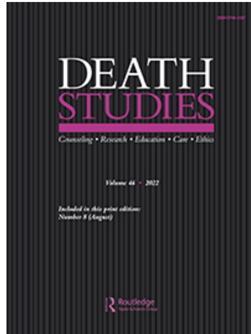

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# Dispositional optimism and suicide among trans and gender diverse adults

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**ABSTRACT**
Trans and gender diverse adults are at increased suicide risk. Optimism protects against suicide across multiple populations. Applying the Interpersonal-Psychological Theory of Suicide (IPTS), we examined both factors among 237 adults recruited via social media and online platforms, 79.3% of whom reported serious suicide ideation. Dispositional optimism predicted suicidal ideation and behaviors (SIB), but did not moderate the relationship between the IPTS components and SIB. After controlling for depressive symptoms, hormone therapy and gender-affirming surgery did not predict SIB. Promoting dispositional optimism within a therapeutic framework may reduce SIB in this vulnerable population.

Trans and gender diverse (TGD) individuals identify with a gender that differs from their assigned biological sex. "Trans" is the current inclusive language used as an umbrella term and abbreviation of "transgender." TGD includes trans men, trans women, and gender identities other than the cisgender majority (National Centre for Transgender Equality, 2016). TGD individuals report higher rates of attempted suicide (40%) in comparison to sexual minority groups (35%) and the general population (4.6%) (James et al., 2016; National LGBTI Health Alliance, 2016). The U.S. general population report higher suicide rates among cisgender men (22.8%) than cisgender women (6.2%; Hedegaard et al., 2020). Within the TGD population, suicide prevalence is higher for trans men (45%) in comparison to trans women (40%), and gender diverse people (39%) (James et al., 2016). TGD individuals aged 18–24 report greater (86%) lifetime suicide attempts in comparison to middle aged (74.4%) and older (56.6%) TGD adults (Haas et al., 2014). These high rates of suicide signal a need to understand suicide risk among this population.

The Interpersonal-Psychological Theory of Suicde (IPTS) proposes that individuals must have both the *desire* and *ability* to suicide (Joiner, 2005). According to the IPTS model, the risk of suicide is predicted by three interrelated constructs: *Thwarted Belongingness* (a sense of isolation/loneliness and absence from social interactions with others), *Perceived Burdensomeness* (subjective thoughts of being a burden upon others and negative beliefs of being incompetent in life), and *Acquiring the Capability* to suicide (an individual's habituation to self-injure and higher tolerance to physical pain and death; Van Orden et al., 2010).

Little research has investigated thwarted belongingness among TGD adults. Aspects of this desire component, such as loneliness and isolation, clearly relate to the TGD population (Khan et al., 2009). These feelings may manifest as a result of marginalization, as TGD individuals violate conventional binary classifications that challenge mainstream gender role expectations. Placing TGD adults at risk of thwarted belongingness are experiences including victimization and discrimination, family rejection, failure to acknowledge TGD identities, and workplace transphobia (Haas et al., 2014; Testa et al., 2017). When the need to belong is unmet, an individual is highly vulnerable to developing a sense of thwarted belongingness, which in turn may impact suicidal thoughts and behaviors (Joiner, 2005; Van Orden et al., 2010).

Theoretically, the desire component of perceived burdensomeness is likely to be a key risk factor for suicide among TGD adults, due to negative cognitions of self-hatred and incompetence (Testa et al., 2017). These cognitions are reflected in the concept of internalized transphobia, defined as the adoption of negative societal behaviors and attitudes toward gender minorities (Testa et al., 2017). Internalized transphobia has been associated with greater lifetime suicide

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attempts within the TGD population (Perez-Brumer et al., 2015). Further, perceived burdensomeness mediated the association between internalized transphobia and suicidal ideation among a sample of White TGD adults, with 30% of the variance in perceived burdensomeness explained by internalized transphobia. These findings demonstrate the theoretical links between negative self-stigma, perceived burdensomeness, and thoughts of suicide among TGD individuals (Testa et al., 2017).

Research has demonstrated the association between acquired capability and suicide among TGD adults (Grossman et al., 2016). Based on Solomon's Opponent Process Theory (Solomon, 1980), acquiring the capability to suicide is habituated via repeated exposures to physical injury and provocative experiences that result in a lower fear of pain toward death (Joiner, 2005). Individuals with a history of suicidal behavior are more likely to sustain higher levels of pain tolerance and more likely to increase the lethality of their acts over time (Van Orden et al., 2010). TGD individuals are six times more likely to self-harm and 53% more likely to self-injure than the general population (National LGBTI Health Alliance, 2016), indicating their acquired capability for suicide is high.

