

OFFENDING TRAJECTORIES AMONG SEX OFFENDERS IN TAIWAN

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by

Hsiao-Wen Wang

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Hsiao-Wen Wang

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APPROVED:

Jorge Varela, PhD  
Dissertation Director

Craig Henderson, PhD  
Committee Member

Marcus Boccaccini, PhD  
Committee Member

Sheng-Ang Shen, PhD  
Committee Member

Abbey Zink, PhD  
Dean, College of Humanities and Social  
Sciences

## ABSTRACT

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Risk assessment instruments have been believed to serve a crucial role in managing sex offender populations because by providing estimates of offender's risk levels, they also help legal services provide appropriate treatment directions. With rising recognition that pitfalls exist in current actuarial risk assessments, which are embedded in a variable-oriented perspective and based on the assumption that the risk of reoffending is linear, additive, and relatively stable overtime, researchers have begun to examine the sex offender population from a person-oriented approach by looking into offending trajectories, which attempt to account for the heterogeneity of individual development. However, current studies have primarily focused on Caucasian males in North America, which limits the generalizability of findings. The purpose of the current study was to fill this gap in the research by examining the heterogeneity of offending trajectories among Taiwanese sexual offenders using retrospective longitudinal data. Data for the current study included 1,607 adult male Taiwanese sex offenders who were released from prison and under community supervision between 2012 and 2016. Data analysis was separated into two phases. In the first phase, Growth Mixture Modeling (GMM) was used to identify groups of offenders with similar offending trajectories of 1) any offending 2) sexual offending. In the second phase, Analysis of Variance (ANOVA) was used to examine the differences among groups with respect to demographic characteristics and offending risk. A five-trajectory model for all offending and a four-trajectory model for sexual offending were identified. In addition, the differences among the trajectory groups

regarding demographic characteristics and offending risk were also revealed. These findings contribute to the existing trajectory research by confirming and adding to the generalizability of previous findings. Specifically, there were similarities between the trajectories identified in the current study and trajectories found in prior research, highlighting the potential cross-cultural universality among the heterogeneity of sex offender populations. Further implications and directions for future research are discussed.

**KEY WORDS:** Sexual offending, Trajectory analysis, Sex offenders, Growth Mixture Modeling, Recidivism, Cross-cultural comparison

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## CHAPTER I

### Introduction

Sex offenses are universally serious crimes that raise intense public concern while presenting a management challenge to stakeholders in the criminal justice system.

Although unlawful sexual behaviors may be defined differently and lead to differing management strategies across cultures and countries, wrongful sexual acts seem to be consistently considered as deviant and harmful (Helmus, Hanson, & Morton-Bourgon, 2011; Wang, 2016). Similarly, there may be variation with respect to sex offense rates, occurring contexts, characteristics of offender and victim, and consequences across countries (see Lalumière, Harris, Quinsey, & Rice, 2005), it is undeniable that sex crime is a challenging issue around the world. According to the U.S. Department of Justice, approximately 346,380 people over the age of 12 were victims of rape/sexual assault (Truman, Langton, & Planty, 2013); and according to the U.S. Department of Health and Human Services (2015), a total of 60,956 children and adolescent reported being sexually abused in 2013. Meanwhile, in Taiwan, the location of the current study, there were approximately 17,513 sexual crime cases reported to different levels of government agencies across the country in Taiwan (Ministry of Health & Welfare, 2015), and according to the Gender Statistical Indicators Report (Ministry of Health & Welfare, 2015), there was an estimated 11,096 rape or sexual assault victimization occurred in the same year, with approximately 10% (i.e., 1,111) involving children under age 12.

Although sex offenses are universally condemned, cross-cultural variances in views and practices toward unlawful sexual behaviors exist. Sexual offenses (e.g., rape) are socially defined concepts (Chappell, 1976; Lalumière, Harris, Quinsey, & Rice, 2005)

and the presentation of the offense may be different in the frequency, context, offender and victim characteristics, and outcomes (see Lalumière et al., 2005). Specifically, countries vary with respect to legislation and their construction of risk assessment in the measure used to assess risk, both of which are a reflection of differing views and definitions of unlawful sexual behaviors (Wang, 2016). For example, the United States and Taiwan have both placed emphasis on managing the risk of sex offenders but applied different approaches in forming related policies. While the United States applies a punitive approach, placing the maintenance of social order and public safety as priority, Taiwan takes a more rehabilitative approach that aims to protect the public and help the sex offenders return to the society (see Wang, 2016). Differences are also evident in the static and dynamic risk factors used in risk assessment instruments, such that some items are only present in North American or Taiwanese instruments (see Wang, 2016). Cultural differences in social values and attitudes/perceptions of sex offenders may explain these differences (Wang, 2016).

The evolution of sex offense policies in the U.S. and Taiwan reflects an increased awareness and emphasis on reducing sexual reoffending. For example, both countries have widened their legal definition, by including both male and female victims, during their modifications of the laws (see Wang, 2016). Although there are similarities and differences existing in sex offense legislation across countries (see Wang, 2016), establishing effective policies in order to prevent further recidivism is still the shared goal (Francis, Harris, Wallace, Knight, & Soothill, 2014). The risk-need-responsivity principle (Andrews et al., 1990), which has gained support over the past two decades, suggests rehabilitation is most successful when services are delivered in a manner

commensurate with an offender's risk. From this perspective, accurately estimating a sex offender's recidivism risk is crucial—accurate risk assessment provides needed information management and intervention planning (Ireland & Craig, 2011).

### **Risk Factors Associated with General Recidivism**

In the late 1980s, the perspective in U.S. corrections began to shift from a punishment model to a rehabilitative model; most notable among these is the *Risk-Need-Responsivity* (RNR) model (Andrews, 2012). The principles of RNR were first outlined by Andrews and Bonta while they were developing the Psychology of Criminal Conduct (PCC; Andrews & Bonta, 2003). It applied a holistic approach and was influenced strongly by General Personality and Cognitive Social Learning (GPCSL) model of human behavior (Ogloff & Davis, 2004). Therefore, similar to the GPCSL model, RNR addresses the complexity of human behavior by considering the potential biological, personal, interpersonal, familial, structural, and cultural factors (Andrew, 2012). The *Risk* principle applies the concepts of prediction and matching (Ogloff & Davis, 2004). An offender's risk must be matched with interventions of commensurate intensity, thereby avoiding interactions between low-risk and high-risk cases (Andrews, 2012). The *Need* principle implies that in order to reduce reoffending, the delivery of treatment should target the criminogenic needs of the individual (Ogloff & Davis, 2004). Criminogenic needs are changeable risk factors that found to link to a risk for recidivism (Ogloff & Davis, 2004), which can also be viewed as the offenders' internal or external impediments that keep them from meeting their basic needs optimally (Ward & Stewart, 2003). The *Responsivity* principle considers that the intervention would be most beneficial to the offender when it is adapted to the offender's learning styles (e.g.,

behavioral approach) and characteristics (e.g., age, intellectual functioning, motivation level; Andrews, 2012). Factors that may affect the offender's response to treatment could also be both internal (e.g., idiographic components) and external (e.g., staff characteristics, therapeutic relationships; Ogloff & Davis, 2004).

Using the extensive literature related to criminal risk, Andrews and Bonta (2010) identified the "Central Eight," which are the best-established risk/need factors. These eight risk/need factors include history of antisocial behavior, antisocial personality pattern, antisocial cognition (i.e., procriminal attitudes), antisocial associates (i.e., social support for crime), substance abuse, family/marital circumstances, school/work, and leisure/recreation (i.e., prosocial recreational activities). These eight factors are theoretically inter-correlated and able to be addressed through interventions (Andrews, 2012). Specifically, the first four of these factors, which also called the Big Four, are strongly associated with various recidivism measurements (Andrews, 2012).

