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Follow-Up: An Evaluation of the RealVictory Program
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Reducing Juvenile Recidivism With Cognitive Training and a Cell Phone Follow-Up: An Evaluation of the RealVictory Program

Bert O. Burraston1, David J. Cherrington1, and Stephen J. Bahr1

Abstract

The purpose of this research was to evaluate the effects of a cognitive training and cell phone intervention on the recidivism of 70 juvenile offenders. Median days to rearrest were 106 for the control group, 191 for the class-only group, and 278 for the class plus cell phone group. Using rearrest as the survival criterion, the survival ratios of the class-only and class plus cell phone groups were 2.64 and 2.94 times longer than the control group, respectively. After controlling for gender, prior arrests, and risk score, the Poisson regression indicated that the class-only and class plus cell phone groups were 51% lower in total arrests than the control group. These results suggest that cognitive training supplemented with a cell phone coach is an effective and cost-efficient intervention for reducing recidivism.

Keywords

juvenile probation, recidivism, desistance from crime, prosocial attitudes, rearrest, cognitive training, technology, treatment

In 2008, juveniles ages 15 to 19 years comprised 7.1% of the U.S. population but committed 21% of all crimes (Pastore & Maguire, 2010). Juveniles accounted for 16% of all arrests for violent crime and 26% of all arrests for property crime (Puzzanchera, 2009).

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In 2010 more than 31 million youth were under the supervision of juvenile courts (Puzzanchera, Adams, & Sickmund, 2010). Many juveniles under correctional supervision have difficulty desisting from crime and completing their probation successfully (Shinkfield & Graffam, 2009). When juvenile offenders do not desist from crime, their chances of success later in life decrease significantly, and large societal costs are incurred (Cohen & Piquero, 2009; Piquero, Farrington, Nagin, & Moffitt, 2010). A critical policy question is what can be done to help more juvenile offenders avoid probation violations and future criminal behavior.

For years, a dominant theme among many employees in the correctional system was that most programs had little impact on recidivism. This belief was bolstered by Martinson’s (1974) review of correctional programs and his conclusion that “nothing works.” However, during the past 35 years, there has been increasing evidence that some types of treatment programs can help reduce recidivism (Cullen, 2005, 2006). In a review of 58 experimental and quasi-experimental studies, Landenberger and Lipsey (2005) found that individuals who received treatment in a cognitive–behavioral program were about 25% less likely to recidivate than comparable individuals who did not receive treatment. In a meta-analysis of 69 studies, Pearson, Lipton, Cleland, and Yee (2002) found that behavioral programs (such as behavior modification, token economy, and aversive conditioning) did not reduce recidivism but that cognitive–behavioral programs produced a mean reduction in recidivism of about 30%. Similarly, in a meta-analysis of 20 studies, Wilson, Bouffard, and MacKenzie (2005) reported that cognitive–behavioral programs reduced criminal behavior by 20% to 30% compared to control groups. Overall, the evidence indicates that juveniles and adults who receive cognitive–behavioral therapy tend to have lower recidivism rates than comparable persons who do not receive treatment. Although some uncertainty remains about the long-term impacts of cognitive–behavioral programs, recent research confirms that they are useful interventions that tend to reduce drug use and recidivism (Dutra et al., 2008; Magill & Ray, 2009; Milkman & Wanberg, 2007).

Meta-analytic studies indicate that the most effective treatment programs (a) use cognitive–behavioral methods that focus on thinking patterns and skill development, (b) target high-risk offenders, (c) focus treatment on the specific needs of the offender (such as anger management, peer associations, or chemical dependencies), (d) are intensive in nature (lasting 3–9 months), (e) are implemented well, and (f) are conducted by trained therapists (Lipsey, 1995, 1999; Lipsey, Chapman, & Landenberger, 2001; Lipsey & Cullen, 2007; Lipsey & Landenberger, 2006).

