Report on the Quasi-experimental Study of the Love Notes Curriculum

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Abstract/Executive Summary

The purpose of this study was to examine the impact of Love Notes on targeted non-sexual relationship variables and secondary outcomes in a variety of settings among youth with elevated risk. Further, the study was designed to compare an adaptation of Love Notes that compressed 13 lessons into a briefer 9-lesson format, for each of the targeted and secondary outcomes. Youth were gathered from mental health facilities, alternative high-schools, and from select groupings within traditional high schools. Non-random assignment was accomplished based on location needs, wherein youth were assigned to a 13-lesson format, a 9-lesson format, or a control group. Linear mixed-effect models with an interaction between experimental arm and time were used to model within-person trajectory changes. Results indicated that for the primary outcomes, Loves Notes was found to be effective at bringing about change, relative to the control group, and that, in general, there was not a functional difference between the 9- versus 13-lesson formats. For the secondary outcomes, there was mixed evidence, with the 13-lesson format displaying slightly better results than the 9-lesson format. Overall, Love Notes shows evidence of improving outcomes for at-risk youth; however, whether to use Love Notes, and which format should be used, depends on the goals and needs of the intervention and the youth being targeted.

Background and Purpose

Research continues to document empirical evidence for the impact and success of relationship education (RE) in general (Arnold & Beelmann, 2019; Hawkins et al., 2008; Stanley et al., 2020). However, a nuanced reading of literature reveals that there continues to be a need to understand the role of a multiplicity of factors, including, but not limited to, the curriculum used, the amount of dosage, participant factors, and context and setting (Crapo et al., 2023, Stanley et al., 2020). This is particularly true given the ongoing disbursement of federal funds to support and enable a wide variety of RE endeavors (Hawkins et al., 2022). Among these federal efforts are the grants administered through the Office of Population Affairs (OPA), which focus on attempting to reach marginalized and disadvantaged youth who may be at increased risk of pregnancy and STIs. A requirement for these grants is to use curricula that have been empirically documented to reduce teen pregnancy and STIs.

One such intervention is Love Notes. Love Notes is a relationship education curriculum targeting youth aged 14-24, and focuses on making informed decisions about relationships and love in the context of healthy boundaries and expectations. It explicitly targets youth who are in difficult circumstances, may have made poor choices already, or exhibit other personal or environmental attributes that put them at elevated risk. Love Notes has been studied previously by Barbee et al. (2016) and Barbee et al. (2022). These scholars performed a randomized control study of Love Notes, with 3-month, 6-month, and 1-year follow-ups. The curricula were presented to youth in a day camp setting, and as such there was high levels of control over participation and completion rates. Approximately 13 hours of content was delivered with a 94% attendance rate (for Love Notes). The authors found that Love Notes was effective in reducing

pregnancy (Barbee et al., 2022) and risky sexual behaviors (Barbee et al., 2016) at the 1-year and 6-month follow-ups, respectively.

However, there are several critical aspects of Love Notes and its implementation that need further research. First, although the work of Barbee et al., (2016, 2022) is an excellent efficacy trial of a preventative intervention for risky sexual behaviors and pregnancy outcomes in a specific, 2-day camp setting, effectiveness trials are needed to test differing implementations of Love Notes. In short, an efficacy trial evaluates an intervention in a tightly controlled environment, whereas an effectiveness trial evaluates an intervention in 'real world' settings. Further to this point, the original research establishing the impact of Love Notes was performed in the years 2011 - 2014, using what is now an outdated edition of the program. There needs to be research regarding the effectiveness of a more recent edition of Love Notes, with more contemporary youth.

Next, although there is evidence that Love Notes changes attitudes and behaviors regarding sex (Barbee et al., 2016), as detailed above, the course embeds sexual decision making in the context of broader relationship education. Love Notes learning objectives target a wider array of outcomes than simply sexual risk taking (Pearson, 2018). Given prior research documenting that RE effectiveness can change depending on the outcome measured (Crapo et al., 2023; Crapo et al., 2020), there is a need to explore the potential impact of Love Notes on other, non-sexual relationship attitudes and factors. Healthy relationships in adolescence are associated with a variety of current and future outcomes, including adult long-term committed relationships (Simpson et al., 2007) and health and wellbeing (Roger et al., 2018). As Love Notes seeks to improve adolescent relationships, and the potential long-term impact of improved relationships, it is important that Love Notes be assessed on its effectiveness at affecting general

relationship outcomes. Additionally, a potential effect that has been documented in other RE research is a phenomenon that has been referred to as collateral benefits (Barton, 2023; Turner et al., 2020). These are outcomes that are not targeted by the RE intervention, but seem to benefit from RE nonetheless. Given the fairly comprehensive approach of Love Notes, there is the possibility that collateral benefits could co-occur, and this needs to be explicitly tested.

