sessions attended was significantly correlated with outcome measures (e.g., \( r = -.38, \ p < .001 \) between the number of sessions attended and the Aware subscale of the C-SRRS). Therefore, we did include number of sessions attended as a covariate.

Table 2 shows baseline assessment of the outcome measures. There were significant group differences in the AI, Emotion, PE, and Compulsion subscales of the C-SRRS, total C-SRRS, and CES-D. These results suggest that the three groups differed in drug-related risks and mental health at baseline.

**Comparison of Treatment Effects across SFBT, TAU, and Mail Groups**

An ANCOVA was used to compare treatment groups, with group difference as the independent variable and post-treatment score (post score) as the dependent variable. Outcome scores at baseline (pre-score) and number of sessions attended were included as covariates. This analysis indicated significant group differences for the AI, Emotion, and Denial subscales as well as the total C-SRRS score (Table 3).

Figure 2 shows that the SFBT and TAU groups improved more on the AI subscale than did the Mail group. The ANCOVA also showed significant group differences in AI when controlling for pre-score and number of sessions attended (Table 3).

Multiple comparisons also suggest that the SFBT and TAU groups showed significantly greater improvement on the AI subscale compared to the Mail group. Similarly, the SFBT and TAU groups improved more on the Emotion subscale than did the Mail group. The ANCOVA also showed significant group differences
in Emotion when controlling for pre-score and number of sessions attended (Table 3). Multiple comparisons also suggest that the SFBT and TAU groups showed significantly greater improvement on the Emotion subscale compared to the Mail group.

In addition, the total relapse risk scale showed similar results. The SFBT and TAU groups improved more on the overall C-SRRS than did the Mail group (Figure 3). The ANCOVA also showed significant group differences on the C-SRRS when controlling for pre-score and number of sessions attended (Table 3). Multiple comparisons also suggest that the SFBT and TAU groups showed significantly greater improvement on the C-SRRS compared to the Mail group.

Although the SFBT and TAU groups were not significantly different in terms of AI, Emotion, or C-SRRS, the SFBT group showed more improvement in terms of Denial than did the TAU group (Table 3). The ANCOVA and multiple comparisons support this pattern. SFBT improved Denial, whereas TAU aggravated Denial.

The ANCOVA models of the PE, Compulsion, and Aware subscales were significant, but these models did not report significant group differences (Table 3). Similarly, the ANCOVA models of the CES-D did not show significant group differences (Table 3).

**Power Analysis of Treatment Effects**

We analyzed the power of total group differences (SFBT, TAU, and Mail) and experimental (SFBT) or positive control (TAU) versus negative control group (Mail) differences. On the one hand, powers of total group differences were small (see partial $\eta^2$ in Table 3). We set the risk of type 1 error at .05 and found that the powers of total group differences for AI, Emotion, C-SRRS, and Denial were .20, .14, .13, and .23, respectively. To reach a power above .80, we would have needed 244, 380, 399, 222 participants for these measures, respectively.

On the other hand, after we controlled for the effects of covariates (pre-score and the number of attendances), the differences between SFBT or TAU and Mail groups reached power on the post-scores. Even though we adjusted the risk of type 1 error to 0.013 for multiple comparisons, the power of the differences between SFBT and Mail groups was 1.00 (AI), .99 (Emotion), .99 (C-SRRS), and .99 (Denial). Similarly, the power of the differences between TAU and Mail groups was .99 (AI), .99 (Emotion), and .99 (C-SRRS). Although for Denial, the differences between TAU and Mail had a small power (.18), the differences between SFBT and TAU had sufficient power (.97).

**Comparison of Goal Achievement Scores within the SFBT Group**
Goal achievement scores for the SFBT group at the final stage were significantly higher than scores at the initial stage (Figure 4; paired t = 2.5, p < .05, df = 8).

Goal achievement scores were also correlated with several outcome measures. Goal achievement scores at the initial stage were negatively correlated with age (r = -.56, p = .09, df = 8), instances of imprisonment (r = -.62, p = .05, df = 8), and age of first stimulant use (r = -.74, p = .02, df = 7). Goal achievement scores at the final stage were negatively correlated with the post-test Compulsion subscale (r = -.60, p = .08, df = 7), Denial subscale (r = -.75, p = .02, df = 7), and total C-SRRS (r = -.59, p = .09, df = 7).

