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**The Pregnant Smoker Stigma Scale - Public Stigma (P3S-PS):
Development and Validation in General French Population**

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Abstract

While pregnancy smoking stigma is widely acknowledged, no psychometrically sound tool to measure it exists. This study was designed to build the Pregnant Smoker Stigma Scale - Public Stigma (P3S-PS) for assessing the stigma of pregnancy smoking in the general French population. A total of 342 adults were recruited online to take the P3S-PS and some items (condemnation / rejection, and support for punitive actions) from other scales. Exploratory factor analysis was performed. Measurement invariance was tested according to gender and smoking status. Temporal reliability was checked after two weeks ($n=72$). The P3S-PS has 26 items and four dimensions: “derogatory cognitions,” “negative emotions and behaviors,” “personal distress,” and “information provision.” All dimensions were correlated ($r=.36$ to $.75$) and have good internal consistency ($\alpha>.70$), temporal reliability ($ICC>.75$), and measurement invariance. Validity is exhibited through the P3S-PS’s association with condemnation and rejection ($r=.32$ to $.53$), support for punitive actions ($r=.35$ to $.65$), and presence of pregnant smokers in the close circle ($r= -.23$ to $-.40$). The P3S-PS is a promising tool that exhibits good psychometric qualities. This scale will be useful to trigger research regarding the stigma of smoking while pregnant.

Keyword. Pregnancy; Scale Development; Smoking Stigma

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Introduction

Smoking has major health consequences and is associated with the death of 6 million people each year worldwide (WHO 2012). To counteract these dramatic effects, tobacco control policies have been developed since 1950. Although such smoking control policies are necessary and effective, they may play a role in the stigmatization of smokers (Bayer & Stuber 2006). Stigma can be defined as an “attribute that is deeply discrediting” and which reduces an individual “from a whole and usual person to a tainted, discounted one” (Goffman 1963). Stigma can be about appearance (e.g., overweight), deviant behaviors or conditions (e.g., mental illness) or membership of a particular group (e.g., being Jewish) (Goffman 1963).

Four types of stigma have been described in the literature (Bos et al. 2013). Public stigma refers to stereotypes (cognitions), prejudices (emotions), and discrimination (behaviors) that people harbor against the stigmatized group. It is thought to be the main source of the other stigma manifestations. Self-stigma impacts on people who are victims of stigma (felt stigma and internalized stigma). Moreover, the people who are associated with stigmatized individuals can themselves become stigmatized. Finally, stigma is thought to be imbued in socio-economic structures such as healthcare and educative institutions.

Smokers are now being stigmatized as people who engage in an unhealthy deviant behavior. They have been described as “selfish,” “reckless,” and “under-educated” (Chapman & Freeman 2008). They are also subject to social rejection and viewed as unattractive prospects as lovers, employees, and housemates (Chapman & Freeman 2008). For instance, most non-smoking French people wouldn’t date a smoker (53%) or hire one as a childcare

provider (79%) ([Peretti-Watel et al. 2014](#)). Moreover, society views pregnant women as having a duty to protect their unborn children and smoking during pregnancy is associated with major health risks ([Mund et al., 2013](#)). Consequently, pregnant smokers are subjected to greater stigma than other smokers. They have been found to be rated more ignorant and selfish than smoking women who were not pregnant ([Wigginton & Lee 2013](#)). Many pregnant smoking women are aware of those strong negative social attitudes and report unpleasant social experiences such as receiving sharp criticisms from family members, friends, co-workers, or healthcare providers ([Flemming et al. 2013](#)). It is especially important when considering that social support favors both maternal mental health ([O'Hara et McCabe 2013](#)) and smoking cessation ([Soulakova et al. 2018](#)). Moreover, health professionals who hold stigmatizing attitudes toward people with substance use disorders exhibit lower personal involvement and empathy ([van Boekel et al. 2013](#)).