Finally, Love Notes is formatted to be taught across 13 lessons (Pearson, 2018). Curricula of this length have been traditional for many RE programs, and for many years (Markman & Rhoades, 2012). However, changing social expectations, particularly among youth, have reduced the amount of time people are willing to invest in RE programs; as such, there is need for brief format interventions and courses that are less time intensive (Halford et al., 2008; Stanley et al., 2020). Put another way, the length of Love Notes has a runtime that is too long for many locations and groups that work with youth, preventing them from adopting the curriculum as an intervention. Scholars have noted the ability and need of program administrators and stakeholders to adapt curriculum content to the needs and context of the communities with which they are working (Hawkins et al., 2020), but the impact of an adaptation to the number of lessons in which Love Notes is administered has yet to be evaluated.

The purpose of this study was to examine the impact of a more recent version of Love Notes on non-sexual targeted relationship and secondary outcomes in a variety of community and institutional settings among contemporary at-risk youth. Further, the study was designed to compare an adaptation of Love Notes (which compressed the 13 lessons into a briefer 9-lesson format) to the original format, for each of the targeted and secondary outcomes. As it is currently unknown exactly which factors and components of Love Notes drive the evidenced change (Barbee et al., 2016, 2020), we were careful in the adaptation to retain all core components,

including activities, topics, and trusted adult connections. Rather than trying identify areas that could be cut, the adaptation was a way to present the same information in a compressed amount of time. Minor reorganization and careful streamlining of content account for the majority of the changes; the reorganization and streamlining were done with the author to ensure fidelity to the original material. The largest modification, in the name of time, was that a small number of activities were changed to be incentivized, take-home activities.

This study sought to address the critical needs outlined above regarding the study of Love Notes by answering the following research questions:

- *RQ1*: In a sample of at-risk youth, does Love Notes yield change in primary targeted beliefs, attitudes, and aptitudes regarding relationships?
- *RQ2*: In a sample of at-risk youth, does Love Notes yield change in relationship secondary outcomes associated with, but not directly targeted by, the curriculum (so-called collateral benefits; Barton, 2023)?
- *RQ3*: Is there a difference in outcomes between the original 13-lesson format and a compressed 9-lesson adaptation which contains the same content but in a streamlined presentation?

Study Methodology

Procedures

Utah State University (USU) partnered with OPA to teach Love Notes 3.0 to at-risk youth along the Wasatch Front region of the state of Utah, and was approved to teach both the original format and a modified, 9-lesson format. USU collaborated with three different types of sites: mental health facilities (such as residential treatment centers and outpatient therapy locations), alternative high schools, and high schools with groups of at-risk students. USU

educators taught either the 13-lesson or the 9-lesson format of Love Notes depending on the needs and constraints of each site. Before teaching any content, USU facilitators oversaw the administration of the pretest. At course completion, USU facilitators oversaw the administration of the posttest, which contained the same items as the pretest. Time between pre- and posttest varied; the mean of the 13-lesson format (45.8 days, $SD = 27.9$) was greater than the mean of the 9-lesson format (29.4 days, $SD = 20$, $p < .001$). Data were gathered between July 2021 and June 2023, and were gathered from 44 different sites.

USU was subsequently awarded funding from The Dibble Institute to gather non-randomized control data to perform a quasi-experimental impact evaluation. Procedures were designed to mimic the OPA-funded intervention as closely as possible, with youth being informed of the study and taking the surveys in as similar of a situation as possible. Data were gathered from youth who had not received the intervention, but were at sites that had received or were receiving the intervention. Instead of being taught Love Notes, the youth instead received the curricula the site normally offers. Time from pre to post varied, with a mean of 10.6 days ($SD = 9.6$). Control data was gathered from April 2023 to January 2024, and included 9 different sites (6 mental health facilities and 3 alternative high schools).

Study procedures and data gathering were approved by USU IRB for both the teaching (IRB# 11347) and the control data (IRB# 13219). Informed consent was obtained via a letter of information, and the study adhered to all ethical considerations.

Participants

Participant demographics are reported in *Table 1*. A total of 2,269 youth participated in the study. Of those, 1,342 were recruited from mental health facilities, 732 from alternative high schools, and 195 from non-alternative high schools. Among these, 1,266 received the 9-lesson

format, and 701 received the 13-lesson format. A total of 302 youth were in the control group. The sample size and analytic strategy (see below) compensate for the unbalanced design.

Table 1. Participant Demographics

Demographic	*M* or *n*	*SD* or *%*
Age (in years)	15.97	1.36
GPA	2.51	1.13
Year in School		
7	25	1.10%
8	137	6.00%
9	354	15.60%
10	526	23.20%
11	566	24.90%
12	363	16.00%
Other	39	1.70%
(missing)	259	11.40%
Race/Ethnicity		
Non-Hispanic White	1054	46.50%
Black/African American	100	4.40%
Mixed/Other	281	12.40%
Hispanic/Latinx	666	29.40%
(missing)	168	7.40%
Gender Identity		
Male	860	37.90%
Female	950	41.90%
Transgender/Do not Identify	187	8.20%
(missing)	272	12.00%

Table 2 gives a breakdown of demographics by experimental arm. As can be seen in Table 2, there were some statistically significant, though minor, differences between the groups. These demographic differences were included as control variables, to account for any non-random differences between groups.

