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The Application of Bystander Intervention Scripts: Implications for Guardianship in Action

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Abstract

Responding to high rates of interpersonal victimization and perpetration among adolescents, schools have implemented bystander intervention (BI) training to educate students to intervene to prevent or stop violence. These trainings function much like an application of scripts for guardianship in action. The current study builds on the overlapping and complementary bodies of BI and routine activities research by testing whether participation in BI training, namely Green Dot (GD), influences individuals' underlying ability to intervene. Using four years of survey data collected from high school students ($N = 2,374\text{--}3,443$), we use item response theory to model the difficulty of engaging in different BI behaviors. We then estimate multivariate ordinary least squares regression models, one for each year, to estimate the effect of GD training on students' ability to intervene. The item response theory results show that BI behaviors differ in terms of how "difficult" they are for respondents to engage in. Findings show that in each year, GD training increased students' underlying ability to intervene. Our findings suggest BI training and guardianship in action scripts should take into account this varying difficulty of intervention behaviors to best train individuals for successful intervention to prevent victimization.

Keywords

bystander intervention, crime script analysis, Green Dot, guardianship, item response theory, interpersonal violence

Studies have reported high rates of victimization and perpetration of sexual and dating violence among adolescents (DeGue et al., 2014; Espelage et al., 2018). According to the 2019 Youth Risk Behavior Surveillance System, among students in grades 9 to 12, 1 in 10 (10.8%) had been forced into kissing, touching, or sexual intercourse in the past 12 months (Basile et al., 2020). Among 9th to 12th graders who had dated someone in the past 12 months, 12.2% experienced dating violence (in any form), 8.2% experienced sexual violence, and 8.2% were physically hurt by someone they were dating (CDC, 2017). One response by high school administrators to address these grim realities is to implement bystander intervention (BI) training for students (DeGue et al., 2014; Mujal et al., 2021). These trainings aim to teach participants effective strategies for stopping or preventing interpersonal violence. Typically, a BI program involves modeling common scenarios the participants may face and helping them identify and practice specific actions they may take to intervene at various stages of those scenarios (see, e.g., Mujal et al., 2021).

One widely implemented BI program is Green Dot (GD) (Coker et al., 2017). A recent randomized controlled trial (RCT) showed that GD reduced rates of interpersonal violence victimization and perpetration at *schools* where the program was implemented compared to control schools in Kentucky (Coker et al., 2017). The current study builds on the RCT findings by analyzing the effect of GD training on *individuals'* underlying ability to intervene. We argue that the current analyses are valuable in that they inform two lines of interpersonal violence prevention theory and practice: (1) BI and (2) scripts for active guardianship from the routine activities perspective.

The general logic of BI training has a clear overlap with the routine activities perspective of criminology. Both posit that third parties can prevent or stop a victimization event from occurring. In BI research, these third parties are referred to as bystanders (Latané & Darley, 1970). In the routine activities perspective, these third parties are referred to as capable guardians (Hollis-Peel & Welch, 2014). Whereas bystanders are expected to reduce crime risk by intervening to stop or prevent a crime from occurring (Coker et al., 2017), capable guardians are expected to deter crime simply by being present and appearing as though they could intervene (Hollis-Peel & Welch, 2014).

Routine activities scholars have begun to draw a parallel between bystanders and guardians by considering the effect of “guardianship in action” on deterring crime and by delineating the process by which capable guardianship becomes active intervention (Reynald, 2009, p. 1). Reynald (2009) argues that guardianship in action (i.e., when capable guardians use “direct interference as a means of deterrence”) is the “ultimate act of guardianship” (p. 4). Further elaborating on the concept of guardianship in action, Leclerc and Reynald (2017, p. 804) propose a script for guardianship in action that

provides a clear set of guidelines about what to do in a situation where crime occurs or is likely to be committed and can therefore be a vital tool for virtually anyone who has the responsibility, the capacity, and/or the willingness to contribute to safety in public places in which people converge in everyday life.

The purpose of Leclerc and Reynald’s (2017) script for guardianship in action is similar to the purpose of BI training—to teach individuals how to recognize “behaviors that may contribute to violence,” and how to effectively intervene to disrupt those behaviors and prevent violence from occurring (Coker et al., 2017, p. 567). As such, GD training takes up the task of identifying “prevention strategies at every stage [of the script]” and training others to use those strategies when the opportunity arises (Chiu & Leclerc, 2017, p. 73). Thus, testing the effect of GD training on individuals’ intervention behaviors can inform the potential effectiveness of using scripts as a tool to facilitate effective guardianship in action. Likewise, our analyses may show that BI training (rooted in social psychology theory) is further justified by the routine activities theoretical perspective and therefore may benefit from drawing further on the ideas and crime prevention techniques that have emerged from that perspective.

As will be described throughout this paper, the current study capitalizes on the overlapping and complementary aspects of these related fields. In doing so, we analyze four years of survey data from high school students in Kentucky to achieve two aims, one theoretical, and one methodological. The primary aim of the current study is to test the effect of GD training on individuals’ underlying ability to intervene to prevent interpersonal violence victimization and perpetration. This is our main focus because we argue that GD training is, in effect, an application of guardianship in action scripts. If we find that GD training increases individuals’ underlying ability to intervene, it will lend credence to claims from Leclerc, Reynald, and others that more work should be done to

develop guardianship in action scripts and to use these scripts to train potential guardians.

The second, methodological aim is to assess and model the difficulty of engaging in different BI behaviors using methods from item response theory (IRT). This analytical strategy offers insight into why Chiu and Leclerc (2017) found that “in many instances, third parties were nearby. . . [but] failed to act as effective guardians” (p. 72). Perhaps some suggested methods of intervention are unlikely to be used or are difficult to use in real-life situations. Potential guardians/bystanders may be taught alternative strategies instead of these difficult interventions. Or they may be taught how to overcome the barriers to using difficult interventions. IRT models the difficulty of engaging in different BI behaviors, thus informing the degree to which potential guardians/bystanders are unable to engage in those behaviors, even after they have received training to do so. Our IRT analysis may inform how scripts can be developed and implemented to train bystanders in a way that harnesses their confidence in completing “easier” intervention strategies and empowers them to engage in more “difficult” intervention strategies. By accounting for an individual’s self-reported intervention behaviors and the difficulty of engaging in those behaviors, we are able to estimate their underlying ability to intervene, which also serves the primary aim.