In sum, the IPTS proposes that suicide risk is high among those who have acquired the capability for serious suicidal behavior, and who simultaneously experience low belonging and high perceived burdensomeness (Joiner, 2005). The IPTS provides a theoretical foundation to understand suicide among TGD adults as they may feel disconnected from mainstream society and a burden on others as a result of multiple minority stressors. Furthermore, a history of self-harming behaviors places TGD adults in a high risk group for acquiring the psychological tools to die by suicide.

To the researchers' knowledge, two studies have investigated all three constructs of the IPTS among TGD adults (Grossman et al., 2016; Snooks & McLaren, 2020). Both samples reported a high risk (73%) for suicide. Further, thwarted belongingness, perceived burdensomeness, and acquired capability all significantly predicted suicide. These studies highlight the urgent need for future research to investigate psychological protective factors within this population.

Dispositional optimism, a trait-like characteristic, is defined as a generalized positive outcome expectation for the future, which enables individuals to achieve desirable goals (Scheier & Carver, 1985). It is identified as a cognitive, affective, and motivational concept that influences the ability to perceive incoming information and help regulate behavioral outcomes and perceptions of the self and the surrounding environment (Carver & Scheier, 2014). Optimistic individuals employ a cognitive flexibility, which appears to facilitate the necessary cognitive resources to protect vulnerable individuals against suicide (Huffman et al., 2016). Dispositional optimism has been identifed as a significant predictor of lower levels of suicide within the general population (Huffman et al., 2016) and high risk populations, including military personnel (Bryan et al., 2013) and Native American adults (O'Keefe et al., 2014).

To the researchers' knowledge, only two studies have investigated the psychological protectiveness of dispositional optimism within the TGD population. Moody and Smith's (2013) study failed to support dispositional optimism as an independent protective factor for suicidal behaviors after taking into account other variables (i.e. emotional stability). This finding could be due to shared variance between dispositional optimism and other similar variables within the study. Conversely, a qualitative study supported the protective nature of dispositional optimism against suicide among TGD adults (Moody et al., 2015).

Research has investigated dispositional optimism as a moderator within the IPTS model. Among undergraduates, dispositional optimism significantly moderated the relationships between suicidal ideation and both thwarted belongingness and perceived burdensomeness, after controlling for depressive symptoms (Rasmussen & Wingate, 2011). Additionally, dispositional optimism moderated the relationship between thwarted belongingness and perceived burdensomeness and suicidal ideation among a sample of suicide attempters, suicide ideators, and non-suicide controls (Rasmussen et al., 2013). Results of both studies suggest that when dispositional optimism increases, the relationships between both desire components of the IPTS and suicidal ideation weaken. Theoretically, optimistic individuals appear to have the psychological resources to positively think forward and protect themselves when experiencing thwarted belongingness and perceived burdensomeness, which may ultimately protect them from suicide. Conversely, dispositional optimism did not buffer the relationship between acquired capability and suicidal ideation in either study. It is plausible that an individual is unable to think forward when positioned at the end of the suicide continuum, and has acquired the behaviors for suicide (Joiner, 2005).

Given the protective nature of dispositional optimism among diverse samples, we proposed that

dispositional optimism may act as a protective factor among TGD adults. We hypothesized that higher levels of dispositional optimism would weaken the thwarted belongingness-suicide relationship, and the perceived burdensomeness-suicide relationship.

## Method

### Participants

A total of 347 individuals commenced the questionnaire. However, 5 were under the minimum age requirement and 95 did not indicate their gender identity, so were excluded from the data analysis. The final sample was 237 TGD adults who identified as *female* ($n$=111), *male* ($n$=95), *gender non-binary* ($n$=10), or *other* ($n$=21; masculine, butch, demi-boy, demi-girl, transgender, trans, transsexual, unsure). Participants ranged in age from 18 to 70 years ($M$age = 33.34, $SD$ = 12.3). Participants were from 20 countries: 43.5% were from Australia, 29.5% were from the U.S., 11.8% were from the U.K., and 4.2% were from Canada. The participants self-identified as a sexual minority (81%), were single (62%), lived in metropolitan (44.7%) or suburban (42.6%) areas, held a university qualification (67%), and were employed full-time (62.9%). Two-thirds of the sample were currently receiving hormone therapy. Most (80.6%) of the participants had not undergone gender-affirming surgery, but almost half (43.9) of these individuals were considering surgery in the future.