Table 2. Demographics by Experimental Arm

	Control (n = 302)	9-Lesson (n = 1266)	13-Lesson (n = 701)	
Variable	*M* or *n* (*SD* or %)	*M* or *n* (*SD* or %)	*M* or *n* (*SD* or %)	P-Value

Age (in years)	15.7 (1.3)	15.9 (1.4)	16.2 (1.3)	<.001
GPA	2.5 (1.3)	2.4 (1.1)	2.7 (1.0)	<.001
Year in School				<.001
7	2 (0.7%)	14 (1.1%)	9 (1.3%)	
8	19 (6.3%)	74 (5.8%)	44 (6.3%)	
9	59 (19.5%)	212 (16.7%)	83 (11.8%)	
10	72 (23.8%)	336 (26.5%)	118 (16.8%)	
11	62 (20.5%)	293 (23.1%)	211 (30.1%)	
12	42 (13.9%)	200 (15.8%)	121 (17.3%)	
Other	3 (1%)	18 (1.4%)	18 (2.6%)	
(missing)	43 (14.2%)	119 (9.4%)	97 (13.8%)	
Race/Ethnicity				<.001
Non-Hispanic White	128 (42.4%)	567 (44.8%)	359 (51.2%)	
Black/African American	15 (5%)	53 (4.2%)	32 (4.6%)	
Mixed/Other	51 (16.9%)	147 (11.6%)	83 (11.8%)	
Hispanic/Latnix	85 (28.1%)	421 (33.3%)	160 (22.8%)	
(missing)	23 (7.6%)	78 (6.2%)	67 (9.6%)	
Gender Identity				.001
Male	101 (33.4%)	528 (41.7%)	231 (33%)	
Female	131 (43.4%)	513 (40.5%)	306 (43.7%)	
Transgender/Do not Identify	25 (8.3%)	89 (7%)	73 (10.4%)	
(missing)	45 (14.9%)	136 (10.7%)	91 (13%)	

Measures

Primary Outcomes

The outcomes below are the non-sexual outcomes that align with the learning objectives of Love Notes and are directly targeted by the curriculum. They consisted of attitudes and aptitudes surrounding knowledge of skills, decision making, relationship competence, and safety awareness.

Have Skills. Youth assessment of whether they have skills and knowledge needed was measured using a single item: “I currently have the skills and knowledge needed for a healthy romantic relationship” on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*).

Warning Signs. The ability of youth to spot warning signs was measured using the warning signs subscale of the Relationship Deciding Scale (Vennum & Fincham, 2011), which consisted of 3 items, on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Participants rated their level of agreement on whether they could recognize warning signs of a bad relationship, how quickly they could detect warning signs, and what they should do when they detected warning signs. Reliability was measured using coefficient alpha: α_{pre} =.84, α_{post} = .84.

Relationship Decision Making. Relationship decision making (decide, don't slide) was measured using three items from the sliding subscale of the Relationship Deciding Scale (Vennum & Fincham, 2011), and was measured on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Participants rated their ability to weigh pros and cons, make thoughtful decisions and have a healthy discussion with their romantic partners regarding next steps in the relationship. Reliability was measured using coefficient alpha: α_{pre} = .62, α_{post} = .69.

Relationship Confidence. Relationship Confidence was measured using the relationship confidence subscale of the Relationship Deciding Scale (Vennum & Fincham, 2011). It consists of four items, measured on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Participants rated their ability to deal with relationship conflicts, their ability to make relationships last, and confidence in their ability to have a stable relationship. Reliability was measured using coefficient alpha: α_{pre} = .87, α_{post} = .86.

Secondary Outcomes

The secondary outcomes listed below are outcomes related to youth outcomes that are tangential to the primary focuses of the Love Notes curriculum. That is, they are touched on (directly or indirectly), encouraged by, or a potentially outgrowth of participation in Love Notes. Growth and destiny beliefs are the beliefs held by the youth regarding the process of

relationships: for example, do relationships grow over time or are they determined by soulmate compatibility (Knee et al., 2003; Knee 1998)? As part of the program, Love Notes encourages youth communication with trusted adults about difficult and important relationship topics. As a result, there may come more openness and connection with adults, particularly parents or guardians. Finally, because Love Notes attempts to address relationships generally, and romantic relationship specifically, there is potential that learning the skills and knowledge presented may help to improve life overall, as represented by well-being.

Growth Beliefs. Growth beliefs were measured using four items from the growth subscale of the Implicit Theories of Relationships Scale (Knee et al., 2003; Knee 1998; items wording was modified slightly to increase readability for our participants), on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Participants rated their agreement with four items which assessed growth over time, the ability of challenges to strengthen relationships, the importance of learning to solve relational problems, and the role of hard work in relationships. Reliability was measured using coefficient alpha: $\alpha_{pre} = .72$, $\alpha_{post} = .80$.