Despite the growing body of research on treatment effectiveness, relatively few policy decisions in corrections use scientific evidence to assist in making informed decisions (MacKenzie, 2000). Visher (2006) noted that research and practice are moving on independent tracks and that the gulf between them is wide. One way to narrow that gap is to conduct high-quality research to determine the conditions under which treatment is effective and to evaluate new treatment programs (Sherman, Farrington, Welsh, & MacKenzie, 2002; Visher, 2006). Areas where research is needed include evaluations of innovative technologies, detailed process evaluations, and examinations of how programs work (Visher, 2006; Wormith et al., 2007).
The purpose of this study is to report an evaluation of a new treatment program that combines cognitive training and an innovative use of cell phone technology. The objective is to provide evidence as to whether this type of program may be useful in helping juvenile offenders desist from crime. It is one of the first evaluations to use cell phone technology as a correctional tool. Although innovative technologies are being used more frequently in corrections, there has been little empirical research that evaluates their effectiveness (Wormith et al., 2007).

The cognitive training program teaches individuals to examine their principles and beliefs, explore how their beliefs influence their behaviors, and align the results of their behaviors with their basic principles and goals. The cell phone technology is used as a follow-up tool to reinforce concepts taught in the training and remind individuals of their specific goals. Before describing the program and our specific research procedures, we turn to a discussion of desistance and the theory underlying the intervention program.

**Desistance**

The basic question underlying all offender intervention programs is, What will help offenders desist from future criminal behavior? Despite the existence of extensive research on recidivism, desistance is not well understood (Bottoms, Shapland, Costello, Holmes, & Muir, 2004; Bushway, Piquero, Broidy, Cauffman, & Mazerolle, 2001). Some of the major questions include the following: What factors make it more likely that an offender will desist from crime? Do different types of individuals desist in different ways? Does treatment help individuals desist and, if so, how?

**Life Course Theory**

To understand how people change over time, it is useful to view desistance as a process rather than a discrete event (Bottoms et al., 2004; Bushway et al., 2001; Maruna, 2001; McNeil, 2006). Maruna, Immarigeon, and LeBel (2004) distinguished between primary and secondary desistance. Primary desistance refers to the immediate move away from criminal behavior, such as when an offender remains drug free for 2 months. Secondary desistance refers to becoming a law-abiding person on a permanent basis, and it emerges over time as one gradually develops a new identity and becomes a changed person (Healy & O’Donnell, 2008; Maruna & Toch, 2005).

Laub and Sampson (2001, 2003) developed a life course theory that integrates social learning, social control, and cognitive transformation theories. They viewed desistance as a process that depends on both subjective (internal) and social (external) characteristics. Subjective influences are internal characteristics such as attitudes, self-esteem, identity, and motivation. Social influences include employment, marriage, parenthood, and treatment interventions. Laub and Sampson focused on social factors and emphasized the importance of structured routine activities and social controls, but they acknowledged that agency and internal factors also play a significant role in desistance. Structured activities, such as employment or treatment interventions, are important because they reinforce legal activities and provide networks of social support.
Creating bonds with family members and friends also helps individuals desist from crime. Conversely, associations with deviant peers appeal to individuals who are unsuccessful in developing meaningful relationships at home or work.

The relative importance of subjective versus social characteristics is unclear. Some emphasize subjective influences and maintain that change will not occur unless offenders have an internal motivation to change (Gideon, 2010). Others emphasize the social context and argue that motivation to change will have little influence unless the social circumstances of offenders support their desistance (Laub & Sampson, 2001). LeBel, Burnett, Maruna, and Bushway (2008) found support for a combined subjective-social model in which desistance is associated with both types of factors. They suggested that the two factors may interact: Desistance is enhanced when treatment is combined with high subjective motivation.

**Cognitive Transformation Theory**

According to the cognitive transformation theory of Giordano, Cernkovich, and Rudolph (2002), there are four key elements in the desistance process. First individuals develop an openness to change. Through their experiences and agency, individuals may begin to conceive of personal change as a possibility. Agency refers to personal choice—whether one seeks change. Some offenders like their life as it is and do not wish to change; others say they would like to change and are willing to attempt to change their behavior. In a study of 73 offenders, Healy and O’Donnell (2008) found that 95% desired to change and 85% said they were capable of changing.

