



Original Article

## Transnegativity based on defensiveness: Attitude functions as predictors of trans attitudes

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### Abstract

Katz (1960) proposed that attitudes exist because they serve a function for the individual who holds them. This theory has been applied to attitudes towards gay men and lesbians (Herek, 1986), but work on attitude functions in relation to trans people is scant. The Attitude Functions Inventory (AFI) assesses whether one's outgroup beliefs are held because they reflect: (1) out group experiences (experiential function), (2) the opinions of important others (social-expressive function), (3) one's values (value-expressive function), and/or (4) personal feelings of discomfort evoked by the outgroup (ego-defensive function). Herek's AFI was applied to help better understand the psychological functions underlying transnegative attitudes. Canadian university student participants from 2001 ( $N=157$ ) and 2014 ( $N=218$ ) completed the AFI and a Transgender Belief Scale (TBS). Those who based their beliefs on personal anxieties were most likely to be transnegative, as assessed using the TBS. Further, those who were male, exclusively heterosexual, and more religious were the least transpositive. This suggests defensiveness--thought to be a person's response to a psychological

threat--might be the psychological basis of a person's trans attitudes. Understanding why people hold the attitudes they do can help guide efforts to foster greater trans acceptance and inclusion.

### Introduction

Transprejudice and transnegativity involve negative valuing, stereotyping, and

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discrimination of those whose appearance of identity does not conform to current societal expectations of gender (Winter et al., 2009). Transnegativity is common across various settings (e.g., Cunningham and Pickett, 2018), and trans individuals experience high levels of violence and discrimination (Grant et al., 2011). While discussion about trans issues seems to be increasing, transprejudice is still more prominent than prejudice against gay, lesbian, or bisexual (LGB) people (Cunningham and Pickett, 2018). Despite this, scholarly work on transprejudice and transnegativity is incipient relative to work on LGB prejudices (Warriner et al., 2013).

Research on predictors and correlates of transprejudice forms the basis for experimental manipulation attempts to ameliorate negative attitudes. Some of these manipulations show positive effects--such as reduced discriminatory intentions or more favourable attitudes--as a result of increased exposure to trans people or information about trans people (Case and Stewart, 2013) or from perspective-taking tasks (Tompkins et al., 2015). However, the effects of attitude interventions are inconsistent; after exposure, some studies find no changes (Ridges, 2019), and one subsample saw an increase in discriminatory behaviours after intervention (Case and Stewart, 2013). Thus, attempts to address transprejudice are nascent and would benefit from additional research and development. However, dismantling trans negativity requires a better understanding of its roots; we propose that it is necessary to better understand the purpose that negative attitudes serve for the attitude-holder.

### Attitude functions

Katz (1960) originally proposed the functional approach to attitudes whereby attitudes are held because they are thought to serve some psychological function for the individual. Expanding upon this work, Herek (1986)

identified four attitude functions related to attitudes toward lesbians and gay men. The *experiential function* is categorized as instrumental in that the attitude helps the individual make sense of their social world; when an attitude serves an experiential function, it is based on past or expected experiences with outgroup members. While the experiential function is instrumental, there are also three symbolic functions (i.e., involving emotional/value-driven responses). The *value-expressive function* is at play when the attitude is thought to uphold or align with cherished moral belief systems held by the individual (e.g., those who value social justice belief systems are likely to eschew transnegativity). When an attitude is adopted from important others around an individual (e.g., when family and/or peers reject/embrace transpeople), this indicates that the attitude serves a *social-expressive function*. Both value- and social-expressive functions are thought to be a means by which individuals express, maintain, or enhance their identity and group membership. Finally, attitudes may be formed in reaction to self-relevant threats; this is the *ego-defensive function*. In the case of gender minorities, the existence of trans individuals may be perceived as a threat to one's identity (e.g., trans people may contradict beliefs about gender expression, challenge the gender hierarchy, or lead one to contemplate their own gender identity; see 'precarious manhood' for men in particular (Vandello and Bosson, 2013)). In short, different psychological functions could underlie the same attitude.

Researchers have used this theoretical framework to investigate attitudes toward lesbians and/or gay men (Franklin, 2000; Hans et al., 2012; Meaney and Rye, 2010). Meaney and Rye found that men were more likely to form homonegative beliefs based on ego-defensiveness and that, across genders, this was the most predictive function of attitudes toward lesbians and gay men.

