ERRATUM

**SUPPLEMENTARY FILE**

(Table of References and Examples of Excerpts from Articles Used)

**Table 1.** Main guiding studies for the theoretical foundation of the instrument.

<table>
<thead>
<tr>
<th>Theoretical Foundation Articles</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your &quot;House&quot;</td>
<td>Grant C, Osanloo A.</td>
<td>2014</td>
</tr>
<tr>
<td>Integration of a Theoretical Framework into your Research Study.</td>
<td>Heale R, Noble H.</td>
<td>2019</td>
</tr>
<tr>
<td>Is There a Conceptual Difference between Theoretical and Conceptual Frameworks?</td>
<td>Imenda S.</td>
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<tr>
<td>Uma Proposta Teórico-Metodológica para Elaboração de Modelos Teóricos.</td>
<td>Souza Filho, BAB; Struchiner, CJ.</td>
<td>2021</td>
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<tr>
<td>Theoretical and Conceptual Framework: Mandatory Ingredients of a Quality Research.</td>
<td>Adom D, Hussein EK, Agyem JA.</td>
<td>2018</td>
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</table>

*to be continued...*
### Examples of Excerpts from Published Articles for Each Item

**Item 1: Title**

Did the article title mention the Theory/Theoretical Model and the related main variables that underlie the research?

**Example 1:**

“Lack of access to information on oral health problems among adults: an approach based on the theoretical model for literacy in health”.

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**Source:** Prepared by the authors (2020).
Example 2:
“Effect of the Intervention Based on New Communication Technologies and the Social-Cognitive Theory on the Weight Control of the Employees with Overweight and Obesity”

Example 3:
“The effect of counseling based on Bandura's self-efficacy theory on sexual self-efficacy and quality of sexual life”

Item 2: Reasoned Abstract
Did the article present, in the abstract, the Theory/Theoretical Model and its main related variables that underlie the research and explain how they were evaluated and what the main findings, potential limitations, and conclusions are, in relation to the Theory/Theoretical Model used?

Example:
“Background: Childhood obesity has become a global epidemic and physical inactivity and considered as one of the most important contributing factors. We aimed to evaluate a school-based physical activity intervention using social cognitive theory (SCT) to increase physical activity behavior in order to prevent obesity among overweight and obese adolescent girls.

Study Design: Randomized controlled trial study.

Methods: A seven-month randomized controlled trial based on SCT was implemented with 172 overweight and obese girl students (87 in intervention and 85 in control group), with the presence of their parents and teachers. Activities of the trial included: Sports workshops, physical-activity consulting private sessions, free practical and competitive sports sessions, family exercise sessions, text messages, and newsletters. Body Mass Index (BMI) and Waist Circumference (WC) were measured and questionnaires about duration of physical activity, duration of screen time (watching television and playing computer games) and psychological variables regarding the SCT constructs were obtained.

Results: Duration of physical activity (in minutes) and most of psychological variables (self-efficacy, social support, and intention) significantly increased at post-intervention, while hours of watching television and playing computer were significantly decreased (P<0.001). The subjects’ mean BMI and WC reduced in the intervention group from
29.47 (4.05) kg/m² to 28.5 (4.35) kg/m² and 89.65 (8.15) cm to 86.54 (9.76) cm, although they were not statistically significant compared with the control group (P=0.127 and P=0.504, respectively).

Conclusions: School-based intervention using SCT led to an increase in the duration of physical activity and reduction in the duration of screen time in overweight and obese adolescent girls.”.

Item 3: Mention and Refer

Did the article explicitly mention and referenced to one or more Theories/Theoretical Models on which the study is based? (In cases the study is based on a theoretical model specifically developed for the research, the authors must explicitly mention it and, whenever possible, provide a reference.)