### **Assessment of Risk for Sexual Recidivism**

Research has shown that actuarial risk assessments, which are empirically developed instruments that statistically combine risk factors to predict recidivism (Beech, Fisher, & Thornton, 2003; Costanzo & Krauss, 2012), produce more accurate estimates when compared to clinical judgment (Costanzo & Krauss, 2012; Hanson & Morton-Bourgon, 2009; Heilbrun, 1997). Risk factors are selected based on their association with sexual recidivism (Ireland & Craig, 2011), and they fall into two broad categories: static risk factors and dynamic risk factors (McGrath, Lasher, & Cumming, 2011). Static risk factors represent aspects of an individual's history that remain fixed, such as prior history of crime and violence, age at first offense, and early abuse of alcohol and/or drugs (Beech

et al., 2003; Costanzo & Krauss, 2012; McGrath et al., 2011). Currently, there are several actuarial static risk assessment instruments commonly used in North America, such as Static-99/R and Static-2002/R (Hanson & Thornton, 2000; Helmus, Thornton, Hanson, & Babchishin, 2012; Hanson & Thornton, 2003), Minnesota Sex Offender Screening Tool-Revised/3.1 (MnSOST-R/3.1; Epperson et al., 1998; Minnesota Department of Corrections, 2012), and Risk Matrix 2000 (RM2000; Thornton et al., 2003).

Research has demonstrated these measures have at least a moderate level of predictive accuracy in North America samples (see Wang, 2016). On the other hand, dynamic risk factors include *stable* factors that may be malleable (e.g., deviant sexual interest, pro-offending attitudes) and *acute* factors that may be associated with imminent sexual offending (e.g., substance abuse, anger/hostility, negative mood; Beech et al., 2003). Similar to the static risk assessment instruments, there are several actuarial dynamic risk assessment instruments also commonly used in North America, such as the Sex Offender Need Assessment Rating (SONAR; Hanson & Harris, 2000), Sex Offender Treatment Intervention and Progress Scale (SOTIPS; McGrath, Cumming, & Lasher, 2013), and Violence Risk Scale: Sex Offender Version (VRO: SO; Wong, Olver, Nicholaichuk, & Gordon, 2000). All these dynamic risk assessment instruments have shown moderate levels of predictive accuracy according to the available research (see Wang, 2016). In addition to the research examining predictive effects in North America, the impact of cultural variation on applied risk assessment instruments has also been discussed. For example, researchers in Taiwan have examined the effectiveness of North American risk assessment instruments with the Taiwanese sex offender population (e.g.,

Static-99; Dong, 2005), and have sought to develop static and dynamic Taiwan-specific risk assessment instruments (e.g., Taiwan Sex Offender Risk Assessment Scale, Lin & Dong, 2005; Taiwan Dynamic Risk—2004, Shen, 2004, 2005, 2006).

### **Variable- versus Person-Oriented Approaches**

Overall, the critical role that risk assessment plays in the management of sex offenders has been recognized in the field, and the direction of current science of risk assessment has been heavily focusing on actuarial prediction, as it is believed that actuarial prediction holds better statistical power than clinical judgment (Lussier & Davies, 2011). Actuarial prediction relies on a *variable-oriented* approach, which makes several assumptions:

1. scores on instruments (e.g., Static-99, SONAR) are all statistically associated with reoffending (Lussier & Davies, 2011);
2. differences in offending are relatively stable throughout the time;
3. offenders' risk of reoffending can be examined by combining these heterogeneous risk factors that are statistically related to sexual recidivism; and
4. the linear combination of risk factors provides a risk estimate (Lussier, Tzoumakis, Cale, & Amirault, 2010; Lussier & Davies, 2011).

There are voices in the field questioning the actuarial approach, as it has limitations when applied to individual cases (Cooke & Michie, 2010; Lussier & Davies, 2011). Indeed, pitfalls exist in the variable-oriented approach in examining the sex offender recidivism. The statistical formulas derived in variable-oriented research may fail to take the statistical outliers into account (Haig, 2005; Ward & Beech, 2015). In addition, because static risk factors are mostly historical and unchangeable, they fail to



consider the dynamic aspect of a sex offender's criminal activity (Lussier et al., 2010). The use of static risk factors is also limited inasmuch as it fails to consider the effects of interventions targeting recidivism risk (e.g., correctional treatment programs). Although there are risk assessment techniques that attempt to capture the more dynamic aspects of a sex offender's profile, such as his/her criminogenic needs and the potential changes in those needs after receiving treatments (Thornton, 2013; Ward & Beech, 2015), there remain unanswered questions. Researchers have argued that current dynamic risk assessments face a "theoretical dead end" (see Ward & Beech, 2015), as they fail to accurately capture the complexity of the dynamic aspects of sexual offending. Instead of placing focuses on the behavior that constitutes sexual offending, Ward and Beech (2015) argued that it is critical to place focuses on the clusters of "symptoms" that accompany sexual offending. They further emphasized the concept of establishing clinical "exemplars" (p. 105, Ward & Beech, 2015) for developing dynamic risk factors, and in order to do so, part of the direction of research should focus on examining the variations in offense course or trajectory. Although heavy commitment from the field has been placed on developing and improving sex offender risk assessment instruments, flaws in current practices and research as well as directions for improvement have been identified. Specifically, instead of merely focusing on actuarial predication, the needs of exploring intra-individual changes throughout an offender's life course have been recognized, as these changes may play critical roles in recidivism.

One intra-individual risk factor that has received substantial attention is *age*. Researchers in the field of criminology have discussed the relation between age and crime over the course of an offender's criminal career (e.g., the age-crime curve;

Blumstein, Cohen, & Farrington, 1988; Lussier et al., 2011). For the sex offender population, age at the time of prison release and potential aging effects have been examined, raising debate between the ideas of the *static-propensity* approach and the *static-maturational* approach (Lussier et al., 2010). The static-propensity approach proposes that there are no dynamic effects of aging in the likelihood of reoffending, and there is no need to adjust the estimates of risk based on the aging factor (see Harris & Rice, 2007). That is, a sex offender's propensity to recidivate is developed early in the life course and remains as a fixed individual difference (Lussier et al., 2010). In contrast, the static-maturational approach proposes that within-individual changes have their impact on the sex offenders' risk of reoffending, and those changes are usually follow the age-crime curve (Barbaree, Langton, & Blanchard, 2007; Lussier et al., 2010). Specifically, there are studies showing that the aging effect (i.e., the factor of offender's age at the time of prison release) plays a role in the risk of recidivism, such that the likelihood of reoffense decreases with age (e.g., Barbaree, Blanchard, & Langton, 2003).

In addition to age/aging as a form of intraindividual heterogeneity, there is another form of heterogeneity receiving attention from the research field. Namely, the question of whether sexual offending is the exclusive (or at least predominant) type of offense throughout a sex offender's criminal career. Following a general assumption in the field that male sex offenders are a unique population that is different from nonsexual offenders, two perspectives have been applied to examine the specificity of sex offender population (see Harris, Mazerolle, & Knight, 2009). The *generalist* refers to the sex offenders who are versatile in their offending; they commit a wide range of crimes, only some of which are sexual offenses (Harris, 2008). In contrast, *specialist* sex offenders

repeatedly, but exclusively, commit sexual offenses (Harris, 2008). While Gottfredson and Hirschi's (1990) general theory of crime has been applied to sex offenders, especially rapists' offending (see Harris et al., 2009), findings suggesting differences between generalist and specialist sex offenders support the concept of sex offender subtypes. Specifically, the subtypes of rapist (i.e., offenders who have sexually assaulted adults) and child molester (i.e., offenders who have sexually assaulted children) have been the focus of these discussions (Harris et al., 2009; Lussier, LeBlanc, & Proulx, 2009; Hanson, 2002; Simon, 1997). While rapists are more likely to be versatile in their criminal activities and engage in other nonsexual violent offending, child molesters have been considered more specific in their dimension of offending (Lussier et al., 2009). Hanson (2002) examined the relation between age and sexual recidivism and found differences between rapists and child molesters. Among the 4,673 sex offenders in this study, rapists were relatively younger than child molesters when they committed their crimes, and their risk of reoffending tends to decline with age; whereas child molesters were relatively older than rapists when they commit their crimes, and their risk of reoffending remained constant during their early and middle years of adulthood (Hanson, 2002).

These findings support examining sex offenders using a *person-oriented* approach, which attempts to account for the heterogeneity of individual development that is less likely to be predicted by the statistical linear relationship that is applied by the variable-oriented approach (Lussier & Davies, 2011). Specifically, the person-oriented approach focuses on longitudinal changes, rather than cross-sectional risk factors, and emphasizes the following several key concepts:

1. a configural approach to examining variables;
2. repeated measurement of changes over time; and
3. examining nonlinear patterns in data (Lussier & Davies, 2011).

