# Capturing violent radicalization: Developing and validating scales measuring central aspects of radicalization

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# Capturing Violent Radicalization: Developing and Validating Scales Measuring Central Aspects of Radicalization

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**Capturing Violent Radicalization: Developing and Validating Scales Measuring Central Aspects of Radicalization**

Abstract

Violent radicalization has emerged as an important topic of theoretical and empirical investigation motivated by the devastating face of terrorism and by the aim of preventing such expressions of extremism. A central aspect of such research inquiries is the foundation of solid measurement. In this article, we develop and validate two generic scales pertaining to (1) endorsement of extremism and (2) acceptance of violent and/or illegal means. In conclusion, the scales yielded sound psychometric properties and cross-cultural equivalence providing a solid measure of important aspects of extremism which can be empirically employed in elucidating generic mechanisms of violent radicalization processes.

Research on extremism and radicalization has been a growing field within psychology and cognate disciplines of the social sciences. This growth can be ascribed to recent years devastating terror attacks threatening stability worldwide (Borum, 2012; McCauley & Moskalenko, 2017). Nevertheless, within this emerging field of research terms like "terrorism", "radicalization", and "extremism" have been problematically, heterogeneously, and ambiguously defined (Borum, 2012; Schmid, 2013; Sedgwick, 2013) limiting the possibilities of establishing a general approach to examining radicalization. One important refining perspective, however, is the distinction between ideology and action–such as violence–suggesting that these two aspects are sometimes but not always connected as the development of radical attitudes does not necessarily lead to an action pathway and actual acts of terrorism (Borum, 2012; Moskalenko & McCauley, 2009; Bertelsen, 2018). Building on integrative approaches to studying the field of radicalization (Borum, 2012; Schmid, 2013), radicalization can generically be understood as diverse processes of gradually accepting extremist ideology and action.

Motivated by the importance of developing efficient counter- and de-radicalization interventions, the field of radicalization research is developing through empirical investigation. A fundamental aspect of conducting empirical research is the development of adequate and validated

measures capturing the phenomenon in question. Given the grave importance and applicability of this field of research, there has so far been a primary focus on conceptualization rather than robust empirical investigation (Borum, 2012, 2015). Consequently, research on terrorism and radicalization has long been in need of an empirical foundation established through inferential statistics (Schuurman, 2018). Furthermore, there has only been developed a limited number of general measures relating to radicalization processes (Moskalenko & McCauley, 2009; Stankov, Saucier, & Knežević, 2010). As radicalization has been a challenging phenomenon to conceptualize and operationalize a variety of measures within this field of research are needed to capture the diversity and complexity of the diverse aspects contained within this phenomenon.

As a contested and heterogeneous term used in powerful political discourse, radicalization currently needs an empirical and scientific foundation (Atran, Axelrod, Davis & Fischhoff, 2017; Borum, 2015; Githens-Mazer & Lambert, 2010). Consequently, in this paper we develop and validate two scales measuring generic aspects of radicalization through both extremist attitude and the acceptance of using illegal means and/or violence in relation to extremism.

## Conceptualizing Processes of Radicalization

Radicalization has been understood as a complex phenomenon including individual, group, and societal level dynamics. On the individual level, early research approaches framed mental or personality abnormality as a central explanation for acts of extremism. However, recent research has repudiated psychopathology and certain personality profiles as root causes of radicalization (Borum, 2012; Webber & Kruglanski, 2018). Another approach has conceptualized the "radicalized mindset" comprising attitudes, dispositions, inclinations, and intentions which might be vulnerabilities or propensities to engage in extremism (Borum, 2014). Other approaches emphasize the group dynamics and social forces that can bring a person to deviate from socially accepted

standards of action (Doosje et al., 2016; Webber & Kruglanski, 2018). Such approaches take their point of departure in the exploration of how normal mental states and processes can affect one's involvement with extremism and violence (Borum, 2014). Consequently, the focus of radicalization research has shifted from investigating abnormality toward generic psychological mechanisms operating among the normal population.