Second, individuals are exposed to particular circumstances, or “hooks,” that may help them move toward change. Hooks for change include social characteristics such as obtaining a good job or attending a treatment program (Giordano et al., 2002). Laub and Sampson (2001) emphasized the importance of social institutions, especially marriage and work, as forces that influence the desistance process.

The third element in their desistance theory is the development of a conventional replacement self. They maintain that part of change is seeing yourself in a different light and changing your identity.

Finally, there is a reinterpretation of previous illegal behavior. For example, those who were previously enmeshed in the drug culture might begin to view it as something that hurts people and that they want to avoid.

Consistent with Giordano et al. (2002), Terry (2003) described desistance as a conversion process that takes a considerable amount of time. He observed that the process often begins with an event that helps individuals reassess their lives. Some were motivated to change when they were unable to function after they became ill. Others decided to change when they realized the damage they had inflicted on their family. A new arrest was a turning point for some—they were faced with the choice of going back to prison or entering a treatment program. With support from treatment, some were able to rebuild their self-worth, develop new associations, and become assimilated into a different social world.
Maruna (2001) also argued that desistance requires a reformulation of one’s identity. After analyzing in-depth interviews of “desisters” and “persisters,” he observed that desisters tended to describe redemption narratives in which they viewed their “real selves” as noncriminals. They differentiated themselves from their previous mistakes, crafted a moral tale from their experiences, and expressed a desire to use their experiences to help others (Maruna, 2001). Similarly, Shover (1996) and Rumgay (2004) found that desisters were able to conceive of change as possible and alter their perceptions of their previous activities. In summary, cognitive transformation theory provides a complement to other theories by focusing on the transformation of one’s identity in the process of desistance from crime.

**Character Development Model**

A theory that explains the internal change processes that lead to desistance is the Character Development Model of Cherrington and Cherrington (2000). This model was the conceptual framework on which the current treatment program was based. It is built on the work by Bandura (1986) and Kohlberg (1981) and postulates that change is facilitated by the reciprocal interactions of attitudes and behavior. The model describes, on a practical level, the change process and how it is influenced by subjective and social factors.

The Character Development Model uses four key concepts: attitudes, behavioral intentions, behavior, and behavioral explanations. Behavioral intentions and behavioral explanations serve as intervening variables that explain the reciprocal impact of attitudes and behavior on each other. For example, attitudes influence behavior by first influencing behavioral intentions. A general, undefined intention is less likely to lead to action than a specific intention to do something at a specific time and place.

On the other hand, behaviors influence attitudes by the rationalizations and justifications that are created in the behavioral explanation process (Ajzen & Fishbein, 1980). People tend not to view themselves as capricious, random actors but as rational beings whose behavior is conscious and planned and whose actions are consistent with their attitudes (Bem, 1972; Festinger, 1957). When behavior is not consistent with attitudes, the easiest way to create harmony is to change one’s attitudes. Therefore, when people misbehave and create an inconsistency between their attitudes and behavior, the easiest way to reestablish harmony is to rationalize and justify their misbehavior.

The amount of change in one’s attitudes and values increases as the need to justify behavior increases. Change is most likely to occur when (a) people are asked to explain their behavior, (b) the explanation is public, (c) there are alternative ways to behave, and (d) they are free to choose how to behave (Elms, 1966; Festinger & Carlsmith, 1959; Harvey & Beverly, 1961).

This rationalization process can be reversed if people recognize that their behavior is improper and make a plan to change. This reversal could be facilitated by various external interventions that change the internal processes, as shown in Figure 1. These external interventions can occur independently or in combination, and the strength of
Figure 1. Character Development Model

a treatment intervention would be expected to increase as the number of components being influenced increases.