The logical next conceptual step to integrating these two bodies of research is twofold. First, to develop the conceptual foundation for the current study, we briefly describe the evolution of crime scripts and the purpose of guardianship in action scripts. Then, to provide an example of bystander training as a script for guardianship in action, we explain how GD uses guardianship scripts to facilitate intervention.

Scripting Guardianship in Action

Cornish (1994) proposed crime scripts as a way to inform the entire crime procedure from preparation to commit the crime to the aftermath of completing the crime. Brayley, Cockbain, and Laycock (2011) define a script as “a sequence of actions which make up an event” (p. 133). Crime scripts can be used to highlight opportunities for an interruption in the commission of a crime and thereby inform prevention and intervention strategies. In this vein, Chiu and Leclerc (2017) developed a script for sexual offenses

against women by acquaintances based on content analysis of court transcripts. This example is relevant because sexual offenses are one of the main forms of violence that BI programs teach trainees to disrupt. Accompanying their script for sexual assault are suggested behaviors that guardians might use to interrupt the script. For example, one critical stage of the sexual assault script is isolating the victim from third parties. Thus, Chiu and Leclerc (2017) recommend that female guardians “adopt a buddy system with another female” (p. 69). In the same vein, GD trains participants to consider asking someone who looks upset at a party “if they needed to be walked or driven home,” among other potential intervention behaviors (Cook-Craig et al., 2014, p. 1191).

To better facilitate crime disruption, researchers have recently called for scripting not only the behaviors of the offender in the commission of a crime but also the behaviors of those who can interrupt the commission of the crime—that is, guardians (Leclerc & Reynald, 2017). Leclerc and Reynald’s (2017) intervention script for active guardianship begins with the preconditions for intervention from routine activities theory (i.e., availability to intervene, capacity to intervene) and the instrumental preconditions of BI proposed by Latané and Darley (1970) (i.e., notice the offense, monitor risks, take responsibility, decide to intervene). The following stages of the script are the instrumental initiation stage in which the guardian may “Alert passers-by” and/or “Infiltrate [the] offense setting/Approach [the] offender,” and/or the instrumental actualization stage in which the guardian may “Discourage [the] offender” (Leclerc & Reynald, 2017, p. 799). These stages are followed by the “doing” stage in which the guardian may “Neutralize [the] offender.” The script concludes with the post-condition stage in which the guardian may “Assist the victim” and/or “Report the incident.”

A systematic review of crime scripting research ($N = 85$) found that despite the proliferation of crime scripts published since Cornish (1994) first introduced the method, there has been “no attempt to empirically assess the contribution of crime scripting techniques” with regard to their usefulness for the purpose of identifying and implementing effective crime disruption strategies (Dehghanniri & Borrion, 2019, p. 14). Herein Dehghanniri and Borrion’s finding lies the primary contribution of the current study. There is an entire area of study that is dedicated to developing, implementing, and evaluating the effectiveness of trainings on crime disruption: BI (see, e.g.,

Banyard et al., 2007; Coker et al., 2011; Coker et al., 2017; Langhinrichsen-Rohling et al., 2011). Many BI programs train students on how to intervene to disrupt a crime by teaching them strategies for intervening at various stages of a scenario in which a crime may occur (Mujal et al., 2021). In other words, many of them use training tools similar to scripts for guardianship action. Within the curriculum of one of the most widely implemented BI training programs, GD, is an example of such a script.

Bystander Intervention Training as a Script for Guardianship in Action

In a recent RCT of GD, Coker et al. (2017) found that the frequency of dating and sexual violence perpetration and victimization was reduced at high schools where GD was implemented. Further analyses revealed that, as expected, GD training reduced school-level violence perpetration by reducing school-level violence acceptance and increasing school-level BI (Bush et al., 2019; see also Coker et al., 2019, 2020).

Other research shows that BI training can reduce the acceptance of rape myths (Banyard et al., 2007; Coker et al., 2011), can increase individuals' self-reported likelihood to intervene (Langhinrichsen-Rohling et al., 2011), and can increase the self-reported frequency of BI behaviors (Banyard et al., 2007). Given these promising findings, routine activities scholars may look to BI training programs as an effective method of motivating active guardianship. While we focus on GD in the current study, it is worth pointing out that many BI training programs involve some activities similar to crime scripting, because they describe specific situations in which intervention may be necessary and train participants on what actions they may take in those situations (Mujal et al., 2021; for more on the situational model of BI, Burn, 2009; Latané & Darley, 1970). Whereas GD has already been shown to reduce violence at the school level (Coker et al., 2017), it is not yet known whether receiving GD training increases an individual's underlying ability to intervene (i.e., their ability to be active guardians).

The curriculum for GD training, implemented as part of the RCT, demonstrates the use of crime scripting for power-based personal violence.¹ For example, in one segment of the training, participants learn the steps of the "sexual assault sequence": (1) target selection, (2) approach and evaluation, (3) separation, (4) consenting or

pressured sex, (5) intimidation, (6) sexual violation, and (7) termination (Edwards, 2009). Examples are also given for scenarios that involve stalking, intimate partner violence (IPV), drink-spiking, and other forms of power-based violence. With each of the various hypothetical scenarios described, the training facilitator works with the participants to identify stages at which a bystander could do something to interrupt the sequence, and ultimately, to learn and build their confidence in completing specific intervention behaviors for situations they are likely to face. This process closely puts into practice the idea that scripts for guardianship in action (and crime scripts in general) should be used to teach potential active guardians how to disrupt crimes at various stages of situations where they are likely to be a bystander (Leclerc & Reynald, 2017).

