

Development and validation of a measurement of Bystander Intervention on Online Hate Speech towards Immigrants (BIOHS-Immigrants)

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Abstract: Online hate speech has profound implications for society, with migrants as primary targets. Underreporting by victims and bystanders obscures the true extent, indirectly legitimizing these crimes. To assess bystander intervention in online hate speech against immigrants, we developed a scale based on the five steps of the bystander intervention model. In Study 1 ($N = 294$), exploratory and confirmatory factor analyses confirmed the five-factor structure, having, as the final step, different types of actions that bystanders can adhere to when witnessing online hate speech. Structural equation modelling showed that, overall, each step was predicted by the preceding step, as proposed by the bystander intervention model. Study 2 ($N = 240$) replicated this finding and assessed the scale's criterion-related validity, revealing negative associations with moral disengagement and victim blaming, and positive associations with self-efficacy. We discuss the scale's relevance and applicability in studying bystander behaviour in response to online hate speech.

Keywords: *Bystander effect; Bystander intervention model; Hate crimes; Online hate speech; Immigrants.*

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SUPPLEMENTARY MATERIAL

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Table 1. Summary of Confirmatory Factor Analysis in Study 1.

	$\chi^2 (df)$	CMIN/DF	GFI	NFI	CFI	RMSEA [CI]	AIC	BIC
Model Initial Steps 1: Step 1 to 4 with four-step solution	92.85 (47)***	1.98	.951	.957	.978	.058 [.040, .075]	154.85	269.04
Model Initial Steps 2: Step 1 to 4 with three-step solution	110.65 (49)***	2.26	.941	.949	.971	.066 [.049, .082]	168.65	275.48
Model 1: Report through formal mechanisms	151.84 (80)***	1.90	.935	.944	.972	.055 [.042, .069]	231.84	379.18
Model 2: Report through social media	161.10 (79)***	2.04	.934	.948	.972	.060 [.046, .073]	243.10	394.13
Model 3: Public actions	136.56 (66)***	2.07	.938	.950	.973	.060 [.046, .075]	214.56	358.22
Model 4: Private actions	111.25 (66)***	1.69	.949	.954	.980	.048 [.032, .064]	189.25	332.91
Model 5: Aggressive response	216.08 (92)***	2.35	.920	.924	.955	.068 [.056, .080]	304.08	466.15
Model 6: Model with full scale	632.14 (261)***	2.42	.862	.884	.928	.070 [.063, .077]	812.14	1143.66

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 2. Summary of Structural Equation Modeling in Study 1.

	$\chi^2 (df)$	CMIN/DF	GFI	NFI	CFI	RMSEA [CI]	AIC	BIC
Model 1: Report through formal mechanisms	201,33 (85) ^{***}	2.37	.919	.926	.955	.068 [.056, .081]	271.33	400.26
Model 2: Report through social media	317.80 (85) ^{***}	3.74	.880	.897	.922	.097 [.085, .108]	387.80	516.73
Model 3: Public actions	212.89 (71) ^{***}	3.00	.913	.922	.946	.083 [.070, .095]	280.89	406.13
Model 4: Private actions	154.6 (72) ^{***}	2.14	.929	.936	.964	.062 [.049, .076]	220.16	341.72
Model 5: Aggressive response	239.98 (98) ^{***}	2.45	.911	.916	.948	.070 [.059, .082]	315.98	455.95
Model 6: Model with full scale	1028.52 (289) ^{***}	3.56	.773	.811	.856	.093 [.087, .100]	1152.52	1380.90

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 3. Summary of Confirmatory Factor Analysis in Study 2.

	$\chi^2 (df)$	CMIN/DF	GFI	NFI	CFI	RMSEA [CI]	AIC	BIC
Model Initial Steps 1: Step 1 to 4 with four-step solution	79.91 (45)***	1.78	.946	.960	.982	.057 [.036, .077]	145.91	260.77
Model Initial Steps 2: Step 1 to 4 with three-step solution	90.61 (47)***	1.93	.940	.955	.978	.062 [.043, .081]	152.61	260.51
Model 1: Report through formal mechanisms	230.87 (78)***	2.96	.892	.912	.939	.091 [.077, .104]	314.87	461.06
Model 2: Report through social media	177.90 (79)***	2.25	.916	.936	.963	.072 [.058, .087]	259.90	402.61
Model 3: Public actions	148.03 (65)***	2.23	.921	.937	.963	.073 [.058, .089]	228.03	367.25
Model 4: Private actions	142.05 (66)***	2.15	.924	.938	.966	.069 [.054, .085]	220.05	355.80
Model 5: Aggressive response	143.68 (91)***	1.58	.931	.942	.978	.049 [.033, .064]	233.68	390.31
Model 6: Model with full scale	520.44 (260)***	2.002	.871	.889	.940	.065 [.057, .073]	702.44	1019.18

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 4. Summary of Structural Equation Modeling in Study 2.

	$\chi^2 (df)$	CMIN/DF	GFI	NFI	CFI	RMSEA [CI]	AIC	BIC
Model 1: Report through formal mechanisms	265.09 (84) ^{***}	3.16	.884	.899	.928	.095 [.082, .108]	337.09	462.39
Model 2: Report through social media	231.51 (83) ^{***}	2.79	.895	.916	.944	.087 [.073, .447]	305.51	434.30
Model 3: Public actions	165.56 (71) ^{***}	2.33	.909	.930	.958	.075 [.060, .090]	233.56	351.90
Model 4: Private actions	143.32 (71) ^{***}	2.02	.922	.938	.967	.065 [.050, .081]	211.32	329.66
Model 5: Aggressive response	166.77 (98) ^{***}	1.70	.919	.933	.971	.054 [.040, .068]	242.77	375.04
Model 6: Model with full scale	661.04 (285) ^{***}	2.32	.829	.859	.914	.074 [.067, .082]	793.04	1022.76

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$