

Does question type matter? Using text messaging to deliver healthy relationship information

Background

- Teen dating violence (TDV) represents a serious public health problem, but effective interventions are difficult to scale due to cost and logistical considerations.¹⁻²
- Short messaging service (SMS) campaigns have been shown to be effective in promoting public health outcomes at low costs.³⁻⁵
- Research on SMS campaigns has shown that bidirectional messages (message that invites a response) is associated with improved health results compared to unidirectional messages (no response elicited).⁶
- However, little is known about the features of each message type.

Purpose

This study seeks to examine how various message styles and participant characteristics influenced participant engagement in a SMS campaign

Methods

525 adolescents from TX public middle/high schools received 3 messages per week promoting healthy relationships (48 messages total). See Figure 1.

- Majority (88%) were in 9th-12th grade; 72% female
- 47% White, 27% Hispanic, 15% Black, 11% Other/≥2 races

The messages participants received were either bidirectional (i.e., **True/False**, **Quiz**, **"MORE"** for information) or unidirectional (i.e., **Fact**, **Hotline**). See **Table 1** for example messages

Statistical analysis

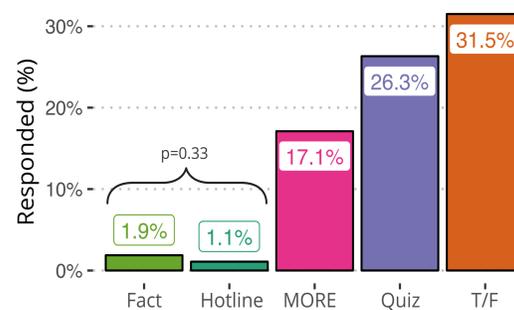
- **Chi-squared:** Test of independence among message styles, with Bonferroni adjusted p-values for pairwise comparisons
- **Logistic regression:** Response rate in association with message style and timing during campaign (controlling for gender, race, grade level)
- All analyses were conducted using the R statistical environment

Results

Chi-square test of independence showed bidirectional messages had higher response rates than unidirectional styles ($p < 0.001$, **Figure 2**). Pairwise comparison below:

- For bidirectional, **True/False** > **Quiz** > **"MORE"** ($p < 0.001$)
- For unidirectional, no significant difference between **Hotline** and **Fact** ($p = 0.33$)

Fig 2: Percent of participants who responded by message style



Logistic regression analyses tested for participant response rate in association with message style and timing during the campaign (**Table 2**, **Figure 3**), while controlling for gender, race, grade level, and the number of participants who had unsubscribed from the campaign.

Table 2: Logistic Regression

Variable	Odds Ratio	95% CI
Style (Reference = Fact)		
Hotline	0.729 *	0.389 - 1.306
MORE	37.169 **	26.9 - 52.6
Quiz	99.108 **	70.0 - 143.3
True/False	111.413 **	79.8 - 159.1
Message # in campaign	0.963 **	0.959 - 0.967

* $p = 0.3$ ** $p < 0.001$

Results (cont)