The survey items used in the GD RCT (and in the current study) to measure bystander behaviors are behaviorally specific and are parallel to several stages of Leclerc and Reynald's (2017) script for active guardianship. For example, the item used in the current study, "Got help for a friend because they had been forced to have sex or were physically hurt by a boyfriend/girlfriend" can be considered a behaviorally specific example of alerting passers-by. The item "Tell someone to stop talking down to, harassing, or messing with someone else" is one behavior that constitutes the "infiltrate the offense/approach the offender" stage in Leclerc and Reynald's (2017) script. Our IRT analysis shows the degree to which the behaviorally specific bystander behaviors measured here capture a broad range of intervention behaviors in terms of "difficulty" and whether GD training affects students' ability to intervene.

We must emphasize that we are not claiming that GD was developed as an implementation of crime scripts, nor do we want to suggest that GD's origins are rooted in routine activities theory or situational crime prevention. GD was developed based on research on violence against women, social diffusion theory, BI, perpetration of power-based personal violence, and marketing and rebranding (Edwards, 2009). However, the GD training curriculum does involve providing scripts for different types of power-based personal violence and training participants to identify opportunities for intervention at moments within those scripts. Our test of the effect of GD on individuals' underlying ability to intervene therefore has implications for the future of guardianship script analysis and the application of such scripts to situational crime prevention, and

specifically to situational interpersonal violence prevention.

The Current Study

The current study tests the effect of the above-described BI training program, GD, on individuals' ability to intervene in situations where violence may occur. Our analyses are unique from prior research in that we measure the ability to intervene by estimating factor scores based on a one-dimensional, two-parameter, graded response model of 11 survey items that measure the number of times the respondent engaged in different acts of BI in the past month prior to taking the survey. Given that the content and aims of GD training are largely parallel to the content and aims of scripting active guardianship, the test of this relationship is akin to a test of an application of guardianship scripting. Just as scripting offender behavior is expected to inform crime prevention and disruption strategies (Cornish, 1994), Leclerc and Reynald (2017) argue that scripting active guardianship can increase the effectiveness of capable guardians in preventing or stopping crime. Thus, we hypothesize that by providing individuals with a script for intervention, GD training will increase individuals' ability to intervene, controlling for the opportunity for intervention, victimization experiences, violence beliefs, and demographic characteristics.

By equating BI with guardianship in action, we integrate the overlapping and complementary concepts of active guardianship and BI and in doing so, extend both bodies of research. Our use of IRT to evaluate the measurement properties of our scale of bystander behaviors allows us to estimate individuals' underlying ability to engage in each bystander behavior item individually and as a whole. By evaluating whether GD training affects this measure of the ability to intervene—which models and accounts for the difficulty of different bystander behaviors—we aim to inform the potential efficacy of programs that train individuals to be active guardians by using scripts and to inform how these programs may measure the behaviors that such training is expected to affect. Thus, our study seeks to answer the following research question:

Does Green Dot training influence individuals' underlying ability to engage in bystander intervention behaviors, controlling for the opportunity for intervention, victimization experiences, violence beliefs, and demographic characteristics?

Methodology

Sampling Design and Data Collection

We conduct a secondary analysis of data collected for “The Health and Safety Study,” a RCT of GD at 26 high schools located across five regions of the Commonwealth of Kentucky. All students in the 26 selected schools were invited to participate in the survey, which was administered during the school day. Participation in the survey was voluntary; all participants provided informed consent (or assent if they were under the age of 18) or could choose to opt out of participating. The parents or guardians of participants under the age of 18 were mailed a letter describing the study prior to the administration of the survey. Any minor student whose parent or guardian contacted the researchers to opt their child out of the study was not administered a survey (Coker et al., 2017).

A 99-item paper and pencil survey² asked students to self-report their demographic characteristics, attitudes about sexual and dating violence, victimization and perpetration of sexual and dating violence since the beginning of the Fall semester of the current academic year, bystander behaviors, and other factors related to sexual and dating violence (e.g., rape myth acceptance) (see Coker et al., 2017).

Supplemental Figure S1 depicts the selection process for identifying respondents for the analytic sample of the current study. For the current study, we analyze data collected from all students who completed surveys at 12 schools³ that received GD training during the Spring semesters of 2011 ($N = 7,960$),⁴ 2012 ($N = 7,518$),⁵ 2013 ($N = 6,296$),⁶ and 2014 ($N = 6,848$)⁷ (Years 2, 3, 4, and 5, respectively).⁸ A total of 28,622 student surveys were completed at the 12 intervention schools across all four years.

The analyses only included individuals who reported an opportunity to intervene in the past 12 months for each of the 11 BI items. Those who had no opportunity to intervene across any of the 11 items—indicated by responding either “Didn’t hear someone say this,” “No friend had this happen,” or “Didn’t see anyone who needed help” (total $n = 11,728$ across all four years)—are excluded from the sample to remove potential bias associated with those who did not have any opportunity to intervene in these situations. In addition, those who responded with “don’t know” to the item

measuring peer IPV involvement (described in further detail below) were treated as missing and excluded from analyses ($n = 4,273$ across all four years, after accounting for no opportunity on the dependent variable).⁹ Finally, respondents who did not answer any of the items on any other multi-item measure or who did not answer the question used for any of the single-item measures were listwise deleted from the sample. As such, following listwise deletion for missing values and values treated as missing for bystander behavior and peer IPV involvement, the analytic sample was reduced to a total of 11,345 completed surveys (Year 2 $N = 3,443$; Year 3 $N = 3,143$; Year 4 $N = 2,601$; Year 5 $N = 2,660$).

As seen in Table 1, on average, the sample within each year was slightly more female (between 54% and 56%) and was predominately White (between 81% and 83%), heterosexual (between 84% and 86%), between 9th (between 24% and 30%) and 10th grade (between 26% and 30%), and not on a free or reduced lunch plan (between 48% and 55%; a proxy for socioeconomic status). Approximately 6.68% of the sample had three or more hours of GD training because they had been identified as a popular opinion leader (POL)¹⁰ and were therefore invited to participate in the training (for more detail, see Butler & Fisher, 2022; Cook-Craig et al., 2014).

