The impact of life satisfaction on substance abuse: delinquency as a mediator

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ABSTRACT
The objectives of the study were two-folds: firstly, to ascertain the effect of life satisfaction on substance abuse among Malay youth. Secondly, to identify the role of delinquency on the relationship between life satisfaction and substance abuse. Self-administered questionnaires were distributed among youths at the youth programmes using a two-step sampling technique: area sampling and systematic sampling. The research hypotheses were tested using Structural Equation Modelling. The findings of the study revealed that there is no significance relationship between life satisfaction and substance abuse. There is a significant inverse relationship between life satisfaction and delinquency. Moreover, delinquency has a positive significant influence on substance abuse. The use of Bootstrapping analysis proved that delinquency plays a full mediating role in the relationship between life satisfaction and substance abuse. This study concluded that to reduce substance abuse, efforts should be undertaken to reduce delinquency behaviour by increasing youth life satisfaction.

Introductions
Youths are portrayed as a resource to be developed (Roth, Brooks-Gunn, Murray, & Foster, 1998) and are perceived to be an important resource of human capital to sustain a nation's development and growth. According to the National Youth Policy (1997), youth is categorized as individuals aged between 15- and 40-years old; however, the policy also specifies that youth development programmes and activities shall be focused on youth aged 18–25. Hence, an investment in the human capital of youth is crucial to prepare this group to withstand the current challenges of globalization (Fauziah, Mohamad, Chong, & Manaf, 2012). However, youth has been portrayed as in the critical stage of mental and physical development (Abd. Rahim & Hussin, 2006) and in a period of storm and stress to be survived or endured (Arnett, 1999).

Fronting these challenging development stages, youths are tending to have conflicts with their parents, disruptive moods and increased tendency for reckless and problem behaviour. Youths are a critical population for prevention efforts, because substance abuse during this period can impede learning and brain development, as well as critical developmental tasks such as educational attainment and career development (Boden & Fergusson, 2011; Gotham, Sher, & Wood, 2003), which may in turn increase risk for lifelong substance abuse and other health and social problems (Bennett, McCrady, Johnson, & Pandina, 1999; Zeigler et al., 2005). Substance abuse, also known as drug abuse, is a patterned use of...
a substance (drug) in which the user consumes the substance in amounts or with methods which are harmful to themselves or others (Chan, Sidhu, Lim, & Wee, 2016).

Globally, the involvement of youths in substance abuse has been increasing (United Nation Office on Drugs & Crime [UNODC], 2007). In Malaysia, substance abuse has become a serious phenomenon that causes significant damage to individuals, families and communities. It has received attention from several parties, especially government and non-government organizations. In 1993, drug was identified as the nation’s number one enemy since the incidents of drug abuse became a serious internal problem. Mohamed, Marican, Elias, and Don (2008) claimed that the number of youths involved in substance abuse was higher. It is clearly proved by statistics in Agensi Antidadah Kebangsaan (2014) that youths appear to be the most drug abusers. Figure 1 indicates that out of 21,777 drug addicts in 2014, 75% of them were youths. Moreover, who were involved with drugs were between the ages of 15–40 which is the most productive age. The statistic also showed that the highest ethnicity involved in drug abuse is Malay compared with other ethnic groups in Malaysia as shown in Figure 2. Hence, this study was conducted among Malay youths.

Figure 1. Drug abuse by age categories. Source: Agensi Antidadah Kebangsaan (2014) (In Malay).

Figure 2. Drug abuse by ethnic group. Source: Agensi Antidadah Kebangsaan (2014) (In Malay).
In addition, involvement in substance abuse does not contribute to the community and social well-being and is negatively associated with life satisfaction. It is supported by Zullig, Valois, Huebner, Oeltmenn, and Drane (2001) whose study revealed that substance abuse is significantly associated with reduced life satisfaction. Due to this circumstance, research should be undertaken to identify the impact of youth life satisfaction on youth substance abuse. Thus, the main objectives of this study were to ascertain the effect of life satisfaction on problem behaviour among Malay youth and the mediating role of delinquency in the relationship between life satisfaction and substance abuse.