### Materials

A plain language information statement provided each participant with information regarding the nature of the study, the requirements of participation, participant anonymity, the right to withdraw, and ethics approval. The information included telephone numbers of the researchers and 24-hour crisis support counseling services in the event of distress from participating in this study. The question about current hormone therapy had response options of "I am currently," "No, I have never," "In the past I have but not currently," "I may in the future," and "I'd rather not say." The question about gender-affirming surgery had options of "Yes," "no," or "I'd rather not say." Respondents who selected "no" were asked "Are you considering gender-reassignment surgery in the future?" with options of "yes," "no" and "unsure."

The Suicidal Behaviors Questionnaire-Revised (Osman et al., 2001) asks four questions about previous suicidal ideation and behaviors, the communication of a suicide attempt, and the possibility of future suicide. Total scores range from 3 to 18 and a cut off score of 7 indicates risk for suicide (Osman et al., 2001). The measure has shown good internal consistency among TGD adults ($\alpha = 0.74$; Snooks & McLaren, 2020). Cronbach's $\alpha$ for the current sample was 0.71, indicating acceptable internal consistency.

The Interpersonal Needs Questionnaire-Revised (Van Orden et al., 2012) is 15 statements in two subscales: thwarted belongingness and perceived burdensomeness. Items are rated on a 7-point Likert scale ranging from 1 (*not at all true for me*) to 7 (*very true for me*), with higher scores indicating higher thwarted belongingness or perceived burdensomeness. Internal consistency for thwarted belongingness ($\alpha = 0.68$) and perceived burdensomeness ($\alpha = 0.88$) was acceptable among TGD adults (Grossman et al., 2016). Cronbach's alpha for the current sample was 0.90 for thwarted belongingness and 0.93 for perceived burdensomeness, indicating excellent internal consistency.

The Acquired Capability for Suicide Scale-Fearless About Death (Ribeiro et al., 2014) contains 7 statements about fearlessness toward pain and injury that relates to self-harming behavior and suicide (e.g. "The fact that I am going to die does not affect me"). Scores are on a 5-point scale ranging from 0 (*not at all like me*) to 4 (*very much like me*), with higher scores indicating higher levels of acquired capability to enact lethal self-injury. Internal consistency was reasonable among Indian/Alaska Native firefighters ($\alpha = 0.68$; Stanley et al., 2020) and high in the current sample ($\alpha = 0.85$).

The Center for Epidemiologic Studies-Depression Scale (Radloff, 1977) is 20 statements about depressive symptoms over the past week (e.g. "I thought my life had been a failure"). Items are on a 4-point scale ranging from 0 (*rarely or none of the time, less than one day*) to 3 (*most or all of the time, 5–7 days*). Scores range from 0 to 60 and higher scores indicate greater severity of depressive symptoms. Internal consistency was 0.92 among a sample of TGD adults (Snooks & McLaren, 2020). For the current sample, $\alpha = 0.93$, indicating excellent internal consistency.

The Life Orientation Test – Revised (Scheier et al., 1994) is a 10-item self-report measure of dispositional optimism (e.g. "In uncertain times I usually expect the best"). Items are on a 5-point scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Following removal of four filler items, scores range from 0 to 24 with higher scores indicating higher levels of optimism. Internal consistency of 0.85 has been

**Table 1.** Correlations between study variables and descriptive statistics.

| Variable | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Suicidal ideation and behaviors | _ | 0.53** | 0.60** | 0.21* | −0.57** |
| 2. Thwarted belongingness | 0.33** | _ | 0.63** | 0.08 | −0.57** |
| 3. Perceived burdensomeness | 0.39** | 0.48** | _ | 0.16* | −0.62** |
| 4. Acquired capability | 0.16* | −0.01 | 0.07 | – | −0.00 |
| 5. Optimism | −0.38** | −0.42** | −0.45** | 0.09 | _ |
| *M* | 9.94 | 32.67 | 15.51 | 14.02 | 10.74 |
| *SD* | 3.79 | 13.06 | 10.07 | 5.39 | 6.00 |

*Note.* Bivariate correlations are presented above the diagonal and partial correlations controlling for age, sexuality, hormone therapy, gender-reassignment surgery, relationship status, living arrangement, residence, education, income and depression, appear below the diagonal.
$^*p < .01$; $^{**}p < .001$.

demonstrated among TGD adults (Moody & Smith, 2013), and for the current sample, $\alpha = 0.86$, indicating excellent internal consistency.