Measures

Dependent variable. The dependent variable, *BI behaviors*, is measured with 11 survey items (Cook-Craig et al., 2014; see Table 1) that ask respondents the number of times in the past 12 months that they engaged in a described behavior. Each response option is coded as the lower-bound value of the provided range (0 = 0 times, 1 = 1–2 times, 3 = 3–5 times, 6 = 6–9 times, and 10 = 10 or more times). The 11 items used to compute the measure of *bystander behaviors* have high internal consistency (Cronbach's $\alpha = .86$) and exploratory factor analysis (EFA) shows that the items load fairly well onto one factor¹¹ with factor loadings ranging from .43 to .79. However, the goal of the current study is to assess how well the ability to engage in different bystander behaviors differentiates between individuals' ability to intervene overall and to test the effect of GD on the underlying overall ability to intervene. The classical test theory approach (i.e., assessing the scale using Cronbach's α and EFA) does not allow us to fully achieve this

goal because it focuses its analyses at the test-level as opposed to the item-level.

Table 1. Sample Characteristics and Survey Items.

	Year 2 (N=3,443)		Year 3 (N=3,143)		Year 4 (N=2,601)		Year 5 (N=2,660)		Variable Range
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Dependent variable									
Ability to intervene (factor scores)	0.00	0.89	0.00	0.88	0.00	0.86	0.01	0.87	-1.02 to 3.77
Key independent variable									
Hours of Green Dot training	0.41	1.01	0.46	1.15	0.53	1.30	0.57	1.34	0-5
Opportunity for intervening									
Peer IPV involvement	0.88	1.20	0.81	1.15	0.62	0.99	0.64	1.02	0-6
Victimization experiences									
Sexual violence victimization	0.35	1.21	0.34	1.26	0.26	1.08	0.25	1.00	0-10
Dating violence victimization	0.85	1.71	0.79	1.67	0.68	1.56	0.65	1.49	0-10
Stalking victimization	0.65	1.54	0.60	1.45	0.49	1.30	0.45	1.18	0-10
Bullying victimization	0.95	2.33	0.95	2.33	1.01	2.39	0.91	2.24	0-10
Violence beliefs									
Dating violence acceptance	0.58	0.61	0.59	0.60	0.51	0.56	0.55	0.56	0-3
Illinois rape myth acceptance	0.85	0.54	0.86	0.55	0.79	0.52	0.78	0.54	0-3
Demographic characteristics									
Male	0.44	0.50	0.46	0.50	0.44	0.50	0.44	0.50	0-1
High school grade	1.45	1.07	1.34	1.09	1.39	1.08	1.30	1.08	0-3
Heterosexual	0.85	0.35	0.86	0.35	0.85	0.35	0.84	0.36	0-1
Non-White	0.19	0.39	0.19	0.39	0.17	0.37	0.18	0.39	0-1
Free/reduced meals	0.45	0.50	0.47	0.50	0.50	0.50	0.52	0.50	0-1

As such, the measure of *bystander behaviors* used in the current study is measured as the respondents' underlying ability to engage in bystander behaviors, modeled using a one-dimensional, two-parameter, graded response model (described in further detail below). This measure is an advance upon existing measures of BI not in

terms of the content of the scale items, but because it takes into account the variation between items in terms of how difficult the items are to endorse across increasing frequency of engaging in the behavior (e.g., from 0 times to 1–2 times, from 1–2 times to 3–5 times).

Independent variable: Green Dot training. The main independent variable in the estimated model, *GD training*, is measured as the number of hours of GD training the student reported having received (0 = No did not receive GD training or never heard of GD; 1 = 1 hour; 2 = 2 hours; 3 = 3 hours; 4 = 4 hours; 5 = 5 or more hours). By measuring *GD training* as the number of hours of training a student received, we are able to examine the dosage effect of each additional hour of training at the individual level.

As a supplemental analysis, we also test the effect of GD training using a more conservative, dichotomous measure. In the RCT, a motivational speech on violence prevention was delivered to each school's entire student body. This speech was distinct from the actual GD training provided to POLs (where students are trained using intervention scenarios akin to scripts are). Recognizing that some students who heard the motivational speech may have reported having received 1 or 2 hours of GD training, we use a more conservative estimate to identify only those who we can be fairly certain of having received the GD POL training (personal communication with one of the lead trainers involved in the RCT). Thus, we also coded *GD training* as a dichotomous measure (0 = No did not receive GD training or never heard of GD, 1 hour, or 2 hours; 1 = 3 hours, 4 hours, or 5 or more hours). The results were not substantively different from those presented, so the ordinal scale was employed to retain the variability in this measure. The full results of the supplemental analysis with GD coded dichotomously are available upon request.

Control variables. To estimate the effect of GD training on bystanders' underlying ability to intervene, net of other factors, we control for several factors that prior literature suggests may explain heterogeneity in bystander behaviors (e.g., Bannon et al., 2013; McMahon 2010; Thornberg et al., 2012). These factors include opportunity for intervention, victimization experiences, beliefs about violence, and demographic

characteristics. As a proxy measure of opportunity for intervention, we measure *peer IPV involvement* (Cronbach's $\alpha = .76$; factor loadings range from .62 to .90) as a mean scale composed of three items from Dekeseredy's (1990) Peer Support for Violence scale that asks respondents to report the number of friends engaging in IPV behaviors, coded with the lower-bound value of the provided range for each response option (0 = 0 friends, 1 = 1–2 friends, 3 = 3–5 friends, 6 = 6+ friends).

Students' experiences with *sexual violence* (Cronbach's $\alpha = .78$; factor loadings range from .63 to .89), *dating violence* (Cronbach's $\alpha = .82$; factor loadings range from .60 to .85), *stalking* (Cronbach's $\alpha = .69$; factor loadings range from .58 to .82), and *bullying* were also controlled for because students who have experienced victimization may feel empathy for other potential victims and may, in turn, be strongly motivated to intervene on behalf of others (Thornberg et al., 2012). Students were asked about the frequency of their victimizations in the past 12 months (e.g., "Had sexual activities when you did not want to because you were drunk or on drugs?"; "Someone showed up at your home, school, or work or waited for you when you did not want them to?"). Responses were coded with the lower-bound value of the provided range for each response option (0 = 0 times or this happened before but not in the past 12 months, 1 = 1–2 times, 3 = 3–5 times, 6 = 6–9 times, 10 = 10+ times). This is the same coding scheme as used in the GD RCT (see Coker et al., 2017; Cook-Craig et al., 2014).