Example 1:
“...Thus, based on the Transtheoretical Model TTM and a needs assessment of children and their parents, an intervention incorporating tailored exercise counseling combined with music skipping rope exercise was developed and administered to overweight/obese school-age children. The current study was designed to evaluate the long-term effects of the intervention using multiple dimensions of indicators to measure program outcomes...”.

Example 2:
“...The aim of our study was to examine the effects of eight sessions of TTM-based tailored exercise counseling offered with music skipping rope exercise classes in modifying stages of change, decisional balance, self-efficacy, and BMI, whether it would improve the glucose tolerance and lipid profile of overweight and obese school-age children.”.

Item 4: Describe the Variables

Did the article describe the variables of the Theory/Theoretical Model and their interrelations with the research cohesively and coherently?

Example:
“...Self-Determination Theory (SDT) is a comprehensive theory of behavioral motivation, which has proven to be particularly useful in the context of Physical Activity (PA) research, both for accounting for patterns of PA behavior and for informing the development
of interventions for promoting PA. Central to this theory is the difference between autonomous and controlled motivation. Both autonomous and controlled motivation influence behavior, but they each lead to a different outcome, with autonomous motivation leading to greater commitment and long-standing maintenance of behavior. SDT posits that individuals are more likely to exhibit autonomous motivation when three basic psychological needs are supported: autonomy (i.e. the need to feel that one can choose one’s behaviors), competence (the need to feel competent and confident) and relatedness (the need to feel connected to and understood by others). Motivational interviewing (MI) is defined as “a collaborative conversation style for strengthening a person’s own motivation and commitment to change”. Several researchers have argued that the specific client-centered communication skills used in Motivational Interviewing (MI) can be used to support client’s basic psychological needs.

In recent years, numerous PA counseling interventions that combine the theoretical framework of SDT with the practical strategies from MI have been developed and evaluated in randomized controlled trials. In general, these interventions are effective in promoting a sustained increase in PA. As discussed above, however, face-to-face PA counseling interventions are often too expensive to be implemented on a large scale. Web-based computer tailored PA interventions grounded in SDT and using the communication style and principles from MI, may be promising for promoting sustained PA behavior on the population level at relatively low costs. To our knowledge, however, no studies have yet evaluated the long term effects of SDT and MI in web-based PA promotion.”

Item 5: Review Literature
Did the article report the existence/absence of other Theories/Theoretical Models related to the analyzed phenomenon and explain the choice with scientific coherence?

Example:
“...To date, web-based computer tailored Physical Activity (PA) interventions have typically been based on traditional health behavior theories such as Social Cognitive Theory (SCT), Relf-Regulation Theory (SRT), the Trans-Theoretical Model (TTM) and the Theory of Planned Behavior (TPB). Interventions of this type, hereafter referred to as ‘traditional interventions’, make use of theoretical constructs such as stages of change,
modeling, attitude and self-efficacy. Recent research on determinants of sustained PA behavior, however, shows another theoretical construct to be essential: autonomous motivation. Substantial evidence suggests that having higher autonomous motivation makes an individual more likely to persist with a PA routine. Although the concept of autonomous motivation does not feature explicitly in SCT, SRT, TTM or TPB, it is central to Self-Determination Theory (SDT) and Motivational Interviewing (MI). Applying the principles of SDT and MI in web-based computer-tailored PA interventions could be a promising improvement for these interventions, and could possibly be more effective in promoting sustained PA behavior than traditional web-based computer tailored PA interventions...”

Item 6: Innovation/Theoretical Gap

Did the article report the contribution of the chosen Theory/Theoretical Model to the phenomenon studied?

Example:
“...Based on these studies, it can be inferred that BIS is related to negative emotions and BAS to positive emotions. Similarly, the anger response in an anger-inducing situation might be positively related with BAS and novelty seeking, but negatively related with BIS and harm avoidance. However, there are few studies on the relationship between anger response, BAS factors, and the four dimensions of temperament in the Psychobiological Model of Temperament and Character. Furthermore, despite the high likelihood of a similarity between the temperaments suggested by the Reinforcement Sensitivity Theory and Psychobiological Model of Temperament and Character, there is little research comparing the associations between each dimension or system and the anger response...”