**Literature review**

Research on substance abuse indicates that the roots of most social ills, including substance abuse among youths, commonly begin while they are still attending schools (Hong et al., 2011). Substance abuse is typically considered the use of substances, such as alcohol or drugs, in ways that harmfully affect life functioning (Forman, Bry, & Urga, 2006). Chan et al. (2016) found that the common substance abuse behaviours in schools were smoking, consuming alcohol, using marijuana and glue-sniffing and they start to become involved in these unhealthy activities between the ages of 15 and 17. As they get older and transcend into the youth's phase of their lives, these youths often move on to experimenting with drugs (Igwe, Ojinnaka, Ejiofor, Emechebe, & Ibc, 2009). This is in line with a study by Mohd (2007) which found that most chronic drug abusers started their participation in delinquent behaviour at a significantly earlier age compared to non-chronic abusers. Drug abuse is related to many medical and costly problems (Yuan & Mineta, 2003). This is supported by Zullig et al. (2001), who stated that engaging in substance abuse may alter an individual's life satisfaction. Life satisfaction also has been proven to influence adolescent substance abuse, emotional well-being and school success (Lewis, Huebner, Malone, & Valois, 2011).

Life satisfaction is defined as the cognitive evaluation that people make about the overall quality of their lives or the quality of specific domains within their lives (e.g. family, friends, school (Gilman & Huebner, 2003) and the cognitive component of subjective well-being (Diener & Diener, 1995). It was described as an individual's subjective well-being and a representative of QOL (Diener & Diener, 1995; Khaufman, Kosberg, Leeper, & Tang, 2010) and individual's conscious, cognitive appraisal of the quality of his or her life (Heady & Wearing, 1992). Pavot and Diener (1993) stated that satisfaction judgements are based on the persons' comparisons between self-imposed criteria and their perceived life circumstances. Life satisfaction is a conscious evaluation process that allows individuals to assess his or her own range of life satisfaction levels based on a presumed standard set of criteria that meets the expectation of the individual (Lewis et al., 2011; Pavot & Diener, 1993). Regarding these definitions, life satisfaction covers general individual perception on their satisfaction of life.

Life satisfaction seems to be a particularly important aspect in mitigating problem behaviour in youth (Sun & Shek, 2010) and integral to the science of positive psychology which focuses on identifying strengths and the building of them as buffers against the development of psychopathological problems (Veenhoven, 1988). Life satisfaction is often measured by scores to indicate people's happiness or unhappiness. In general, positive evaluations of life satisfaction are linked with happiness and the achievement of the 'good life', whereas negative evaluations of life satisfaction are associated with depression and unhappiness (Proctor, Linley, & Maltby, 2009). McFarlane, Younger, Francis, Gordon-Strachan, and Wilks (2014) claimed that depression may be a contributing factor for risk behaviours or may be the cause of certain risk behaviours in youth. Numerous depressive symptoms are displayed in increased risk behaviours such as early and increased sexual activity, drug and alcohol abuse and participation in violence (Halfors et al., 2004).

High levels of life satisfaction are related to positive outcomes in intrapersonal, interpersonal, vocational, health and educational arenas, while low levels of life satisfaction are similarly predictive of a variety of negative outcomes, including various high-risk behaviours (e.g. drug and alcohol use, and aggressive/violent behaviour), psychopathological symptoms (depression, anxiety, low self-esteem, low self-efficacy, loneliness) and physical health indices (e.g. malnutrition) (Ye et al., 2014). Adolescents
who have low levels of life satisfaction are predicted to exhibit internalising and externalising behaviours in the future (Haranin, Huebner, & Suldo, 2007). They also tend to involve themselves more in substance abuse and delinquency (Sun & Shek, 2010). Satisfaction with life has been reported to be a buffer against negative effects of stress and development of psychopathological behaviour (Suldo & Huebner, 2004). Middle-school students with low levels of life satisfaction were found to exhibit violent behaviour such as carrying a gun or knife, being involved in physical fighting, or substance abuse (Valois, Zullig, Huebner, & Drane, 2001).