For the *dating violence* items (e.g., "Threatened to hit, slap, or physically hurt you?"; Cook-Craig et al., 2014), the response option "not in a dating or romantic relationship in the past 12 months" was also listed, and this option was coded as 0 times. Each scale is computed as the mean of the items of which it is composed (Swan et al., 2012). *Bullying* is measured with the item, "In the past 12 months, how many times have you been bullied by another high school student?"¹² and is coded with the same coding scheme as the other victimization measures (Cook-Craig et al., 2014). The Supplemental Appendix provides the survey items that constitute each of the victimization experiences scales.

Because personal beliefs about IPV may affect an individual's BI behaviors (Bannon et al., 2013; McMahon, 2010), two mean attitudinal scales— *dating violence acceptance* and *rape myth acceptance*—are included as control variables. The dating

violence acceptance scale (Foshee et al., 1998) asked students their level of agreement or disagreement with five statements with responses ranging from strongly disagree to strongly agree on a four-point Likert scale (Cronbach's $\alpha = .84$; factor loadings range from .64 to .80).¹³ The Illinois Rape Myth Acceptance Scale (Payne et al., 1999) asked students to rate their level of agreement or disagreement with seven statements on the same four-point Likert scale (Cronbach's $\alpha = .79$; factor loadings range from .39 to .87). The items used in these scales and their coding and measurement properties are presented in the Supplemental Appendix.

Four demographic characteristics were controlled for in our analyses to account for additional heterogeneity in respondent's BI behaviors. *Male* is a measure of self-reported sex (0 = Female; 1 = Male). High school *Grade* was self-reported (0 = 9th grade, 1 = 10th grade, 2 = 11th grade, 3 = 12th grade). Those who responded "ungraded" or "other grade" are not included in the analysis (a total of $n = 99$ across all four years). *Nonwhite* is a dichotomous indicator of whether a respondent is White (= 0) or Nonwhite (= 1) (i.e., "American Indian or Alaska Native," "Asian," "Black or African American," "Hispanic or Latino/Latina," and "Other"). As a proxy for socioeconomic status (Nicholson et al., 2014), students were asked if they received *free or reduced lunch* meals (0 = No, 1 = Yes). *Sexual attraction* is measured with students' self-reported sex and the item "People are different in their sexual attraction to other people. Which describes your feelings? Are you: only attracted to females, mostly attracted to females, equally attracted to females and males, mostly attracted to males, only attracted to males, not sure." Respondents are classified as heterosexual (= 1) if they reported being male and only attracted to females or if they reported being female and only attracted to males. All other respondents are classified as sexual minorities, which was the reference category (= 0). Finally, we control for school effects with a series of 11 dummy variables, each identifying an individual school, with the school with the greatest percentage of respondents having received GD training being the reference school.¹⁴

Analytical Strategy

We employ two phases of analysis to assess the relationship between GD training and bystander behaviors: (1) psychometric analysis using IRT, and

(2) ordinary least squares (OLS) multivariate regression. In the first phase, we aim to assess the psychometric properties of the 11-item measure of *bystander behaviors*. This stage is important because our test of the effect of GD on bystander behaviors relies on a valid and reliable measure of ability to engage in *bystander behaviors*. This phase also informs how each bystander behavior uniquely captures the degree to which individuals are able to engage in BI. The second phase directly tests whether *GD training*, which provides a script for active guardianship, increases an individuals' ability to engage in *bystander behaviors*, controlling for the variables described above.

Phase one: Psychometric analysis using IRT. Unlike methods used in classical test theory, which uses test-level (i.e., scale-level) analyses, psychometric analysis using IRT allows for the scale to be examined at the item-level through the use of nonlinear (categorical) modeling of responses (De Ayala, 2009). Using IRT, we model the responses to the *bystander behaviors* items similarly to factor weighting used in factor analysis with continuous items (Dumenci & Achenbach, 2008; Kappenburg-ten Holt, 2014). Because the responses to the *bystander behaviors* items are ordered and polytomous, the best fitting model for these items is the graded response model (Samejima, 1969), which provides for ordered thresholds between response options and differing levels of difficulty and discrimination parameters between items (De Ayala, 2009). The advantage of the IRT approach using a graded response model is that the model allows for items to be more or less challenging to endorse (i.e., difficulty) as well as better or worse at differentiating between people of varying BI abilities (i.e., discrimination)—two item characteristics that are not assessed in classical test theory analyses such as EFA. Item difficulties and discriminations are discussed in detail below. Thus, this method of using IRT factor scores is preferable to producing a summative or mean scale—which assumes the equality of all items within the scale—because IRT factor scores take into account the difficulty and discrimination of each item (Dumenci & Achenbach, 2008; Kappenburg-ten Holt, 2014).

Phase two: Analyzing the relationship between Green Dot training and the ability to engage in bystander intervention behaviors. In the second phase of analysis, the

relationship between *GD training* and the ability to engage in *bystander behaviors* is examined using OLS regression, which provides the ability to control for the heterogeneity of respondents and their school environments. All model variance inflation factors (highest VIF = 2.149) are below the standard threshold (Belsley et al., 1980), which suggests multicollinearity is not a statistical concern for these models.