Destiny Beliefs. Destiny beliefs were measured using four items from the destiny subscale of the Implicit Theories of Relationships Scale (Knee et al., 2003; Knee 1998; items wording was modified slightly to increase readability for our participants), on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Participants rated their agreement with the idea of finding the right partner, the role of destiny in compatibility, that relationships will fail if they don't start off well, and a binary approach to relationship compatibility. Reliability was measured using coefficient alpha: $\alpha_{pre} = .76$, $\alpha_{post} = .82$.

Parental Connection. Parental connection was measured using the support and disclosure subscales of the Network of Relationships Inventory, Relationship Quality Version (NRI-RQV;

Buhrmester & Furman, 2008), measured on a scale of 1 (*never or hardly at all*) to 5 (*always or extremely much*). Youth reported on 6 items which measured their levels of disclosure to and support from parents. Reliability was measured using coefficient alpha: $\alpha_{pre} = .93$, $\alpha_{post} = .94$.

Well-being. Well-being was measured using the WHO-5 Well-being Index (De Wit et al., 2007). The participants rated 5 items on how often they felt cheerful, calm, and active, how often they woke up feeling refreshed, and had their lives filled with things that interest them, on a scale of 0 (*at no time*) to 5 (*all of the time*). Reliability was measured using coefficient alpha: $\alpha_{pre} = .88$, $\alpha_{post} = .90$.

Control Variables

Control variables related to relationship outcome and youth risk were included as covariates in the models, including any variables in which there was a difference between experimental arms. These included age, self-reported GPA, race/ethnicity, gender, facility type, and time between pre and post (as measured by number of days). Due to small sample sizes, race and ethnicity were reduced to four categories: non-Hispanic White, Black or African American, Hispanic, and Other. Non-Hispanic White was chosen as the reference category due to having the largest *n*. Gender was coded as Male, Female, or Transgender/Do not Identify, once again due to sample sizes. Female was coded as the reference category due to having the largest sample size.

Analysis

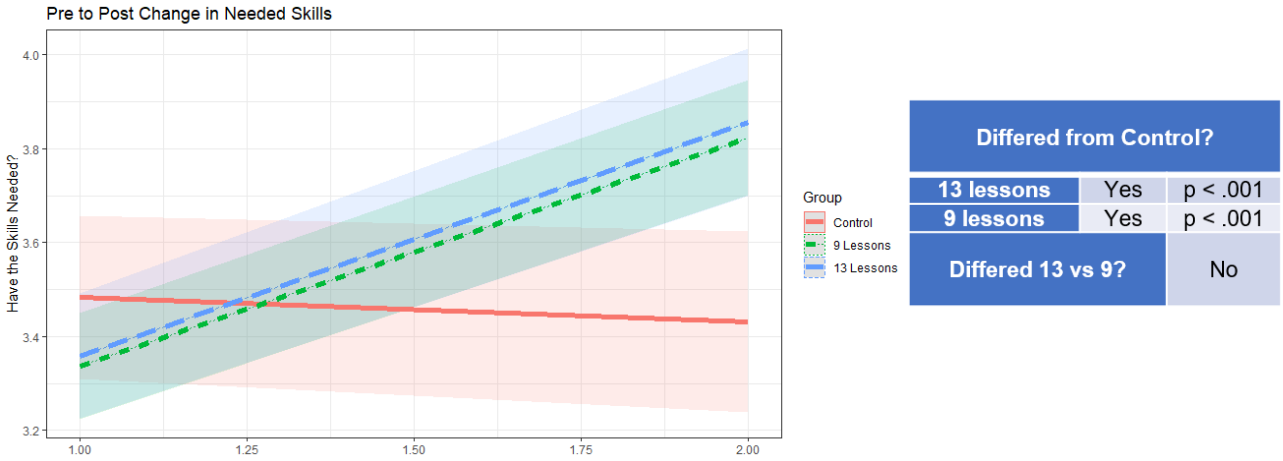
To answer the research hypotheses, the outcomes were modeled using liner mixed-effects modeling using the lme4 package (Bates et al., 2015), in R (R Core Team, 2023). Significance testing was performed using a Wald test, (using the lmerTest package, Kuznetsova et al., 2017), to facilitate significance testing for within-factor levels (i.e., different experimental arms). Time was nested in individuals, who were nested in locations. An interaction between time and

experimental arm was included as the focal predictor, with covariates also being included in the model. Reported models were estimated using restricted maximum likelihood (REML), and missing data were handled using full information maximum likelihood (FIML). This approach allowed us to model within-person, trajectory-based differences between the groups, while accounting for variations due to individual or location effects. As such, any pretest differences between groups did not significantly bias the results, as the model tested trajectories and not mean differences. However, variables that differed between groups were nonetheless included as control variables. One model was run for each outcome variable.