Prior research has consistently documented negative associations between life satisfaction and delinquent behaviour in cross-sectional studies (Jung & Choi, 2017). Wan (2012) stated that delinquency is an anti-social behaviour which is more serious, and the delinquent may be put under arrest when the behaviour is noticed by the police, emphasising the importance of legal aspects of an act in a culture. Therefore, there is no unique definition of delinquency for all research because of the cultural differences. Delinquent youths tend to be more drug involved than non-delinquent youths (Wagner, 1996; White, Loeber, Stouthamer-Loeber, & Farrington, 1999). Various studies revealed a positive relationship between delinquency and drug abuse with minor delinquency or deviant acts normally prior the onset of drug abuse (Brook et al., 1998; DeWit & Silverman, 1995; Newcomb, 1992; Oetting & Beauvais, 1986; Petraitis, Flay, & Miller, 1995).

Involvement in delinquency places adolescents at risk of physical injury and is associated with greater likelihood of engagement in other non-normative behaviours (e.g. alcohol and drug) use (Patterson, Dishion, & Yoerger, 2000; Valois, McKeown, Garrison, & Vincent, 1995). High rates of drug use are often found among youths who are involved in delinquent behaviours. (Young, Dembo, & Henderson, 2007). The correlation between substance abuse and delinquency cannot be denied when substance abuse causes delinquent behaviour or delinquency causes alcohol and drug use. These two behaviours are toughly interrelated and repeatedly bring about school and family problems, envelopment with negative peer groups, a lack of neighbourhood social controls and physical or sexual abuse (Hawkins, Lishner, Jenson, & Catalano, 1987; Wilson & Howell, 1993). A study by Azimi, Turiman, and Ezhar (2003) indicated that higher percentages of youth engage in risky behaviours as they leave youth and enter early adulthood. Therefore, it is crucial to curb the substance abuse among youth before it is too late and become a norm of behaviour.

Method

This study employed a survey method using cross-sectional research design. Data were collected using personal interview at the youth programmes organized by Ministry of Youth and Sports, Malaysia among Malay youths. The selection of respondents involved two steps. First, using area sampling technique, five programmes in the five states were selected and 125 questionnaires were distributed to each programme. Second, a total of 500 samples were returned using systematic sampling technique, however, only 363 samples were considered valid to be analysed after data-cleaning process. During the data collection, respondents were informed of the purpose of the study and the confidentiality of the data collected was emphasized to all respondents. Instructions and adequate time pertaining to responding to the questionnaire was provided to the respondents. This study used a self-administered questionnaire in Bahasa Malaysia as a research instrument, containing items that measure substance abuse, life satisfaction, delinquency and demographic characteristics of respondents.

The Satisfaction with Life Scale (SWLS) adopted from Diener, Emmons, Larsen, and Griffin (1985) was used to measure youths’ life satisfaction. Youths indicated how strongly they agreed with each of the five items and responses ranged 1 as strongly disagree to 10 as strongly agree. Respondents stressed their own standard of evaluation in making a life satisfaction judgement. Adopting the work of Shek (2004), substance abuse was examined using a 10-point rating scale capturing respondent’s frequency of using alcohol, ketamine, cannabis, cough mixture, an organic solvent, pills and narcotics. Meanwhile, intention to engage in substance abuse was measured using a 10-point rating scale to capture respondent’s intention to engage in substance abuse such as consuming alcohol, smoking and consuming illicit drugs. Delinquency was measured using 12 items using 10-point rating scale on the respondent’s frequency of engaging in antisocial behaviour such as stealing, cheating, truancy,
running away from home, damaging property, assault, having sexual relationship with others, gang fighting, speaking foul languages, staying away from home without parental consent, strong-arming others and breaking into residences. The last part of the questionnaire contained questions pertaining to the demographic data of respondents. Following the work Sun and Shek (2010), substance abuse and intention to engage in substance abuse was obtained by averaging the items in each subscale.