“...Thus, this study aimed to 1) examine the strength of associations between temperament factors and anger response among prisoners, 2) investigate the similarities and differences of each temperament measure from Gray’s Reinforcement Sensitivity Theory and Cloninger’s Psychobiological Model of Temperament and Character, and 3) explore the relationship between the temperament factors in each model to understand the nature of temperaments...”
Item 7: Explanatory Topic

Did the article dedicate a topic (preferably at the beginning of the Methods session) to describe in depth how the Theory/Theoretical Model guided the methodological paths developed in the research?

Example 1:

“...Theoretical framework

...The Theory of Planned Behavior (TPB) model included two indicators of prescribing practice: percentage of prescriptions containing antibiotics and percentage of prescriptions containing two or more antibiotics. The two indicators were proposed by the World Health Organization (WHO) for measuring the rational use of medicines. Attitudes, subjective norms and perceived behavioral control in relation to antibiotic use were linked with intentions to prescribe antibiotics. They were deemed to be key factors shaping prescribing practice.

The TPB model assumed that antibiotic prescribing practice is influenced by behavioral intentions and the perceived behavioral control of the prescribers, with the former serving as a motivational factor while the latter reflecting the ability of the prescribers to fulfill their intentions. Attitudes, subjective norms and perceived behavioral controls are linked to each other and they can influence the behavioral intentions of the prescribers...”

Item 8: Graphic Representation

Did the article represented the Theory/Theoretical Model using a graph? (e.g., figure in the form of a concept map, causal diagram, among other forms). When it is not available in the article, did the article inform where and how it can be accessed (e.g., email address, appendix, supplementary file)?

Example 1:

“...Para se investigar os fatores associados à falta de acesso à informação em saúde bucal, utilizou-se como referencial teórico o Modelo de Alfabetização em saúde proposto por Sørensen et al., em 2012 (Figura).
Modelo teórico da Alfabetização em saúde apresentado por Sørensen et al. em 2012.

O modelo exibe fatores proximais e distais determinantes e/ou determinados pela Alfabetização em saúde de forma dinâmica. Entre os distais, têm-se os fatores sociais e ambientais. Entre os determinantes proximais, têm-se os determinantes sociais situacionais e os pessoais. Outros fatores relacionados à Alfabetização em saúde (determinantes e/ou determinados) também apresentados no Modelo são: uso dos serviços de saúde, custos com a saúde, comportamentos relacionados à saúde, desfechos de saúde, participação das pessoas, empowerment, equidade e manutenção. Assim, o modelo adotado prevê o acesso a informações como condição indispensável para aumentar os nósveis de Alfabetização em saúde das pessoas...”¹.

Example 2:
“...The theoretical framework was adapted from the Theory of Planned Behavior (TPB) model (Fig.).
The TPB model assumed that antibiotic prescribing practice is influenced by behavioral intentions and the perceived behavioral control of the prescribers, with the former serving as a motivational factor while the latter reflecting the ability of the prescribers to fulfill their intentions. Attitudes, subjective norms and perceived behavioral controls are linked to each other and they can influence the behavioral intentions of the prescribers...”

**Item 9: Conceptualize and Categorize**

Did the article conceptualize, categorize, and inform how interrelated research variables in the Theory/Theoretical Model will be recorded and/or classified?

**Example:**

“...As variáveis independentes foram reunidas em quatro subgrupos selecionados a partir do Modelo Teórico de Sørensen et al., sendo:
Determinantes pessoais: sexo, idade, estado civil, cor da pele autodeclarada, escolaridade, renda per capita e situação de trabalho atual. As variáveis idade e escolaridade, embora coletadas de forma quantitativa discreta, foram analisadas de forma categórica. A renda per capita foi estimada a partir da renda familiar, dividida pelo número de residentes no domicílio e posteriormente dicotomizada (menor ou igual à R$ 400,00 / acima de R$ 400,00). O salário mínimo vigente à época da coleta de dados era de R$ 465,00 ou US$ 245.0...”