Results

Primary Outcomes

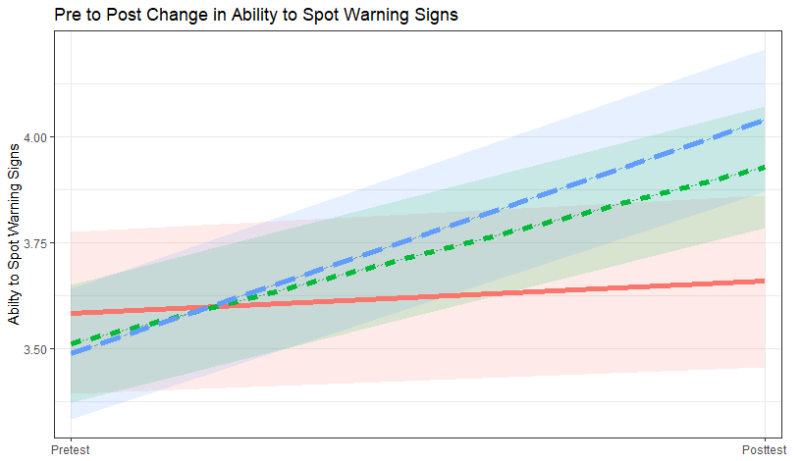
Have Skills



Differed from Control?		
13 lessons	Yes	p < .001
9 lessons	Yes	p < .001
Differed 13 vs 9?		No

The results for if the youth identify as having the skills and knowledge needed improved from pre to post, relative to the control group, for both the 13-lesson format and the 9-lesson format ($B^*_{13xTime} = .26$, $p < .001$; $B^*_{9xTime} = .25$, $p < .001$). There was no difference between the 13-lesson format and the 9-lesson format relative to pre-post changes ($B^* < .01$, $p = .894$).

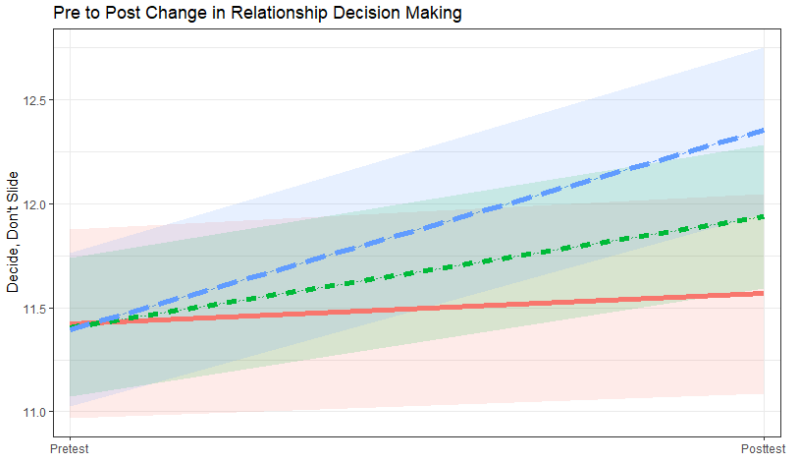
Warning Signs



Differed from Control?		
13 lessons	Yes	p < .001
9 lessons	Yes	p < .001
Differed 13 vs 9?		No

Similarly, the results for if the youth's ability to spot warning signs improved from pre to post, relative to the control group, for both the 13-lesson format and the 9-lesson format ($B^*_{13xTime}$ = .25, $p < .001$; B^*_{9xTime} = .18, $p < .001$). There was a small difference between the 13-lesson format and the 9-lesson format relative to pre-post changes (B^* = .07, p = .044).

Relationship Decision Making

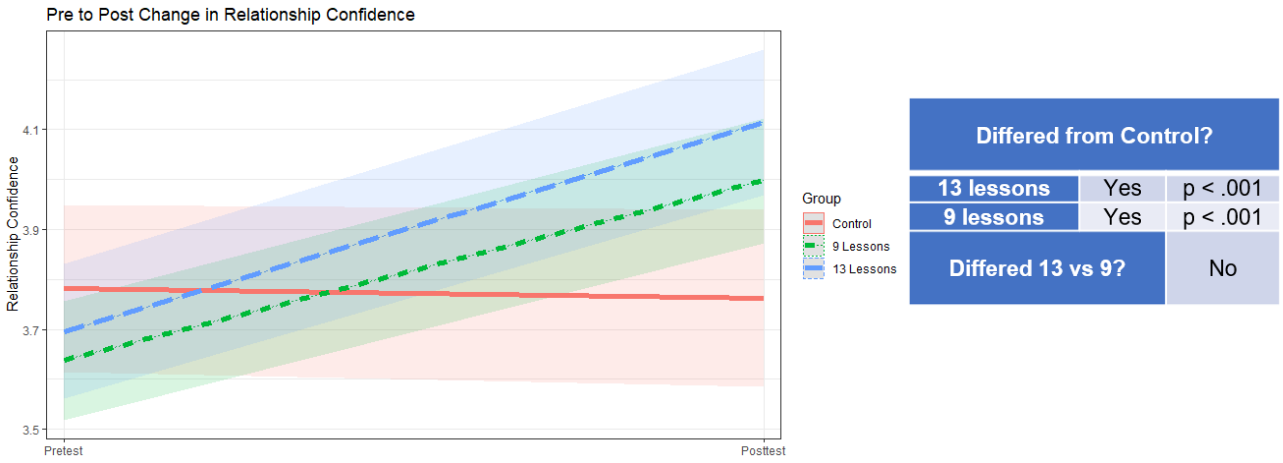


Differed from Control?		
13 lessons	Yes	p < .001
9 lessons	Yes	p = .042
Differed 13 vs 9?		Yes

Like the previous two outcomes, the results for if the youth's relationship decision making improved from pre to post, relative to the control group, for both the 13-lesson format and the 9-lesson format ($B^*_{13xTime}$ = .18, $p < .001$; B^*_{9xTime} = .09, $p < .001$). There was, however, a small

difference between 13-lesson format and the 9-lesson format, relative to pre-post changes (B* = .09, p = .007).