In the current context, trajectory refers to patterns of offending over extended periods of time (Blumstein, Cohen, Roth, & Visher, 1986; Lussier et al., 2010). Despite research examining the life span offending trajectories of criminals (e.g., Blokland, Nagin, & Nieuwebeerta, 2005; Fergusson, Horwood, & Nagin, 2000), there is shortage of research examining sex offender's offending over the life-course (Francis et al., 2014). Therefore, in light of the need to examine dynamic changes of intra-individual risk factors and changes over the life course, the current study will focus on the offending trajectories of sex offenders.

### **Research Examining Offender Trajectories**

Little research has examined the lifetime offending trajectories of sex offenders. Lussier et al. (2010) initiated this work by exploring adult sex offenders' offending trajectories from early adolescent to adulthood. They targeted all types of offending (i.e., general offending, property crimes, nonsexual violent crimes, and sexual crimes) trajectories of adult sex offenders who were imprisoned for at least two years ( $M = 45.5$ ) in Quebec, Canada. Specifically, they examined the total number of convictions of these offenders for four time intervals ranging from age 12 to age 35. The results of their study showed four offending trajectories (i.e., very low-rate offenders, the late-bloomers, low-rate desistors, and high-rate chronics; see Lussier et al., 2010), revealing that between-group and within-individual differences do significantly change in sex offender population over the time. Importantly, their findings supported the heterogeneous nature

of the sex offender population that these four groups differed in some of the basic sociodemographic descriptors (e.g., age) as well as the characteristics of the victim (e.g., child molesters were large proportionally included in the very low-rate offender's group and rapists were large proportionally included in the high-rate chronic group).

In 2011, Lussier and Davis further specifically examined sexual and violent offending trajectories by tracking Canadian offenders' sexual and violent offending over a 17-year period (i.e., from age 18 to age 35). The results of their study revealed two sexual offending trajectories—a very low rate group and a high-rate group—with the latter showing an increasing trend in offending over time. Freiburger, Marcum, Iannacchione, and Higgins (2012) examined the offending trajectories of 500 sex offenders who had an arrest for sexual offending between 1993 and 2007 in Virginia. They found three trajectories in their sample—a group that consisted of offenders who starts with no sex offenses at age 19 but has nearly 0.50 (i.e., number of sex offenses) by age 33; another group that consisted of offenders starts with no sex offenses at age 19, but has spikes on the number of sex offenses around ages 23 to 28 and the numbers declines afterward; and a third group that consisted of offenders who starts with no sex offenses at age 19, but the number of sex offenses increases and remains consistent from ages 23 to 33. Notably, the high-rate group, whose arrest rate peaked at age 30, exhibited and remained a relatively more consistent number of sex offenses between age 23 and 33, and was more likely to commit other forms of criminal behaviors (e.g., other violent, drug, property crimes).

Francis et al. (2014) attempted to improve upon previous research by examining a larger sample (780 male sex offenders who were referred for civil commitment in

Massachusetts) and removing and constraints related to referral age. They examined trajectories of these offenders for both sexual offending and any offending (i.e., combining sexual and non-sexual offending) and found four trajectories after considering the number of sexual offending across life time—low-rate persistent, high-rate limited, high-rate accelerator, late-onset accelerator.

Overall, the results of these previous studies reveal differences among sex offenders with respect to rates of offending over their lifetime. Moreover, these groups of offenders also potentially differ with respect to other features (e.g., the characteristics of the victim, more likely to commit other forms of crime). This literature highlights the importance of examining the trajectories of sex offenders, as previous research has not only highlighted the potential unique nature of the sex offender population when compared to non-sexual offender population but also indicated the potential heterogeneous nature within the sex offender population.

Considering cross-cultural differences may have impact on multiple aspects of sex offender management, it is possible that cross-cultural variation may also exist in the development of sex offender's offending trajectories. Specifically, the current findings on sex offender's offending trajectories are all based on Caucasian males primarily in North America; this absence of research examining the impact of cultural differences and ethnicity diversity limits the generalizability of findings. Therefore, the current study aims to explore and compare the potential heterogeneous nature within the sex offender population across countries, with an emphasis on exploring the trajectories of Taiwanese sex offenders and comparing the findings to the existed trajectories findings on the American sex offenders.

## **CHAPTER II**

### **Current Study**

The current study sought add to the sex offender literature by examining offending trajectories among Taiwanese offenders. Specifically, both sexual offending trajectories and any offending trajectories were examined. After the groups of offenders with similar offending trajectories were identified, differences among groups with respect to demographic characteristics and offending risk were examined.

## CHAPTER III

### Method

#### Participants

The original sample of participants included 1,607 adult male sex offenders in the Taiwanese Justice System released from the prison as either parolee or probationer and under community supervision. These sex offenders were from six major cities in Taiwan: Taipei City, New Taipei City, Taoyuan City, Taichung City, Tainan City, and Kaohsiung City. On average, the offenders included in the original sample were 38.9 years old ( $SD = 13.25$ ; range = 19-89) at the time when their archival files were retrieved for the purpose of current study. More information regarding the participants' demographic and offense background was included in Table 1. Twenty-nine percent of the participants ( $n = 481$ ) was from Kaohsiung City. Forty-one percent of the participants ( $n = 669$ ) had only one conviction (i.e., their current convicted sexual offense) in their criminal history, and the rest of the participants either had more than one sexual offense or at least had one other previous criminal charge, regardless of the type of crime.

Table 1

*Cities and Offense Background (N = 1607)*

Variable	Mean (SD)
Age	38.9 (13.25)
City	<i>n</i> (%)
Taipei City	44 (2.7)

(continued)



Variable	Mean (SD)
New Taipei City	313 (19.5)
Taoyuan City	215 (13.4)
Taichung City	357 (22.2)
Tainan City	197 (12.3)
Kaohsiung City	481 (29.9)
Education Level	
Completed high school	555 (34.5)
Marital Status	
Lived with a romantic partner	420 (27.5)
Offense Background	
Index offense only	669 (41)

## Procedures

Data for the current study was retrieved from participant files in the National Domestic Violence, Sexual Assault and Children -Juvenile Protection Information System. This database system included information regarding offenders' prison records and treatment progress after they were released into the community. This information was first entered into the system immediately after the participant was released from the prison and updated every six months by the sex offender treatment providers in the

community. Data for the current study was entered between 2012 and 2016. The study was reviewed and approved by the Institutional Review Board of Fu Jen Catholic University (Hsinjhuang District, New Taipei City, Taiwan) and the Sam Houston State University Committee for the Protection of Human Subjects.

## **Measures**

**Criminal History.** Data related to frequency of offending and type of offenses was gathered from offenders' official criminal records. That is, offenders' previous prison admissions and their number of charges were counted. Therefore, the definition of recidivism in this study was to be re-conviction of any type of crime or violation of probation or parole (Grossman, Martis, & Fitchner, 1999). Overall, there were 104 types of charges, and these charges were collapsed into four categories: sexual, nonsexual violence, property, and substance abuse. All charges for any crime and/or a sex crime were collected beginning age 18 and were coded according to five-year time period. The selection of a five-year time period was based on the recommendations made by previous researchers (see Francis et al., 2014).

**Static-99.** The Static-99 is an actuarial risk assessment instrument that has been recognized as the most commonly used instrument with adult male sex offenders in North America (Archer, Buffington-Vollum, Stredny, & Handel, 2006; Hanson & Morton-Bourgon, 2009; Hanson & Thornton, 2000; Helmus et al., 2011). It contains the four items from RRASOR and other historical factors that are designed to measure offenders' long-term risk potential (Hanson & Thornton; 2000). There are 10 items included in the Static-99 that assess antisociality, sexual deviance, intimacy deficits, etc. (Helmus et al., 2011). The total score of these 10 items can be classified into four categories (i.e., low,

moderate-low, moderate-high, and high) that indicate risk level. Although the predictive accuracy of the Static-99 is not significantly better when compared to other sex offender risk assessment measures (see Hanson & Thornton, 2000), because it is cost-effective, it is still widely applied (Helmus et al., 2011).