*Physis: Revista de Saúde Coletiva, Rio de Janeiro, v. 31(4), e310136, 2021*
It is important to consider that the study cited as an example of items 8 and 9, despite presenting the graphic representation of the theoretical model and the description of the conceptualization and categorization of the variables contained in the model, as presented in the excerpts from the previous examples, the authors did not incorporate, in the analyzes carried out in their article, the complexity of the theoretical model as suggested in this checklist.

**Item 10: Theoretical Analysis**

Does the data analysis plan include all the variables of the Theory/Theoretical Model related to research? If any variables have been excluded or included in the analysis, please justify.

**Example 1:**

“...We assessed the psychometric properties of all Theory of Planned Behavior (TPB) variables. First, we checked whether these variables contained only 1 dimension using exploratory factorial analyses. We used the Kaiser eigenvalue-greater-than-one rule and Cattell scree plot to determine the number of dimensions for each variable. Each dimension was considered as a variable in the next steps of our analyses. Second, we assessed the internal consistency of each dimension with Cronbach alpha coefficient. We retained only dimensions for which the Cronbach alpha coefficient was equal to or greater than 0.60...”

**Example 2:**

“...Two sets of analyses were conducted. The analysis on the non-twin sample (n = 1255–296 = 959) tested the overall model, and the analysis on the twin sample (n = 148 pairs) estimated the influence of genes, shared environment, and individual-specific environment. Using the non-twin sample, Pearson correlation among all related variables was conducted to test our first hypothesis. Next, a Structural Equation Model (SEM) was established to test the second hypothesis on mediation and the third hypothesis on moderation. Then, using the twin sample, the ACE model was fitted to each variable. This method allows decomposition of the variance of each variable into additive genetic (A), shared environmental (C), and nonshared environmental (E) sources. A larger proportion of additive genetic and shared environmental variance indicates a need for
co-twin control. Using stress as an example to illustrate the co-twin design, the average stress level of a twin pair Stresstwin was calculated, and then subtracted from the individual stress level to obtain the individual-specific stress level Stressself that cannot be explained by genetic or common familial factors. Then, the twin shared stress and the individual-specific stress were both used as predictors. Finally, a SEM was established to evaluate the overall fit of the moderated mediation model after controlling for the twin shared variance. The model with fit indices CFI>0.9 and RMSEA<0.08 is considered a good fit (Hu & Bentler, 1999).

The SEM and ACE model were conducted using Onyx, a graphical interface for Structural Equation Modeling (von Oertzen, Brandmaier, & Tsang, 2015). All other analyses including data screening, descriptive statistics, correlation, and co-twin design were implemented using R (R Core Team, 2017).”

**Item 11: Result of the Variables**

Did the article present the results of all the variables of the analyzed Theory/Theoretical Model? If any variable has been occulted, please justify.

**Example 1:**

“...Patient characteristics included in the hypothesized theoretical model were refined by combining bivariate and multiple regression analyses (inclusion criterion set at p < .20) with an evaluation of each characteristic’s merit based on past research and theory. These criteria were chosen to retain as many patient characteristics as possible since they could be significant in the final analyses of theory testing. As a result, 2 (i.e., race and health insurance policy holder) of the 13 patient characteristics to the prediction of cancer-related fatigue (CRF) severity were eliminated. Similarly, two other patient characteristics (i.e., employment data and treatment information) to the prediction of CRF severity had some but not all variables eliminated (i.e., was on a temporary leave; radiation therapy; surgery prior groups don’t know if I had surgery and response choice was not selected; surgery during group this response choice was not selected). Next, the exogenous-endogenous model was tested to examine the overall fit. While the solution converged, the fit of the model was not acceptable (X2 = 160.18; p < .01; df = 50; RMSEA = .089; lower bound 90% CI = 0.074; upper bound 90% CI = 0.10; CFI = 0.92; GFI = 0.95; AIC = 482). The model was improved by removing nonsignificant...
paths one at a time and by including paths that had not been taken into account in the first solution. Both removing and including paths were based on evaluation of parameter estimates, modification indexes, goodness-of-fit tests, and theoretical considerations.”

