



Development and Factor Structure of a New Scale to Measure Distracted Driving Countermeasure Strategies among Young Adult Drivers



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Introduction

In the US in 2020, 3,142 people were killed in motor vehicle crashes involving distracted driving (NHTSA, 2022). In 2019, almost 2,400 teenagers ages 13-19 were killed in such crashes and another 258,000 were treated in emergency departments for injuries (CDC, 2020). This translates to approximately seven teenage fatalities and hundreds of injuries each day in 2019 due to motor vehicle crashes. There is mixed evidence on the effectiveness of driver cellphone bans and built-in crash prevention technologies. It may be that young drivers themselves will need to play a role in curbing this dangerous behavior; thus, identifying which behaviors young adult drivers currently use to curb distracting driving may be an important first step toward intervention development. In the present study, focus groups with young drivers were conducted to learn about the strategies young adult drivers use for avoiding distracted driving. The 25 items that emerged were included in an online survey and respondents were asked to indicate how often they engage in each curbing strategy. Factors were then identified, and redundant items dropped, resulting in a 19-item two factor measure.

Method

Participants

- $N = 1,345$ undergraduate students ages 18-30
- Mean age = 21.41, $SD = 3.37$
- Predominantly White (44%) or Black (30%)
- Majority (65%) cisgender women

Initial Focus Groups

- In a prior study, three focus groups with young drivers were conducted to learn about the strategies young adult drivers use for avoiding distracted driving.
- Topics included: Strategies participants use or have heard of to prevent distracted driving, reasons some people don't use those strategies, and potential ways to overcome those barriers.
- Researchers generated items based on transcripts and items were reviewed by 5 undergraduate research assistants at two institutions, and 2 researchers with expertise in this traffic safety.

Materials

- The 25 items that emerged from focus groups were included in an online survey
- Respondents were asked to indicate how often they engage in each countermeasure strategy, with response options ranging from 0 (*never*) to 3 (*always*).