Confirmatory factor analysis (CFA) was applied to validate the measurement model in this study (Hair, Black, Babin, & Anderson, 2010). Validity of the instrument was ascertained through the three types of validity tests which are convergent validity, construct validity and discriminant validity. Convergent validity, measuring the extent to which a set of measured items reflect the theoretical latent construct those items are design to measure (Hair et al., 2010) was assessed based on the Average Variance Extracted (AVE) value. An AVE of .5 or higher is a good rule of thumb suggesting adequate convergence (Hair et al., 2010). Construct validity was assessed using several acceptable fitness indexes such as normed chi-square (Chi-sq/df), Goodness-of-fit Index (GFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA). Discriminant validity can be achieved when the value of square root of AVE is higher than the values of correlation between constructs and the values of correlation between construct cannot exceed .85 (Hair et al., 2010).

After the measurement model was validated, Structural Equation Modelling (SEM) was used to test the structural model goodness-of-fit of the hypothesized model and examines the relationship between the constructs by path analysis result. The model of goodness-of-fit was accessed through several acceptable statistical indices which were categorized into absolute fit, incremental fit and parsimonious fit (Hair et al., 2010). Absolute fit indices were accessed based on an index such as Root Mean Square Error of Approximation (RMSEA) and Goodness-of-Fit index (GFI). The acceptable cut-off point value for RMSEA and GFI is less than .08 and equal to or more than .90, respectively. Incremental fit indices were accessed based on Comparative Fit Index (CFI) and Tucker Lewis Index (TLI). Parsimonious fit index was determined based on Adjusted Goodness of Fit Index (AGFI). The acceptable cut-off point value of CFI, TLI and AGFI is .90. Bootstrapping procedure was applied to the data-set to test the mediation effect of delinquency.

Results

Profile of respondents

As mentioned earlier, the respondents of this study are Malay youth and analysis of the data revealed that this study equally represented both genders, male (53%) and female (47%). Most of the respondents (87%) are in the age group 15–and unemployed (87%). The figure is parallel to the data reported in the Statistics Yearbook Malaysia (2012) which illustrates that only 15% individuals within this age group are working. The majority of respondents are single (90%) and only 10% are married. Seventy-two per cent of the respondents attend national secondary school and other respondents attend national-type secondary school (4%) and religious school (10%).

This study is also represented by respondents who live in the urban area (51%) and rural area (49%). Most respondents also indicated that their parents still lived together (90%) and their fathers are self-employed (51%), working in the government sector (23%), private sector (18%) and unemployment (8.3%). Regarding respondent’s mothers’ employment status, the data revealed that 54% were not working which means they are a housewife and have time to take care of their children.

Measurement model of the construct

This study contained three latent constructs in the model; Life Satisfaction (LS), Delinquency Behaviour (DEL) and Substance Abuse (SA). Table 1 shows the factor loading for every item for the latent constructs exceeded the cut of point level of .6 (Hair et al., 2010; Zainudin, 2014). Thus, all the items used to measure latent constructs are retained for further analysis. The value of Composite Reliability (CR) and Average Variance Extracted (AVE) met the requirement of recommended value where the value exceeds .7 and .5,
respectively (Hair et al., 2010). The fitness index of the measurement model depicted all index achieved the requirement level of goodness-of-fit (RMSEA = .075, GFI = .974, AGFI = .956, CFI = .983, TLI = .968 and Chisq/df = 2.92). The results from confirmatory factor analysis conclude that the measurement model for this study achieved the validity and reliability of the latent constructs.

Table 2 presented the discriminant validity index where the values of square root of Average Variance Extracted (AVE) are greater than the values of correlation between constructs. Thus, all the results show the discriminant validity among constructs were achieved (Hair et al., 2010).