### *Procedure*

Upon ethics approval by the Human Research Ethics Committee at the first author's institution, we recruited using convenience and snowball sampling via social media and online platforms (Facebook/Reddit). Flyers advertised the study within TGD and LGBTIQ+ health clinics and university groups. Upon entry to the study link, participants received a plain language information statement informing them of all relevant details of the study. Consent was implied by the completion of the questionnaire. All responses were anonymous. Participants were informed to contact their doctor or free relevant 24-hour helplines should they experience distress. The measures were counterbalanced to control for order effects.

## Results

We used depression, sexual orientation, and having hormone therapy or gender affirming surgery, relationship status, level of education, employment status, and living arrangement as covariates in all analyses. Over three quarters (79.3%) of the sample scored 7 or over on the Suicidal Ideation and Behaviors Questionnaire-Revised (Osman et al., 2001), indicating high risk of suicide. Additionally, 66.7% of the sample had clinically significant levels of depressive symptoms, scoring 16 or over on the Center for Epidemiologic Studies-Depression Scale (Radloff, 1977).

As seen in Table 1, results of the partial and bivariate correlations indicate that higher levels of dispositional optimism were significantly associated with lower levels of thwarted belongingness, perceived burdensomeness, and suicidal ideation and behaviors. Higher levels of thwarted belongingness, perceived burdensomeness, and acquired capability were significantly associated with higher levels of suicidal ideation and behaviors.

Table 2 displays the results for the hierarchical regression analysis. For Step 1, the demographic variables and depressive symptoms explained 33% of the variance in suicidal ideation and behaviors. The addition of the IPTS constructs at Step 2 explained a further 14% of the variance in suicidal ideation and behaviors. The addition of dispositional optimism at Step 3 explained a further 3.2% of the variance in suicidal ideation and behaviors. In the final model, which accounted for 51% of the variance in suicidal ideation and behaviors, identifying as a sexual minority, depressive symptoms, thwarted belongingness, perceived burdensomeness, acquired capability, and lower levels of dispositional optimism, were associated with higher levels of suicidal ideation and behaviors.

The results of the analyses testing the moderation models can be seen in Table 3. The interactions between dispositional optimism and each of the IPTS constructs did not significantly predict suicidal ideation and behaviors. The moderation models were therefore not supported.

## Discussion

This study is the first to demonstrate dispositional optimism as a significant predictor of suicide among TGD adults. Depositional optimism predicted unique variance in suicidal ideation and behaviors among TGD adults, but it did not moderate the relationship between thwarted belongingness and suicidal ideation and behaviors or between perceived burdensomeness and suicidal ideation and behaviors.

Consistent with the literature supporting the independent association between dispositional optimism and suicide within the general population (Huffman et al., 2016), and qualitative research among TGD adults (Moody et al., 2015), the current study indicated that dispositional optimism negatively predicted suicidal ideation and behaviors in all regression