**Power Analysis of Goal Achievement Scores within the SFBT Group**

To assess the power of goal achievement scores within the SFBT group, we set the type 1 error at .05. Mean and standard deviation of differences between pre and post scores were 2.96 and 2.30, respectively, resulting in a power of .91.

**Discussion**

The present non-randomized trial exploratively examined treatment effects of SFBT on drug use as compared to negative (Mail) and positive (TAU) control groups. As hypothesized (1), the SFBT group showed more improvement on the AI and Emotion subscales as well as the overall C-SRRS than did the Mail group. Furthermore, the SFBT and TAU groups showed similar improvement regarding these scales. Power analysis also supported these improvements.

Surely, our non-randomized trial included biases at baseline, which made our findings suggestive rather than conclusive (Van Breukelen, 2006).

However, our data support the claim that treatment effects of SFBT are comparable to popular therapies, such as anonymous meetings (Gossop et al., 2008) and skills training (Hawkins et al., 1986) for adult drug users. Our findings help to bridge the gap between practical protocols of SFBT (Pichot & Dolan, 2014; Pichot et al., 2009) and empirical data (Corcoran & Pillai, 2009; Gingerich & Peterson, 2013) regarding drug use and support the applicability of SFBT for addictive behaviors.

The present group SFBT shared the theoretical orientation and many techniques with previous implementations of group SFBT for substance abusers (Froeschle et al., 2007;
Li et al., 2007; Smock et al., 2008), but the current program also had specific differences. The present program (24 weeks) was longer than that of previous studies (6–16 weeks). The program also involved more troubled participants (methamphetamine/amphetamine abusers, middle-aged men with a 20-year drug use history, imprisoned patients) than previous studies (cannabis and alcohol abusers [Li et al., 2007], eighth-grade healthy students [Froeschle et al, 2007], or outpatients [Smock et al., 2008]). The present participants were also sober during treatment because they had no access to the drugs in prison. Furthermore, the Japanese prison environment prepared neither a one-way mirror room (Li et al., 2007; Smock et al., 2008) nor additional meetings with participants’ family members (Froeschle et al, 2007). These differences might explain the treatment effects. For example, a previous study suggested that the length of treatment was related to relapse rates of substance abusers (McLellan et al, 2000): thus, the present long programs might have produced these positive treatment effects more easily than the previous short ones.

In line with our hypothesis (3), SFBT sessions improved goal achievement scores. The significant improvement of goal achievement scores indicates that SFBT was a successful treatment (Berg & Reuss, 1998; de Shazer et al., 1986). Goal achievement scores at the initial stage (pre-treatment) were negatively correlated with age and instances of imprisonment. These data suggest that elderly prisoners who have been imprisoned many times might have difficulty achieving their goals compared to young, first-time prisoners. Goal achievement scores at the final stage (post-treatment) were negatively correlated with several relapse-risk scales. These data could be interpreted as an indication that subjective achievement of a dream life was associated with subjective relapse-free survival in a free society. The SFBT group significantly increased their goal achievement scores, reflecting more positive goal-oriented emotions and perspectives (e.g., Grant et al., 2012).

In contrast to our hypothesis (2) and previous studies (Kim, 2008; Smock et al., 2008), our data did not indicate any significant improvement in depressive symptoms after treatment, although all of our treatments improved participants’ depressive symptoms to a certain extent (Cohen’s $d$ ranged from 0.2–0.4). The present program fixed the theme of each session and limited the range of themes within drug-related solutions, limiting the program’s effects to drug-related relapse. More spontaneous and flexible themes might be more effective in decreasing depressive symptoms (e.g., Smock et al., 2008).
The Asian inmates of the present study also indicated that SFBT was helpful for them, especially when related to issues with their significant others (Lee & Mjelde-Mossey, 2004). For example, one prisoner experienced difficulties to imagine an ideal life in free society because his stay in prison had been longer than the time in freedom. However, when the therapist asked this prisoner, “If your friend from childhood were still alive (he was dead because of an overdose), how would he advise you to live?” he could easily imagine his ideal life from his past friend’s perspective.