### Structural model
The structural model was established to test the proposed hypotheses once the validity and reliability of the measurement model were achieved. Figure 3 depicted the results from the analysis showing the path coefficient from the independent construct to its corresponding depending construct.
Table 3 depicted the result for the path coefficient for the model in this study. The hypothesis testing results revealed the significance of three hypotheses, respectively. The relationship between life satisfaction and substance abuse was not supported ($\beta = .001, p = .87$). However, the result supports that life satisfaction has inverse relationship effect on delinquency behaviours ($\beta = -.225, p = .0001$). Finally, delinquency behaviours positively influences substance abuse has also been supported by results ($\beta = .107, p = .0001$).

**Table 3.** Hypothesis testing.

| Construct Path | Construct | Estimate | S.E. | C.R. | P     | Result          |
|---------------|-----------|----------|------|------|-------|-----------------|
| Substance abuse (SA) <- Life Satisfaction (LS) | .001      | .009     | .158 | .875 | Not significant |
| Delinquency (DEL) <- Life Satisfaction (LS) | -.225     | .048     | -4.678 | *** | Significant   |
| Substance abuse (SA) <- Delinquency (DEL) | .107      | .015     | 7.033 | *** | Significant   |

**Figure 4.** The delinquency as a mediator in life satisfaction relationship with substance abuse.

**The mediation analysis**

Zainudin (2015) suggested the procedure for testing the mediator. By referring to Figure 4, the procedure is as follows:

1. The indirect effect = (.28 x .56) = .16
2. The direct effect = .01
3. Since the value of the indirect effect is more than the value of direct effect, the mediation occurs.
4. Type of mediation is full mediation since the direct effect for LS to SA is not significant (Table 3).

In this study, the result of mediation was reconfirmed using the bootstrapping procedure as suggested by Zainudin (2015). The study has conducted the Maximum Likelihood Bootstrapping procedure with bootstrap sample of 1000 and bias correction confidence interval of 95%. Thus, the result of bootstrapping showed in Table 4 has confirmed the result of mediation as conducted before where delinquency behaviours play as full mediator on the relationship between life satisfaction and substance abuse.
Discussion

The result indicates that there is no significant relationship between life satisfaction and substance abuse. However, there is a significant inverse relationship between delinquency and life satisfaction. The result indicated that less delinquency was associated with higher youth life satisfaction. This finding is supported by Savi Cakar, Tagay, & Karatas, 2015; Cekseven Önder & Yilmaz, 2012). This study also depicted that there is a significant relationship between delinquency and substance abuse. Therefore, this study also confirms that role of delinquency as a full mediator in the relationship between life satisfaction and substance abuse.

The finding indicated that youths in this study are involved in delinquent behaviours like cheating, truancy and speaking foul language. It is in line with a study by Shek, Ma, and Tang (2012) where over 60% of the respondents in their study had cheated and spoken foul language. Even though these behaviours are not considered high-risk behaviour, youths also tend to involve in substance abuse due to certain circumstances. This is supported by (Rivis, Sheeran, & Armitage, 2006; Warner, Krebus, & Fishbein, 2008) who claimed that individual factors, including attitude and perceptions, give impact on the intention of behaviour and influences behaviour and they also tend to involve themselves more in substance abuse and delinquency (Sun & Shek, 2010, 2012).

Therefore, efforts should be made towards reducing delinquency and problem behaviour by increasing youth life satisfaction. Haslina, Ortega, Nobaya, and Syamsyihana (2015) stressed that there are challenges in attempting to address youth delinquency in Malaysia due to identity crisis, emotional stress and boredom that are faced by Malaysian youth and suggested the need to develop a programme that focuses on soft skills development and on values and moral education. In line with that, Mahadzirah, Morliyati, and Azman (2014) found that having higher aspects of positive youth development will help youths in achieving higher satisfaction with life.