One of the many challenges of a scientific approach to investigating radicalization relates to the great diversity the phenomenon comprises across a multitude of sociocultural contextual diversity (Borum, 2012). Doosje et al. (2016) characterize five overall types of extremism: 1) nationalistic or separatist, 2) extreme right-wing, 3) extreme left-wing, 4) specific single issue, and 5) religiously motivated. Even though, these categories vary across ideological, political, and religious motivation, all categories are oriented toward profoundly changing society with status quo being unacceptable and, furthermore, some believe in the efficacy of violence to achieve this goal (Schmid, 2013). Additionally, the categories of extremism are characterized by an idealistic endorsement of own norms and values as superior creating a strong in-group versus out-group dichotomization which can legitimize violence against the out-group (Doosje et al., 2016).

Our conceptualization of extremism suggest that extremist attitudes develop dynamically along two interrelated dimensions of (1) endorsement of comprehensive personal and societal change and (2) intolerance toward other groups of citizens objecting to these societal changes. Within this conception, intolerance includes a refusal to respect opinions contrary to one's own and, likewise, refusal to respect members of different social groups than one's own. In relation to extremism, research have found dogmatic intolerance in which ideological beliefs different from one's own are not tolerated to be strong among political extremist (left and right) as compared to moderates (van Prooijen & Krouwel, 2017).

In accordance with this conception, extremism *in itself* can be defined as an intense desire for and/or pursuit of universal and comprehensive changes in one´s own and the common life socially, culturally and/or societally, where the concern for human coexistence is set aside (Bertelsen, 2016, 2018). Such a definition accentuates extremism as both (a) an attitude toward constructing or reconstructing one's life and sociocultural context in a significantly different way than they currently are constituted (Schmid, 2013) and (b) intolerance and setting aside concerns about human coexistence (Bertelsen, 2016). Mainly, this definition emphasize that extremism *in itself* is not accompanied by violent and criminal acts. Much extremism is completely legal such as religious communities in which extremism solely comprise a comprehensive schism with the "mainstream" ways of life along with a self-excluding disinterest in dialogue and communion with such ways of life. Thus, while radicalization refers to the process, the various expressions of extremism can be understood as the outcome. Correspondingly, violent/criminal extremism extends the definition of extremism with acceptance of employing violent/criminal acts possibly leading to terrorism (Bertelsen, 2016, 2018). Indeed, to be able to capture the essence of extremism, this concept should be operationalized independently from its relation to accepting the use of illegal/violent means. Such operationalization allows for empirical investigations that distinguishes extremism within and beyond the law avoiding the problem of false positive in which legal extremism is confused with extremism employing illegal means (Bertelsen, 2018; Moskalenko & McCauley, 2009).

**Measuring Radicalized Attitudes**

Within the emerging research on radicalization, some operationalizations have been developed to tap into various aspects of the complex radicalization phenomenon. However, few of them have been properly validated (Scarcella, Page, & Furtado, 2016). Such measures have taken dissimilar forms and while some relates to a specific context or group (Doosje, Loseman, & van den Bos,

2013) others attempt a generic approach (Hogg, Meehan, & Farquharson, 2010; Moskalenko & McCauley, 2009; Stankov, Saucier, & Knežević, 2010). Additionally, most measures tap into religious extremist ideology (Altmeyer & Hunsberger, 2004), political extremism (Moskalenko & McCauley, 2009; Simon & Ruhs, 2008), or group involvement (Hogg, Meehan, & Farquharson, 2010; Moskalenko & McCauley, 2009).

This leaves a deficiency for measures tapping into the generic conception of radicalization. With such need for further development of psychometrically sound self-respond questionnaires examining the central aspects of the multifaceted radicalization phenomenon, we developed two scales that can complement the measures mentioned above by keeping a strong alignment with the integrative and generic conceptualization of extremism provided in this paper.