Similarly, Ciocca et al. (2015) found defensive styles predictive of attitudes toward homosexuality. Franklin found that the ego-defensive function was the only function that differentiated non-assailants from those who had physically assailed or orally taunted gay men/lesbians.

Research regarding the functions of trans attitudes, however, is scant. Willoughby and colleagues (2010) explored this topic but did not use Herek's Attitude Function Inventory to measure attitude functions; instead, they used pre-existing psychological instruments to represent the different attitude functions (e.g., Religious Fundamentalism and Right-Wing Authoritarianism scales to represent value-expressiveness; Rokeach's moral dogmatism measure to represent social-expressiveness). They found that their proxy measure of ego-defensiveness (i.e., Herek's (1987) Attitudes Toward Gay Men Scale replacing gay men with gender non-conformists as the target), as well as value- and social-expressive measures significantly predicted transnegativity (Willoughby et al., 2010). However, this was not a direct test of the role of attitude functions in relation to transnegativity, as no direct measures of attitude functions were used. Other research has established that threats to identity-particularly gender-related identity--are predictive of more negative trans attitudes (Brassel and Anderson, 2020; Ching, 2022; Vandello and Bosson, 2013) lending additional indirect support to the idea that defensiveness may underlie transnegativity.

Understanding the functions of trans attitudes is crucially important to understand how best to intervene and counteract transprejudice. For example, contact with gender and sexual minorities has been shown to reduce negative beliefs about these groups; this type of intervention may address the experiential function (Paluck et al., 2019; Tadlock et al., 2017). One experimental study showed that different messages are more effective in

altering beliefs held for value- versus social-expressive reasons (DeBono, 1987). For example, should the social-expressive function drive transnegativity, an intervention in which respected others express transpositive attitudes may be most appropriate. Katz (1960) wrote that "self-insight" is important when the ego-defensive function is driving the attitude. Thus, exploring the attitude functions behind transprejudice may indicate the optimal route(s) for intervention.

### The current study

The current study is a direct investigation of attitude functions in relation to trans attitudes. Using two university samples, this correlational study used Herek's Attitude Function Inventory to investigate the relationship of attitude functions with a measure of trans attitudes and beliefs. Key demographic characteristics of the social perceiver (participant) were also considered in the prediction of trans attitudes, as men and women differ in their attitudes toward sexual and gender minorities (Glotfelter and Anderson, 2017), and there may be different underpinnings of men and women's trans attitudes (Nagoshi et al., 2008; Norton and Herek, 2013). We hypothesize that the Attitude Functions Inventory scales will add predictive value above and beyond that of the gender of the perceiver; additionally, based on the current literature pointing to identity threat as playing an important role in transprejudice, we expect that the ego-defensive function will be particularly predictive.

### Method

#### 1. Participants

This study was conducted using two samples of participants: a contemporary sample (most relevant to current trans issues;  $N=214$ , data collected in 2014) and a historic sample

(included for historic relevance and to help establish the replicability of the findings;  $N=157$ , data collected in 2001). Across samples, participants were students enrolled in a psychology course at a mid-sized Canadian university and received course credit for voluntary participation. On average, participants in both samples were young (average age=19.6 and 19.4 years); the majority were female (73% and 61%); and only slightly or not-at-all religious (59% and 43%, respectively). The religiosity item was strongly correlated with Altemeyer and Hunsberger's (1992) Religious Fundamentalism Scale (Rye and Underhill, 2020). Ethnicity was only available for the contemporary sample, who were primarily White (50%) or Asian (34%). The contemporary sample was more sexually diverse, with 69% rating themselves as exclusively heterosexual compared to the historic sample, 92% of whom rated themselves as exclusively heterosexual.

## 2. Materials

The Transgender Belief Scale (Rye & Elmslie, 2001; Appendix-A) is a 21-item measure used to assess opinions, ideas, and beliefs vis-à-vis trans individuals (e.g., [Trans people] "...should have the same rights as everyone else in society"; "...pose a threat to society's morals and values") on a 7-point Likert scale (items averaged; possible range= 1-7, higher scores indicate more transpositivity). The Transgender Belief Scale (TBS) demonstrated strong internal consistency ( $\alpha_{\text{contemporary}}=.91$ ;  $\alpha_{\text{historical}}=.92$ ).