**Taiwan Dynamic Risk – 2004.** Taiwan Dynamic Risk-2004 was developed using the MnSOST-R, SONAR, SOTNPS, and clinicians' experiences as references. It is mainly used with sex offenders who are on community supervision. The Taiwan Dynamic Risk-2004 includes seven stable factors and eight acute factors (see Table 3), with the total score of these two parts calculated separately. Both total scores can be classified into four categories (i.e., low, moderate-low, moderate-high, and high) that indicate sex offenders' risk level. The Taiwan Dynamic Risk-2004 is significantly correlated with the Static-99, and the magnitude of change in the Taiwan Dynamic Risk-2004 has also moderately predicted the level of risk on the Static-99 (Shen, 2009). Regarding the predictive validity, the Taiwan Dynamic Risk-2004 has shown significant performance with two community treatment samples (i.e., 571 sexual offenders joining in the 2004, 2005 and 2006 programs, and 1,022 sexual offenders joining in the 2008 program (Shen, 2009).

### **Data Analysis**

Data analysis of this study was separated into two phases. In the first phase, I identified groups of offenders with similar offending trajectories. Growth mixture modeling (GMM) using MPlus (Version 7) was used to identify clusters of offenders within the entire sample with similar trajectories of (1) any offending and (2) sexual offending. GMM is a statistical application that is suitable for identifying subgroups of

individuals who have similar patterns of change in a continuous process across population members (Muthén, 2004). It is one of the longitudinal analytic methods that was widely applied by psychology researchers for answering questions regarding discovering the heterogeneity in developmental patterns of change exist within the population (Frankfurt, Frazier, Syed, & Jung, 2016). Although most of the previous research that examines similar research questions used Group-based trajectory modeling (GBTM; Nagin, 2005) to address the question (e.g., Lussier et al., 2010), we selected GMM rather than GBTM because GMM not only provides information regarding differences between the classes that have different trajectories but also provides information regarding differences within the classes (Frankfurt et.al., 2016). That is, GMM provides an additional benefit of analyzing individual variation around the average group trajectory. Starting with a one-class model, this analysis estimated a series of GMM models; each following model included one additional class. The decision respecting to selecting the model with the optimal number of classes is usually based on both the basis of a convergence of model fit criteria as well as substantive considerations, as traditional likelihood ratio tests for comparing nested models cannot be used to statistically determine the optimal number of classes (McLachlan & Peel, 2000; Miller, Turner, & Henderson, 2009). Several statistical indices were used to identify the model (i.e., number of trajectory groups) that best fit the data. The first index is the Bayesian Information Criterion (BIC; Schwarz, 1978), which compares the log likelihood values between the classes (Frankurt et al., 2016) and has been widely applied for model selection (Lussier et al., 2010). A lower value of BIC indicates a better fit in the model. The second index is entropy, which indicates the likelihood of individuals being

accurately classified into the classes (Frankurt et al., 2016). Entropy values fall between 0 and 1, with higher values indicating higher accuracy of an individual being placed into his/her group membership (Frankurt et al., 2016). The third index is the Lo-Mendell-Rubin Likelihood Ratio Test (L-M-R LRT; Lo, Mendell, & Rubin, 2001), which provides a test to determine if a statistically significant improvement between  $k-1$  and the  $k$ -class models exist (Miller et al., 2009). Thus, lower BIC, higher entropy, and statistically significant L-M-R LRT were the criteria used in model selection.

The second phase included examining the differences among groups with respect to demographic characteristics and offending risk. To this end, analysis of variance (ANOVA) was used to examine differences across the trajectory groups.

## CHAPTER IV

### Results

#### Descriptive Statistics

Table 2 provides the means and standard deviations of conviction counts for the sample. Although the conviction counts for sexual offending at each of age interval are lower than the counts for any offending, as expected, they share a similar pattern over time. Both any offending and sexual offending convictions peak at the 23 to 27 interval. In addition, both types of offending start decreasing after the peaks and drop below .1 after age 53.

Table 2

*Means and Standard Deviations of Conviction Counts for Any Offending and Sexual Offending with Each of Age Interval (N = 1607)*

Age Interval	Any Offending	Sexual Offending
18 – 22	.21 (.60)	.13 (.41)
23 – 27	.58 (1.06)	.31 (.60)
28 – 32	.40 (.87)	.21 (.52)
33 – 37	.31 (.75)	.17 (.48)
38 – 42	.23 (.69)	.13 (.41)
43 – 47	.19 (.60)	.11 (.38)
48 – 52	.14 (.48)	.10 (.35)

(continued)

Age Interval	Any Offending	Sexual Offending
53 – 57	.06 (.32)	.05 (.25)
58 – 62	.04 (.28)	.03 (.21)
63 – 67	.03 (.19)	.03 (.17)
68 – 72	.02 (.19)	.01 (.17)
73 and above	.01 (.10)	.01 (.09)

## Offender Trajectories Based on Any Offending

### Model Selection

Examination of Table 3 indicates that relative to the models with fewer classes, the six-class model had the smallest BIC. However, due to the class counts of its first class was too small (i.e.,  $n = 49$ ; 3%) that may lead to the problem of low representativeness, the six-class model was not selected. Relative to the four-class model and other models with fewer classes, the five-class model had a smaller BIC. Although the five-class model had a slightly lower entropy when compared to the four-class model and had a nonsignificant L-M-R LRT, few considerations had been taken into account while selecting the model. For example, previous simulation studies (i.e., Nylund, Asparouhov, & Muthén, 2007; Nylund & Masyn, 2008) has indicated that among all the traditionally used fit indices, BIC performed better in determining the number of classes in mixture modeling. Specifically, the difference between the BIC of the four-class and five-class models was greater than 10, which suggested the five-class model meaningfully improves model fit (Raftery, 1995; Frankurt et al., 2016). Furthermore,

although statistical consideration has its power in guiding the decision on selecting the model, substantive consideration is also important in the model selecting process (Muthén, 2003). When examining the trajectories of the four-class and five-class models, it was discovered that a class peak in the age interval of 18-22 was not observed in the four-class model. For these statistical and substantive reasons, the five-class model was considered as the model that provided the best representation of the data.

Figure 1 shows the offending trajectories for any offending resulting from the five-class model selected. The *Adult Offender* (24%) trajectory group showed an increase in offending through early adulthood, with a peak in the 28 to 32 age period, and had no convictions after age of 47. The *Middle Age Offender* (29%) had a relatively stable offending pattern compared to other classes; most offending occurred between ages 28 and 57, with no convictions after this age interval. The *Sunset Offender* (14%) group had a very low number of convictions before age 43 and increased to a peak in the 48 to 52 age period and gradually decreased afterwards. The *Young Adult Offender* (20%) group had a peak in their offending in the 23 to 27 age period with an average of approximately 2 convictions and did not have any other convictions in other age period. The *Teen Offender* (13%) had a peak in their number of convictions in early adulthood (i.e., 18 to 22 age period) and gradually decreased afterwards with no conviction after age 32.



Table 3

*Model Fit Criteria for One- to Six-Class Models for Any Offending Trajectories (N = 1607)*

Model	Log Likelihood	Number of Parameters	BIC	Entropy	L-M-R LRT( <i>p</i> )
One-Class	-8398.910	27	16997.138	NA	NA
Two-Class	-8191.309	31	16611.463	.636	<.001
Three-Class	-8119.205	35	16496.784	.606	.006
Four-Class	-8082.127	39	16452.157	.630	.039
Five-Class	-8041.295	43	16400.022	.615	.123
Six-Class	-8000.561	47	16348.082	.687	.152

*Note. BIC = Bayesian Information Criterion; L-M-R LRT = Lo-Mendell-Rubin Likelihood Ratio Test; NA = not applicable*