**Current Study**

In relation to the shortcomings of previous scales of extremism, the aim of the current study was to develop and validate generic scales related to central aspects of violent radicalization through extremist attitude and endorsement of violence and/or illegal acts in relation to extremism. These scales were developed to strengthen the empirical approach of statistical inference investigating radicalization among normal populations across cultural and religious groupings. Specifically, the aim of evaluating the scales in regard to structure, cross-cultural applicability, and construct validity was to provide psychometrically sound measures of radicalization that can be used in generic studies of radicalization processes and associated underlying psychological mechanisms and risk factors. Accordingly, research employing such scales investigating general models of radicalization could provide key information in regard to preventive and de-radicalization interventions addressing psychological mechanisms predicting extremist attitudes consistent across contextual specificity.

**Method**

The study adhered to the Danish national ethical guidelines for research. Institutional review boards or committees are not mandatory at Danish universities for such a questionnaire study.

*Developing Items Reflecting Radicalization*

Our scales were entitled (a) Extremism Scale (ES; Table 1) and (b) Pro-violence and Illegal Acts in Relation to Extremism Scale (PIARES; Table 2). The development of items for the ES was founded on the previously stated definition of extremism comprising two components of 1) attitude toward comprehensive sociocultural change and 2) intolerance toward others through group dynamics. Additionally, the first component included the following domains: lifestyle and culture, socioeconomic founding, and governmental system. While the second component was taping into the domains of: rigid us-them distinction, devaluation of others, breakdown in deliberation, and the impossibility of coexistence. Each domain was represented by two items and within the first facet each item was differentiated by reference to either changing the majority society or establishing a parallel society.

As non-violent and violent extremism emerge as independent dimensions (Borum, 2012; Moskalenko & McCauley, 2009), the assessment of violence should be separated from the measure of extremism. This was accomplished through our second scale tapping into an attitude of pro-violence and acceptance of using illegal means in regard to extremism (PIARES) centered on various domains (e.g. society, a higher cause, family and friends, and group).

The Extremism Scale and the Pro-violence and Illegal Acts in Relation to Extremism Scale were both developed in accordance with the criteria's for establishing sound psychometric properties (Robinson Shaver, & Wrightsman, 1991). This was endeavored through clearly founding

the operationalization on solid theoretical work delineated in the introduction. Our original item pool in Danish language was reviewed by a panel of experts within this field of research to evaluate the items clarity, conciseness, and that they were theoretically meaningful. The revised item pool was then examined and discussed within a focus-group interview with university students in regard to wordiness, univocality, and securing that the items were tapping into the phenomenon we were attempting to measure. Finally, the scales were translated from Danish to English language employing a back-translation procedure (Brislin, 1986). Subsequently, the scales were ready for analyzing their general psychometric properties.

*Participants*

The total number of participants was 686. These participants comprised 364 high school students from Denmark and 322 US participants equivalent to the Danish sample in age who were currently studying in high school or college across the US. In the Danish sample the participants age ranged from 16 to 20 ($M$=17.93.54, $SD$=0.87) and the US sample ranged from 17 to 20 ($M$=18.54, $SD$=1.17). 65.7% percent of the Danish sample were female, 33.2% were male, and 1.1% did not wish to indicate their gender. Similarly, 65.9% of the US sample were females, 33.0% were males, and 1.1% did not wish to report their gender. In the Danish sample, 93.7% were born in Denmark, while 95% of the US sample were born within USA.

Data was collected online from high school students within the municipality of Aarhus in Denmark as well as from the US. The Danish sample was recruited through an agreement with school principals and the students completed the questionnaires in class under supervision of their teacher. These students did not receive any compensation for their participation. The US responses were attained through a research service company that paid their panel participants for their replies.

The two culturally dissimilar samples represent a corresponding age group (late teens) and educational status providing the possibility of testing our scales for cross-cultural equivalence.

*Measurements*

Besides background information asking about age, gender, and country of birth, the measurements contained five self-report measurement scales:

*Extremism Scale* (ES) described above consists of 14 items that are scored on a 7-point Likert scale ranging from (1) Strongly disagree to (7) Strongly agree. The scale was developed to tap into both a strong desire for comprehensive personal and societal change (6 items) and aspects of intolerance (8 items; a complete list of items can be found in Table 1).