Confidence

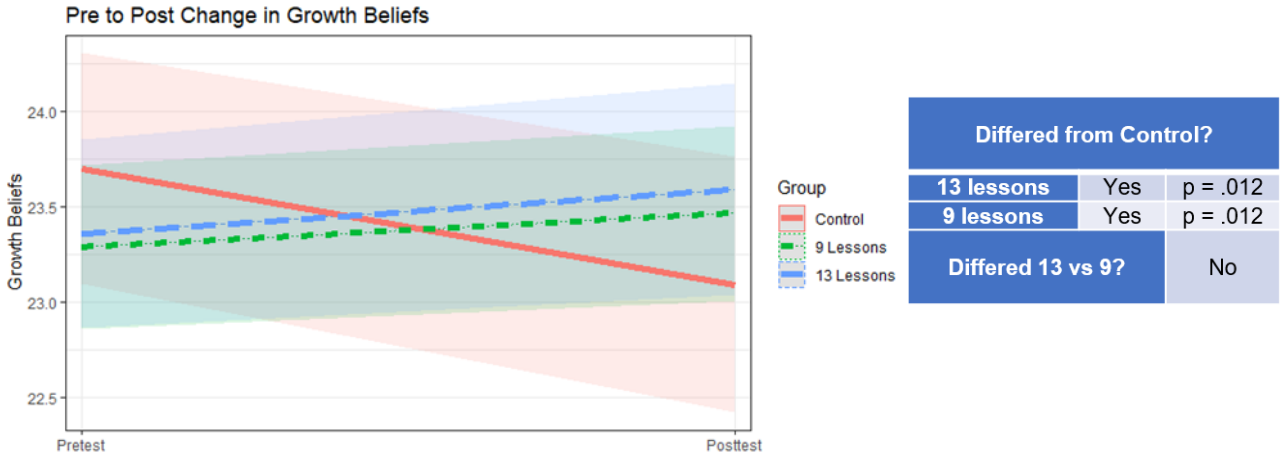


Differed from Control?		
13 lessons	Yes	p < .001
9 lessons	Yes	p < .001
Differed 13 vs 9?		No

The results for levels of relationship confidence showed improvement from pre to post, relative to the control group, for both the 13-lesson format and the 9-lesson format ($B^*_{13xTime}$ = .18, p < .001; B^*_{9xTime} = .09, p < .001). There was no difference between the 13-lesson format and the 9-lesson format relative to pre-post changes (B* = .03, p = .307).

Secondary Outcomes

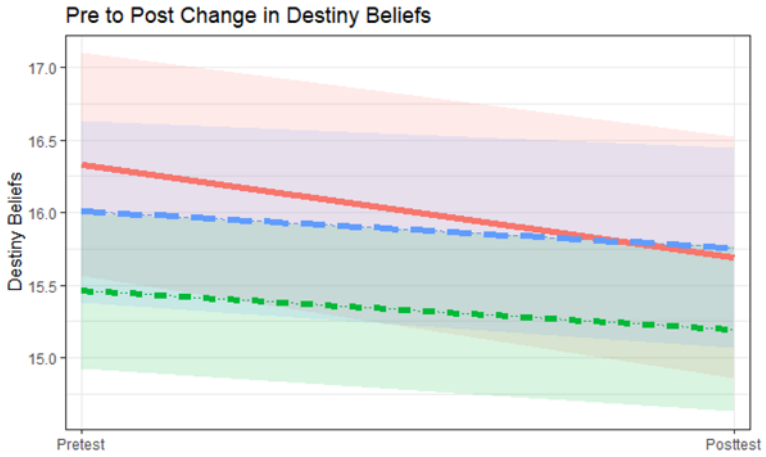
Growth Beliefs



Differed from Control?		
13 lessons	Yes	p = .012
9 lessons	Yes	p = .012
Differed 13 vs 9?		No

The results for growth beliefs showed improvement from pre to post, relative to the control group, for both the 13-lesson format and the 9-lesson format ($B^*_{13xTime}$ = .12, p = .012; B^*_{9xTime} = .11, p = .012). There was no difference between the 13-lesson format and the 9-lesson format relative to pre-post changes (B* = .01, p = .737).