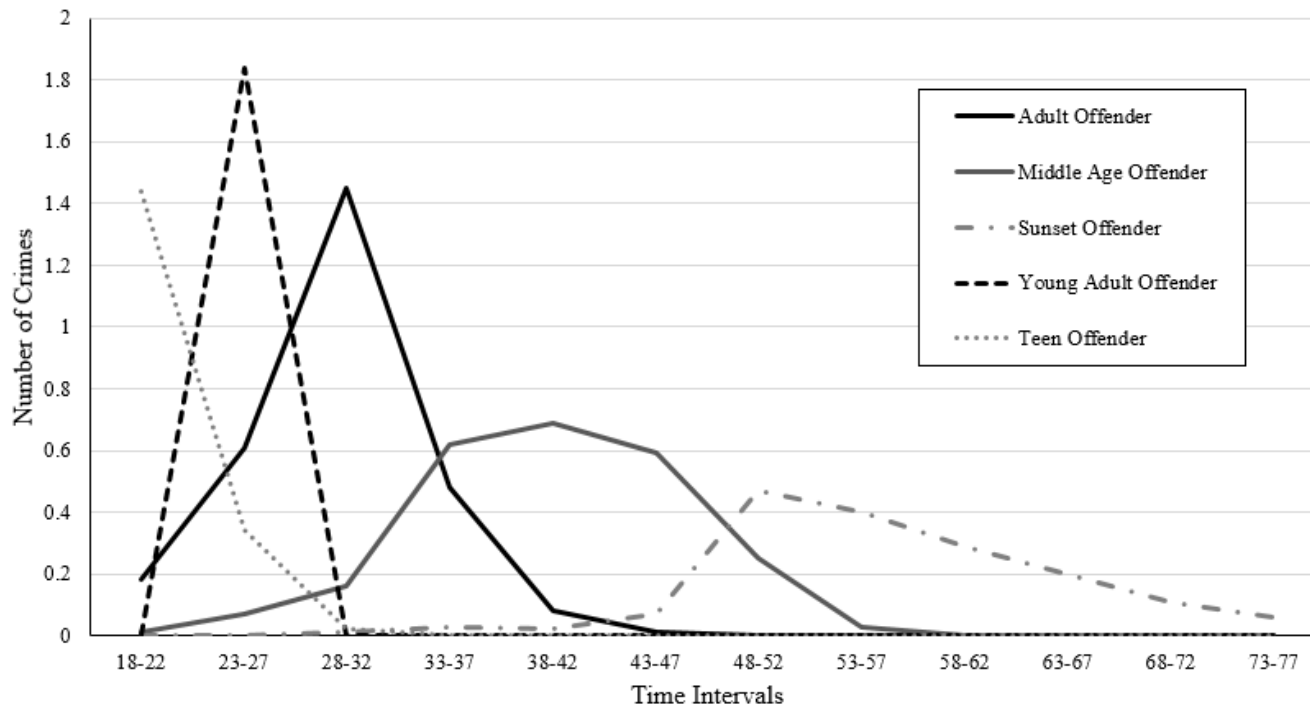


Figure 1. Any offending trajectories of adult sex offender ( $n = 1607$ ).

### **Differences Among Trajectory Groups for Any Offending**

**Demographic characteristics.** Table 4 present the Chi-square test of independence for percentage differences and the one-way ANOVA for mean differences in proportions across the any offending trajectory groups.

**Age ( $n = 1607$ ).** There were statistically significant differences in regards to age among the groups for any offending trajectories,  $F(4,1602) = 1668.87, p < .001, \eta^2 = .81$ .

**Marital status ( $n = 1527$ ).** There were statistically significant differences in regards to marital status among the trajectory groups for any offending,  $\chi^2 = (4, N = 1527) = 199.30, p < .001, \text{Cramer's } V = .36$ .

**Education level ( $n = 1594$ ).** There were statistically significant differences in regards to education level among the trajectory groups for any offending,  $\chi^2 = (4, N = 1594) = 50.93, p < .001, \text{Cramer's } V = .18$ .

**Geographic area ( $n = 1607$ ).** There were no statistically significant differences in regards to geographic area among the trajectory groups for any offending,  $\chi^2 = (8, n = 1607) = 14.94, p = .06, \text{Cramer's } V = .07$ .

**Offending Risk.** Table 5 and Table 6 presents the Chi-square test of independence for percentage differences and the one-way ANOVA for mean differences in proportions across the trajectory groups.

**Static-99 item/total scores ( $n = 1567$ ).** Statistically significant differences across trajectory groups were observed for eight of the ten Static-99 items. Similarly, significant differences across groups were observed for the Static-99 Total scores,  $F(4,1562) = 82.71, p < .001, \eta^2 = .17$ .

*Taiwan Dynamic Risk-2004-Static Dynamic item/total score (n = 1186).* There were no statistically significant differences in regards to Taiwan Dynamic Risk-2004—Static Dynamic total score among the group for any offending trajectories,  $F(4,1181) = .59, p = .672$ . Regarding to the item scores, there were statistically significant differences on three out of the seven static dynamic items (i.e., Bad Social Influence, Social Relationship Deficit, Attitude Toward Sexual Assault).

*Taiwan Dynamic Risk-2004-Acute Dynamic item/total scores (n = 1149).* There were no statistically significant differences across the trajectory groups with respect to Taiwan Dynamic Risk-2004—Acute Dynamic total scores,  $F(4, 1144) = 2.02, p = .089$ . Regarding the item scores, there were statistically significant differences on two out of the eight acute dynamic items (i.e., Negative/Depressed Mood, Decreased Social Support Network).

***Risk-Need-Responsivity Related Factors.*** Table 7 presents the Chi-square test of independence for percentage differences in proportions across the any offending trajectory groups. Overall, according to the results, there are statistically significant differences among the groups on the items related to the R-N-R domains of History of Antisocial Behavior, Antisocial Personality, Social Supports for Crime, Family/Marital Relationship, and School/Work.

Table 4

*Demographic characteristics differences among the groups of any offending trajectories*

Variable <sup>1,2</sup>	Middle Age			Young Adult		ES
	Adult offender	offender	Sunset offender	offender	Teen offender	
Average Age ( <i>SD</i> )	34.92 (5.36)	45.35 (6.64)	61.19 (8.11)	26.97 (3.87)	24.17 (3.80)	$\eta^2 = .81$
Percent Living with Romantic Partner*	18.6	40.2	29.8	8.1	3.3	$V = .36$
Percent High School Graduate*	28.5	36.4	11.0	17.7	6.5	$V = .18$
Geographic Area*						$V = .07$
Northern <sup>3</sup>	9.8	9.6	4.5	7.0	4.7	
Central <sup>4</sup>	4.0	7.3	3.5	4.9	2.5	
Southern <sup>5</sup>	10.4	12.6	6.3	8.3	4.5	

*Note.* <sup>1</sup> Variables marked with an asterisk (\*) are categorical and effect size (ES) is Cramer's *V*. Continuous variable effect size is eta-squared. <sup>2</sup> All group differences are significant,  $p < .001$ , except for Geographic Area,  $p = .06$ . <sup>3</sup> Northern area includes Taipei City, New Taipei City, and Taoyuan City. <sup>4</sup> Central area includes Taichung City. <sup>5</sup> Southern area includes Tainan City and Kaohsiung City.

Table 5

*Static-99 item/total scores differences among the groups of any offending trajectories*

Static-99 Items	Percent of Offenders with Risk Factor Present					$\chi^2(df)$	<i>V</i>
	Adult offender	Middle Age offender	Sunset offender	Young Adult offender	Teen offender		
Young	7.7	3.2	0.8	51.3	37.0	784.30(4)*	.71
Lived with Intimate partner $\geq$ 2 yrs.	26.9	18.2	4.6	33.6	16.8	304.53(4)*	.44
Index Non-sexual Violence	35.0	33.7	7.4	16.0	7.8	28.90(4)*	.14
Prior Non-sexual Violence	37.1	29.6	7.5	15.5	10.3	26.67(4)*	.13
Prior Sex Offenses (item score)						51.71(12)*	.11
0 (no charges or convictions)	20.2	26.7	13.8	19.0	8.9		
1 (1-2 charges; 1 conviction)	4.2	2.6	0.6	1.3	1.9		
2 (3-5 charges; 2-3 convictions)	0.2	0.4	0.0	0.1	0.0		
3 (6+ charges; 4+ convictions)	0.0	0.1	0.0	0.0	0.0		
Prior Sentencing Dates $\geq$ 4	34.1	40.8	7.8	10.1	7.3	34.67(4)*	.15
Non-contact Sex Offences	23.1	50.0	15.4	11.5	0.0	7.57 (4)	.07
Unrelated Victims	26.0	25.8	13.1	23.0	12.1	96.91(4)*	.25
Stanger Victims	32.2	30.9	10.4	16.8	9.8	20.94(4)*	.12
Male Victims	25.6	32.6	18.6	9.3	14.0	3.76 (4)	.05

(continued)

Static-99 Items	Adult offender	Middle Age offender	Sunset offender	Young Adult offender	Teen offender	$\chi^2(df)$	<i>V</i>
Static-99 Total score ( <i>M &amp; SD</i> ) <sup>1</sup>	2.58 (1.4) <sub>a</sub>	1.93 (1.4) <sub>b</sub>	1.40 (1.0) <sub>c</sub>	2.87 (1.1) <sub>d</sub>	3.22(1.4) <sub>e</sub>		

Note. <sup>1</sup> $F(4,1562) = 82.7, p < .001, \eta^2 = .17$ ; row values with different subscripts are significantly different,  $p \leq .05$ . \* $p < .001$ .