**Table 2.** Model summary for dispositional optimism predicting suicidal ideation and behaviors.

| Variable | *B* | *β* | 95% CI | *B* | *β* | 95% CI | *B* | *B* | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | | | Model 2 | | | Model 3 | | |
| Constant | 10.27*** | | | 6.45** | | | 8.85*** | | |
| Age | −0.03* | −.12 | [0.81, 1.22] | −0.02 | −0.06 | [0.79, 1.26] | −0.01 | −0.04 | [0.78, 1.27] |
| Sexuality[a] | −1.51** | −.15 | [0.97, 1.03] | −1.07* | −0.11 | [0.95, 1.04] | −1.08* | −0.11 | [0.95, 1.04] |
| Hormone therapy[b] | 0.45 | 0.05 | [0.88, 1.13] | 0.35 | 0.04 | [0.87, 1.13] | 0.39 | 0.04 | [0.87, 1.13] |
| Gender A-surgery[c] | −0.59 | −0.06 | [0.83, 1.19] | −0.57 | −0.06 | [0.83, 1.19] | −0.48 | −0.05 | [0.83, 1.20] |
| Relationship status[d] | −0.23 | −0.03 | [0.84, 1.18] | −0.42 | −0.05 | [0.84, 1.18] | −0.40 | −0.05 | [0.84, 1.18] |
| Education level | −0.17 | −0.02 | [0.92, 1.08] | 0.01 | 0.00 | [0.90, 1.10] | 0.12 | 0.02 | [0.89, 1.11] |
| Employment[e] | 1.01* | 0.13 | [0.95, 1.05] | 0.52 | 0.06 | [0.92, 1.08] | 0.47 | 0.06 | [0.92, 1.08] |
| Living arrangement[f] | −0.12 | 0.55 | [0.83, 1.20] | −0.07 | −0.00 | [0.81, 1.23] | −0.20 | −0.02 | [0.80, 1.24] |
| Depressive symptoms | 0.12*** | 0.47 | [0.89, 1.11] | 0.05*** | 0.23 | [0.64, 1.55] | 0.03** | 0.13 | [0.49, 2.00] |
| Thwarted belongingness | | | | 0.05** | 0.19 | [0.53, 1.87] | 0.04* | 0.13 | [0.51, 1.95] |
| Perceived burdensomeness | | | | 0.10*** | 0.28 | [0.49, 2.04] | 0.07** | 0.20 | [0.43, 2.29] |
| Acquired capability | | | | 0.07** | 0.11 | [0.94, 1.05] | 0.09** | 0.13 | [0.92, 1.07] |
| Optimism | | | | | | | −0.15*** | −0.25 | [0.50, 1.97] |
| $R^2$ | 0.34*** | | | 0.47*** | | | 0.50*** | | |
| $\Delta R^2$ | 0.31*** | | | 0.45*** | | | 0.48*** | | |

*Note.* [a]1 = heterosexual, 2 = sexual minority; [b]1 = yes, 2 = no; [c]1 = yes, 2 = no; [d]1 = partnered, 2 = unpartnered; [e]1 = employed, 2 = unemployed; [f]1 = alone, 2 = not alone.
*$p < .05$; **$p < .01$; ***$p < .001$.

**Table 3.** Model summary for dispositional optimism moderating the associations between the IPTS components and suicidal ideation and behaviors.

| | Thwarted belongingness | | Perceived burdensomeness | | Acquired capability | |
|---|---|---|---|---|---|---|
| Variable | *B* | 95% CI | *B* | 95% CI | *B* | 95% CI |
| Constant | 10.25*** | [5.75, 14.75] | 11.10*** | [6.65, 15.54] | 10.40*** | [5.91, 14.88] |
| Age | −0.02 | [−0.05, 0.01] | −0.01 | [−0.04, 0.01] | −0.02 | [−0.05, 0.01] |
| Sexuality[a] | −1.21* | [−2.15, −0.26] | −1.14* | [−2.08, −0.21] | −1.31** | [−2.26, −0.36] |
| Hormone therapy[b] | 0.44 | [−0.38, 1.27] | 0.34 | [−0.47, 1.15] | 0.48 | [−0.34, 1.31] |
| Gender A-surgery[c] | −0.41 | [−1.42, 0.59] | −0.40 | [−1.39, 0.58] | −0.41 | [−1.42, 0.58] |
| Relationship status[d] | −0.33 | [−1.15, 0.48] | −0.38 | [−1.19, 0.42] | −0.33 | [−1.15, 0.48] |
| Education level | 0.14 | [−0.51, 0.81] | 0.01 | [−0.62, 0.66] | 0.14 | [−0.51, 0.80] |
| Employment[e] | 0.56 | [−0.21, 1.34] | 0.53 | [−0.23, 1.30] | 0.67 | [−0.10, 1.45] |
| Living arrangement[f] | −0.11 | [−1.11, 0.88] | −0.39 | [−1.37, 0.59] | −0.28 | [−1.27, 0.71] |
| Depressive symptoms | 0.06*** | [0.03, 0.09] | 0.05*** | [0.02, 0.08] | 0.06*** | [0.03, 0.09] |
| IPTS component | 0.06** | [0.02, 0.09] | 0.09*** | [0.04, 0.15] | 0.11*** | [0.04, 0.18] |
| Optimism | −0.18*** | [−0.27, −0.10] | −0.16*** | [−0.24, −0.08] | −0.24*** | [−0.32,−0.17] |
| IPTS component × optimism | −0.002 | [−0.007, 0.002] | −0.001 | [−0.009, 0.005] | −0.0025 | [−0.014, 0.009] |
| $R^2$ | 0.46*** | | 0.47*** | | 0.46*** | |
| $\Delta R^2$ | 0.0031 | | 0.0005 | | 0.0004 | |