Public stigma is thought to be the source of self-stigma through a process of internalization ([Evans-Lacko et al. 2012](#); [Bos et al. 2013](#)). Self-stigma is associated with poor mental health in various contexts (e.g. mental illness, HIV/AIDS, overweight) ([Mak et al. 2007](#); [Emmer, Bosnjak, et Mata 2020](#)). Smoking self-stigma has been associated with the desire to stop smoking but also with negative consequences (e.g. depression, low self-esteem) that might prevent smoking cessation ([Evans-Polce et al., 2015](#)). In some recent experimental studies, smoking stigma inducing situations have been associated with reduced intention to stop smoking ([Helweg-Larsen, Sorgen, et Pisinger 2019](#)) inability to delay cigarette consumption ([Cortland et al. 2019](#)), greater physiological reactivity, cognitive depletion and self-exempting beliefs ([Helweg-Larsen, Sorgen, et Pisinger 2019](#)). Self-stigma might also prevent access to adequate healthcare for pregnant women who smoke because of its association with non-disclosure of smoking status to healthcare providers ([Curry et al. 2013](#)) a frequent behavior in this population (22.9% vs. 9%) ([Dietz et al. 2011](#)).

In sum, public stigma might be associated with discriminatory behaviors toward pregnant women who smoke (Flemming et al. 2013) which might cause distress (O'Hara et McCabe 2013) and hinder smoking cessation (Soulakova et al. 2018). Of note, stigma toward pregnant smoking women might be especially deleterious in healthcare providers because it reduce healthcare quality (van Boekel et al. 2013). Moreover, public stigma is thought to be the source of self-stigma (Bos et al. 2013; Evans-Lacko et al. 2012). For this reason, anti-stigma interventions aiming the general population may disrupt the negative feedback stemming from public stigma and so reduce self-stigma and its deleterious consequences (Evans-Lacko et al., 2012).

However, to study public stigma toward pregnant smokers, its consequences and intervention efficacy, a psychometrically sound questionnaire is required to measure it. At present, such tool does not exist. Stuber et al. developed an adaption of a scale assessing the devaluation and discrimination associated with mental illness (2008). Brown-Johnson et al developed the Internalized Stigma of Smoking Inventory, an adaptation of the Internalized Stigma of Mental Illness (2015). Another set of items, used by Kim et al., was adapted from a lung cancer stigma scale (2018). All three scales do not measure pregnancy smoking stigma; they are adaptations of scales that measure the stigma of mental illness or lung cancer.

This study was therefore designed to build a scale that assesses the stigma of pregnancy smoking in the general French population. Among industrialized countries, France has some of the highest rates of smoking. In 2016, 32.9% of French adults were smokers. This is higher than the USA (21.9%) and the rest of Europe (28.7%) (WHO 2016). Moreover, 14.2% of pregnant French women smoke. It is higher than the prevalence reported in Western Europe (8.7%) and Northern Europe (7.3%; Smedberg et al., 2014).

Method

Step 1. Item Development

To assess the features of the stigma of pregnancy smoking, a qualitative analysis is needed to identify themes and generate items (Boateng et al. 2018). A first step was therefore conducted to identify the relevant cognitions, emotions, and behaviors that pregnant smoking women elicit in the French general population. Participants (n=100) were recruited online through the social media platform Facebook. They were on average 31 years old (M=30.92, SD=11.97) and mostly women (60%). They were non-smokers (33%), former smokers (21%) or smokers (46%). They were questioned about what “most people” think, feel, and do when they encounter a smoking pregnant woman. This step is described extensively elsewhere (Loyal et al. 2021). Items were generated to assess the relevant themes (see Supplementary Material 1).

Step 2. Content Validity - Experts

Twenty-one experts in perinatal care (n=8), addiction treatment (n=8) or both (n=5) were recruited by email through the research team’s professional network and directed to the online questionnaire. They were 39 years old (M=39.48, SD=11.82) and had 10 years of expertise in their field (M=9.81, SD=8.54). They were psychiatrists or psychologists (n=9), midwives or nurses (n=5), physicians (n=4), and researchers (n=3). Most experts were women (n=18), non-smokers (n=12), or former smokers (n=8). They were asked to rate the extent to which each item was successful in aiding an understanding of the cognitions, emotions, and behaviors elicited by pregnant smoking women in the general population (1: *Not relevant at all*; 5: *Highly relevant*). Each expert could share its comments about items. Items deemed

irrelevant (<3) have been examined by the members of the research team to decide how to proceed.