Table 6

*Taiwan Dynamic Risk-2004 Static/Acute Dynamic item/total scores—Trajectory Group (Any Offending)*

Taiwan Dynamic Risk Assessment Items	Mean ( <i>SD</i> ) Item Scores					<i>F</i> (4,1181)	$\eta^2$
	Adult offender	Middle Age offender	Sunset offender	Young Adult offender	Teen offender		
<i>Static Dynamic Items</i>							
Bad Social Influence	.39 (.58)	.30 (.55)	.21 (.45)	.37 (.59)	.52 (.65)	6.687***	.02
Intimacy Relationship Deficit	1.40 (.80)	1.36 (.80)	1.29 (.83)	1.37 (.79)	1.33 (.78)	.577	.002
Social Relationship Attachment Deficit	.53 (.60)	.60 (.60)	.64 (.62)	.41 (.53)	.39 (.55)	7.179***	.02
Self-Regulation About Sex	.41 (.56)	.48 (.61)	.41 (.52)	.42 (.58)	.44 (.65)	.718	.002
Attitude Toward Sexual Assault	.44 (.62)	.53 (.68)	.63 (.66)	.41 (.60)	.38 (.57)	4.864**	.02

(continued)

Taiwan Dynamic Risk Assessment Items	Adult offender	Middle Age offender	Sunset offender	Young Adult offender	Teen offender	<i>F</i> (4,1181)	$\eta^2$
Poor Cooperation with Supervision	.12 (.35)	.10 (.35)	.06 (.28)	.14 (.38)	.14 (.39)	1.665	.006
Self-Regulation Characteristics	.97 (.63)	.97 (.61)	.89 (.59)	.98 (.60)	.92 (.69)	.805	.003
Static Dynamic Total Score	4.25 (2.07)	4.33 (2.25)	4.14(1.97)	4.10 (2.07)	4.11 (2.17)	.585	.002
<i>Acute Dynamic Items</i>							
Opportunity to Contact with Victims	.69 (.66)	.67 (.67)	.65 (.64)	.71 (.61)	.70 (.65)	.273	.00
Negative/Depressed Mood	.35 (.53)	.45 (.57)	.49 (.54)	.27 (.45)	.24 (.47)	8.332***	.03
Preoccupation with Sexual Desires/Fantasies	.30 (.51)	.34 (.51)	.25 (.44)	.32 (.51)	.41 (.57)	1.889	.007
Hostility toward Others	.22 (.47)	.18 (.42)	.16 (.42)	.12 (.33)	.13 (.34)	2.146	.007
Substance Abuse	.40 (.58)	.34 (.56)	.28 (.49)	.32 (.54)	.30 (.46)	1.610	.006
Decreased Social Support Network	.42 (.60)	.51 (.65)	.49 (.57)	.37 (.56)	.39 (.59)	2.532*	.009
Refused Supervision or Treatment	.11 (.33)	.09 (.32)	.08 (.31)	.10 (.33)	.10 (.31)	.284	.00
Individual Idiographic Factors	.24 (.56)	.27 (.59)	.28 (.57)	.25 (.56)	.18 (.48)	.654	.002
Acute Dynamic Total score	2.73 (1.93)	2.86 (1.99)	2.68(1.65)	2.48 (1.69)	2.45 (1.75)	2.022	.007

*Note.* Row means with different subscripts are significantly different,  $p \leq .05$ . \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$



Table 7

*Differences in R-N-R Risk Factors among Trajectory Group—Any Offending*

R-N-R Factors	% of Offenders with Risk Factor Present					$\chi^2(df)$	V
	Adult offender	Middle Age offender	Sunset offender	Young Adult offender	Teen offender		
<i>History of Antisocial Behavior</i>							
History with Violent Crimes	37.6	25.6	6.0	16.2	14.5	17.47(4)**	.11
First Offense Under Age 18	20.2	5.8	1.9	25.0	47.1	155.03(4)***	.32
History of Reoffend After Parole	38.6	38.6	2.3	9.1	11.4	12.33(4)*	.09
<i>Antisocial Personality</i>							
Poor Impulsivity Control	26.3	31.7	11.6	18.4	11.9	10.86(4)*	.08
Low or No Empathy Toward Victims	22.3	34.3	22.5	12.9	8.0	56.10(4)***	.19
Impulsivity/Irritability	26.1	27.2	11.1	22.1	13.5	7.18 (4)	.07
<i>Social Supports for Crime</i>							
Maintain Contacts with Deviant Peers	18.8	24.6	5.8	34.8	15.9	13.94(4)**	.10
<i>Substance Abuse</i>							
Ongoing Substance Abuse	24.5	35.5	14.5	15.0	10.5	6.87 (4)	.07

(continued)

R-N-R Factors	Adult offender	Middle Age offender	Sunset offender	Young Adult offender	Teen offender	$\chi^2(df)$	V
<i>Family/Marital Relationship</i>							
Poor Family Relationship	25.7	23.7	5.4	24.2	21.0	81.55(4)***	.23
No Ability to Maintain Intimate Relationship	23.1	30.0	13.0	19.2	14.7	5.73 (4)	.06
<i>School/Work</i>							
Poor School Adaptive Experiences	29.2	20.6	7.0	26.0	17.2	56.77(4)***	.19
<i>Prosocial Recreational Activities</i>							
No Regular Leisure Habits	22.4	31.0	17.6	19.9	9.1	8.73 (4)	.08

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## Offending Trajectories Based on Sexual Offending

### Model Selection

Examination of Table 8 indicates that relative to the models with fewer classes, the five-class model had the smallest BIC. However, relative to the five-class model, the four-class model provided a very similar BIC value and a higher entropy. Applying the same statistical and substantive considerations described previously, it was noticed that the trajectories of the four-class model is more distinguishable than the trajectories of the five-class model. In addition, the four-class model provided more consistency with previous offending trajectory research (e.g., Francis et al., 2014). For these statistical and substantive reasons, the four-class model was considered as the model that provided the best representation of the data.

Figure 2 depicts the offending trajectories for sex offending resulting from the four-class model selected. The *Adult Offender* (40%) group committed their sexual offenses between 18 to 22 and 33 to 37 age periods, with the peak in the 23 to 27 age period. The *Middle Age Offender* (16%) group had a peak in their offending between the ages of 33 and 37 followed by a decrease in offending between the ages of 38 and 42 and no convictions later in life. The *Young Offender* (10%) group was the smallest group, with offending limited to the 19 to 22 age interval. The *Lifetime Offender* (36%) group showed peak offending between the ages of 23 and 27 followed by a period of no convictions until age 37; this was followed by a second peak, albeit much lower, with a slow decrease throughout the remainder of the lifespan.