*Note.* [a]1 = heterosexual, 2 = sexual minority; [b]1 = yes, 2 = no; [c]1 = yes, 2 = no; [d]1 = partnered, 2 = unpartnered; [e]1 = employed, 2 = unemployed; [f]1 = alone, 2 = not alone.
*$p < .05$; **$p < .01$; ***$p < .001$.

models. Higher levels of dispositional optimism were associated with lower levels of suicidal ideation and behaviors, independently of demographic variables, depressive symptoms, and each component of the IPTS. Findings suggest that dispositional optimism is directly protective against suicide, and that individuals who employ the mechanisms to retain positive thoughts for the future experience lower levels of suicidal ideation and behaviors.

The current findings are inconsistent with Moody and Smith's (2013) study that did not support dispositional optimism as a protective factor against suicidal ideation and behaviors among TGD adults. A possible explanation could be due to the inclusion of similar protective factors in their study, such as emotional stability, which theoretically resemble dispositional optimism.

Results of the current study are also inconsistent with previous research that demonstrated dispositional optimism is a significant moderator in the relationship between each desire component and suicidal ideation among undergraduate students (Rasmussen & Wingate, 2011) and adults who have attempted suicide (Rasmussen et al., 2013). These inconsistent findings may be explained by the differences in the level of suicide risk between each sample (79% in the current study vs. 21.8% and 10.3%, respectively, among undergraduates and suicide attempters). The majority of TGD adults in the current study were further along the suicide continuum, indicating a potential higher

risk for thwarted belongingness, burdensomeness, and the acquisition of behaviors to die by suicide (Van Orden et al., 2010). More importantly, the findings suggest that dispositional optimism does not buffer against the IPTS risk factors for suicide among TGD adults.

Given that this appears to be the first study to investigate dispositional optimism among TGD adults within the context of the IPTS, the current findings raise questions surrounding the protective role of dispositional optimism among TGD adults. There are some possible explanations for why dispositional optimism failed to moderate the relations between the desire components of the IPTS and suicidal ideation and behaviors in this sample. Given that optimism is a dispositional trait (Scheier & Carver, 1985), it is plausible that individuals positioned toward the end of the suicide continuum are unable to think forward and hold positive thoughts that the effects of thwarted belongingness and perceived burdensomeness are temporary.

Optimism is dispositional and intertwined with the cognitive and motivational processes that facilitate attaining future goals (Carver & Scheier, 2014). When goal attainment is prevented, suicidal individuals have been found to disengage from their desired goal (O'Connor et al., 2012), restricting their cognitive flexibility to reengage with new attainable goals (Heckhausen et al., 2010). Future goals and their achievability impacts whether optimistic individuals remain engaged in their efforts to positively think forward (Carver & Scheier, 1998). It is plausible that the components of the IPTS act as goal blockages, disrupting the regulation of future goal attainment among highly suicidal TGD individuals, and likely disables positive thoughts for the future, which in turn, exposes vulnerable TGD individuals to suicide.

As anticipated, the current results demonstrate no support for dispositional optimism as a moderator in the relationship between acquired capability and suicide. This finding supports the previous findings by Rasmussen and Wingate (2011) and Rasmussen et al. (2013). Given the high rates of self-harm reported within this population (National LGBTI Health Alliance, 2016), and the current sample's high risk for suicide, it is plausible that an optimistic outlook is thwarted when individuals have acquired the psychological tools to engage in suicidal behavior.

Previous research within the TGD population has highlighted the significant links between depressive symptoms and suicidal ideation and behaviors (Clements-Nolle et al., 2006). In the current study, depressive symptoms also significantly predicted suicide in the regression analyses. Additionally, the main effect for sexual orientation significantly predicted suicidal ideation and behaviors in all models; participants who identified as a sexual minority were at higher risk for suicidal ideation and behaviors than TGD adults who identified as heterosexual. This supports previous research highlighting TGD individuals who are a sexual minority are a high risk group for suicide (Lytle et al., 2016), which is likely due to the multiple risk factors that relate to TGD and sexual minority populations, such as discrimination, victimization, transphobia, homophobia, and internalized transphobia/homophobia (Haas et al., 2014; Testa et al., 2017).