Step 3. Content Validity – General Population

The scale was then presented to adults from the general population of France. Thirty participants were recruited online through the social media platform Facebook. A presentation about the study was posted on various community groups of residents or students based in major French cities (Bordeaux, Lyon, Marseille, Nantes, Nice, Paris, Toulouse...). Participants were directed to the online questionnaire. They had to be resident in France and older than 18. They were mostly women (n=23) who were about 32 years old (M=31.60, SD=13.25). Half of them had three years of tertiary education or less (n=15). They were asked to rate if each item was clear (1: *Not clear at all*; 5: *Very clear*). Participants could share comments about the items. Items deemed unclear (<3) have been examined by the members of the research team to decide what to do.

Step 4. Scale Structure and Psychometric Qualities

French adults were recruited from the general population in the same way and with the same requirements mentioned above. The characteristics of participants (N=342) are described in Table 1.

TABLE 1

First, they were given the P3S-PS items with a Likert scale ranging from 1 (*Totally disagree*) to 6 (*Totally agree*). We have avoided using a mid-point to avoid a possible response bias (Chyung et al. 2017).

In addition to the P3S-PS, the participants were invited to answer five other items that assessed the condemnation and rejection of smokers. Those items have been previously used

by the French National Institute for Prevention and Health Education to assess public opinion about smokers (Guignard 2010). We have also included six items that assessed the support for punitive actions toward smokers (e.g., “*Healthcare professionals should have the right to refuse expensive medical care to people who continue to smoke*”) and smoking parents or future parents (e.g., “*Smoking should be forbidden during pregnancy*”). Those items are loosely based on the Smoking Policy Index, a scale including 13 items assessing attitudes toward tobacco (Schumann et al., 2006). We have chosen to use those two sets of items because they provided a simple and short proxy to discriminatory behaviors. Both sets of items were presented separately from the P3S-PS. They are provided as Supplementary Materials 2.

Participants were also requested to provide sociodemographic information (age, gender, education, marital status, parenthood...), their own smoking status and that of their close circle (See Table 1). At the end of protocol, they were invited to participate again about two weeks later (n=72).

Statistical Analyses

All the statistical analyses were performed with RStudio (1.1.463). First, an exploratory factor analysis (Unweighted Least Square, Oblimin Rotation) was performed (Costello & Osborne 2005). Such an analysis requires 10 participants per item. The Kaiser-Meyer-Olkin value (KMO) (≥ 0.8) and the Bartlett test ($p < 0.05$) were computed. The parallel analysis scree plot was used to determine how many dimensions should be extracted. Items must exhibit one sufficient factor loading (>0.4) and no cross loadings (<0.2 difference). Items that did not meet one of those requirements have been dropped from the analyses. Internal consistency was computed ($\alpha < .70$). Spearman correlations between dimensions were tested. Intraclass correlations (ICC > 0.75) were computed to establish the temporal stability of the scale (Koo et Li 2016). The scale was also correlated with validity

indicators: condemnation and rejection, support for punitive actions toward smokers, and close circle smoking status.

Next, the measurement invariance of the scale was checked according to gender and smoking status. Configural, metric, scalar, and strict invariance models were computed. The following model fit indicators were examined: χ^2/df (< 2), Comparative Fit Index [CFI] (> 0.95), Root Mean Square Error of Approximation [RMSEA] (< 0.07), and Standardized Root Mean Squared Residual [SRMR] (< 0.08) (Hooper, Coughlan, & Mullen 2008). To be deemed non-invariant, the metric invariance model should present a CFI change higher than 0.01, supplemented by a RMSEA or SRMR higher than 0.015 and 0.030 respectively (Chen 2007). Finally, to be deemed non-invariant, the scalar and strict invariance models should present a CFI change higher than 0.01, supplemented by a RMSEA or SRMR higher than 0.015 and 0.01 respectively (Chen 2007).

Results

Step 1. Item Development

A total of 32 items were generated to assess cognitions (n=11, including five reversed items), emotions (n=8) and behaviors (n=13, including five reversed items). Here are some examples of items assessing cognitions (“A pregnant woman who smokes is selfish”), emotions (“If I see a pregnant woman smoking, I feel disgust”), and behaviors (“If I know a pregnant woman who smokes, I make her feel guilty”).