Another prisoner felt difficulty to stop using drugs even for one day. However, he managed to stop using the drug for two weeks when he planned to visit the grave of his grandmother. He assumed that his “clean” (not contaminated by drug) body is appropriate to meet her spiritually. Asian people live in an interdependent society, which makes it easier for them to create their goals and solutions in the context of social relationships (Lee & Mjelde-Mossey, 2004).

Our study had five limitations. First, our three groups were not randomly assigned, so the effects of SFBT on drug use remain unclear (Van Breukelen, 2006) and a cautious interpretation of the findings is warranted (Miller & Chapman, 2001). In particular, the Mail group did not participate voluntarily. Their low-level motivation might have lessened the effects of the mail feedback (e.g., Walters & Neighbors, 2005). Second, the limited sample size and disproportionate amount of participants in the Mail group increased the risk of statistical errors. In fact, the power of total group differences was too small to be conclusive. Third, the outcome measures included only questionnaires, so we do not know whether the participants started using drugs again after returning to free society. Fourth, we did not intervene in their current relationship with significant others, although we included their past relationship with others. Fifth, we did not measure their duration of sobriety, which might affect drug-related risks. Future studies need to implement randomized controlled designs with sufficient sample size for severely affected clients. Furthermore, follow-up studies involving relapse rate would be valuable (Yokotani & Tamura, 2015).

Despite these limitations, our pilot study had a value as a starting point for therapeutic trial in Japanese prisons. Although Japanese prisons did many treatments, effects of these treatments were basically secret. Hence, comparative discussion about them was difficult. To move out of the habitual secrecy, the present study revealed the data in public and compared treatment effects in a Japanese prison. Our study could serve as a precedent for public announcement of treatment effects in Japanese prisons.
and provide comparable data set with another therapy. Accumulation of these data could produce generalizable findings and foster randomized controlled study near the future in Japanese prisons.

Our non-randomized trial examined the treatment effects of SFBT compared to positive and negative control groups. Our findings exploratively suggested that SFBT could be effective for drug users in a prison environment. These findings are consistent with previous drug-related findings (Berg & Reuss, 1998; de Shazer & Isebaert, 2004; Froeschle et al., 2007; Li et al., 2007; Pichot & Dolan, 2014; Pichot et al., 2009; Smock et al., 2008; Yokotani & Tamura, 2014) and add pilot data to the treatment efficacy evidence for SFBT (e.g., Corcoran & Pillai, 2009; Gingerich & Peterson, 2013; Kim, 2008) in an Asian population (Lee & Mjelde-Mossey, 2004). Furthermore, the participants’ goal achievement scores reflected the seriousness of their situation in the prison environment, and these scores reacted to treatment. This finding could provide a speculative outline for further research on the applicability of goal achievement scores in correctional facilities (Lee et al., 2007; Lindforss & Magnusson, 1997; Walker, 2009) and represent an index of substance abusers’ relapse.

Reference
Berg, I. K., & Miller, S. D. (1992).

Working with the problem drinker: A solution-focused approach. New York, NY: WW Norton.
Berg, I. K., & Reuss, N. H. (1998).
Solutions step by step: A substance abuse treatment manual. New York, NY: WW Norton.
Corcoran, J., & Pillai, V. (2009). A review of the research on solution-focused therapy. British Journal of Social Work, 39(2), 234–242.
doi:10.1093/bjsw/bcm098
de Shazer, S., & Isebaert, L. (2004). The Bruges model: A solution-focused approach to problem drinking. Journal of Family Psychotherapy, 14(4), 43–52.
doi:10.1300/J085v14n04_04
de Shazer, S., Berg, I. K., Lipchik, E. V. E., Nunnally, E., Molnar, A., Gingerich, W., & Weiner-Davis, M. (1986). Brief therapy: Focused solution development. Family Process, 25(2), 207–221.
doi:10.1111/j.1545-5300.1986.00207.x
Dimeff, L. A., Baer, J. S., Kivlahan, D. R., & Marlatt, G. A. (1999). Brief alcohol screening and intervention for college students (BASICS): A harm reduction approach. New York, NY: Guilford Press.
Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods, 41, 1149–1160. doi:10.3758/BRM.41.4.1149
Froeschle, J. G., Smith, R. L., & Ricard, R.
(2007). The efficacy of a systematic substance abuse program for adolescent females. *Professional School Counseling, 10*(5), 498–505. doi:10.5330/prsc.10.5.a458605px1u572