The Attitude Function Inventory (AFI) is a 10-item instrument measuring the sources to which people attribute their attitudes (Herek, 1987). Participants respond to AFI items on a 7-point Likert-type scale with anchors of "not at all true of me" to "very true of me" (possible range=1-7). The internal consistency of scales in each sample was as

follows:  $\alpha_{\text{experiential-contemporary}}=.77$ ;  $\alpha_{\text{experiential-historic}}=.73$ ;  $r_{\text{social-contemporary}}=.53$ ;  $r_{\text{social-historic}}=.53$ ;  $r_{\text{ego-defensive-contemporary}}=.62$ ;  $r_{\text{ego-defensive-historic}}=.63$ ;  $r_{\text{value-contemporary}}=.27$ ;  $r_{\text{value-historic}}=.20$ . Herek (1987) developed the AFI after coding the themes found within essays by participants justifying their feelings about gay men and lesbians. His cluster analysis supported a four-scale structure, reflecting the experiential (e.g., "my opinions about [trans people] mainly are based on my personal experiences with specific [trans] persons"; 4 items), ego-defensive (e.g., "my opinions about [trans people] mainly are based on the fact that I would rather not think about [trans]"; 2 items), social-expressive (e.g., "my opinions about [trans people] mainly are based on learning how [trans people] are viewed by the people whose opinions I respect most"; 2 items), and value-expressive (e.g., "my opinions about [trans people] mainly are based on my moral beliefs about how things should be"; 2 items) functions. Other studies have used the AFI (Barron et al., 2008; Franklin, 2000; Hosseinzadeh and Hossain, 2011), or variations thereof, and correlations between the AFI scales and related constructs provide evidence for convergent validity. Evidence of the distinctiveness of the AFI scales has been indicated by low inter-scale correlations (Barron et al., 2008; Meaney and Rye, 2010).

## 3. Procedure

Participants completed demographic measures and were given the TBS, followed by the AFI. These materials were embedded in a larger questionnaire which included other measures and addressed multiple research questions (Rye et al., 2019; Rye and Underhill, 2020). The study was conducted in small group settings and administered by student research assistants. Participants were aware of the sexual nature of the study at recruitment. Informed content and debriefing procedures were employed.

## Results

### 1. Descriptive statistics and sample comparisons

#### 1.1. Trans attitudes

For contemporary and historic samples, the average TBS scores were in the favourable direction (above the scale midpoint). Inspection of the TBS histograms (Appendix B) indicated that the contemporary sample had a slightly positive skew, whereas the historic sample demonstrated a bell curve.

A 2 (participant sex) x 2 (sample) ANOVA indicated a main effect of participant sex whereby women were more transpositive than men on the TBS ( $M_{\text{women}}=5.00$ ,  $sd=.99$  vs.  $M_{\text{men}}=4.27$ ,  $sd=1.12$ ;  $F(1,369)=32.66$ ,  $p<.0001$ ,  $\eta_p^2=.08$ ). There was also a main effect of sample such that the contemporary sample was more transpositive than the historic sample (Table 1). There was no significant interaction of sample and participant sex.

#### 1.2. Attitude functions

Across samples, participants did not endorse that their attitudes were based on the ego-defensive, experiential, and social-expressive functions (i.e., the average response was in the “not characteristic of me” end of the response scale). Across samples, participants endorsed that their trans attitudes were based on their value systems (i.e., average response near “slightly true of me”). ANOVAs indicated that the samples did not differ significantly in their ratings of the experiential and value-expressive functions, whereas the contemporary sample denied social-expressive and ego-defensive functions more strongly than the historic sample (Table 1). While significant, the effect size of the social-expressive sample difference was negligible ( $\eta_p^2=.02$ ). The historic sample endorsed the ego-defensive function more than the contemporary sample,

with a modest effect size ( $\eta_p^2=.07$ ). While both samples produced scores across the entire scale range, 40% of the contemporary sample entirely denied (i.e., scored a “1”) that the ego-defensive function underlies their trans attitudes. In contrast, only 16% of the historic sample did the same.