Step 2 Content Validity - Experts

The mean relevance score for all items was 3.81 (SD=1.19). Four cognition items were deemed irrelevant (< 3). Two were reformulated (inversion and tense change), one was deleted (redundant), and one was duplicated to express two different ideas (irresponsible and reasonable). Finally, one item (lack of will) was added in response to one expert’s suggestion

and one item was reformulated (inversion). All Emotions and Behaviors items were relevant (≥ 3). However, two emotions items were modified in response to experts' suggestions. One item was reformulated to be clearer ("surprised and shocked" became "shocked") and one was duplicated to express two different ideas (sadness and pity).

Step 3 Content Validity - General Population

The mean clarity score for all items was 4.69 (SD=0.80). All items were regarded as satisfactory and clear (≥ 4). However, one item was modified (inversion), as suggested by one participant.

Step 4. Scale Structure and Psychometric Qualities

Scale Structure

The scale now has 34 items assessing cognitions (n=12, including four reversed items), emotions (n=9), and behaviors (n=13, including four reversed items). All items are provided as Supplementary Material 3.

Sample size (N=342) was sufficient to conduct an exploratory factor analysis. There was no missing data because the online questionnaire offers no possibility to avoid answering an item. The KMO value (0.95) and the Bartlett test ($p < 0.05$) were satisfactory. The parallel analysis scree plot indicates that four factors should be extracted (see Supplementary Material 4). Eight unsatisfactory items were removed because they had low loadings ($< .40$) and/or cross loadings ($< .20$ difference) (See Supplementary Material 5 for discussion).

The final structure is presented in Table 2. F1 describes "derogative cognitions" (DC) about pregnant smoking women (irresponsible, selfish...). F2 describes "negative emotions and behaviors" (NEB) (disgust and contempt, make her feel guilty...). F3 describes "personal distress" (PD) (sadness, pity...). F4 describes "information provision" (IP) (tips to quit and

risk explanation). The final structure explains 58% of the variance. Cronbach's alphas were satisfactory ($>.70$). Correlations between dimensions ranged from $r=.37$ to $r=.75$. Loadings, variance explained, Cronbach's alphas and intercorrelations are presented in Table 2. Descriptive statistics for each dimension and item are provided as Supplementary Material 6.

TABLE 2

Temporal Reliability

Intraclass correlations were satisfactory ($ICC>.75$), indicating adequate temporal reliability after two weeks ($M=13.12$ days, $SD=3.15$) (See Table 2). Intraclass correlations for each item are provided as Supplementary Material 6.

Measurement Invariance

Regarding measurement invariance (Table 3), the configural model was satisfactory for gender ($\chi^2/df = 1.38$, $CFI = 0.936$, $RMSEA = 0.048$, $SRMR = 0.061$) and smoking status ($\chi^2/df = 1.30$, $CFI = 0.921$, $RMSEA = 0.048$, $SRMR = 0.065$). CFI was below .95 but higher than 0.90. The changes in CFI, RMSEA, and SRMR were satisfactory, indicating that the measure remains invariant despite the constraints. Of note, former smokers were excluded because of small sample size ($n=73$). The loadings for each group are presented as Supplementary Material 7.

TABLE 3

Convergent Validity

Regarding convergent validity, external Items assessing condemnation / rejection ($\alpha=.74$) and support for punitive actions toward smokers ($\alpha=.80$) had adequate Cronbach's alphas. The condemnation and rejection score was positively correlated with DC, NEB, PD, and IP ($r = .53, .47, .32$ and $.38$ respectively, $p<.01$). Support for punitive actions toward

smokers was positively correlated with DC, NEB, PD, and IP ($r=.65, .61, .35$ and $.38$ respectively, $p<.01$).

Criterion Validity

Regarding criterion validity, we computed means differences according to gender and smoking status (Table 4). Men exhibited higher scores than women for DC, NEB, and IP. Non-smokers exhibited higher scores than smokers for DC, NEB, and PD.