**Example 2:**
“...A SEM model was established to test the hypothesized structure among variables. Demographics were also controlled in this model. All observed variables were standardized in order to obtain standard path coefficients. The moderating effect of emotional and cognitive control was tested between perceived stress and general distress (H3a) and between general distress and sleep quality (H3b). However, the second moderating effect was not significant. Although the $\chi^2$ of this model was still significant, $\chi^2 (df = 24) = 85.44$, $p < .05$, fit indices all indicated that the model fit the data well, CFI = 0.965, RMSEA = 0.054. Therefore, a moderated mediation model was supported, where the effect of perceived stress on sleep quality was mediated by general distress, and emotional/cognitive control moderated the effect of stress on general distress. A higher level of perceived stress was associated with a higher level of general distress, which in turn was associated with poor sleep quality. A higher level of cognitive and emotional control weakened the association between perceived stress and general distress. In other words, for people with better control capabilities, perceived stress is less likely to link to distress and therefore may not lead to poor sleep quality.”

**Item 12: Theoretical Impact**

Did the article report how the study’s findings impact the Theory/Theoretical Model and show it in the final Theory/Theoretical Model (in the same way as in item 8; for instance, figure in the form of concept map, causal diagram, among other forms)?

**Example:**
“...The direct and indirect paths in the final parsimonious theoretical model are shown in Figure, with the fitting measures indicating a good fit, improved over the original model ($X^2 = 17.76$; $p = .22$; df = 14; RMSEA = .03; lower bound 90% CI = 0.00; upper bound 90% CI = .068; CFI = .99; GFI = 0.99; AIC = 79). The direct paths demonstrate the following for persons with cancer: younger age ($t = -2.18$), greater number of comorbid conditions ($t = 3.36$), and being female ($t = 2.11$) predicts
greater CRF severity. Having surgery anytime prior to chemotherapy \((t = -2.85)\) predicts greater average severity of the other symptoms. Contrary to expectations, the relationship between CRF severity and average symptom severity was not reciprocal. Instead, greater CRF severity predicts greater average symptom severity \((t = 9.69)\). The effect of CRF severity on the average symptom severity was found to be significant \((t = 2.07)\), but the reverse effect was not significant \((t = 1.16)\). Correspondingly, the model fitting measures indicated that when eliminating the effect of the average symptom severity on CRF severity while retaining the effect of CRF severity on the average symptom severity, the model fit was improved...”

**Item 13: Discussion and Reflection**

Did the article discuss the study's findings cohesively and coherently based on the interrelations expected and those found using the Theory/Theoretical Model?

**Example 1:**

“...Three relevant findings can be drawn from the present study. First, a high proportion of people included in our analyses had good past and good future Noninsulin Antidiabetic Drug (NIAD) adherence. Second, past NIAD adherence was both a strong predictor and a modifying factor for the prediction of future NIAD adherence. Third, the Theory of Planned Behavior (TPB) was good at predicting intention to adhere to the NIAD in...”
adults with type 2 diabetes, but not at predicting future NIAD adherence even after stratifying participants according to past adherence level. Moreover, the TPB better predicted both intention to adhere to the NIAD and future NIAD adherence in the past nonadherers group than the past adherers group. Thus, the TPB could be more effective in predicting the NIAD adherence of past nonadherers than that of past adherers...”