The Character Development Model is a useful supplement to the desistance theories of Laub and Sampson (2003) and Giordano et al. (2002) because it provides clarity regarding the change process. It served as the conceptual basis for designing the treatment program evaluated in this research consisting of a cognitive class and a cell phone coach. We now turn to a brief description of these two interventions.

The Cognitive Training

The cognitive training consists of six 90-minute training sessions that teach the Control Model and how it can be used to analyze one’s behavior and attitudes. The Control Model was first proposed by Robert Bennett in his book *Gaining Control* (1987) and is designed to help individuals examine their principles and beliefs, understand how their beliefs influence their behaviors, and align the results of their behavior with their basic principles and goals.

This model is illustrated in Figure 2. It assumes that all human behavior is motivated by a desire to satisfy one of four basic needs: the need to live (survive), the need to love and be loved, the need to feel important, and the need to experience variety. All persons have a unique “belief window” through which they view the world, and this window includes a set of principles that form expectations: “If I do X, then Y will happen.” These beliefs are seen as the forces that determine behavior. During the training, participants examine their behaviors and assess the consequences of their actions. They are asked to assess whether the results of their behaviors are satisfying their basic
needs; and if they are not, they are asked to identify which incorrect beliefs may be causing their problems.

The Control Model is consistent with the Character Development Model discussed earlier, particularly in examining how attitudes influence behavior. However, we use the Control Model in our training not because of its theoretical value but because it appeals to our audience and helps them examine the consequences of their behavior. Trainees seem to readily accept the idea that everyone has basic needs that deserve to be fulfilled.

The Control Model is intended to provide a value-neutral framework for examining one’s beliefs and adjusting one’s behaviors to achieve desired results. This nonjudgmental approach allows participants to discover for themselves why they need to change their behavior without feeling that they are being “preached to.” However, this training does not endorse a relativistic philosophy because the training focuses on helping participants assess the natural consequences of their actions. Group discussions of the natural consequences of one’s behavior, especially for others, facilitate the behavioral evaluation process.

The class consisted of six sessions taught over a period of 6 weeks. During each class there were discussions of key concepts, video clips to illustrate concepts, in-class exercises, examples from newspapers and other media, and homework assignments. The assignments were designed to identify key concepts in their own lives. At the beginning of each class, there was a review of key ideas from the previous class and a discussion of assignments.

The Cell Phone Program
The cell phone program is an intervention centered on the idea that behavior drives beliefs. Phone calls are used to monitor behavior during the training and serve as aftercare when the training is completed. The cognitive class is much shorter than many interventions and a key question is whether a 6-week class can effectively produce
lasting change. The cell phone program is designed to be an aftercare component that reinforces the learning from the cognitive class and reminds individuals of their goals.

Near the end of the class, the participants set personal goals with lists of specific activities that will help them accomplish both short- and long-term goals. After setting specific goals, they decide how often they will be called and the prime question they will be asked. Most participants receive two phone calls per day at preestablished times. Each call consists of three short questions. First, the phone coach asks if the participant has followed the goal since the last phone call, such as “Have you followed all the rules of your probation since the last phone call?” Next, it asks how much effort the participant has put forth to accomplish one of the steps to achieve the goal. Finally, it asks what results the efforts have produced.

Participants answer each question using the keypad on their phone. If there has been progress, a prerecorded positive message is played at the end of the call. If correction is needed, a prerecorded encouragement message is played. These messages can be recorded by friends, family, or anyone the participant invites. The messages and goals can be updated at any time, as directed by participants, case managers, or professional counselors. Responses are automatically recorded on a secure Internet site and can be analyzed to assess their progress.

If participants lose hope or abandon the change effort, they are asked to record why the failure occurred. These stories provide useful information for identifying reasons for the failure or ideas for future adjustments. Participants can also receive immediate help from a professional counselor or a help line. Data obtained from the cell phone calls provide useful diagnostic information long after the participants have completed treatment.

During the next to last class, the cell phone program is described and they are given cell phones. The cell phone program is tried for a week to make certain all equipment is working properly and each participant understands how to use the phone coach. After the last class, each participant begins the phone coach system for a period of 1 year.