Conclusion

In general, this study provides a relationship between life satisfaction, substance abuse and delinquency behaviours among Malay youth in Malaysia. Life satisfaction does not have a relationship with substance abuse, but delinquency behaviour plays a role as full mediator on that relationship. It means, when youth perceived that he/she is satisfied with life, youth don’t have intention or become involved in substance abuse. However, youth who participate in delinquency behaviour when he/she are not satisfied in life can lead them to participate in substance abuse. So, attention should be given to youths’ delinquency behaviours of cheating, truancy and speaking foul language in order to increase youth life satisfaction. Besides, intervention youth programmes that address risk and protective factors in delinquency should be developed by examining the prevalence and psychosocial correlates of youth substance abuse.

When conducting the research, limitation of the study cannot be avoided. One of the limitations of this study included was the result cannot be inferred to the whole population of youth in Malaysia as the findings were based on the perspective of the Malay youths only. It is suggested that future study include respondents from other races of the country to have a clearer perspective of youths’ substance abuse and delinquency. Secondly, the respondents were primarily composed of youths from the youth programme organized by the Malaysia Ministry of Youth and Sport in the selected states, so the findings of the study only represent this group of youth. Therefore, future research should examine youths from

### Table 4. The results of bootstrapping procedure in testing delinquency as a mediator on the relationship between life satisfaction and substance abuse.

| Indirect effect LS-SA | Direct effect LS-SA |
|-----------------------|---------------------|
| Bootstrapping results | −.159               |
| Bootstrapping p-value | .001                |
| Result                | Significant         |
| Type of mediation     | Full Mediation since direct relationship is not significant |

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several types of background to validate the predictive directionality of variables in the model. Finally, the present study was conducted on a cross-sectional research design which has the limitation of causality. Future research should adopt a longitudinal research design to overcome the problem of causality.

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**References**

Abd. Rahim, A. R., Hussin, S., & Tubah J. (2006). *Family institutions face the new millennium* (p. 77). Kuala Lumpur: Utusan Publications Distributions Sdn. Bhd.

Agensi Antidadah Kebangsaan. (2014). *Maklumat Dadah 2014*. Kementerian Dalam Negeri Malaysia (In Malay).

Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist, 54*, 317–326.

Azimi, H., Turiman, S., & Ezhar, T. (2003). Gaya hidup dan gaya fakir remaja masa kini. In B. Azizan (Ed.), *Generasi Muda Menangani Cabaran* (pp. 11–26). Pataling Jaya: Qarya Sdn Bhd (In Malay).

Bennett, M. E., McCrady, B. S., Johnson, V., & Pandina, R. J. (1999). Problem drinking from young adulthood to adulthood: Patterns, predictors and outcomes. *Journal of Studies on Alcohol, 60*, 605–614.

Boden, J. M., & Fergusson, D. M. (2011). The short and long term consequences of adolescent alcohol use. In J. B. Sauders, & J. M. Rey (Eds.), *Young people and alcohol: Impact, policy, prevention and treatment* (pp. 32–46). West Sussex: Blackwell Publishing.

Brook, J. D., Brook, D. W., de la Rosa, M., Fernando, D., Rodriguez, E., Montoya, I. D., & Whiteman, M. (1998). Pathways to marijuana use among adolescents: Cultural/ecological, family, peer, and personality influences. *Journal of the American Academy of Child and Adolescent, Psychiatry, 37*, 759–766.

Cekseven Önder, F., & Yilmaz, Y. (2012). The role of life satisfaction and parenting styles in predicting delinquent behaviors among high school students. *Educational Sciences: Theory & Practice, 12*, 1744–1748.

Chan, Y. F., Sidhu, G. K., Lim, P. C., & Wee, E. H. (2016). Students’ perceptions of substance abuse among secondary school students in Malaysia. *Pertanika Journal Social Sciences & Humanities, 24*, 555–572.

DeWit, D. J., & Silverman, G. (1995). The construction of risk and protective factor indices for adolescent alcohol and other drug use. *Journal of Drug Issues, 25*, 837–863.

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology, 68*, 222–663.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75.