Results

Item Response Analysis

Table 2 presents the difficulty and discrimination parameters for responses in the Year 2 sample. In this model, the most difficult item to endorse, moving from 0 times to 1 to 2 times (i.e., Difficulty 1), was “. . .Talk to a friend who was being physically hurt by a boyfriend/girlfriend” (Difficulty = 1.611). Conversely, the easiest item to endorse at this threshold was “. . .Spoke up to someone who was bragging or making excuses for forcing someone to have sex with them” (Difficulty = 0.087). Moving up the response categories (i.e., endorsing more occurrences of engaging in bystander behavior), the items that are easiest and most difficult shift mildly. In addition, the item that can best discriminate between individuals of differing abilities to intervene as a bystander is “How many times have you talked with friends about what you can do to keep yourself or others safe from dating violence or unwanted sexual activity” (Discrimination = 4.132). The lowest discriminating item is “. . . Tell someone to stop talking down to, harassing, or messing with someone else” (Discrimination = 1.247).

Although several items produced relatively low discrimination parameters (e.g., less than 2), these items were retained for three reasons: (1) construct validity, (2) improved range of difficulty, and (3) improved information across the range of the construct. First, previous literature recognizes several behaviors as part of “BI”; thus, removing these lower discriminating items may omit a potential bystander behavior. Second, in IRT, it is important to be able to adequately capture the fullest range of the construct’s difficulty—in this case, 0.087 to 3.665 *SD* from the mean—which can be accomplished by intentionally using items of different difficulties. Third, the inclusion of multiple items helps to build a more accurate model by reducing error—conversely increasing information—across the entire range of the construct (De Ayala, 2009).

Taken as a whole, this set of items can produce accurate estimations (i.e., information > 10) of an individual's ability to intervene across the range of $\Theta = 0.36$ to 3.21. Based on this modeling of items, respondents' ability to intervene as a bystander was calculated as factor scores and used as the dependent variable.

Table 2. One-Dimensional Graded Response Model (Year $N = 3,443$).
2:

Item	Discrimination	Difficulty 1: Moving from 0 times to 1–2 times	Difficulty2: Moving-from 1–2 times to 3–5 times	Difficulty3: Moving-from 3–5 times to 6–9 times	Difficulty4: Moving-from 6–9 times to 10+ times
. . .Tell someone to stop talking down to, harassing, or messing with someone else.	1.247	0.644	1.985	3.097	3.665
. . .Speak up when you heard that someone who was forced to have sex or hurt by a boyfriend/girlfriend was to blame.	1.755	1.450	2.470	3.150	3.536
. . .Talk to a friend who was being physically hurt by a boyfriend/girlfriend.	1.910	1.611	2.493	3.124	3.459
. . .Ask someone that looked very upset at a party if they were okay or needed help.	1.962	1.182	2.151	2.831	3.233
. . .Ask a friend if they needed to be walked or driven home from a party if they looked upset.	1.547	0.435	1.484	2.237	2.647
. . .Spoke up to someone who was bragging or making excuses for forcing someone to have sex with them.	1.827	0.087	1.178	2.116	2.571
. . .Got help for a friend because they had been forced to have sex or were physically hurt by a boyfriend/girlfriend.	3.192	0.831	1.649	2.243	2.584
How many times have you and your friends ever talked about activities you could do or join them in activities that might help prevent dating violence or unwanted sex in your school or your community?	2.480	0.630	1.484	2.147	2.560
How many times have you and your friends ever text messaged, instant messaged, blogged, emailed each other or used other technology to discuss activities or things you could do to prevent dating violence or unwanted sexual activity?	2.732	0.741	1.561	2.156	2.556
How many times have you talked with your friends about what you can do to keep yourself or others safe from dating violence or unwanted sexual activity?	4.132	0.912	1.609	2.110	2.518
How many times have you talked with your friends about being safe in dating relationships?	3.795	1.054	1.788	2.267	2.698

Note. Discrimination and difficulty parameters did not substantively change over Years 3, 4, and 5 (coefficients available upon request).

Multivariate Analyses: OLS Models

Turning to the multivariate analyses, Table 3 provides the results of four OLS models—one for each year—predicting students' ability to intervene as by standers, which were modeled as factor scores. Across all four models, the number of hours of GD training was significantly and positively associated with the ability of students to engage in bystander behaviors (between $\beta = .093$ and $.168$).¹⁵ Additionally, being male was significantly associated with lower ability to intervene as a bystander across all four models (between $\beta = -.113$ and $-.134$). Likewise, as high school grade level increased, the ability to intervene decreased significantly across all four models (between $\beta = -.057$

and $-.129$). However, being non-white or in the free and reduced lunch program did not significantly influence bystanders' ability to intervene.

The number of peers involved in IPV reported by the respondent was significantly associated with an increase in the ability to intervene across all four models ($\beta = .201 - .233$). Furthermore, being a victim of stalking significantly increased the ability to intervene in three of the four models (all except Year 2) ($\beta = .078 - 0.89$), being a victim of bullying or dating violence significantly increased the ability to intervene in three of the four models (all except Year 3) ($\beta = .044 - .070$ and $\beta = .066 - .127$, respectively), and being a victim of sexual violence was associated with significantly lower ability to intervene in one of the four models, year 5 ($\beta = -.047$). Acceptance of dating violence was associated with significantly decreased ability to intervene in three of the four models (all except Year 4) ($\beta = -.050$ to -0.99). Finally, students' rape myth acceptance was not significantly associated with the ability to intervene.

Table 3. Ordinary Least Squares Regression Predicting Bystander Intervention Factor Scores (Ability to Intervene).