During the 1-year follow-up period, research workers telephone each participant periodically to confirm that the phone is working and to answer questions. These calls helped maintain contact with the juveniles and enabled them to make adjustments in calling times and recorded messages as needed.

**Research Method**

**Participants**

The participants were recruited from probationers in the juvenile court in one county in Utah. The juvenile court categorizes the youth as low, moderate, or high risk based on their history, background, and type and number of offenses. Initially, we were given a list of 16 low- to moderate-risk probationers and randomly assigned them to two treatment groups (class only and class plus cell phone) and a control group. We are aware of the limitations of risk assessments but they were used by the juvenile court as one factor in planning appropriate treatment activities for the juveniles (Kemshall, 2008).
After the completion of one 6-week class, the same procedure was used to recruit and teach a second class. Before beginning the third class, the juvenile court decided not to allow random assignment for future classes. Rather, they identified eight to nine moderate- to high-risk probationers for the class and then allowed us to use current juvenile probation records to identify a control group. For each treatment juvenile, we searched juvenile probation records to identify a juvenile who was the same age, gender, race, and risk category (low, medium, or high) and similar on type of offense.

Using these procedures, a total of 76 juveniles were recruited for participation in the study, 43 treatment and 33 controls. Each of the 43 treatment subjects participated in one of five classes that were taught. Attrition was small—2 of the control and 4 of the treatment juveniles were lost from the study because they moved from the state, leaving a final sample of 70 juveniles—39 treatment and 31 control participants.

The 39 juveniles who received treatment were assigned to one of two treatment conditions—11 to the class-only option and 28 to the class plus cell phone condition. The class-only group is small because after the second class, this option was discontinued. Given the smaller than expected sample sizes, we chose to focus on the effects of the combined treatment. The 31 juvenile offenders in the control condition received standard programming available to juveniles on probation. Each probation officer met with the probationer periodically and developed an individualized treatment plan. They encouraged the juvenile probationer to attend school, comply with probation requirements, and attend programming. Most attended some type of class such as a drug treatment class.

Recruitment

After identifying the potential participants, a probation officer invited the juveniles and their parents or guardian to an orientation meeting. At the beginning of each class, we held two different orientation meetings, one for the treatment group and one for the control group. At the treatment orientation meeting, we explained the purpose, expectations, and benefits of the class and invited them to participate. The juvenile and parent signed a consent form and completed a background questionnaire. For the control group, we explained that we were doing a study to understand better what helps juvenile probationers succeed and invited their participation. In addition to completing a background questionnaire and a consent form, we asked if each month they would complete a brief questionnaire to assess how they were feeling and how things were going. With the encouragement of the probation officers, we were able to obtain 100% cooperation of the participants, although as noted above, six later dropped out of the study.

Analysis

The dependent variables were (a) recidivism, which was measured by the first arrest during the year following the class, and (b) total arrests during the year following completion of the class. These data were obtained from the juvenile court, which keeps a detailed record of each juvenile and the types and frequency of all offenses.
Table 1. Mean of Background Variables by Experimental Condition

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Class-only</th>
<th>Class + cell phone</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>15.7</td>
<td>16.5</td>
<td>16.1</td>
<td>13-18</td>
</tr>
<tr>
<td>Prior arrests</td>
<td>9.3</td>
<td>6.0</td>
<td>10.2</td>
<td>1-28</td>
</tr>
<tr>
<td>Prior felonies</td>
<td>0.9</td>
<td>1.7</td>
<td>1.0</td>
<td>0-7</td>
</tr>
<tr>
<td>Risk</td>
<td>1.8</td>
<td>1.5(^a)</td>
<td>2.1</td>
<td>1-3</td>
</tr>
<tr>
<td>Gender (% female)</td>
<td>12.9</td>
<td>9.1</td>
<td>10.7</td>
<td>0-1</td>
</tr>
<tr>
<td>Sample size</td>
<td>31</td>
<td>11</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) The only difference close to statistical significance was that the class-only group had a lower mean risk score than the class plus cell phone group, \(p = .06\), post hoc Bonferroni test.