*Pro-violence and Illegal Acts in Relation to Extremism Scale* (PIARES**)** included 6 items pertaining to accepting the use of violence and 6 relating to the acceptance of using illegal means. All items were answered through a 7-point Likert scale ranging from (1) "Strongly disagree" to (7) "Strongly agree" (a complete list of items can be found in Table 2).

*Vile World* (VW; Stankov, Saucier, & Knežević, 2010) is a subscale of the militant mind-set tapping into the notion that there is something very wrong with the world we live in. This aspect of the militant mind-set was included as a conceptually proximal construct and was measured through six items answered through a five-point Likert scale ranging from (1) "Strongly and completely disagree" to (5) "Strongly and completely agree" Internal consistency for this scale was good with Cronbach's alpha=.89. Sample item reads: "The world is headed for destruction".

*Short-form Big Five Measure* (mini-IPIP; Donnellan, Oswald, Baird, & Lucas, 2006) is a short 20 items version of the Big Five Personality measures. This scale has previously shown good reliability, validity, and predictive power of self-esteem and related behavioral systems. However, in our survey internal consistency for the five subscales were questionable: Extraversion α=.73,

agreeableness α=.70, conscientiousness α=.58, neuroticism α=.57, and openness to experience

α=.57. The low Cronbach alpha values could relate to the use of negatively worded items and the

low number of items pertaining to each factor. Consequently, caution should be applied in the

analysis. Accordingly, these measures were only included as criteria measures and not employed in

further inferential statistics. All items were answered by the respondent indicating on a five-point

Likert scale how well different statements describes them. Responses ranged from (1) "Not at all"

to (5) "Very well". Sample item from the neurotic subscale reads: "I get upset easily".

*Satisfaction With Life Scale* (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a measure of

global life satisfaction. The scale consists of five items and yielded good internal consistency with

Cronbach's alpha=.88. All items were answered on a seven-point Likert scale ranging from (1)

"Strongly disagree" to (7) "Strongly agree". Sample items include: "So far I have gotten the

important things I want in life".

**Results**

The analytical plan for the general validation of the scales comprised the following three

superordinate steps: First, the two scales were validated through factor analysis to determine how

well the theoretically conceptualized understanding of radicalization fit actual data through

validation of the scale structure. Second, the two scales were examined across two culturally and

linguistically different contexts to test invariance and cross-cultural compatibility with a translated

version of the scales. Third, in order to assess the construct validity, the relationship between the

two radicalization scales and relevant criteria scales were analyzed.

*Analysis of the Internal Structure of the ES and PIARES*

With the aim of establishing and validating the factor structure of the two radicalization scales, an EFA/CFA procedure was employed in which the total sample was divided randomly into two groups that did not differ in relation to which country they were from, $t(684.47)=-0.12$, $p=.91$, $d=.01$.

First, we used the first subgroup of respondents to inspect the factor structure without any presumptions of the scale structure employing an Exploratory Factor Analysis (EFA). Principal axis factoring was used, employing promax rotation (Kappa=4), to examine the factor structure of both the ES and the PAIRES. For both scales, parallel analysis (O'Connor, 2000) was initially applied to determine the number of factors to be extracted. Within this analysis, the factors generated with the real dataset was compared with factors generated from a random-number dataset to secure that the real data provide larger eigenvalues than what would be expected from chance. Results indicated a one factor structure for the Extremism Scale and a two factor structure for the Pro-violence and Illegal Acts in Relation to Extremism Scale. The results of the EFA yielded a good Kaiser-Meyer-Olkin measure of sampling adequacy (KMO=.95 for the ES and KMO=.94 for the PAIRES). The item loadings in the ES were all within the acceptable range (>.4) ranging from .51 to .77 (see table 1). Within the PAIRES, the two factors established in the EFA reflected the division between accepting violence and accepting illegal acts as means to a goal with acceptable loadings ranging between .54 and .92 with no cross-loadings ($\Delta>.2$; see table 2).