Fauziah, I., Mohamad, M. S., Chong, S. T., & Manaf, A. A. (2012). Substance abuse and aggressive behavior among adolescents. *Asian Social Science, 8*, 92–97.
Forman, S. G., Bry, B. H., & Urga, P. A. (2006). Substance abuse. In G. G. Bear & K. M. Minke (Eds.), Children's needs III: Development, prevention, and intervention (pp. 1011–1023). Bethesda, MD: National Association of School Psychologist.

Gilman, R., & Huebner, S. (2003). A review of life satisfaction research with children and adolescents. School Psychology Quarterly, 18, 192–205.

Gotham, H. J., Sher, K. J., & Wood, P. K. (2003). Alcohol involvement and developmental task completion during young adulthood. Journal of Studies on Alcohol, 64, 32–42.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis. Upper Saddle River, NJ: Prentice Hall.

Halfors, D. D., Waller, M. W., Ford, C. A., Halpern, C. T., Brodish, P. H., & Iritani, B. (2004). Adolescent depression and suicide risk: Association with sex and drug behavior. American Journal of Preventive Medicine, 27, 224–231.

Harain, E. C., Huebner, E. S., & Suldo, S. M. (2007). Predictive and incremental validity of global and domain-based adolescent life satisfaction reports. Journal of Psychoeducational Assessment, 25, 127–138.

Haslina, A., Ortega, A., Nobaya, A., & Syamsyihana, G. (2015). Aggressive and delinquent behavior among high risk youth in Malaysia. Asian Social Science, 11, 62–72.

Hawkins, J. D., Lishner, D. M., Jenson, J. M., & Catalano, R. F. (1987). Delinquents and drugs: What the evidence suggests about prevention and treatment programming. In B. S. Brown & A. R. Mills (Eds.), Youth at high risk for substance abuse (pp. 81–131). Rockville, MD: National Institute on Drug Abuse.

Heady, B., & Wearing, A. (1992). Understanding happiness: A theory of subjective well-being. Melbourne: Longman Cheshire.

Hong, K. S., George Tan, G. S., Gan, S. L., Songan, P., Abang Eksan, A. O., Hasbee, U., & Shahren, A. Z. A. (2011). Penyalahgunaan bahan di kalangan remaja: Satu kajian di sekolah menengah Sarawak. Jurnal Antidadah Malaysia (Malaysian Anti-Drugs Journal), 8(2), 1–18.

Igwe, W. C., Ojinnaka, N., Ejiofor, S. O., Emechebe, G. O., & Ibc, B. C. (2009). Socio-demographic correlates of psychoactive substance abuse among secondary school students in Enugu. Nigeria. European Journal of Social Sciences, 12, 277–283.

Jung, S., & Choi, E. (2017). Life satisfaction and delinquent behaviors among Korean adolescents. Personality and Individual Differences, 104, 104–110.

Khaufman, A. V., Kosberg, J. I., Leeper, J. D., & Tang, M. (2010). Social support, caregiver burden, and life satisfaction in a sample of rural African American and white caregivers of older persons with dementia. Journal of Gerontological Social Work, 53, 251–269.

Lewis, A. D., Huebner, E. S., Malone, P. S., & Valois, R. F. (2011). Life satisfaction and student engagement in adolescents. Journal of Youth and Adolescence, 40, 249–262.

Mahadzirah, M., Morliyati, M., & Azman, M. A. (2014). Positive youth development and life satisfaction among youths. Journal of Applied Sciences, 14, 2782–2792. doi:10.3923/jas.2014

McFarlane, S., Younger, N., Francis, D., Gordon-Strachan, G., & Wilks, R. (2014). Risk behaviours and adolescent depression in Jamaica. International Journal of Adolescence and Youth, 19, 458–467. doi:10.1080/02673843.2012.751041

Mohamed, M. N., Marican, S., Elias, N., & Don, Y. (2008). Pattern of substance and drug misuse among youth in Malaysia. Jurnal Antidadah Malaysia (Malaysian Anti-Drugs Journal), 38/4, 1–56.

Mohd, M. S. (2007). The relationship between the age of onset for delinquent behavior and chronic drug abuse among adolescents. Malaysian Anti-Drugs Journal, 2, 97–110.