Table 8

*Model Fit Criteria for One- to Five-Class Models for Sexual Offending Trajectories (N = 1607)*

Model	Log Likelihood	Number of Parameters	BIC	Entropy	L-M-R LRT( <i>p</i> )
One-Class	-6127.770	27	12454.858	NA	NA
Two-Class	-6005.877	31	12240.599	.679	<.001
Three-Class	-5945.524	35	12149.423	.800	<.001
Four-Class	-5903.377	39	12094.657	.788	<.001
Five-Class	-5865.312	43	12048.055	.735	<.001

Note. *BIC* = Bayesian Information Criterion; *L-M-R LRT* = Lo-Mendell-Rubin Likelihood Ratio Test; *NA* = not applicable

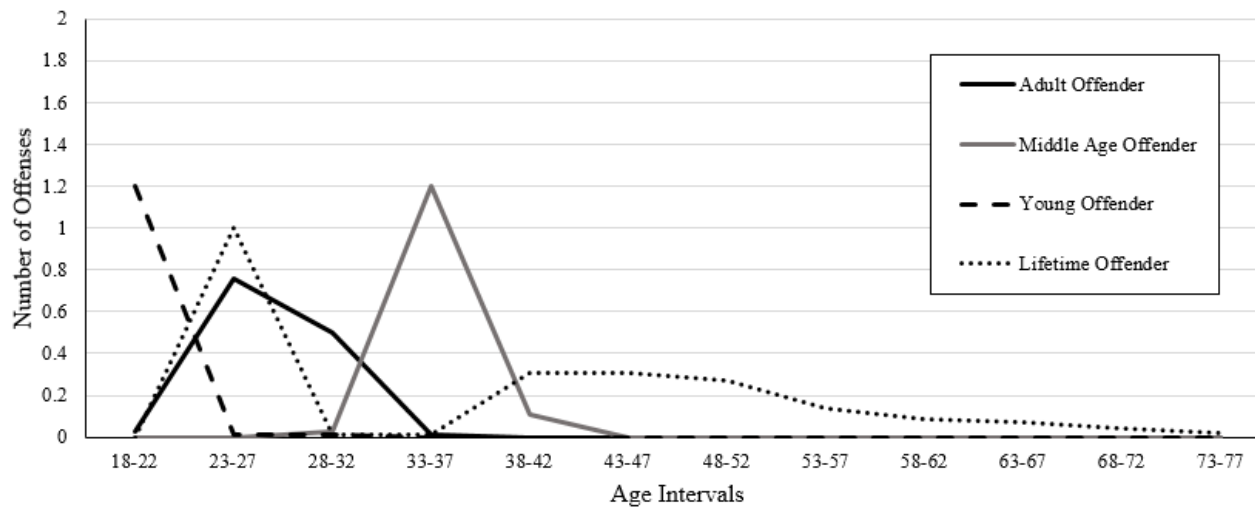


Figure 2. Sex offending trajectories of adult sex offender ( $n = 1607$ ).

### Differences among Trajectory Groups – Sexual Offending

**Demographic characteristics.** Table 9 present the Chi-square test of independence for percentage differences and the one-way ANOVA for mean differences in proportions across the sexual offending trajectory groups.

**Age ( $n = 1607$ ).** There were statistically significant differences in regards to age among the groups for sexual offending trajectories,  $F(3,1603) = 1481.90, p < .001, \eta^2 = .73$ .

**Marital status ( $n = 1527$ ).** There were statistically significant differences in regards to marital status among the groups for sexual offending trajectories,  $\chi^2 = (3, N = 1527) = 194.85, p < .001, \text{Cramer's } V = .36$ .

**Education level ( $n = 1594$ ).** There were statistically significant differences in regards to education level among the groups for sexual offending trajectories,  $\chi^2 = (3, N = 1594) = 25.43, p < .001, \text{Cramer's } V = .13$ .

**Geographic Area ( $n = 1607$ ).** There were statistically significant differences in regards to geographic area among the trajectory groups for sexual offending,  $\chi^2 = (6, N = 1607) = 16.26, p = .012, \text{Cramer's } V = .07$ .

**Offending Risk.** Table 10 and Table 11 presents the Chi-square test of independence for percentage differences and the one-way ANOVA for mean differences in proportions across the trajectory groups.

**Static-99 item/total scores ( $n = 1567$ ).** There were statistically significant differences across trajectory groups for seven of the ten Static-99 items. Similarly, significant differences across groups were observed for the Static-99 Total scores,  $F(3,1563) = 91.89, p < .001, \eta^2 = .15$ .

*Taiwan Dynamic Risk-2004-Static Dynamic item/total scores (n = 1186).* There were no statistically significant differences among the sexual offending trajectory groups in regards to Taiwan Dynamic Risk-2004—Static Dynamic total score,  $F(3,1182) = .44$ ,  $p = .726$ . Regarding item scores, there were statistically significant differences on three out of the seven static dynamic items (i.e., Bad Social Influence, Social Relationship Deficit, Attitude Toward Sexual Assault).

*Taiwan Dynamic Risk-2004-Acute Dynamic item/total scores (n = 1149).* There were statistically significant differences among the sexual offending trajectory groups with respect to Taiwan Dynamic Risk-2004—Acute Dynamic total score,  $F(3, 1145) = 3.33$ ,  $p = .019$ ,  $\eta^2 = .009$ . At the item level, there were statistically significant differences on two out of the eight acute dynamic items (i.e., Negative/Depressed Mood, Decreased Social Support Network).

***Risk-Need-Responsivity Related Factors.*** Table 12 presents the Chi-square test of independence for percentage differences in proportions across the sexual offending trajectory groups. There were statistically significant differences among the groups on the items related to the R-N-R domains of History of Antisocial Behavior, Antisocial Personality, Substance Abuse, Family/Marital Relationship, School/Work, and Prosocial Recreational Activities.

Table 9

*Demographic characteristics differences among the groups of sexual offending trajectories*

Variable <sup>1,2</sup>	Adult offender	Middle Age offender	Young offender	Lifetime offender	ES
Average Age ( <i>SD</i> )	29.83 (5.24)	38.64 (4.09)	23.74 (3.87)	53.07 (9.35)	$\eta^2 = .73$
Percent Living with Romantic Partner*	20.5	13.8	2.9	62.9	$V = .36$
Percent High School Graduate*	43.6	16.6	5.6	34.2	$V = .13$
Geographic Area*					$V = .07$
Northern <sup>3</sup>	15.7	4.0	4.2	11.6	
Central <sup>4</sup>	8.2	2.9	2.0	9.1	
Southern <sup>5</sup>	16.2	6.6	3.7	15.7	

Note. <sup>1</sup> Variables marked with an asterisk (\*) are categorical and effect size (ES) is Cramer's *V*. Continuous variable effect size is eta-squared. <sup>2</sup> All group differences are significant,  $p \leq .05$ . <sup>3</sup> Northern area includes Taipei City, New Taipei City, and Taoyuan City. <sup>4</sup> Central area includes Taichung City. <sup>5</sup> Southern area includes Tainan City and Kaohsiung City.



Table 10

*Static-99 item/total scores differences among the groups of sexual offending trajectories*

Static-99 Items	Percent of Items with Risk Factor Present				$\chi^2(df)$	<i>V</i>
	Adult offender	Middle Age offender	Young offender	Lifetime offender		
Young	62.2	2.4	32.7	2.7	569.48(3)***	.60
Lived with Intimate partner $\geq$ 2 yrs.	57.5	12.6	14.1	15.8	290.63(3)***	.43
Index Non-sexual Violence	42.0	16.0	6.6	35.4	3.38(3)	.05
Prior Non-sexual Violence	41.3	13.6	8.0	37.1	.33(3)	.01
Prior Sex Offenses (item score)					18.92(9)*	.06
0 (no charges or convictions)	35.0	12.1	7.7	33.9		
1 (1-2 charges; 1 conviction)	5.2	1.5	1.3	2.5		
2 (3-5 charges; 2-3 convictions)	0.3	0.1	0.0	0.4		
3 (6+ charges; 4+ convictions)	0.0	0.0	0.0	0.1		
Prior Sentencing Dates $\geq$ 4	32.4	16.2	5.0	46.4	12.79(3)**	.09
Non-contact Sex Offences	30.8	30.8	0.0	38.5	8.69 (3)*	.07
Unrelated Victims	44.9	13.2	10.1	31.8	104.67(3)***	.26
Stanger Victims	40.7	17.8	8.5	33.0	8.40(3)*	.07
Male Victims	34.9	16.3	11.6	37.2	.91 (3)	.02

(continued)

Static-99 Items	Adult offender	Middle Age offender	Young offender	Lifetime offender	$\chi^2(df)$	<i>V</i>
Static-99 Total score ( <i>M &amp; SD</i> ) <sup>1</sup>	2.75 (1.2) <sub>a</sub>	2.23 (1.4) <sub>b</sub>	3.23 (.94) <sub>c</sub>	1.72 (1.3) <sub>d</sub>		

Note. <sup>1</sup> $F(3,1563) = 91.89, p < .001, \eta^2 = .15$ ; row values with different subscripts are significantly different,  $p \leq .05$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 11

*Taiwan Dynamic Risk-2004 Static/Acute Dynamic item/total scores—Trajectory Group (Sexual Offending)*