Gingerich, W. J., & Peterson, L. T. (2013). Effectiveness of solution-focused brief therapy a systematic qualitative review of controlled outcome studies. *Research on Social Work Practice, 23*(3), 266–283. doi:10.1177/1049731512470859

Gossop, M., Stewart, D., & Marsden, J. (2008). Attendance at Narcotics Anonymous and Alcoholics Anonymous meetings, frequency of attendance and substance use outcomes after residential treatment for drug dependence: a 5-year follow-up study. *Addiction, 103*(1), 119–125. doi:10.1111/j.1360-0443.2007.02050.x

Grant, A. M. (2012). Making positive change: a randomized study comparing solution-focused vs. problem-focused coaching questions. *Journal of Systemic Therapies, 31*(2), 21–35. doi:10.1521/jsyt.2012.31.2.21

Grant, A. M., Cavanagh, M. J., Kleitman, S., Spence, G., Lakota, M., & Yu, N. (2012). Development and validation of the solution-focused inventory. *The Journal of Positive Psychology, 7*(4), 334–348. doi:10.1080/17439760.2012.697184

Grant, B. F. (1995). Comorbidity between DSM-IV drug use disorders and major depression: results of a national survey of adults. *Journal of Substance Abuse, 7*(4), 481–497. doi:10.1016/0899-3289(95)90017-9

Hawkins, J. D., Catalano, R. F., & Wells, E. A. (1986). Measuring effects of a skills training intervention for drug abusers. *Journal of Consulting and Clinical Psychology, 54*(5), 661–664. doi:10.1037/0022-006X.54.5.661

Kim, J. S. (2008). Examining the effectiveness of solution-focused brief therapy: A meta-analysis. *Research on Social Work Practice. 18*(2), 107–116. doi:10.1177/1049731507307807

Lee, C. M., Neighbors, C., Kilmer, J. R., & Larimer, M. E. (2010). A brief, web-based personalized feedback selective intervention for college student marijuana use: A randomized clinical trial. *Psychology of Addictive Behaviors, 24*(2), 265–273. doi:10.1037/a0018859

Lee, M. Y., & Mjelde-Mossey, L. (2004). Cultural dissonance among generations: a solution-focused approach with East Asian elders and their families. *Journal of Marital and Family Therapy, 30*(4), 497–513. doi:10.1111/j.1752-0606.2004.tb01258.x

Lee, M. Y., Uken, A., & Sebold, J. (2007). Role of self-determined goals in predicting recidivism in domestic violence offenders. *Research on Social Work Practice, 17*(1), 30–41. doi:10.1177/1049731506294375
Li, S., Armstrong, M. S., Chaim, G., Kelly, C., & Shenfeld, J. (2007). Group and individual couple treatment for substance abuse clients: a pilot study. *The American Journal of Family Therapy, 35*(3), 221–233. doi:10.1080/0192618060814585

Lindfors, L., & Magnusson, D. (1997). Solution-focused therapy in prison. *Contemporary Family Therapy, 19*(1), 89–103. doi:10.1023/A:1026114501186

McLellan, A. T., Lewis, D. C., O’Brien, C. P., & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. *Journal of the American Medical Association, 284*(13), 1689–1695. doi:10.1001/jama.284.13.1689

Miller, G. A., & Chapman, J. P. (2001). Misunderstanding analysis of covariance. *Journal of Abnormal Psychology, 110*(1), 40–48. doi:10.1037/0021-843X.110.1.40

Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing: Helping people change*. New York, NY: Guilford Press.

National Registry of Evidence-based Programs and Practices (2012, April). Solution-Focused Group Therapy. Retrieved April 3, 2015 from http://www.nrepp.samhsa.gov/ViewIntervention.aspx?id=281

Ogai, Y., Haraguchi, A., Kondo, A., Ishibashi, Y., Umeno, M., Kikumoto, H., ... Ikeda, K. (2007). Development and validation of the Stimulant Relapse Risk Scale for drug abusers in Japan. *Drug and Alcohol Dependence, 88*(2–3), 174–181. doi:10.1016/j.drugalcdep.2006.10.005

Pichot, T., & Dolan, Y. M. (2014). *Solution-focused brief therapy: Its effective use in agency settings*. New York, NY: Routledge.