TABLE 4

The presence of former smokers in the close personal circle was negatively associated with DC, NEB, and IP ($r = -.16, -.14$ and $-.12$ respectively, $p<.05$). The presence of smokers in the close personal circle was negatively associated with DC and NEB ($r = -.14$ and $-.13$ respectively, $p<.05$). Finally, the presence of women who are smoking or had smoked while pregnant in the close personal circle was negatively associated with DC, NEB, PD, and IP ($r = -.40, -.29, -.23$ and $-.26$ respectively, $p<.01$). Correlations of DC with presence of women who are smoking or had smoked while pregnant ($r = -.40$) was higher than correlations of DC with presence of former smokers ($r = -.16$) or smokers ($r = -.14$) ($Z=4.14$ and 4.48 , $p<0.01$). Correlations of NEB with presence of women who are smoking or had smoked while pregnant ($r = -.29$) was higher than correlations of NEB with presence of former smokers ($r = -.14$) or smokers ($r = -.13$) ($Z=2.51$ and 2.58 , $p<0.01$). Correlations of IP with presence of women who are smoking or had smoked while pregnant ($r = -.26$) was higher than correlations of IP with presence of former smokers ($r = -.12$) ($Z=2.32$, $p<0.05$) (Lee et Preacher 2013).

Discussion

The first dimension, derogative cognitions (DC), describes the cognitive dimension of stigma. Items describe stereotypes identified previously in the literature (selfish, stupid, thoughtless...). Only one item was supposed to assess an emotion (incomprehension). However, this item presumably refers to the fact that smoking while pregnant is regarded as an outrageous behavior. The dimension “negative emotions and behaviors” (NEB) describe both emotional (disgust and contempt) and behavioral features. Interestingly, disgust and contempt have been associated with harming behaviors ([Cuddy, Fiske, & Glick 2007](#)). The third dimension, “personal distress” (PD), describes feelings that people experience when faced with a pregnant smoking woman (sadness, pity...). While contempt and disgust are felt toward people characterized by low warmth and low competence (e.g., poor people), pity is felt for people characterized by low competence but high warmth (e.g., elderly people). Thus, smoking pregnant women might be at the receiving end of both contemptuous and paternalistic prejudice ([Fiske et al., 2002](#)). They may generate ambivalent feelings because they combine a positive feature (being pregnant) with a negative one (smoking). This double prejudice could also stem from the complex attitude most people have toward people with addiction. Indeed, addicts are framed as criminals who should be held morally responsible (contemptuous prejudice) or victims of a disease (paternalistic prejudice) ([Heather 2017](#)). The final dimension describes “information provision” (IP) to pregnant smokers. This presumably well-meaning behavior was nevertheless associated with the other stigma dimensions. People who provide information on smoking risks do often hold stigmatizing views of pregnant smokers. Obviously, the way in which such information is provided by each individual cannot be known. Issuing an aggressive order is not equivalent to a benevolent discussion about the risks of tobacco use.

Measurement invariance was supported for men and women, and smokers and non-smokers. Measurement invariance guarantees that the scale can be used in both groups and that meaningful comparisons are possible. Our study found that women and smokers hold fewer stigmatizing attitudes. Gender norms might play a role in this finding: Society still expects women to display greater empathy than men (Haines, Deaux, & Lofaro 2016). Indeed, studies have found that women hold less negative attitudes toward people with drug addiction (Sattler et al., 2017). Unsurprisingly, studies have found that smokers minimize smoking risks, presumably to avoid cognitive dissonance (Fotuhi et al., 2013). They might therefore also view smoking during pregnancy as a less serious problem and hold fewer stigmatizing attitudes to the women who do so. Smokers may also better understand the burden of dependence on tobacco and the impact of negative social attitudes (Evans-Polce et al., 2015; Stuber, Galea, & Link 2008). Consequently, they may be more benevolent toward people who share the same addiction.

As expected, the P3S-PS was associated with the condemnation / rejection of smokers and with support for punitive action. The P3S-PS was also correlated with the respondent's close personal circle smoking status. This finding is in line with many studies showing that contact with people with mental health issues or drug users is associated with fewer stigmatizing attitudes (Maunder & White 2019; Palamar, Kiang, & Halkitis 2011). Interestingly, the P3S-PS scores were more strongly correlated with the number of women who smoked during pregnancy than with the number of former smokers or smokers. It is another indicator of its validity.

Limitations

This study suffers from certain limitations which should be acknowledged. First, the study was conducted in France only. While some aspects of the study may be shared in certain industrialized countries, others may be different in line with variables as tobacco control and

the gender ideology. Second, this study relies on online data collection. The internet offers a cost-effective way to recruit participants. However, scholars have raised issues regarding the representativeness of samples recruited online ([Gosling et al. 2004](#)). Third, because of low sample size, measurement invariance has not been established for former smokers. Fourth, the “Information Provision” sub-scale has only two items. It is frequently recommended to have at least three items by subscale ([Marsh et al. 1998](#)). Finally, the DC and NEB dimensions are highly correlated ($r = 0.75$) indicating that they share a large part of their variance (56%). Presently, we have used the P3S-PS only at the sub-scale level. However, the Cronbach alpha for the whole scale was very satisfactory (0.9). Further research should examine the usefulness of a global score.