A sample by sex multivariate ANOVA was conducted for the attitude functions. There was one significant but the weak main effect of sex: women denied the ego-defensive function more than men ( $F(1,363)=7.29$ ,  $p<.01$ ,  $\eta_p^2=.02$ ;  $M_{\text{women}}=2.60$ ,  $sd=1.66$  vs.  $M_{\text{men}}=3.24$ ,  $sd=1.78$ ). This could be described as men endorsing the ego-defensive function more than women; however, this characterization would be disingenuous because both are largely *denying* (i.e., “this is not characteristic of me”) the function. There was a weak but significant univariate crossover interactive effect of sample and participant sex for the experiential function only ( $F(1,363)=6.66$ ,  $p=.01$ ,  $\eta_p^2=.02$ ), such that men denied the experiential attitude function more in the older sample ( $M_{\text{historic}}=2.71$  vs.  $M_{\text{contemporary}}=3.19$ ) while women denied it more in the more recent sample ( $M_{\text{historic}}=3.15$  vs.  $M_{\text{contemporary}}=2.80$ ). While these effects (i.e., participant sex for ego-defensive function and interaction of participant sex and sample for experiential function) were significant, they are negligible (i.e., both  $\eta_p^2=.02$ ).

In short, while there were multivariate differences in attitude functions ( $F(4,360)=7.18$ ,  $p<.0001$ ,  $\eta_p^2=.07$ ), participant sex ( $F(4,360)=3.58$ ,  $p<.01$ ,  $\eta_p^2=.04$ ), and their interaction ( $F(4,360)=2.66$ ,  $p<.05$ ,  $\eta_p^2=.03$ ), the univariate tests were generally non-significant, or significant but inconsequential. There was modest evidence that the contemporary sample denied the ego-defensive attitude functions more than the historic sample.

**Table 1. Means, Standard Deviations, and Univariate Analysis of Variance for Trans Attitudes and Attitude Functions by Sample.**

Measure	Contemporary Sample		Historic Sample		Univariate test of difference (df) F	$\eta_p^2$
	M	SD	M	SD		
TBS	5.15	0.97	4.24	1.03	(1,369)=57.60***	.14
AFI- Experiential	2.89	1.42	2.98	1.44	(1,366)=0.31	.00
AFI-Value-Expressive	4.98	1.58	4.77	1.45	(1,366)=1.73	.01
AFI-Social-Expressive	3.30	1.61	3.78	1.65	(1,366)=8.04**	.02
AFI-Ego-Defensive	2.41	1.60	3.34	1.74	(1,366)=28.43***	.07

Note. TBS= Transgender Belief Scale.

\*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 2. Zero-order correlations of the Attitude Functions and Transgender Belief Scale**

	TBS	Social-Expressive	Value-Expressive	Experiential
Ego-Defensive	-.69***/-.72***	.31***/.38***	-.21**/.14	.36***/.29***
Men	-.68***/-.74***	.57***/.49***	-.08/.19	.27*/.38**
Women	-.67***/-.72***	.26***/.31***	-.26*/.11	.37***/.26*
Social-Expressive	-.20**/-.24***	--	.02/.14	.38***/.34***
Men	-.48***/-.26*		-.07/.11	.35***/.31*
Women	-.15/-.26***		.04/.16	.41***/.36***
Value-Expressive	.15*/-.15		--	-.19**/-.11
Men	.16/-.19			-.13/-.15
Women	.15/-.13			-.22**/-.19*
Experiential	-.27***/-.11			--
Men	-.26/-.15			
Women	-.24***/-.17			

Note: Contemporary sample (N=212-216;  $n_{men}=56$ ,  $n_{women}=155-158$ ) correlations/historic sample (N=156;  $n_{men}=61$ ,  $n_{women}=95$ ) correlations. TBS=Transgender Belief Scale.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



## 2. Attitude functions as predictors of trans attitudes

### 2.1. Correlations

The AFI scale intercorrelations were generally weak, around  $r=.35$  or lower (Table 2). For both samples and across genders, the ego-defensive attitude function was strongly related to the TBS (i.e.,  $r$  around  $-.70$ ). No other AFI scale was as strongly nor consistently related to trans attitudes. Greater denial that attitudes were based on ego-defensive concerns corresponded with more positive trans attitudes. The social-expressive attitude function was the next most strongly related (i.e.,  $r$  around  $-.20$ ). There were no consistent sex differences in the relationship between attitude functions and trans attitudes.