In order to confirm the psychometric soundness of the scale structures, we conducted Confirmative Factor Analysis (CFA) on the second randomly selected subgroup employing maximum likelihood estimation with robust standard errors in Mplus 8 (Muthén & Muthén, 1998-2011). Kline (2012) suggests Comparative Fit Index (CFI)≥.90, Standardized Root Mean Square Residual (SRMR)≤.08, and Root Mean Square Error of Approximation (RMSEA)≤.08 as guidelines for evaluating model fit. Fit indices for the one-factor structure of the ES indicated good fit,

$\chi^2(53)=94.96$, $p<.001$; CFI=.97; SRMR=.04; RMSEA=.05. Item loadings ranged from .45 to .75

confirming that the ES items patterned into one common factor. Likewise, fit indices for the two-

factor structure of the PAIRES suggested good fit, $\chi^2(77)=136.59$, $p<.001$; CFI=.95; SRMR=.04;

RMSEA=.05, with loadings ranging from .62 to .89. Consequently, the structures of the scales were

validated in their general form.

*Consistency across Cultural Contexts*

The ES and PAIRES scales were developed to measure generic processes of radicalization and

consequently, they require cross-cultural equivalence in their psychometric properties. Accordingly,

scalar invariance was examined across the two cultural contexts of the Danish and American

sample.

First, the Extremism Scale was examined across the two cultural samples indicating good fit,

$\chi^2(77)=136.59$, $p<.001$; CFI=.95; SRMR=.04; RMSEA=.05. Loadings within the Danish sample

ranged from .40 to .76 and from .56 to .77 within the US sample. This unconstrained model was

then compared against a constrained model with factor loadings set equal across the two locations

(metric invariance) which did not yield significant differences in fit indices, $\Delta\chi^2(14)=-23.86$, $p<.05$,

$\Delta$CFI=.005; $\Delta$RMSEA=.001. However, comparing the equal-factors-model against a constrained

model with both factor loadings and intercepts constrained equal (scalar invariance) did yield

significant differences in fit indices, $\Delta\chi^2(16)=-93.29$, $p<.01$, $\Delta$CFI=.024; $\Delta$RMSEA<.007.

Consequently, we examined each item for invariance across site by constraining one intercept at a

time and examining the change in the CFI and RMSEA. However, none of the paths was found to

violate the assumption of invariance ($\Delta$CFI & $\Delta$RMSEA $\leq$ .01). Thus, the ES was validated in

regard to cross-cultural equivalence.

Second, the Pro-violence and Illegal Acts in Relation to Extremism Scale was likewise examined through an unconstrained model indicating good fit, $\chi^2(111)=220.22$, $p<.001$; CFI=.96; SRMR=.04; RMSEA=.06. Within the Danish sample, the loadings ranged from .61 to .90 and from .68 to .90 within the US sample. Testing metric invariance did not yield significant difference in model fit, $\Delta\chi^2(7)=-8.53$, $p>.05$, $\Delta$CFI=.001; $\Delta$RMSEA=.002. Likewise, examining scalar invariance of the PAIRES did not indicate significant difference in model fit, $\chi^2(12)=-35.79$, $p<.01$, $\Delta$CFI=.007; $\Delta$RMSEA=.002. Consequently, the PAIRES can be applied as a valid measurement scale across certain cultural contexts.

Even though the statistical properties of the two scales holds across the two cultural contexts, the two samples differ in their extremist endorsement and their acceptance of the use of violence and illegal acts. The US sample endorsed the extremist viewpoint (*M*=2.68, *SD*=1.22) to a higher degree than the Danish sample (*M*=2.31, *SD*=1.01), $t(614.63)=-4.23$, $p<.001$, *d*=.33. Similarly, the US sample accepted the use of violence (*M*=2.14, *SD*=1.31) to a higher degree as compared to the Danish sample (*M*=1.81, *SD*=1.14), $t(629.27)=-3.47$, $p=.001$, *d*=.27. Finally, the US sample accepted the use of illegal acts (*M*=2.41, *SD*=1.49) to a higher degree as compared to the Danish sample (*M*=2.19, *SD*=1.29), $t(628.15)=-2.00$, $p=.048$, *d*=.16.