Fig 3: Predicted chance of responding by campaign day and message style

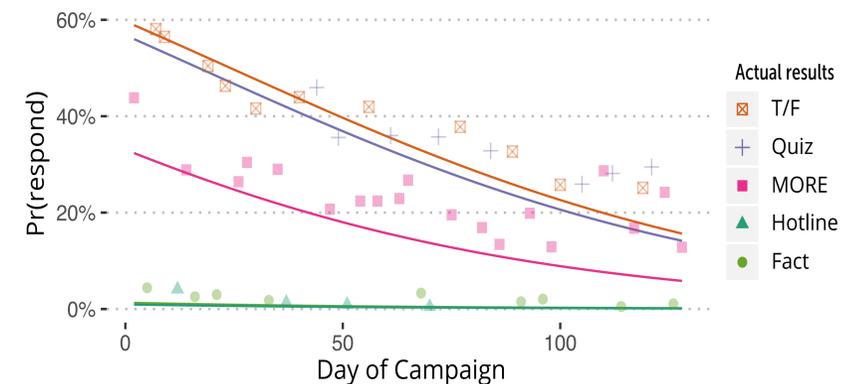
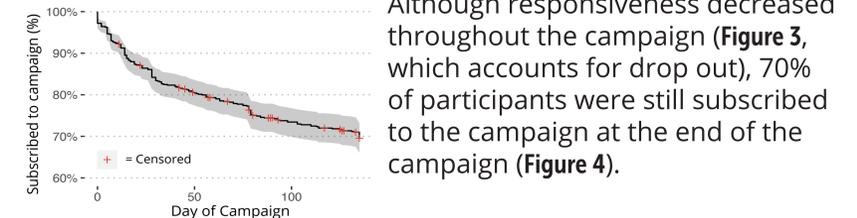


Fig 4: Retention during the campaign



Although responsiveness decreased throughout the campaign (**Figure 3**, which accounts for drop out), 70% of participants were still subscribed to the campaign at the end of the campaign (**Figure 4**).

Conclusion

- Future public health SMS campaigns looking to increase participant engagement should consider using bidirectional questions styles that are more interactive (e.g., **True/False**, **Quiz**) rather than other bidirectional styles (i.e., **"MORE"**) or unidirectional message styles (e.g., **Fact**, **Hotline**).
- Over time, participants became less likely to respond regardless of message style. However, the majority were still subscribed to the campaign at the end. It is possible that the novelty of SMS campaign wear off overtime that participants loss interests in engaging responses but still are reading the messages. Future research is needed to find explanation for the reduced engagement and investigate the possible influence on campaign effectiveness.

Table 1: Message Styles with Examples

Style	Example (with response)
True/False (x11 messages)	Fact or Crap: Believing that dating violence is acceptable or witnessing violence at home puts you at risk for being in a violent relationship. REPLY 1-Fact or 2-Crap 1-Fact: If you believe dating violence is acceptable or witness violence at home puts you at increased risk for being in a violent relationship. 2-Crap: This is a fact. If you believe dating violence is acceptable or witness violence at home puts you at increased risk for being in a violent relationship.
Quiz (x8 messages)	After an argument, your partner blocks the doorway and takes your keys to prevent you from leaving. Is this 1-healthy, 2-unhealthy, or 3-abusive? REPLY 1, 2 or 3 1-Healthy: No, this is abusive. Your partner is using their physical body to control your actions, by blocking your way 2-Unhealthy: No, this is abusive. Your partner is using their physical body to control your actions, by blocking your way 3-Abusive: Yes. Blocking your way is physical abuse, as your partner is using their physical body to control your actions
MORE (x14 messages)	A person is trustworthy when their words & actions match up. REPLY 1 for an example. 1-If Replied: Your friend says they trust you, but demands to read your txt msgs. Their words & actions don't match up. They may not be trustworthy.
Fact (x14)	Most teens are in healthy relationships; however 1 in 3 young people will be in an unsafe, unhealthy, or abusive relationship.
Hotline (x5 messages)	Need to talk to someone about an issue, contact the Suicide Prevention Hotline 1-800-273-TALK (8255). Open 24/7. They are able to help with counseling and mental health needs.

Fig 1: Screenshot of Text Campaign

Fact or Crap: Believing that dating violence is acceptable or witnessing violence at home puts you at risk for being in a violent relationship. REPLY 1-Fact or 2-Crap

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Correct. If you believe dating violence is acceptable or witness violence at home puts you at increased risk for being in a violent relationship.

Need to talk to someone about an issue, contact the Suicide Prevention Hotline 1-800-273-TALK (8255). Open 24/7. They are able to help with counseling and mental health needs.

References

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Source code and additional information:
• http://rpubs.com/HunterRatliff1/HRTC_stats
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