### 2.2. Multiple regression analyses

Hierarchical multiple regression analyses were conducted for each sample. The TBS was regressed upon the demographic characteristics of self-reported participant sex, sexual orientation, and religiosity on the first step and the four AFI scales on the second step (see Table 3). Results were almost identical for the two samples: participant sex, sexual orientation, and religiosity were significant predictors of trans attitudes, collectively accounting for modest amounts of variance (adjusted  $R^2=.26$  and  $.27$ ). After the AFI scales were entered on the second step, these demographic variables remained significant, while the addition of the AFI was also significant. The ego-defensive attitude function was strongly predictive of trans attitudes, explaining approximately an additional third of TBS variance beyond the demographic variables. No other attitude function was a significant predictor of trans attitudes.

## Discussion

This study sought to explore the attitude functions that were most related to trans

attitudes across historic and contemporary samples. In just over a dozen years, our cohorts shifted their trans attitudes--as measured by the TBS--from neutral to favourable on average. This is consistent with favourable changes in attitudes toward trans people reported in an overlapping six-year period (2005-2011; Flores, 2014). Flores concludes that longitudinal lesbian and gay attitude change can be attributed to cultural shifts rather than a generational replacement or cohort differences; this likely extends to positive trans attitude change. In our study, participants were predominantly young, well-educated, and women - all of whom are more likely to be positive toward trans people (Morgan et al., 2020); thus, the positive attitudes observed may be due to the nature of the samples. However, this change gives hope that the overall orientation toward transpeople has and will continue to improve with time.

As expected, participant sex was an important predictor of transnegativity in our study, with men being more negative than women. This is one of the most reliable findings in the literature on attitudes towards sexual and gender minorities and gender issues (e.g., Norton and Herek, 2013; Moss-Racusin and Rabasco, 2018; Willoughby et al., 2010). Recent literature posits that trans individuals pose more of an ideological threat to men than women ("gender-related self-esteem", Brassel and Anderson, 2020 or "precarious manhood", Vanello and Bosson, 2013). Norton and Herek (2013) suggested that attitudes toward trans people might be determined by a value-expressive function for women but an ego-defensive function for men. However, our direct test of the role of attitude functions finds that ego-defensiveness was overwhelmingly and robustly important for both men and women. This is consistent with findings that men and women show more negative trans attitudes after receiving threatening information about their gender belonging (Konopka et al., 2021). What exactly it is about trans people that is

**Table 3. Hierarchical regression analysis for participant sex and attitude functions as predictors of the Transgender Belief Scale**

	Contemporary Sample					
	TBS					
	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Constant	2.77	.29	--	4.41	.34	--
Participant Sex	.63	.13	.29***	.40	.11	.18***
Sexual Orientation	.36	.09	.25***	.20	.07	.14**
Religiosity	.22	.04	.30***	.16	.04	.22***
Ego-Defensive				-.35	.03	-.58***
Social-Expressive				-.02	.03	-.03
Value-Expressive				.01	.03	.01
Experiential				.02	.04	.04
Adjusted R <sup>2</sup>		.26			.56	
(df)					(4,203)	
<i>F</i> change					35.71***	
(df)		(3,207)			(7,203)	
<i>F</i>		25.33***			38.54***	
	Historic Sample					
	TBS					
	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Constant	1.68	.36				
Participant Sex	.59	.15	.28***	.47	.11	.22***
Sexual Orientation	.71	.20	.25***	.43	.15	.15**
Religiosity	.27	.05	.35***	.14	.04	.18***
Ego-Defensive				-.37	.04	-.63***
Social-Expressive				.01	.04	.01
Value-Expressive				-.02	.04	-.03
Experiential				.02	.04	.02
Adjusted R <sup>2</sup>		.27			.61	
(df)					(4,147)	
<i>F</i> change					34.03***	
(df)		(3,151)			(7,147)	
<i>F</i>		20.30 ***			35.76 ***	

TBS=Transgender Belief Scale All VIFs < 1.4, Tolerance statistics >.71, Durbin-Watson = 2.04 for both analyses.

\**p*<.05. \*\**p*<.01. \*\*\**p*<.001.



threatening may vary for women and men; some predictors of transnegativity and homonegativity are shared between men and women, whereas others are unique to one gender (Kanamori and Xu, 2022; Warriner et al., 2013). It is possible that different identity threats are evoking the ego-defensive attitude function for men and women (cf. Conlin et al., 2021); this is a worthy candidate for future research.