Nevertheless, the researchers are of the opinion that the P3S-PS has the potential to become a relevant measure of pregnancy smoking stigma in the general population. Its development and validation process is exemplary and provides strong guarantee of quality. Item development has been guided by a rich qualitative analysis ([Loyal et al. 2021](#)) and content validity has been checked. Moreover, the P3S-PS exhibits a wide range of good psychometric qualities: internal consistency, temporal reliability, measurement invariance, and validity. Further research should employ the P3S-PS to study pregnancy smoking stigma, its determinants, and consequences. Public stigma may impact pregnant smoking women because it favors discriminatory behaviors, causing distress and possibly hindering smoking cessation. Of note, studying this stigma in healthcare providers could be an interesting research avenue. Moreover, aiming anti-stigma interventions at the general population may disrupt the negative feedback stemming from public stigma and so reduce self-stigma and its deleterious consequences. Such interventions would help bring pregnant smokers back into the healthcare fold, where they would receive proper pregnancy care and support that may help them give up smoking. Currently, the P3S-PS would be the best option to study

pregnancy smoking stigma consequences and intervention efficacy. Finally, further research could also consider the P3S-PS adaptation for use with pregnant smoking women themselves (self-stigma version).

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Data Availability Statement The data that support the findings of this study are available from the corresponding author.

Statement of Ethics This study was approved by an institutional review board (IRB00003888, IORG0003254, and FWA00005831). All participants received written information and signed an informed consent form.

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Table 1. Participant's characteristics (N=342)

Variables	M(SD)[min-max] or % (n)
Age^a	33.95 (13.95) [18-74]
Gender	
Women	67% (n=229)
Men	32.2% (n=110)
Marital situation	
Couple	64.3% (n=220)
Single	33.3% (n=114)
Child number	
0	62.6% (n=214)
1	13.7% (n=47)
≥ 2	21.1% (n=72)
Youngest child age^a	14.1 (12.08) [0-52]
Education	
≤ High school degree	19.3% (n=66)
3 yrs. of higher education	37.7% (n=99)
≥ 5 yrs. of higher education	43% (n=147)

Skill level

Low skilled jobs	22.8% (n=78)
Medium skilled jobs	16.1% (n=55)
High skill jobs	26.9% (n=92)
Business owner, artisan or farmer	7.9% (n=27)
Students and other situations	26.3% (n=90)

Smoking Status

Non-smoker	45.9% (n=157)
Smoker	32.7% (n=112)
Former smoker	21.3% (n=73)
Smoked during pregnancy ^b	7% (n=24)

Close circle smoking status

Former smokers ^c	4.45 (5.11) [0-50]
Smokers ^c	12.89 (17.18) [0-99]
Pregnancy smoking ^c	1.26 (1.95) [0-20]

Among Smokers (n=112)

Smoke since ^a	14.91 (11.10) [1-55]
Cigarettes per day	9.69 (7.85) [1-54]

Among Former smokers (n=73)

Stopped smoking since ^a	8.11 (8.81) [0-35]
Smoked during ^a	14.87 (12.21) [1-71]
Cigarettes per day	14.30 (14.19) [0-88]

Note. ^a In years. ^b woman who had smoked during a previous pregnancy (n=24) represents 7% of the whole sample (n=342) but 27% of women who had at least one pregnancy (n=88). ^c How many people in the participant's close circle are smokers, former smokers or smoked during pregnancy.