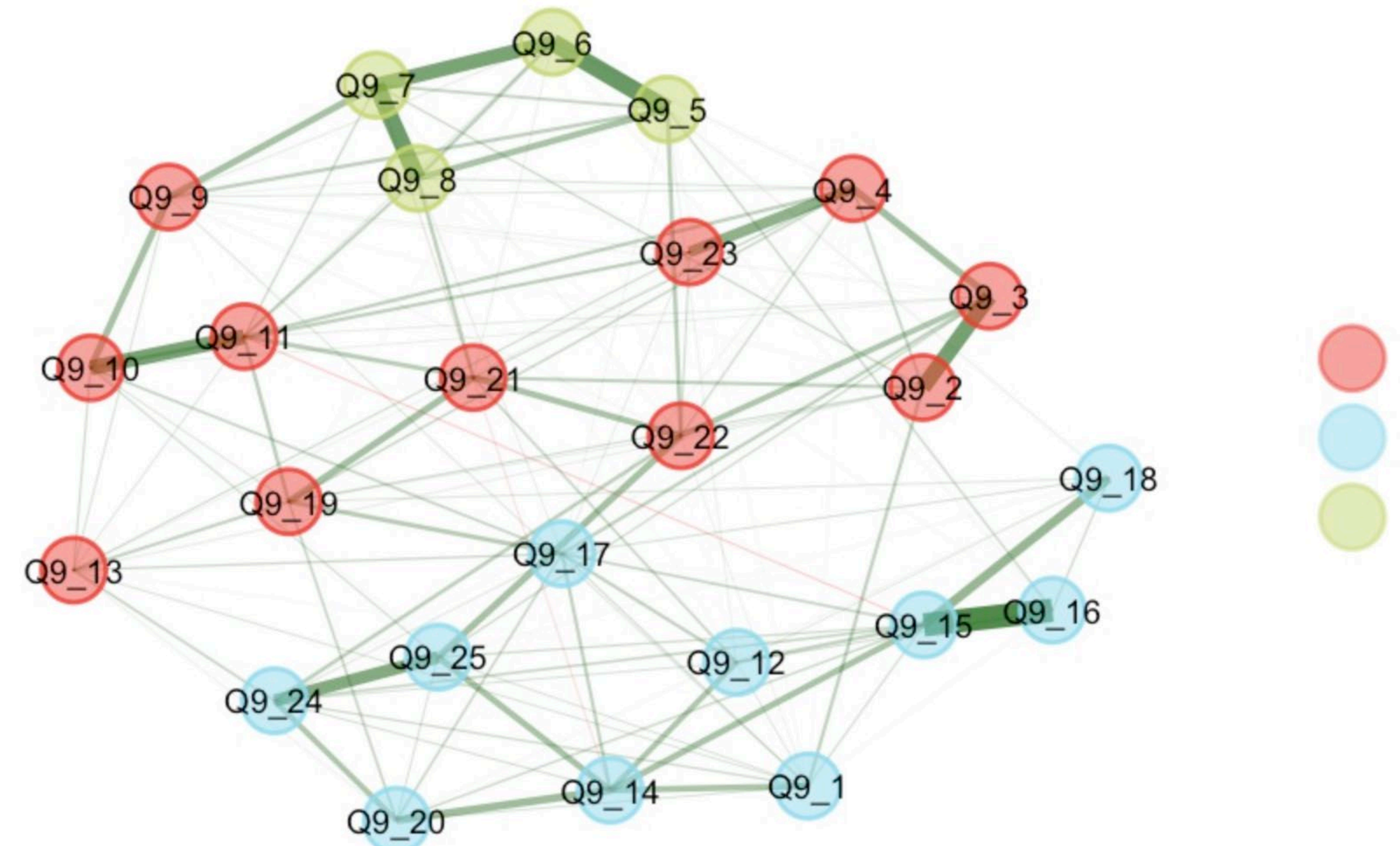
Procedure

- Online survey (approximately 30 minutes)
- Undergraduate students at a large public institution were recruited through a combination of the psychology participant pool (for course credit) and postings in emailed student announcements (for raffle entry)