National Youth Development Policy. (1997). Retrieved October 25, 2016 from, www.youthpolicy.org/factsheets/country/malaysia/

Newcomb, M. D. (1992). Understanding the multidimensional nature of drug use and abuse: The role of consumption, risk factors, and protective factors. In M. Glantz & R. Pickens (Eds), Vulnerability to drug abuse (pp. 255–297). Washington, DC: American Psychological Association.

Oetting, E. R., & Beauvais, F. (1986). Peer cluster theory: Drugs and the adolescent. Journal of Counseling and Development, 65, 17–22.

Patterson, G. R., Dishion, T. J., & Yoerger, K. (2000). Adolescent growth in new forms of problem behaviour: Macro and micro-peer dynamics. Prevention Science, 1, 3–13.

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. Psychological Assessment, 5, 164–172.

Petrakis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. Psychological Bulletin, 117, 67–86.

Proctor, C. L., Linley, P. A., & Maltby, J. (2009). Youth life satisfaction: A review of the literature. Journal of Happiness Studies, 10, 583–630. doi:10.1007/s10902-008-9110-9

Rivis, A., Sheeran, E., & Armitage, C. J. (2006). Augmenting the theory of planned behavior with the prototype/willingness model: Predictive validity of actor versus abstainer prototype for adolescents’ health-protective and health-risk intentions. British Journal of Health Psychology, 11, 483–500.

Roth, J., Brooks-Gunn, J., Murray, L., & Foster, W. (1998). Promoting healthy adolescents: Synthesis of youth development program evaluations. Journal of Research on Adolescence, 8, 423–459.

Savi Cakar, F., Tagay, Ö., & Karatas, Z. (2015). Adolescents’ life satisfaction: Risky behaviors and hopelessness. International Journal on New Trends in Education and Their Implications, 6, 55–62.

Shek, D. T. (2004). Chinese cultural beliefs about adversity its relationship to psychological well-being, school adjustment and problem behaviour in Hong Kong adolescents with and without economic disadvantage. Childhood, 11, 63–80.
Shek, D. T., Ma, C., & Tang, C. Y. (2012). Delinquency and problem behaviour intention among early adolescents in Hong Kong: Profiles and psychosocial correlates. *International Journal on Disability and Human Development, 11*, 151–158.

Suldo, S. M., & Huebner, E. S. (2004). Does life satisfaction moderate the effects of stressful life events on psychopathological behavior during adolescence? *School Psychology Quarterly, 19*, 93–105.

Sun, R. C. F., & Shek, D. T. L. (2010). Life satisfaction, positive youth development and problem behaviour among Chinese adolescents in Hong Kong. *Social Indicators Research, 95*, 455–474.

Sun, R. C. F., & Shek, D. T. L. (2012). Positive youth development, life satisfaction and problem behaviour among Chinese adolescents in Hong Kong: A replication. *Social Indicator Research, 105*, 541–559.

United Nation Office on Drugs and Crime (UNODC). (2007). *The world drug report* (Vol. 1). New York, NY: United Nation Publications.

Valois, R. F., McKeown, R. E., Garrison, C. Z., & Vincent, M. L. (1995). Correlates of aggressive and violent behaviours among public high school adolescents. *Journal of Adolescent Health, 16*, 26–34.

Valois, R. F., Zullig, K. J., Huebner, E. S., & Drane, J. W. (2001). Relationship between life satisfaction and violent behaviours among adolescents. *American Journal of Health Behavior, 25*, 353–366.

Veenhoven, R. (1988). *The utility of happiness*. *Social Indicators Research, 20*, 333–354.

Wagner, E. F. (1996). Substance use and violent behaviour in adolescence. *Aggression and Violent Behaviour: A Review Journal, 1*, 375–387.

Valois, R. F., Zullig, K. J., Huebner, E. S., & Drane, J. W. (2001). Relationship between perceived life satisfaction and adolescents’ substance abuse. *Journal of Adolescent Health, 29*, 279–288.