*Construct Validity*

The correlation matrix in Table 3 reflects the relationship between the ES, PAIRES and relevant criterion scales. These correlation analyses indicate whether the relationship between the developed measures of radicalization relates to established measures as expected, allowing us to test the criterion-related validity of the scales.

The ES and the two subscales of PAIRES were positively and significantly correlated reflecting their assessment of related aspects of radicalization. Nevertheless, the correlations were not perfect

indicating that the (sub)scales were independently demarcated providing empirical evidence for the distinction between extremist attitudes and action and, furthermore, for the discreteness between acceptance of violence and illegal means in relation to extremism.

As expected, both scales and subscales correlated significantly and positively with the proximal measure of Vile World, indicating that our measures is related to but yet demarcated from negative beliefs about the world we live in (Stankov et al., 2010). Additionally, the measures of personality correlated with the ES and PAIRES as expected. Extraversion, agreeableness, conscientiousness, and openness to experience all correlated negatively with our measures of radicalization. Conversely, neuroticism correlated positively with the different measures of radicalization. Finally, as expected, both ES and PAIRES correlated significantly and negatively with life satisfaction, possibly reflecting the frustration and ensuing motivation for profound changes based on one's perception of life not reaching one's expectations.

**Discussion**

The results of the analyses can be discussed in relation to statistical properties, implications, and limitations of the radicalization scales.

*Psychometric Properties of the Scales*

Both the ES and PAIRES yielded sound psychometric properties across the two contexts that was represented in the study. The structure of the scales were clearly demarcated and replicated through the factor analyses with acceptable loadings throughout. The scale structure confirmed and further diverged the distinction between activism and radicalism (Moskalenko & McCauley, 2009). Internal consistency was good with Cronbach's alpha being .92 for all scales. Convergence validity for both ES and PAIRES were positive as they were found to be related to other relevant measures

as expected. Although the ES and PAIRES were associated with the criterion variables in a largely uniform manner, they were still demarcated from each other by correlations ranging from .53 to .67.

Although the statistical properties for the scales were good, a few confounding findings should be considered as well. The responses to both scales yielded a skewed distribution in our samples with means ranging from 1.81 to 2.68 on a 7-point scale suggesting employment of some caution in statistical analyses and implementation of robust statistical methods (Erceg-Hurn & Mirosevich, 2008). Nevertheless, the variance recorded should allow for statistical analyses employing the scales in relation to other measures of relevance. The variance might further be amplified in other samples differing from the ordinary high school students in Western contexts included in this study.

The factor structure of the two scales did not reflect all the conceptual peculiarities included in the development of items. The Extremism Scale yielded a one factor structure which did not differentiate between the conceptual aspects of endorsing societal change on the one hand and intolerance on the other, suggesting that both aspects pertain to an overall extremist attitude. Likewise, the difference between changes in the majority society and the development of parallel communities was not reflected in the factor analyses, suggesting that the ES taps into all of these aspects in a unidimensional operationalization encompassing various distinctions of extremist attitudes. Consequently, the Extremism Scale is in fact able to identify extremism by the above proposed criteria of deeply felt wish to change life conditions and setting aside concerns about human coexistence.