Because previous research has shown that age, criminal history, and gender are associated with future criminal behavior, we were particularly concerned about differences among the groups on those variables (Gendreau, Little, & Goggin, 1996). To minimize selection bias, each program juvenile that was not randomly assigned was matched with a nonprogram juvenile on age, gender, race, risk category (low, medium, or high), and type of offense. In addition, in all analyses, we controlled for number of prior arrests (natural log transformation), risk score, and gender (\(\text{male} = 0\), \(\text{female} = 1\)).

A comparison of the treatment and control groups on key background variables is shown in Table 1. There were no significant differences among the three groups on age, prior arrests, prior felonies, gender, or risk. However, the average risk score for the class-only group was somewhat lower than for the class plus cell phone group (marginally significant, \(p = .06\)). The ages of the participants ranged from 13 to 18 years, with a mean of 16. Prior arrests ranged from 1 to 28, with an average of 9. Males comprised 87% of the sample.

We used survival analysis to test for differences in how soon the participants were rearrested because it is appropriate for time-to-event data (time to rearrest) with censored cases (those not rearrested; Schmidt & Witte, 1988; Yamaguchi, 1991). It enabled us to take into account exposure time since the five cohorts began treatment at different times. We used parametric survival regression with a lognormal distribution because the arrest data did not meet the proportional assumption of a Cox regression model (Schmidt & Witte, 1988). To determine which parametric model to use, we compared graphs of the hazard functions and used the Akaike information criterion and the Bayesian information criterion (Cleves, Gould, Gutierrez, & Marchenko, 2008). We found no nesting by cohort nor any interaction or quadratic effects.

Because total arrests have a Poisson distribution, we used Poisson regression to assess the association between treatment and total arrests during the year after completion of the class. We found no nesting by cohort or any interaction effects, but there was a significant quadratic effect for risk score (Rabe-Hesketh & Skrondal, 2008).
Table 2. Juvenile Arrests by Experimental Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Total arrests</th>
<th>Mean arrests per participant</th>
<th>Median days to first rearrest</th>
<th>Never rearrested, n (%)</th>
<th>Rearrested, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (n = 31)</td>
<td>71</td>
<td>2.29</td>
<td>106</td>
<td>3 (9.7)</td>
<td>28 (90.3)</td>
</tr>
<tr>
<td>Class (n = 11)</td>
<td>10</td>
<td>0.91</td>
<td>191</td>
<td>5 (45.4)</td>
<td>6 (54.6)</td>
</tr>
<tr>
<td>Class + cell phone (n = 28)</td>
<td>33</td>
<td>1.25</td>
<td>278</td>
<td>13 (46.4)</td>
<td>15 (53.6)</td>
</tr>
</tbody>
</table>

Results

The first research question was whether the treatment groups had less recidivism than the control group. The time to first rearrest for both experimental groups was significantly longer than for the control group. As shown in Table 2, the median days to first rearrest was 106 for the control group, 191 for the class-only group, and 278 for the class plus cell phone group. These differences are illustrated in Figure 3. The percentage of control participants who were rearrested was significantly higher than for the experimental groups. As shown in Table 2, 90% of the control participants had been rearrested compared to 55% of the class-only group and 54% of the class plus cell phone group.

Table 3 shows the results of the parametric survival regression model. The survival ratio of the class plus cell phone group was 2.9 times longer than for the control group ($p < .05$), indicating that they survived without getting arrested much longer than the control group.

The survival ratio of the class-only group was 2.6 times longer than for the control group; however, this difference was not statistically significant because of the small sample size. The difference between the class-only and the class plus cell phone groups was also not statistically significant. A graph of the three survival ratios is shown in Figure 4.

The survival ratio was 80% smaller for females than for males—$(0.20 - 1) \times 100$, $p < .05$—suggesting that girls were more likely to be rearrested. Prior arrests and risk score were not associated significantly with survival.