Additional demographic predictors of sexual orientation and religiosity were predictive of trans attitudes. Sexual minorities have been shown to be more favourable toward other minorities (Thorpe and Arbeau, 2020), perhaps due to shared stigmatization experience (Craig and Richeson, 2016). In contrast, Scandurra et al. (2017) did not find sexual orientation predictive of transphobia when other socio-demographic variables were considered. Religiosity measures, however, are often predictive of trans attitudes (Kanamori and Xu, 2022; Tadlock et al., 2017; Scandurra et al., 2017; Warriner et al., 2013) and might reflect overall conservatism--liberalism. Hone et al. (2021) indicate that conservative moral judgement regarding unconventional or stigmatized sexuality is at the heart of religious identity.

Regardless of demographic predictiveness, the ego-defensive attitude function strongly predicted trans attitudes. Consistent with prior research finding a relationship between the ego-defensive attitude function and attitudes and behaviours toward gay men (Barron et al., 2008; Franklin, 2000; Meaney and Rye, 2010) participants in this study were the most transpositive when they did *not* report that they based their attitudes on ego-defensiveness. This is consistent with research suggesting ego-defensiveness is a strong predictor of transnegativity when measured indirectly (Willoughby et al., 2010). It is also congruent with the literature on *contact apprehension*--the discomfort or anxiety associated with being in

close contact with those of minority status. McCullough et al. (2019) found that trans-relevant contact apprehension was the strongest predictor of trans attitudes, more so than right-wing authoritarianism or social dominance orientation. Future research may explore whether contact apprehension relates to (and perhaps is a reflection of underlying) ego-defensiveness. The importance of the ego-defensive function is also consistent with a qualitative study conducted by Hans and colleagues (2012), wherein participants stated that their negative attitudes would be exacerbated if they felt uncomfortable (e.g., if a same-sex person expressed romantic interest toward them). This discomfort may represent a psychological threat (e.g., implications for their sexuality or gender role failure). Similarly, Barron et al. (2008) suggested that gay men symbolize threats to gender or masculinity-related social order. Trans individuals may be perceived as a gender hierarchy threat, producing similar anxiety and insecurity-based psychological response.

Our findings that social-expressive and experiential functions were, on average, *denied* (i.e., rated toward the "not-true-of-me" response scale option) are consistent with Barron et al. (2008). However, when asked to provide a rationale for one's homosexual attitudes, Hans et al.'s (2012) respondents listed contact with a homosexual person (experiential), social justice values (value-expressive), parental influences (social-expressive), religious beliefs (value-expressive), and etiological beliefs about sexual orientation (value-expressive) as their attitudinal sources. Our participants largely denied these aforementioned functions (exception: slightly-endorsed value-expressive). The differing findings may be a function of study design: Hans et al.'s participants were asked to justify their attitudes using a thoughtful reflection, whereas, in the current study, participants may have felt no obligation to do so. This may have

led to differences in the type of processing behind the responses, with Hans et al.'s participants needing to engage cognitively and purposefully and the current study's participants engaging in more automatic or affective responding. In addition, Hans et al. asked participants to self-generate; ego-defensive explanations ("these people make me feel uncomfortable") may be less consciously accessible than concrete reasons ("my attitude is consistent with my value system") or may have been seen as less socially acceptable.

### **Limitations**

The current study helps to elucidate our understanding of the origins of attitudes toward trans people. However, using university samples prohibits the generalizability of the findings to non-students, and the use of a correlational design precludes us from making causal explanations. Future research could continue to explore inducing ego-defensiveness experimentally--for example, like Konopka et al. (2021) did by manipulating gender-threat--and observe the influence on the ego-defensive function and trans attitudes. A strength of the current study is the use of data collected at two different time points, showing consistency in the importance of ego-defensiveness across time.

A major limitation with this and other attitude functions investigations is how attitude functions are operationalized: Herek's (1987) AFI scales consist of only two items each (except the 4-item experiential scale). Willoughby et al. (2010) operationalized attitude functions by using instruments that could underpin attitude functions (e.g., religiosity as a value-expressive function); however, the problem with this approach is that the value-expressive function could just as easily underpin religiosity or a third variable could explain both. To measure ego-defensiveness, Willoughby et al. adapted

Herek's attitudes toward gay men (ATG) scale to measure attitudes towards gender non-conformists. The ATG includes defensive items, but also includes civil liberties-based items, conflating defensive reactions and more rights-based cognitive responses. Griffiths and Pedersen (2009) expanded the experiential and value-expressive functions measures to ten and seven items each in their assessment of attitudes toward Indigenous and Muslim Australians; this type of adaptation should be used to assess trans-attitude functions in future studies.