Independent Variable	Year 2, N=3,443 2,660		Year 3, N=3,143		Year 4, N=2,601		Year 5, N=	
	b (SE)	β	b (SE)	β	b (SE)	β	b (SE)	β
Green Dot training	0.113 (0.014)	.146***	0.123 (0.013)	.161***	0.111 (0.012)	.168***	0.060 (0.011)	.093***
Opportunity for intervention								
Peer IPV involvement	0.166 (0.015)	.225***	0.153 (0.017)	.201***	0.174 (0.020)	.201***	0.198 (0.019)	.233***
Victimization experiences								
Sexual violence victimization	-0.019 (0.015)	-.025	0.016 (0.016)	-.023	-0.023 (0.020)	-.028	0.041 (0.019)	.047*
Dating violence victimization	0.045 (0.010)	.086***	0.009 (0.012)	.016	0.036 (0.013)	.066***	0.074 (0.013)	.127***
Stalking victimization	0.019 (0.012)	.033	0.054 (0.013)	.089***	0.052 (0.016)	.078***	0.062 (0.016)	.084***
Bullying victimization	0.021 (0.006)	.055**	0.009 (0.006)	.026	0.025 (0.007)	.070***	0.017 (0.007)	.044*
Violence beliefs								
Dating violence acceptance	-0.130 (0.031)	-.090***	-0.145 (0.033)	-.099***	-0.034 (0.035)	-.022	-0.077 (0.035)	-.050*
Rape myth acceptance	-0.021 (0.035)	-.013	0.028 (0.037)	.017	-0.015 (0.038)	-.009	0.065 (0.036)	.040
Demographic characteristics								
Male	-0.212 (0.030)	-.119***	-0.142 (0.031)	-.115***	-0.233 (0.033)	-.134***	-0.197 (0.032)	-.113***
High school grade	-0.064 (0.013)	-.078***	-0.061 (0.013)	-.076***	-0.102 (0.014)	-.129***	-0.046 (0.014)	-.057**
Heterosexual	-0.101 (0.041)	-.040*	-0.142 (0.044)	-.056**	-0.034 (0.045)	-.014	-0.010 (0.043)	-.004
Non-White	-0.025 (0.041)	-.011	0.021 (0.043)	.010	0.005 (0.046)	.002	-0.059 (0.045)	-.026
Free/reduced meals	0.032 (0.030)	.018	0.011 (0.031)	.006	0.057 (0.033)	.033	0.042 (0.033)	.024
Intercept	-0.033 (0.067)	—	0.037 (0.069)	—	0.007 (0.072)	—	-0.152 (0.069)	—
Adjusted R-square		.158		.143		.196		.211

Note. The coefficients for each school (measured as dummy variables) are not presented here but are available upon request from the second author; School 25 is the reference school because it had the highest percentage of survey participants participate in Green Dot training (18+ %). *** $p \leq .001$. ** $p \leq .01$. * $p \leq .05$.

Discussion

The current study integrates the complementary bodies of research on BI and

routine activities to argue that BI training is akin to an implementation of scripts for guardianship in action (Leclerc & Reynald, 2017). We analyze survey data from students at 12 high schools where one training program, GD—a program that trains students using scripts—was implemented to test whether GD influences individuals' underlying ability to engage in bystander behaviors (Coker et al., 2017).

The purpose of Leclerc and Reynald's (2017) script for guardianship in action is to identify opportunities for intervention and strategies for doing so for third parties to crime events. GD has been widely implemented with the goal of empowering those who are trained to intervene when they have the opportunity to do so and to spread the norm of BI throughout their communities. The RCT of GD in Kentucky high schools showed a reduced prevalence of dating and sexual violence victimization and perpetration in schools where training was delivered relative to control schools (Coker et al., 2017), but these data have not yet been used to assess the effect of GD on *individuals'* ability to intervene.

As a precursor to the multivariate analyses, we conducted psychometric analysis of the *bystander behaviors* items using IRT to measure individuals' underlying ability to engage in *bystander behaviors*. The IRT results can inform future program development, as they reveal which bystander behaviors are most difficult (e.g., Speak up when you heard that someone who was forced to have sex or hurt by a boyfriend/girlfriend was to blame) and which are "easiest" (e.g., Spoke up to someone who was bragging or making excuses for forcing someone to have sex with them).

Scripts for BI or guardianship in action could work to script the more difficult methods of intervention in ways that make those methods easier. They could also provide alternative options for intervention that could interrupt the same stage in the commission of the crime but may be easier for bystanders/ guardians to implement. "Difficulty" and "ease" do not necessarily mean that the bystander behavior is more or less challenging but could instead indicate that it is simply not a behavior a person is likely to engage in for a range of reasons. Future research could explore whether more difficult bystander behaviors are difficult because the bystander encounters barriers to intervention such as ambiguity as to whether the situation necessitates intervention (Burn, 2009), believes the behavior will be ineffective, or other reasons.

In the multivariate analyses, we find that *GD training* increased ability to engage in *bystander behaviors*, controlling for the opportunity for intervention, victimization experiences, violence beliefs, and demographic characteristics. The effect of *GD training* on *bystander behaviors* remained positive and significant across all four years of training implementation. Those who wish to expand the use of crime script analysis to include scripts for potential active guardians should take this as evidence to suggest that the implementation of guardianship in action scripts could effectively increase active guardianship. Although GD is not, in a pure sense, an implementation of guardianship scripts, it does provide scripts to participants (such as the sexual assault sequence) and trains them on intervention strategies.

The strongest predictor of ability to engage in *bystander behaviors* was *peer IPV involvement*, such that the more peers the student has who have committed dating violence, the greater ability they have to intervene across all four years. This finding was to be expected, given that we used *peer IPV involvement* as a proxy measure of opportunity to intervene. Another notable finding is that *dating violence acceptance* decreased the ability to engage in *bystander behaviors*. One plausible interpretation of this finding is that those who are more accepting of dating violence are less likely to view scenarios as posing an opportunity for intervention even if an act of violence was occurring or about to occur. Likewise, beliefs about crime, people who commit crime, and targets of crime, could serve as barriers to active guardianship even when scripts for guardianship in action are used to train individuals on how to intervene to prevent crime. Thus, these results have important implications for situational crime prevention scholars who seek to prevent a broad range of crime types.

We also find that experiencing dating violence, bullying, and stalking victimization each generally increased ability to intervene. However, sexual violence victimization increased ability to intervene only in Year 4. BI program developers may want to consider victimization experiences in the process by which they select individuals for training. As Butler and Fisher (2022) argue, students who have a strong stake in preventing sexual or dating violence may be especially motivated to diffuse BI norms by having conversations with peers about preventing such violence. Similarly, those who seek to develop and implement scripts for guardianship in action to prevent other types

of crimes (e.g., burglary, theft, assault) may want to consider how a potential guardian's prior experiences with victimization could facilitate greater motivation to intervene, on one hand, or hinder their ability to intervene, on the other. Finally, we find that non-White students and students who receive a free/reduced lunch did not have significantly different ability to intervene from White students and students who do not receive a free/reduced lunch, respectively. These findings suggests that BI and/or guardianship scripting programs more broadly should make effort to train individuals across diverse racial and socioeconomic backgrounds, because they may be just as capable of intervention as their respective counterparts and therefore may increase the scope of programs impact.