Table 2. Exploratory Factor Analysis (N=342, Unweighted Least Squares, Oblimin Rotation)

Item	Abbreviated Content	DC	NEB	PD	IP	h2
1	Irresponsible	.86	-.02	-.01	.08	76
2	Reasonable person ^a	.76	-.07	-.03	.07	53
3	Selfish	.84	.00	-.05	.03	71
4	Thoughtless	.77	.02	.05	.05	67
5	Cares about baby's health ^a	.62	-.01	-.09	.11	39
6	It's a shame	.69	.15	.09	-.08	66
7	Worthy of being a mother ^a	.58	.29	-.11	-.08	58
8	Good mother ^a	.61	.20	-.13	.02	53
9	Puts her baby in danger	.69	-.19	.20	.08	48
11	Stupid	.69	.16	.00	.08	61
12	Lacks willpower	.66	.01	.02	.00	45
17	Incomprehension	.57	.11	.22	-.01	69
14	Disgust	.16	.65	.24	-.09	60
19	Contempt	.26	.67	.09	-.11	45

THE PREGNANT SMOKER STIGMA SCALE

25	Don't give her a lecture ^a	.09	.45	-.04	.24	55
26	Make her feel guilty	.12	.70	-.04	.12	75
27	Judge her negatively	.30	.55	.08	-.16	48
29	Reproach her	-.06	.84	-.03	.18	50
30	Calm ^a	-.03	.64	-.05	.01	71
31	Argue with her	-.05	.78	.02	.09	55
15	Sadness	-.07	-.10	.77	.09	37
16	Pity	-.07	.13	.65	.04	67
20	Uncomfortable	.04	.24	.59	-.03	61
21	Worried	.26	-.04	.54	.13	73
23	Explain the risks	.15	.14	.07	.70	38
24	Give advice to stop	.05	.12	.14	.62	61
Variance (58%)		27%	18%	8%	5%	
Cronbach Alpha (.95)		.93	.91	.77	.80	
Correlation with DC		1	--	--	--	
Correlation with NEB		.75**	1	--	--	
Correlation with PD		.36**	.37**	1	--	
Correlation with IP		.46**	.46**	.41**	1	
Intraclass correlation ^b		.90	.89	.79	.75	

Note. DC (Derogatory Cognitions), NEB (Negative Emotions and Behaviors), PD (Personal Distress) and IP (Information Provision). h² : communalities. ^a Reversed items. ^b Intraclass correlations computed with 72 participants two weeks later (M=13.12 days, SD=3.15). ** p>.01. Loadings higher than .40 are in **Bold**.

Table 3. Measurement Invariance According to Gender and Smoking Status

Models	X2(df)	X2/df	CFI	ΔCFI	RMSEA	ΔRMSEA	SRMR	ΔSRMR
Gender								
Configural	810.229 (586)	1.38	.936	--	.048	--	.061	--
Metric	815.274 (608)	1.34	.941	.005	.045	-.003	.072	.011
Scalar	846.334 (630)	1.34	.938	-.003	.045	0	.073	.001
Strict	883.840 (656)	1.35	.935	-.003	.046	0	.076	.003
Smoking								
Configural	765.278 (586)	1.30	.921	--	.048	--	.065	--
Metric	736.450 (608)	1.21	.943	.023	.040	-.008	.072	.007
Scalar	762.647(630)	1.21	.941	-.002	.040	0	.074	.001
Strict	787.249 (656)	1.20	.942	.001	.039	-.001	.076	.002

Note. Gender: Men (n=110) and Women (n=229). Smoking: Non-smokers (n=157) and Smokers (n=112). Former smokers were excluded.

Table 4. Means Comparisons according to Gender and Smoking Status

	Women (N=229)	Men (N=110)	Student T test		NS (N=157)	S (N=112)	Student T test
DC	3.75 (1.02)	4.19 (1.02)	t(337)	= -3.51,	4.21 (1.05)	3.50 (1.09)	t(267) = 5.38, p=.000
			p=.001				
NEB	2.36 (1.04)	2.81 (1.22)	t(337)	= -3.52	2.78 (1.14)	2.16 (0.95)	t(267) = 4.74, p=.000
PD	3.73 (1.12)	3.80 (1.27)	t(337)	= -0.53	3.96 (1.12)	3.46 (1.20)	t(267) = 3.49, p=.001
IP	4.19 (1.44)	4.56 (1.23)	t(248)	= -2.46,	4.45 (1.35)	4.23 (1.47)	t(267) = 1.23, p=.219
			p=.015				

Note. Mean (SD). Dimensions: DC (Derogatory Cognitions), NEB (Negative Emotions and Behaviors), PD (Personal Distress) and IP (Information Provision). NS: Non-smokers. S: Smokers. Former smokers were excluded. Higher means are in **Bold**.