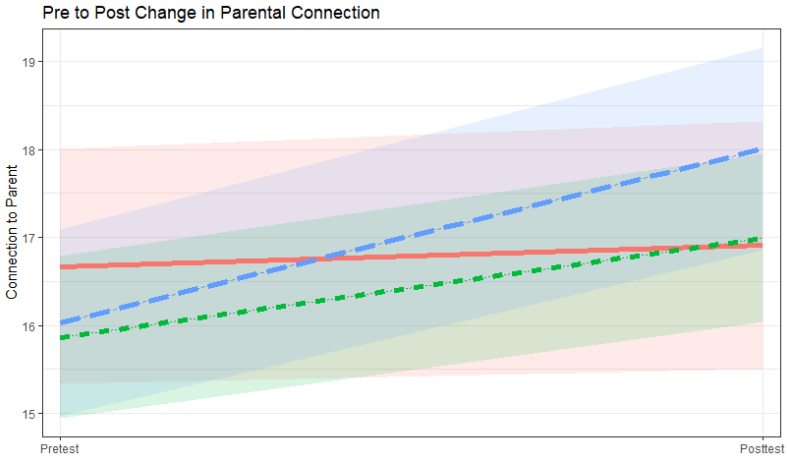
Destiny Beliefs



Differed from Control?		
13 lessons	Yes	p = .042
9 lessons	No	p = .159
Differed 13 vs 9?		No

The results for destiny beliefs, on the other hand, differed from previous patterns. The 13-lesson format showed a difference from the control group ($B^*_{13xTime}$ = -.18, p = .042), while the 9-lesson format did not (B^*_{9xTime} = -.13, p = .159). However, there was also no difference between the 9- and the 13-lesson formats (B* = -.06, p = .071).

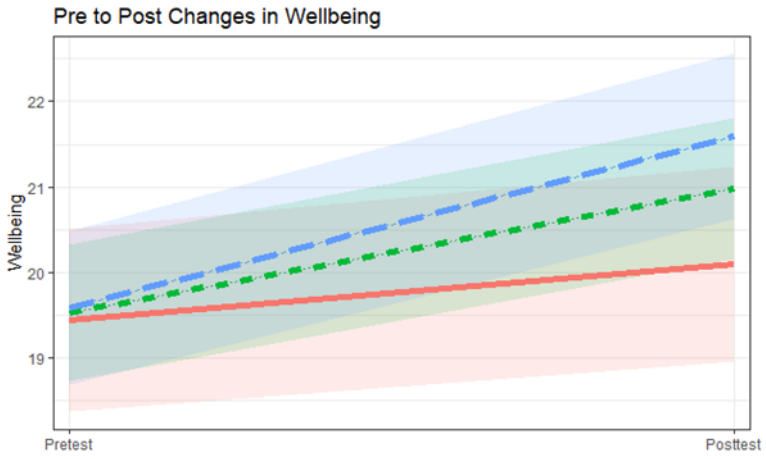
Parental Connection



Differed from Control?		
13 lessons	Yes	p = .001
9 lessons	No	p = .058
Differed 13 vs 9?		Yes

Similar to the results for destiny beliefs, parental connection in the 13-lesson format showed a difference from the control group ($B^*_{13xTime}$ = .12, p = .001), while the 9-lesson format did not (B^*_{9xTime} = .06, p = .058). However, there was a difference between the 9- and the 13-lesson formats (B* = .06, p = .039).

Wellbeing



Differed from Control?		
13 lessons	Yes	p = .005
9 lessons	No	p = .069
Differed 13 vs 9?	No	

Once again, the results for wellbeing showed improvement from pre to post, relative to the control group, for only the 13-lesson format ($B^*_{13xTime}$ = .11, p = .005). The 9-lesson format did not differ (B^*_{9xTime} = .07, p = .069), nor was there a difference between the 13-lesson format and the 9-lesson format relative to pre-post changes (B* = .04, p = .135).

Discussion and Implications

The purpose of this study was to examine the impact of a recent version of Love Notes on targeted non-sexual relationship and secondary outcomes among youth in settings of elevated risk (e.g., mental health facilities, alternative high schools). Additionally, we sought to compare a 9-lesson adaptation of Love Notes to the original format, relative to a control group, for each of

the targeted and secondary outcomes. We discuss our findings by the primary and secondary outcomes, in relation to the three research questions.

Primary Outcomes

In terms of RQ1, all four primary outcomes showed improvement relative to the control group, regardless of lesson format. In short, our findings indicate that Love Notes was effective in producing change from pre to post in the targeted outcomes of rating of skills, ability to spot warning signs, relationship decision making, and relationship confidence – and this was the case under both experimental conditions. In turn, these improved skills and knowledge should lead to improved relationships and future outcomes (Wadsworth & Markman, 2012).

In terms of RQ3, only two of the eight outcomes showed a difference between the 13- and the 9-lesson formats, but the differences were small. Based on these results, if there is time to use the 13-lesson format, it would be recommended over the 9-lesson format; however, since both were better than control, it stands to reason that if time, implementation, or operation constraints require the 9-lesson version, it is an acceptable and viable option. Indeed, our results indicate that either is better than no intervention.