### **Conclusion**

Participant sex, sexual orientation, religiosity, and ego-defensive attitude function were predictors of trans attitudes. Specifically, those who were female, sexual orientation minorities, less religious, and those who denied that they based their attitudes on defensive responses to trans people were the most transpositive. Social-expressive and experiential attitude functions were largely denied--while the value-expressive attitude function was slightly endorsed--these three were not predictive of trans attitudes.

How the attitude functions--ego-defensiveness, in particular--are measured is an important issue. Theoretically, it may be that all attitude functions are not equal. Ego-defensiveness may represent an affective or disgusted response (cf. Kiss et al., 2018), while value-expressive, social-expressive, and experiential attitude sources may be more cognitive justifications of attitudes. Alternatively, ego-defensive attitude functions may determine, mediate, or moderate other functions' relationships with attitudes; however, the simple bivariate relationship among the AFI scales does not support these ideas. In short, the nature of ego-defensiveness and its role in understanding, predicting, and changing attitudes toward sexual and gender minorities needs to be explored further.

Those attempting to ameliorate negative attitudes towards trans individuals can use these findings to hone their approach. As with other sexual and gender minority research, men will generally be more negative than women, so efforts to reduce prejudice should ensure that they include (and perhaps focus on) men. Given that those who are most transnegative are likely to be personally uncomfortable in reaction to trans people, it may be helpful to explore the root of this discomfort. Katz (1960) writes that the antidote to negative attitudes borne of ego-defensiveness involves addressing the person's internal psychological processes. Accordingly, Knight Lapinski and Boster (2001) indicate that information delivery interventions may not work for those who are ego-defensive, as they are likely to use source-discounting techniques when receiving this information. Instead, they suggest role-playing or perspective-taking exercises that may allow these individuals to adopt a different view on sexual and gender minorities. These suggestions are made tentatively as this study is correlational and preliminary in considering what role ego-defensiveness has in transnegativity and consequent prejudice and discrimination.

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The authors have no known conflicts of interest concerning this paper. Informed consent was obtained from all participants

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## Appendix -A

Sex change operations should be covered by government health plans (eg. OHIP).

It would “turn my stomach” if I found out that a woman I know was actually a [trans] person, i.e., had female breasts and a penis.

I can accept the idea of a person wanting to change completely from one sex to the other, i.e., having genital surgery and taking opposite sex hormones.

A man with a penis and female breasts, who dresses and acts like a woman -- is just plain sick.

[Trans] people have the right to expect others in society to be accepting of their situation.

A [Trans] person should be able to keep the same job [he/she/they] had before having sex change surgery.

[Trans] people should not be surprised if they are treated badly by the rest of society.

I can accept the idea of a person wanting to be both sexes, i.e., keeping their genitals but taking opposite sex hormones.

Schools should not hire [Trans] teachers.

[Trans] people pose a threat to society’s morals and values.

[Trans] people are more confused about their sexuality compared to heterosexuals and [homosexuals/lesbians & gay men].

[Trans] individuals are no more likely to be sexually promiscuous than any other person.

[Trans] individuals are really just gay and lesbian people who are afraid to admit that they are homosexuals.

I can’t understand why anyone in their right mind would want to change their sex.

[Trans] people are more psychologically well-rounded than the average male and female person.

[Trans] individuals have the best of both worlds because they experience both male and female roles.

[Trans] people are more likely to spread AIDS and sexually transmitted diseases compared to heterosexuals and [homosexuals/ lesbians/ gay men].

[Trans] people should have the same rights as everyone else in society.

[Trans / transgender] is not a deviant lifestyle but rather a natural variation on gender identity.

[Trans] individuals have more flexible attitudes about sex compared to heterosexuals and homosexuals.

A person’s gender identity should not be an issue, rather people should be accepted for who they are, based on personality and other human qualities.

Square brackets are used to denote language that has changed over time and may yet change again (e.g., gender non-binary might be included in future iterations). Terms may also be region specific.



Appendix -B