The current study is not without limitations. Unfortunately, because the RCT did not track participants across years of data collection, individual- level longitudinal comparisons between those who attended intervention schools and those who attended control schools are not possible. However, because only the students who were identified as POLs received GD training at the intervention schools, we are able to examine the effect of the number of hours of GD training received¹⁶ on ability to engage in *bystander behaviors*. It is important to recognize also that our findings only apply to those who reported having at least one opportunity in the past 12 months to intervene across all of the BI items. We do not know why some students had an opportunity to engage in one or more of the bystander behaviors and others did not—although the individual's lifestyle routine activities likely shape those opportunities (Waterman et al., 2020). It is also possible that some students did have an opportunity to intervene but did not perceive the situation as necessitating intervention for a number of reasons, such as attitudes toward the potential victim or perpetrator (see, e.g., Butler et al., 2017; Pugh et al., 2016; Waterman et al., 2020). Finally, although not possible in the current study, future research should aim to measure the number of opportunities students had to intervene and the proportion of opportunities in which they actually intervened (see also McMahon et al., 2017). In doing so, researchers could improve the measure of underlying ability to intervene by taking into account the possibility that some bystander behaviors are more difficult to endorse because opportunities to engage in them are less frequent than opportunities for other behaviors.

Conclusion

To reiterate, our findings show that *bystander behaviors* vary in terms of difficulty of engaging in the behavior and that GD increases individuals' ability to engage in *bystander behaviors*. Given that these findings are based on a large sample of high school students in Kentucky, it is important for future research to replicate our analyses in other samples, such as college students and individuals in other geographic locations. Future research in the BI field should consider employing the IRT approach to assessing existing scales used to measure bystander behaviors and test program effectiveness. Similarly, routine activities and situational crime prevention scholars who use crime script analysis in general, and scripts for guardianship in action, in particular, could use IRT to assess the difficulty of the behaviors that they aim to train individuals to engage in as guardians. Ultimately, this study reveals the overlap in the ideas of situational crime prevention scholars who are seeking to develop and implement scripts for guardianship in action and BI scholars who have provided training akin to such scripts to prevent interpersonal violence.

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Notes

1. According to the GD Instructor Manual, power-based personal violence includes “partner violence, sexual violence, stalking, bullying, or child abuse” (Edwards, 2009, p. 4).
2. Trained proctors read the survey to and recorded responses for students with special needs (e.g., unable to read or write).
3. Although there were initially 13 intervention schools where GD training was delivered, “one intervention school dropped out [of the study] in Year 4,” thus, we do not include the data from this school (Coker et al., 2017, p. 570).
4. 12.99% of students present did not complete the survey because they or their parents refused consent to participate (henceforth, refused participation). 7.64% of students present were excluded because they agreed to participate but did not complete any of the demographic survey items nor violence or intervention training items (henceforth, missing); 6.64% of students present were excluded from the sample because their responses were mischievous (henceforth, mischievous) (Coker et al., 2017, p. 570).
5. 13.05% refused participation; 7.98% missing; 7.33% mischievous.
6. 17.92% refused participation; 8.74% missing; 6.49% mischievous.
7. 19.83% refused participation; 7.49% missing; 6.72% mischievous.
8. Although data was collected from students in an additional 13 schools that did not engage in the GD training, we did not include these data in the current study because the emphasis of this study was on the impact of GD training on BI behaviors. Data from these non-intervention schools would have produced over-inflated zeros in our key independent variable. Furthermore, in the 12 schools that are in this study, only the POLs received the more intensive training (6.68% of the sample), with all students reporting the hours of GD training they received on a scale of 0 to 5 hours; therefore, we are still able to adequately control for students who did not receive the training (between 77.58 and 78.74% of students received 0 hours of training across the four years).
9. Analyses were restricted to those who had the opportunity to intervene in all 11 situations because, without such opportunities, responses to the subsequent BI

behavior questions would be biased due to an over-inflation of reportedly “0 times” of intervening. We were interested in those who had the opportunity and made a decision to (or not to) intervene, not simply those who did not have an opportunity. Still, this measure is incomplete because it does not account for the number of opportunities a respondent had, but that they had the opportunity to intervene at least once in each of the 11 situations.

10. POLs were identified “using a qualitative strategy for triangulating information on influential students by asking a broad set of key informants to nominate persons based on a set of name-generator questions” and represent “the most popular, well-liked, and trusted” members of the student population (Cook-Craig et al., 2014). By targeting these students to receive training, GD expects that the broader population will adopt bystander behaviors because they see POLs “visibly adopt, endorse, and support [these] innovative behavior[s]” (Edwards, 2014, p. 4).
11. All EFA were conducted with maximum-likelihood extraction and promax rotation. These reported characteristics and subsequent reported scale characteristics are derived from the Year 2 data; analyses from other years are substantively similar and available upon request from the second author.
12. The following definition of *bullying* was provided on the survey: “Bullying is when students tease, threaten, spread rumors, hit, shove, or hurt another student over and over again. It is not bullying when students who are about the same size fight or tease each other in a friendly way.”
13. Note that McMahon and Farmer (2011) made important updates to the rape myth acceptance scale. This version was not used in the RCT because it was not published until after data collection for the RCT had started. A change to the survey instrument in a longitudinal design could be a threat to the internal validity of the RCT, so the original scale was used for all years of data collection.
14. The deidentified school effects are available upon request from the second author.
15. There was some variation in effects across schools, which will be explained in more detail below. These coefficients are not reported in the tables but are avail-

able upon request.

16. Between 77.58% and 78.74% of students received 0 hours of training across the four years.

Supplemental Material

Supplemental material for this article is available online.

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