Example 2:
“...The results of our study indicate that combined approach of TTM-based exercise counseling and exercise classes was more beneficial to overweight/obese children than exercise classes alone. In addition, development of the theory-based intervention incorporating information obtained from the needs assessment of children and parents increased the intervention effectiveness. The TTM has been criticized in that it does not appear to have long-term effects, and is difficult to apply to complex health behaviors such as physical activity [21]. However, demonstration of significant differences between the experimental and control groups in BMI and self-efficacy at posttest (6 months after the intervention) indicates that our study partially supports the effectiveness of the TTM-based exercise intervention...”

Item 14: Limitations
Did the article describe the limitations of the Theory/Theoretical Model (e.g., Theory/Theoretical Model simplified or incomplete and possible exclusions of variables in the analysis)?

Example:
“...There was little change in the physical activity (PA) mediators as a result of the intervention, which raises several issues. The mediators were assessed in relation to “regular PA”, however the The Exercise and Nutrition Routine Improving Cancer Health (ENRICH) intervention specifically targeted walking and resistance training. The lack of specificity may have also been an issue in how the Social Cognitive Theory (SCT) constructs were defined. Self-efficacy was examined as one category, rather than breaking it down into the more specific constructs of task or barrier self-efficacy. There may have been cross-over or contamination between the individual construct measures, and it may be difficult to separate the individual effects of self-efficacy and outcome expectations. The measure used to assess goal setting in this analysis is a measure of...
likelihood of performing regular PA, which may be a measure of motivation or intention, and makes it difficult to tease out separate effects of these constructs...”

**Item 15: Conclusions**

Did the article present a general interpretation of the Theory/Theoretical Model used in the study considering other Theories/Theoretical Models regarding potentialities, gaps, and implications for future studies on this Theory/Theoretical Model?

**Example 1:**

“...The present study suggests that the Theory of Planned Behavior (TPB) is a good tool to predict intention to adhere and future Noninsulin Antidiabetic Drug (NIAD) adherence, particularly in past NIAD nonadherers. Our results could have implications for clinical practices and research. This study helps health professionals (physicians, pharmacists, nurses, and health educators) and researchers understand the adoption of NIAD adherence in adults with type 2 diabetes using the TPB. Health professionals and researchers should keep in mind that the past NIAD adherence level could influence the TPB’s ability to predict NIAD adherence among adults with type 2 diabetes. Therefore, the content of future NIAD adherence-enhancing interventions based on TPB should be adapted according to investigators’ aim to either improve or maintain the NIAD adherence of adults with type 2 diabetes. It is relevant to discriminate past adherers from past nonadherers when one wishes to implement NIAD adherence-enhancing interventions...”

**Example 2:**

“...The present study is the first to evaluate the Self-Determination Theory (SDT) and Motivational Interviewing (MI) in a web-based computer tailored physical activity (PA) intervention. In this study, I Move was effective in increasing weekly minutes of MVPA at 12 months from baseline, while the effect of Active Plus on this outcome disappeared. This finding provides support for the use of SDT and MI in web-based computer tailored PA interventions. However, Active Plus was found to be effective in increasing weekly days with ≥30 min PA at 12 months, while I Move was not. Together these results suggest that web-based computer tailored PA interventions might best include elements
based on both SDT/MI and traditional health behavioral theories. To be more precise, it is arguable that the focus of the theoretical foundations, used in new web-based PA interventions should depend on the intended program outcome. If the intended program outcome is to get individuals to comply with PA guidelines, an emphasis on traditional health behavioral theories might be most suitable. If the intended program outcome is to increase overall PA behavior (without taking into account PA guidelines), making strong use of MI and SDT might be more appropriate. However, in order to draw firm conclusions, more research should be done on the effects of SDT and MI in web-based PA promotion. Future research should also assess the working mechanism underpinning the long-term effects of this type of intervention, and whether or not these effects are mediated by an increase in autonomous motivation...”.

References