*Implication of the Radicalization Scales*

Besides sociocultural and organizational processes, the psychological processes pertaining to general root and risk factors of radicalized trajectories need investigation contributing within a more comprehensive theory (Mandel, 2009; Webber & Kruglanski, 2018). Such psychological inquiry

has been related to motivational dynamics initiating the radicalization trajectory including the quest for personal significance (Kruglanski et al., 2014), insecure life attachment (Bertelsen, 2018), feelings of self-uncertainty (Hogg, 2007) and striving for certainty and reducing ambiguity through cognitive closure (Webber et al., 2017). These are universal psychological mechanisms that underlie the initial phase of radicalization processes prior to the specific direction of the radicalized involvement (formed by e.g. networks and narratives; Webber & Kruglanski, 2018). Our radicalization scales provide an outcome measure for examining relevant models and predictors of extremist attitudes and acceptance of various means to effectuate such attitudes. Such research can guide future development of general preventive and counter-radicalization interventions addressing relevant generic psychological mechanisms and risk factors.

*Limitations and Directions for Future Research*

The current study includes several important limitations which can further indicate possibilities for future avenues of research. First, the scales has been tested in only two sociocultural contexts limiting their cross-cultural validity. Future research could examine the properties of these scales in other contexts especially in non-Western societies and within contexts and populations of high risk for radicalization.

Second, in regard to convergence validity, our scales correlated with other relevant measures as expected. However, we were not able to clearly differentiate the three aspects of extremism in regard to our criteria scales. Future research could further examine the differences between endorsing extremist attitudes and accepting either violence or illegal acts in relation to extremism.

Third, our measures does not capture the specificity of radicalization processes. Other measures or methodology could be developed to address the sociocultural specificity of the complex radicalization phenomenon.

Third, in this paper we did not examine possible risk factors of radicalization in relation to the developed scales. Future research could empirically investigate models of risk factors and how such psychological mechanisms underlying radicalization processes relates to the differentiation between extremist opinions and extremism employing either illegal means or violent means.

Overall, there is a great need for research examining the radicalization processes that give rise to extremist attitudes and expressions. Such research include the study of general psychological mechanisms at play in regard support of extremism and collective violence (Mandel, 2009) providing important empirically grounded information for a larger multi-domain framework theory of risk factors and methods for prevention (Borum, 2015).

**Conclusion**

In order to empirically examine risk factors and processes of radicalization, it is necessary to operationalize central outcome variables; namely extremism. In this paper we have developed radicalization scales that can identify extremism *in itself*–independent of accepting usage of illegal/violent means–to avoid the false positive confusion of non-violent and non-criminal extremism with extremism expressed through violence and/or illegal acts. Consequently, we have presented generic scales assessing violent extremism based on (1) the assessment of extremism defined in accordance with a twofold definition of extremism as an intense desire for and/or pursuit of universal and comprehensive changes in one´s own and the common life socially, culturally and/or societally where the concern for human coexistence is set aside  and (2) acceptance of proactive use of violence and/or illegal acts as means in the quest for such quest for changes in life conditions.

The scales were validated through an EA/CFA procedure reaching a clear demarcated scale structure. Furthermore, the scales were tested for invariance across the cultural contexts of Denmark

and the US revealing an acceptable cross-cultural equivalence. Finally, construct validity was established through the relationship between the radicalization scales and other validated measures. We hope that our work can contribute to the development of a strong empirical foundation for radicalization research and the improvement of counter- and de-radicalization interventions.

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Table 1. Item wording, EFA loadings, and means for the Extremism Scale