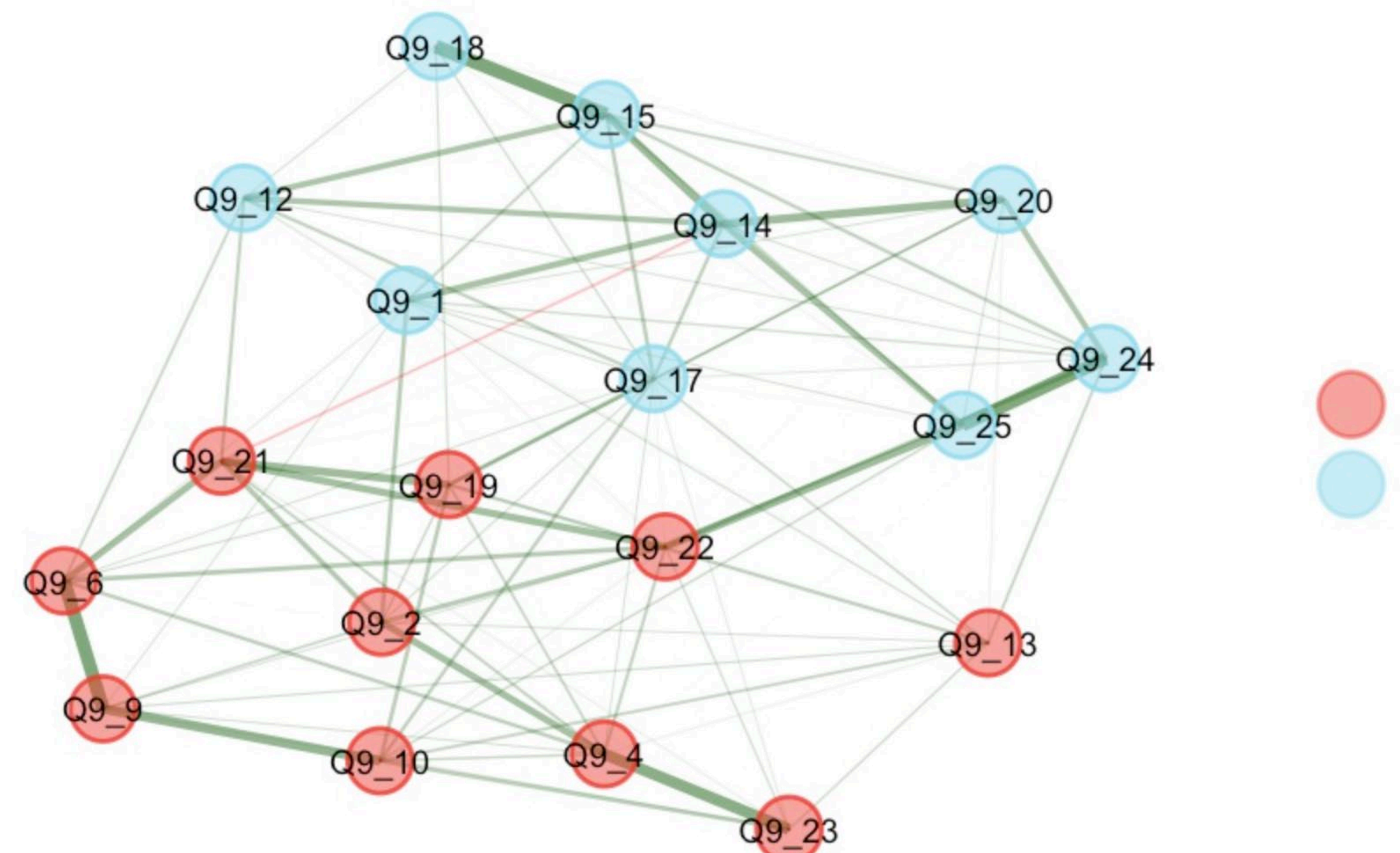
Results

Exploratory graph analysis (EGA) was used to identify the number of factors within the 25 items and the level of association between items within each factor. It also provides a visualization of the degree to which the items within each factor cluster together (Golino et al., 2020). Three factors emerged, with 11, 10, and 4 items, respectively. However, a unique variable analysis (UVA) identified some redundant items. After eliminating 6 redundant items, two factors, with 10 and 9 items each, were retained.

Initial EGA model
(3 factors identified)



Final EGA model with redundant items removed
(2 factors identified)



Final factors and their corresponding items

Factor 1 (10 items; $\alpha = .77$): Behaviors intended to limit or prevent distractions

- 2: Limit passengers
- 4: Pull over to eat, use phone, or other distraction
- 6: Use technology that prevents notifications and notifies those sending messages that you are driving, but does not automatically engage based on motion
- 9: Silence notifications
- 10: Put phone out of sight (for example, in pocket, face down)
- 13: Memorize route before trip
- 19: Use only audio for GPS (don't look at screen)
- 21: Use large print directions
- 22: Ask the other person on a call to hang up so you don't have to touch your phone
- 23: Not eat while driving

Factor 2 (9 items; $\alpha = .78$): Behaviors intended to minimize the distracting effects of non-driving tasks

- 1: Pre-create music for driving (for example, phone playlist for driving, bringing CDs)
- 12: Clip GPS or phone to dashboard or other fixed spot on car
- 14: Type in address to GPS before you start driving
- 15: Use phone hands-free for talking (for example, using Bluetooth or speakerphone)
- 17: Minimize interaction with the radio (for example, using only one radio station, having your favorite radio stations saved)
- 18: Use a button on the steering wheel to change music
- 20: Only interact with phone when stopped (for example, at a stoplight, when traffic is slow)
- 24: Prepare food for eating easily before you start driving (for example, using a water bottle with a straw, unwrapping your food)
- 25: Have a passenger help with non-driving tasks (for example navigate, send texts for you, unwrap food)

Discussion

After dropping 6 items identified via unique variable analysis (UVA), two factors were retained. Factor 1 (10 items; $\alpha = .77$) involves behaviors intended to limit or prevent distractions (e.g., use technology to prevent cellphone notifications) and Factor 2 (9 items; $\alpha = .78$) pertains to behaviors intended to minimize the distracting effects of non-driving tasks (e.g., use phone hands-free). An ongoing study is examining an updated version of items in these two factors that merges text for the items that were dropped for redundancy (e.g., new item "Block or silence phone notifications" combines separate items for silencing notification and different methods of blocking notifications). This new scale may be utilized by researchers to explore the extent to which young drivers take steps to mitigate their own distracted driving, as well as to explore impacts of relevant countermeasures to address this dangerous behavior.

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