The results shown in Table 4 indicate significant effects for both experimental treatments and risk score in the Poisson regression model. After controlling for all variables in the model, there was a significant intervention effect for both experimental groups on total arrests: The incidence-rate ratio was .49 for both the class-only ($p \leq .05$) and class plus cell phone group ($p \leq .001$), implying that they were 51% lower in total arrests than the control group. The data indicated that the predicted number of total arrests increased with risk level, but the increase was nonlinear as shown in Figure 5. The total arrests increased much more from Risk Level 1 to 2 than from Risk Level 2 to 3. Gender and prior arrests were not significantly associated with total arrests.
Table 3. Time to Rearrest: Survival Regression Controlling for Gender, Prior Arrests, and Risk Score

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Exp(coefficient)</th>
<th>Standard error</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>0.97</td>
<td>2.64</td>
<td>0.60</td>
<td>1.62</td>
</tr>
<tr>
<td>Class + cell phone</td>
<td>1.08*</td>
<td>2.94*</td>
<td>0.44</td>
<td>2.48</td>
</tr>
<tr>
<td>Female</td>
<td>-1.61**</td>
<td>0.20</td>
<td>0.60</td>
<td>2.69</td>
</tr>
<tr>
<td>Prior arrests</td>
<td>-0.29</td>
<td>0.75</td>
<td>0.29</td>
<td>-1.01</td>
</tr>
<tr>
<td>Risk score</td>
<td>-0.32</td>
<td>0.73</td>
<td>0.28</td>
<td>-1.13</td>
</tr>
<tr>
<td>Constant</td>
<td>5.80**</td>
<td></td>
<td>0.74</td>
<td>7.89</td>
</tr>
<tr>
<td>Ln(σ)</td>
<td>0.44**</td>
<td></td>
<td>0.11</td>
<td>4.07</td>
</tr>
<tr>
<td>σ</td>
<td></td>
<td></td>
<td>1.55</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01.

Discussion

Juveniles who participated in the class followed by the cell phone coach had less recidivism than comparable juveniles who did not receive the program. Because of the small sample size, the results for the class-only group were not as significant, although they were in the expected direction; the class-only group had lower recidivism than the control group but slightly higher recidivism than the class plus cell phone group.
The class helps individuals set goals, develop specific behavioral intentions to change, and assess the consequences of their behavior. It is based on the Control Model, which provides a value-neutral framework for examining the consequences of one’s behavior and testing whether it meets one’s needs. The cell phone coach...
The success of the cognitive training and cell phone programs may be explained by the fact that they incorporated several program characteristics that have been found to be associated with lower rates of recidivism (Springer et al., 2004). First, the cognitive class focused on thinking patterns, it was interactive, and it emphasized building skills. There were many different assignments that required the participants to interact and respond. The cell phone intervention reinforced those skills.

Second, effective programs tend to be structured and focused but also adapted to the needs and risk levels of the participants (MacKenzie, 2000). The cognitive class had a specific curriculum that focused on thinking about and evaluating behavioral results. Assignments were structured according to the needs of the individuals, and all participants set specific goals that they chose.

Third, the program used a unique cell phone technology to reinforce the training for a year following the class. This reinforced the principles learned in the class and required participants to monitor their behavior and report on it. Research has shown that aftercare may be an essential component if treatment programs are to have lasting effects (Inciardi, Martin, & Butzin, 2004; Kurlychek & Kempinen, 2006). Innovative

Figure 5. Total male arrests by experimental condition and risk score, controlling for prior arrests
Note: The arrests curve for both the class only and the class plus cell phone groups are essentially the same.
use of cell phone technology may be a cost-effective way to reinforce learning and provide follow-up that is similar to aftercare.

Lynch (2006) suggests that we need to move beyond the assessment of whether a program succeeds to a more complex understanding of the principles that explain what succeeds under different conditions and for different types of offenders. In the present research, the cognitive training focused on the Control Model, which examines how attitudes and beliefs influence behavior and whether behavior meets one’s needs. However, the Character Development Model provided the theoretical foundation for understanding how moral development occurs by examining the reciprocal relationship between attitudes and behaviors and how behavioral intentions and behavioral evaluations have an impact on changing behavior.