| Item wording | loading | M (SD) |
|---|---|---|
| 1. Most people in this country have a lifestyle and culture that is necessary to change totally. | .69 | 2.58 (1.70) |
| 2. If one can´t live with the majority´s lifestyle and culture, it is necessary to create a totally different lifestyle and culture for oneself and ones like-minded. | .66 | 2.78 (1.70) |
| 3. It is necessary to totally change the economic system that is the basis of society. | .60 | 2.77 (1.68) |
| 4. Those who think like me have to thoroughly change the foundation of our own life (economy, job, consumption, well-being). The rest of the society can do what they want. | .68 | 2.62 (1.64) |
| 5. It is necessary to do away with the democratic form of government if we want to have a decent society. | .70 | 2.23 (1.63) |
| 6. Just let the rest of the society choose democracy – I, and those who think like me, work to establish up a different system in our own milieu. | .76 | 2.38 (1.60) |
| 7. I, and those who think like me, in fact share nothing with the rest of the society. | .77 | 2.18 (1.49) |
| 8. There is only one way to live the good and correct life. | .70 | 2.18 (1.68) |
| 9. If one doesn´t live in agreement with the good and correct life, then one has chosen to withdraw from the community. | .59 | 2.62 (1.60) |
| 10. Those groups in the society that don´t support the good and correct life should be deprived of their rights. | .70 | 2.26 (1.56) |
| 11. It is a waste of time to try to find common solutions with those whose thoughts about life are completely different than ours. | .65 | 2.41 (1.57) |
| 12. It is wrong to make compromises with what oneself stands for. | .51 | 3.16 (1.75) |
| 13. It is wrong and immoral to live peacefully side by side with people who don´t live the good and correct life. | .69 | 2.22 (1.53) |
| 14. In the end, there must be a confrontation – one can´t forever live peacefully, side by side with people who live a completely different life than they are obligated to live. | .73 | 2.51 (1.64) |

Note: The means and standard deviations represent the whole sample while the factor loadings represent the EFA subsample. Loadings below .2 has been suppressed.

Table 2. Item wording, EFA loadings, and means for the Pro-violence and Illegal Acts in Relation to Extremism Scale

| Item wording | loading | | M (SD) |
|---|---|---|---|
| 1. Using physical violence is the only thing that really works when it is a matter of… creating proper conditions for those with whom one feels a solidarity. | .91 | | 1.88 (1.36) |
| 2. Using physical violence is the only thing that really works when it is a matter of … creating a new and better society. | .79 | | 1.80 (1.42) |
| 3. Using physical violence is the only thing that really works when it is a matter of … creating proper conditions for those one is closely connected to. | .92 | | 1.89 (1.39) |
| 4. Using physical violence is the only thing that really works when it is a matter of … creating respect for one's own rights and security. | .74 | | 2.06 (1.53) |
| 5. Using physical violence is the only thing that really works when it is a matter of … preventing repression and assault of my people. | .54 | | 2.42 (1.72) |
| 6. Using physical violence is the only thing that really works when it is a matter of … advancing a higher cause (ideological, religious). | .87 | | 1.76 (1.38) |
| 7. Breaking the law is the only thing that really works when it is a matter of… creating proper conditions for those with whom one feels a solidarity. | | .77 | 2.20 (1.55) |
| 8. Breaking the law is the only thing that really works when it is a matter of… creating a new and better society. | | .80 | 2.44 (1.76) |
| 9. Breaking the law is the only thing that really works when it is a matter of… creating proper conditions for those one is closely connected to. | | .87 | 2.21 (1.55) |
| 10. Breaking the law is the only thing that really works when it is a matter of… creating respect for one's own rights and security. | | .82 | 2.29 (1.65) |
| 11. Breaking the law is the only thing that really works when it is a matter of… preventing repression and assault of my people. | | .87 | 2.59 (1.76) |
| 12. Breaking the law is the only thing that really works when it is a matter of… protecting a higher cause (ideological, religious). | | .64 | 2.06 (1.55) |

Note: The means and standard deviations represent the whole sample while the factor loadings represent the EFA subsample. Loadings below .2 has been suppressed.

Table 3. Means, internal consistency and correlations among (sub)scales and criterion scales

| | Proviolence subscale | Pro illegal acts subscale | Vile world | Extraversion | Agreeableness | Conscientiousness | Neuroticism | Openness to experience | Satisfaction with life | M (SD) | α |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Extremism Scale | .59** | .53** | .37** | -.15* | -.34** | -.08* | .04 | -.23** | -.17** | 2.29 (0.96) | .92 |
| Proviolence subscale | | .67** | .31** | -.05 | -.34** | -.13* | .08* | -.18** | -.15** | 1.92 (1.28) | .92 |
| Pro illegal acts subscale | | | .34** | -.08* | -.25** | -.15** | .11** | -.06 | -.16** | 2.27 (1.28) | .92 |

Note. *p < .05; **p < .01