Pichot, T., Nelson, T. S., & Smock, S. A. (2009). *Solution-focused substance abuse treatment*. New York, NY: Taylor & Francis.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385–401. doi:10.1177/014662167700100306

Research and Training Institute of the Ministry of Justice (2006). White paper on crime 2006. Tokyo: Nikkei Insatsu (In Japanese).

Research and Training Institute of the Ministry of Justice (2009). White paper on crime 2009. Tokyo: Nikkei Insatsu (In Japanese).

Richmond, C. J., Jordan, S. S., Bischof, G. H., & Sauer, E. M. (2014). Effects of solution-focused versus problem-focused intake questions on pre-treatment change. *Journal of Systemic Therapies, 33*(1), 33–47. doi:10.1521/jsyt.2014.33.1.33

Riordan, R. J., & Walsh, L. (1994).
Guidelines for professional referral to Alcoholics Anonymous and other twelve step groups. *Journal of Counseling & Development, 72*(4), 351–355.

Santor, D. A., Zuroff, D. C., Ramsay, J. O., Cervantes, P., & Palacios, J. (1995). Examining scale discriminability in the BDI and CES-D as a function of depressive severity. *Psychological Assessment, 7*(2), 131–139. doi:10.1037/1040-3590.7.2.131

Shima, S., Shikano, T., Kitamura, T., & Asai, M. (1985). New self-rating scales for depression. *Clinical Psychiatry, 27*, 717–723. (In Japanese)

Shimizu, H., Murayama, A., & Daibo, I. (2006). Interdependent analysis of group communication (1): Application of hierarchal data analysis on communication data. *The Institute of Electronics, Information and Communication Engineers Technical Reports, 106*(146), 1–6. (In Japanese)

Smock, S. A., Trepper, T. S., Wetchler, J. L., McCollum, E. E., Ray, R., & Pierce, K. (2008). Solution-focused group therapy for level 1 substance abusers. *Journal of Marital and Family Therapy, 34*(1), 107–120. doi:10.1111/j.1752-0606.2008.00056.x

Van Breukelen, G. J. (2006). ANCOVA versus change from baseline had more power in randomized studies and more bias in nonrandomized studies. *Journal of Clinical Epidemiology, 59*(9), 920–925. doi:10.1016/j.jclinepi.2006.02.007

Walker, D. D., Roffman, R. A., Stephens, R. S., Wakana, K., & Berghuis, J. (2006). Motivational enhancement therapy for adolescent marijuana users: A preliminary randomized controlled trial. *Journal of Consulting and Clinical Psychology, 74*(3), 628-632. doi:10.1037/0022-006X.74.3.628

Walker, L. (2009). Pono Kaulike: Reducing violence with restorative justice and solution-focused approaches. *Federal Probation, 73*, 23–27.

Walters, S. T., & Neighbors, C. (2005). Feedback interventions for college alcohol misuse: What, why and for whom? *Addictive Behaviors, 30*(6), 1168–1182. doi:10.1016/j.addbeh.2004.12.005

Yamamoto, M., Todoriki, S., & Nishida, A. (2011). Development of the Correctional Stimulant Relapse Risk Scale (C-SRRS) for drug abusers in Japanese prison: the examination of reliability and validity. *Japanese Journal of Criminal Psychology, 49*, 1–14. (In Japanese)

Yokotani, K, & Tamura, K. (2014). Solution-focused group therapy program for repeated-drug users. *International Journal of Brief Therapy and Family Science, 4*(1), 28–43.

Yokotani, K., & Tamura, K. (2015). Effects of personalized feedback interventions on drug-related
reoffending: a pilot Study. *Prevention Science*. doi:10.1007/s11121-015-0571-x

**Declaration of Conflicting Interests**

The authors disclosed no conflicts of interest with respect to the authorship and/or publication of this article.

**Funding**

The present study was funded by the Nikkoso Foundation for Safe Society (SZ2014A—004).

**Acknowledgements**

We thank the prison staffs for their cooperation and assistance.