The remaining covariates in the current study that have been identified as predictors of suicidal ideation and behaviors within TGD research, specifically hormone therapy (Bauer et al., 2015) and gender affirming surgery (Bailey et al., 2014), were not significant within this sample after controlling for depressive symptoms. The TGD literature suggests that hormone therapy and gender affirming surgeries are associated with better adjustment and wellbeing among TGD individuals, due to the ability to live authentically (Gómez-Gil et al., 2014). It is possible that dispositional optimism accounted for the variance explained by hormone therapy and gender affirming surgeries, as the majority of participants were currently receiving hormone therapy (67.5%), and over three quarters of the participants (80.6%) who reported "No" to gender affirming surgery were considering this in the future. Therefore, medical treatments may be indicators of positive goals and expectations for the future, which appear to relate to the characteristics of dispositional optimism.

Additional covariates identified as suicide predictors within the general population (i.e. age, relationship status, and employment; Van Orden et al., 2010) were not significant predictors of suicidal ideation and behaviors within the current study. It is plausible that each additional covariate in the current study failed to explain unique variance when depressive symptomatology was taken into account, as two thirds of this sample reported clinical depression.

The findings of the current study have implications for mental health professionals developing interventions for TGD adults who are at risk for suicide. Findings highlight the potential direct benefits for promoting dispositional optimism within a therapeutic framework in order to reduce levels of suicidal ideation and behaviors. Dispositional optimism has been identified as a modifiable factor during therapy

(Malouff & Schutte, 2017). Specifically, Cognitive Behavioral Therapy (Beck, 1963) has robust evidence for incorporating optimistic characteristics that simultaneously treat suicidal behavior (Tarrier et al., 2008) and depression (Pachankis et al., 2015).

Currently in its infancy, Transgender Affirmative Cognitive Behavioral Therapy (TA-CBT; Austin & Craig, 2015) specifically supports and implements resilience in TGD individuals. Given the current evidence indicating TGD sexual minorities are at further risk for suicide, TA-CBT shares key components of Gay Affirmative Cognitive Behavior Therapy (Craig et al., 2013), which may potentially generalize to both gender and sexual minorities. TA-CBT appears to utilize optimistic elements that facilitate goals and positive future expectations (Austin & Craig, 2015), and has the potential to be an effective intervention for the TGD population who are at high risk for suicide.

Given the strength of the relationship between each component of the IPTS and suicide within this study, investigating multiple protective factors in order to reduce this relationship is warranted. According to Zimmerman's (2013) *Protective-Protective* model, the interactions of multiple protective factors may relate to positive outcomes. Additional psychological protective factors that may act as buffers include hope (Kwon, 2013), emotional stability (Moody & Smith, 2013), and self-determination (Bureau et al., 2012). Also, having a sense of identity-pride appears to protect against minority stress, due to the sense of pride individuals may possess regarding their gender identity and sexuality (Meyer, 2003). Although identity pride is yet to be investigated among TGD adults, exploration of its potential to weaken the effects of thwarted belongingness and perceived burdensomeness is important, as these two desire components indicate early warning signs that lead to suicidal ideation and behaviors.

It is important to consider the current results within the context of some limitations. First, the cross-sectional design precludes any causal inferences. Second, the study relied on self-report measures, which introduced response subjectivity and potential response biases. Third, the method of recruitment, via social media and group forums, may have resulted in a potential bias in sampling collection, due to correlations between social media and feelings of social isolation and depression (Shensa et al., 2017). Finally, we did not assess race and ethnicity, and collectively the results may not generalize to the broader TGD population.

In summary, the current study investigated the association between dispositional optimism and suicidal ideation and behaviors after controlling for each component of the IPTS among an international sample of TGD adults. Results indicated that dispositional optimism independently predicted suicidal ideation and behaviors, revealing that the cognitive characteristics to positively think forward may be protective against suicidality. Conversely, dispositional optimism did not moderate the relationships between each component of the IPTS and suicidal ideation and behaviors. This research extends the limited literature investigating suicide and resilience among TGD adults. Future research focusing on identifying protective factors against thwarted belongingness, perceived burdensomeness, and acquired capability is critical within the TGD population, in order to prevent the reported high rates of suicide.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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