The program is also consistent with the cognitive transformation and life course theories because the class helps participants see that change is possible. Participation in the program is a “hook” for change in that it has the potential to help them make a cognitive shift and begin fashioning a replacement self in which they see themselves and their behavior in a different light. Some of the most significant program elements include the following:

1. Perceive that change is possible. The development of manageable goals and support from significant others helps individuals develop self-efficacy and recognize that change is possible. Asking people to describe the effort they are expending to accomplish their goals raises their self-awareness.

2. Manageable goals. The class and cell phone help participants break large goals into manageable parts with achievable time frames. Participants set their own goals and design the calling schedule to fit the time frame that works best for them. For example, one drug addict in a pilot study said that remaining clean and sober for an entire day was entirely unrealistic, but he knew he could make it to the next phone call.

3. Understanding the natural consequences of misbehavior. By examining the natural consequences of their behavior, the class helps participants see their behavior in a new light. This may help individuals fashion a replacement self as suggested by Giordano et al. (2002). As participants perceive that the results of their behavior are not satisfying their needs, they are motivated to make changes. The cell phone reinforces efforts to see the consequences of their behavior.

4. Moment-of-decision support. Life course theorists (Laub & Sampson, 2003) emphasize that there are critical turning points where support may be particularly essential. The class plus cell phone provides a low-cost method that supports participants when they are most at risk. The cell phone coach becomes a hook for change at critical decision points. Contact and encouragement from significant others can be timed to come at the most vulnerable times to strengthen a participant’s resolve. The participant can choose not to answer the phone, but even if the call is refused it is a reminder of previous decisions.
5. Support of “significant others.” Both the social-subjective model of LeBel et al. (2008) and the life course theory of Laub and Sampson (2001, 2003) indicate that social support and the development of bonds are critical in helping offenders desist from crime. In the cell phone program, significant others can leave voice messages of support without requiring them to know or have access to any of the details of the person’s goals or efforts. These messages can be recorded at any time and from any location and made available to the participants.

6. Accountability. In the class, participants are taught to examine the consequences of their actions, including the impacts on others. During each phone call, participants are asked if they have stayed with their goal since the last phone call. If they have, they receive praise; and if they have not, they are asked to explain what they have done and why. These types of questions reinforce personal accountability.

Limitations

Although the results of this research appear promising, there are also limitations. First, the sample was relatively small and from one geographical area. The program needs to be tested on larger, more diverse samples in different geographical locations. In addition, it needs testing on adults. The authors are in the process of conducting additional evaluations of the program with juvenile and adult samples.

Second, the cognitive training class was taught primarily by two people. This provided consistency and fidelity for the program. However, it is important to test the program with different instructors to demonstrate that the program can be implemented on a larger scale.

Third, given that desistance is a long-term process, a 1-year follow-up may not be sufficient to capture future criminal behavior. Additional research over longer periods of time is needed.

Conclusion

The results of this study provide evidence that a brief cognitive training program followed by a cell phone coach is a useful tool that helps juvenile probationers reduce their recidivism. It appears that the process of evaluating the consequences of one’s behavior, setting short- and long-term goals, and using a cell phone to reinforce goal accomplishment can help some individuals avoid further criminal behavior. One of the participants commented that carrying a cell phone around with him was like carrying his probation officer with him. The cell phones provide daily reminders of goals they have set for themselves and there is immediate social support and encouragement.

Although the cognitive class included several elements that have been recommended by previous researchers, it contained these unique elements: (a) It was shorter than most other cognitive interventions, (b) it was built on concepts from the Control Model and the Character Development Model, and (c) it included the cell phone
coach as an aftercare component. If the results reported here are confirmed in future research, it will indicate that the combined class and cell phone intervention can be useful in fostering behavioral change. Particularly promising is the possibility of using the cell phone coach as a follow-up to reinforce training and provide an after-care component.

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