These findings need to be interpreted in context. As an effectiveness study, as opposed to an efficacy study, the interventions were implemented at scale across a variety of locations, institutions, and settings. Youth varied in attendance rates and interest levels. Yet despite these challenges and implementation differences, our findings showed gains for those who were assigned to the treatment groups. This context suggests that gains from Love Notes may be generalizable beyond strictly controlled settings with high attendance rates. It is also important to note that often, though not always, the sites where the intervention was offered run their own interventions, including education and therapy. As such, the impacts of teaching Love Notes can

be understood as gains that are above and beyond existing treatments. This implies there is something about the way that Love Notes addresses relationships directly that is potentially additive to other treatments, including therapy. Future research might investigate whether there are components specific to Love Notes, or if there are processes inherent to RE capable of adding distinct gains to ongoing efforts to aid youth in risky contexts.

Secondary Outcomes

Relative to RQ2, the 13-lesson format demonstrated gains over the control group in all four secondary outcomes, while the 9-lesson format only demonstrated gains in one of the secondary outcomes. Where it becomes more nuanced is in relation to RQ3. Although the 13-format differed for all outcomes, and the 9-lesson format only differed from the control on one outcome, there was also no evidence that the 9-lesson format performed differently than the 13-lesson format for three of the four secondary outcomes. In general, such findings mean that we lack evidence that the 9-lesson format was better than control (in three of four secondary outcomes), but we also simultaneously lack evidence that the 9-lesson format was worse than the 13-lesson format, suggesting that differences observed between the 9-lesson format and either of the other two conditions may be due simply to chance. To help clarify the implications of our findings, we examine each of the secondary outcomes in greater detail.

Changes in growth beliefs were found to differ between intervention and control arms, for both formats of the intervention. Further, there was no difference between the 13- and the 9-lesson formats. As explained, growth beliefs are the idea that relationships can improve and cultivate over time (Knee, 1988; Knee et al, 2003). In a sense, they embody the implicit theories of individuals regarding how relationships function; they embody the hope- and growth-oriented mindset that challenges now can lead to improved relations in the future. The figure for growth

beliefs shows that in the control group, there is a decline over time, indicating that for these youth in these risky contexts, they lose belief in the idea that they can improve a relationship. Love Notes, on the other hand, appears to serve as a protective factor, enabling the youth to maintain levels of growth beliefs, despite whatever contextual factors were causing the control group to lose hope.

Well-being and destiny beliefs are the most nuanced to interpret. The clearest aspect is that the 13-lesson format was different from the control group—particularly in terms of well-being. However, the 9-lesson format did not differ from the control group nor from the 13-lesson format. This implies two things simultaneously: the 9-lesson format may not yield changes that are any different from the control group, and the 9-lesson format may also not yield any changes that differ from the 13-lesson format. The outcomes can vary widely, and were not systematically different enough to warrant a strong conclusion either way. If a program targets well-being as a focal point of change immediately following the intervention, the 13-lesson format is clearly a better choice. The 9-lesson format may or may not yield desired results.

As far as parental connection, here it is clear that the 13-lesson version is the most effective of the three conditions. It differed from both the 9-lesson and the control group in increasing parental connection, whereas the 9-lesson format failed to improve parental connection relative to the control group.

It is important to keep in mind the secondary outcomes are not the focal point of the course. Rather, they serve to illustrate that a broader focus on relationships generally, rather than a focus on sex and STIs specifically, may enhance the lives of youth above and beyond the direct impact of changing relationship views and aptitudes. As such, we caution readers against discounting the value of the 9-lesson format. There is still on-going research, and a lack of

consensus, regarding the key mechanisms by which RE effects change (Stanley at al., 2020; Wadsworth & Markman, 2012), which is complicated by the potential differential causes for varying outcomes (Crapo et al., 2023). Without knowing the mechanisms by which Love Notes (or other RE curricula) influence non-target outcomes, it is difficult to say why the 13-lesson format consistently performed better than the control group, while the 9-lesson format did not. Future research should continue to investigate mechanisms of change in RE, and how they relate to important outcomes. Further, research should also investigate the shared and individual elements of change in RE curricula, including Love Notes.

Limitations and Conclusion

Like all studies, our study carries limitations. Even though we taught at a variety of locations, our sample was gathered in a single state. Thus, there may be youth for whom, or settings in which, Love Notes is not as effective as our results may indicate. Relatedly, Love Notes may be more effective in other populations or locations. There was diversity in the sample regarding sexual orientation, race and ethnicity, and gender identity, and some of the youth were from different states, but a sample taken from more states and settings would further illuminate the effectiveness of Love Notes. Although the purpose of the study was explicitly to study non-sexual outcomes, replication using both relational and sexual outcomes would be beneficial. Lastly, our study used a quasi-experimental approach. We were careful to ensure that we were sampling from the same populations and locations, but without randomization, true equivalence between the arms cannot be assured. Sampling and statistical processes help to mitigate this limitation.

In conclusion, our findings indicate that for the primary outcomes, Loves Notes participation was related to change, relative to the control group, and that, in general, there was

not a functional difference between the formats. For the secondary outcomes, the 13-lesson format displayed slightly better results than the 9-lesson format. Overall, Love Notes shows evidence of improving outcomes for at-risk youth; however, whether to use Love Notes, and which format should be used, depends on the goals and needs of the intervention and the youth being targeted.

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