Taiwan Dynamic Risk Assessment Items	Mean ( <i>SD</i> ) Item Scores				<i>F</i> (3,1182)	$\eta^2$
	Adult offender	Middle Age offender	Young offender	Lifetime offender		
<i>Static Dynamic Items</i>						
Bad Social Influence	.39 (.60)	.28 (.51)	.51 (.63)	.29 (.54)	6.218***	.020
Intimacy Relationship Deficit	1.38 (.79)	1.41 (.81)	1.39 (.74)	1.31 (.82)	.907	.002
Social Relationship Attachment Deficit	.46 (.57)	.50 (.59)	.37 (.56)	.65 (.61)	10.894***	.020
Self-Regulation About Sex	.42 (.57)	.43 (.61)	.47 (.67)	.45 (.56)	.413	.001
Attitude Toward Sexual Assault	.43 (.61)	.43 (.63)	.39 (.59)	.58 (.67)	5.456**	.010
Poor Cooperation with Supervision	.13 (.36)	.11 (.33)	.12 (.38)	.09 (.34)	.870	.002
Self-Regulation Characteristics	.96 (.62)	1.02 (.60)	.87 (.68)	.94 (.61)	1.344	.003

(continued)

Taiwan Dynamic Risk Assessment Items	Adult offender	Middle Age offender	Young offender	Lifetime offender	<i>F</i> (3,1182)	$\eta^2$
Static Dynamic Total Score	4.16 (2.08)	4.17 (2.07)	4.13 (2.23)	4.31 (2.17)	.438	.001
<i>Acute Dynamic Items</i>						
Opportunity to Contact with Victims	.71 (.63)	.61 (.64)	.69 (.67)	.69 (.67)	.940	.002
Negative/Depressed Mood	.31 (.48)	.38 (.54)	.21 (.43)	.48 (.57)	11.001***	.030
Preoccupation with Sexual Desires/Fantasies	.32 (.51)	.31 (.50)	.44 (.59)	.31 (.48)	2.126	.006
Hostility toward Others	.17 (.40)	.18 (.43)	.11 (.31)	.18 (.43)	1.004	.003
Substance Abuse	.34 (.53)	.36 (.62)	.30 (.46)	.34 (.55)	.288	.001
Decreased Social Support Network	.39 (.57)	.40 (.61)	.44 (.62)	.53 (.63)	4.137**	.010
Refused Supervision or Treatment	.10 (.33)	.07 (.27)	.08 (.27)	.10 (.34)	.827	.002
Individual Idiographic Factors	.23 (.54)	.28 (.61)	.16 (.46)	.28 (.59)	1.612	.004
Acute Dynamic Total score	2.57 (1.79)	2.59 (1.76)	2.43 (1.80)	2.90 (1.94)	3.329*	.009

Note. Row means with different subscripts are significantly different,  $p \leq .05$ . \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Table 12

*Differences in R-N-R Risk Factors among Trajectory Group—Sexual Offending*

R-N-R Factors	% of Offenders with Risk Factor Present				$\chi^2(df)$	V
	Adult offender	Middle Age offender	Young offender	Lifetime offender		
<i>History of Antisocial Behavior</i>						
History with Violent Crimes	41.9	11.1	12.0	35.0	1.24(3)	.03
First Offense Under Age 18	38.5	5.8	45.2	10.6	163.42(3)***	.33
History of Reoffend After Parole	40.9	15.9	6.8	36.4	.64(3)	.02
<i>Antisocial Personality</i>						
Poor Impulsivity Control	37.4	15.8	10.9	36.0	7.72(3)	.07
Low or No Empathy Toward Victims	30.3	11.3	7.3	51.2	56.25(3)***	.19
Impulsivity/Irritability	41.8	15.6	10.5	32.1	4.40(3)	.05
<i>Social Supports for Crime</i>						
Maintain Contacts with Deviant Peers	53.6	7.2	10.1	29.0	6.57(3)	.07
<i>Substance Abuse</i>						
Ongoing Substance Abuse	35.0	13.2	7.3	44.5	8.31(3)*	.07

(continued)

R-N-R Factors	Adult offender	Middle Age offender	Young offender	Lifetime offender	$\chi^2(df)$	V
<i>Family/Marital Relationship</i>						
Poor Family Relationship	46.4	13.6	17.3	22.7	62.66(3)***	.20
No Ability to Maintain Intimate Relationship	38.7	13.9	12.3	35.1	3.43(3)	.05
<i>School/Work</i>						
Poor School Adaptive Experiences	50.1	11.3	13.7	24.9	38.76(3)***	.16
<i>Prosocial Recreational Activities</i>						
No Regular Leisure Habits	37.8	11.3	7.6	43.3	13.08(3)**	.09

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\*  $p < .001$ .

## CHAPTER V

### Discussion

The importance of identifying the heterogeneity of sex offender population has been widely recognized by the researchers in the field of sexual offending (Cale, Lussier, & Proulx, 2009; Lussier & Davies, 2011; Harris, 2012). However, studies have primarily focused on Caucasian males in North America, which limits the generalizability of findings. The purpose of the current study was to fill this gap in the research by examining the heterogeneity of offending trajectories among Taiwanese sexual offenders using retrospective longitudinal data. The results revealed five trajectories regarding any offending and four trajectories regarding sexual offending. In addition, the differences among the trajectory groups regarding demographic characteristics and offending risk were also revealed. These findings and their implications are discussed below.

#### **Trajectories for Any Offending**

The analysis of offending trajectories yielded five trajectory groups for any offending. The Adult Offender group had a steady increase in offending count that peaked at age 28-32 and fell to nearly zero by age 43-47. Just over 21% percent lived with a romantic partner at the time of their index offense and approximately 40% had completed high school. The Adult Offender group had an average Static-99 total score of 2.58 and were more likely to have history of non-sexual violence as well as convictions for non-sexual violence along with their index offenses. This group was also more likely than the other groups to have prior sexual offenses charges and convictions and were more likely to have unrelated and stranger victims in their offenses. Regarding their dynamic risk, the Adult Offender group scored significantly lower than Middle Age

Offender and Sunset Offender group on Negative/Depressed Mood. Regarding the R-N-R factors, this group was more likely than the other groups to have a history of violent offending and reoffending after parole and more likely to have poor family relationships and poor school adaptive experiences.

The Middle Age Offender group had a slower rise in offense count that reached its highest (approximately .7) at age 38-42 and steadily but slowly dropped to nearly zero by age 53-57. Thirty-eight percent of these offenders lived with a romantic partner at the time of their index offense and 43.3% were high school graduates. The Middle Age Offender group had an average Static-99 total score of 1.93 and was overrepresented among offenders with lowest possible score and highest possible score for prior sexual offenses. They were also more likely to have at least four prior sentencing dates as well as convictions for non-contact sex offenses and offenses against male victims. Regarding their dynamic risk, they scored significantly lower than Teen group members on the item of Bad Social Influence and scored significantly higher than Young Adult Offender and Teen Offender group members on the item of Social Relationship Attachment Deficit. Regarding their acute dynamic risk, the Middle Age Offender group scored significantly higher than Adult Offender, Young Adult Offender, and Teen Offender groups on Negative/Depressed Mood and scored significantly higher than Young Adult Offender group on Decreased Social Support Network. Regarding R-N-R factors, this group was most likely to have history with reoffending after parole, poor impulsivity control, low or no empathy toward victims, impulsivity/irritability, ongoing substance abuse, no ability to maintain intimate relationship, and no regular leisure habits.

The Sunset Offender group had a pattern of nearly no offending until age 43-47 and peak offending at age 48-52 then slowly dropping in offending through the life span. Over 55% were living with a romantic partner at the time of their index offense and 11% had graduated high school. Their average Static-99 total score was 1.4, which is the lowest Static-99 average total score across the five groups. The Sunset Offenders were least likely to be scored as young or not having lived with an intimate partner and were less likely to have a history of nonsexual violence. This group scored significantly lower than Class Adult Offender, Young Adult Offender, and Teen Offender groups on Bad Social Influence and scored significantly higher than Young Adult Offender and Teen Offender groups on Social Relationship Attachment Deficit. In addition, they scored significantly higher than Adult Offender, Young Adult Offender, and Teen Offender groups on Attitude Toward Sexual Assault. Regarding their acute dynamic risk, the Sunset Offenders scored significantly higher than Adult Offender, Young Adult Offender, and Teen Offender groups on Negative/Depressed Mood. With respect to R-N-R risk factors, they were more likely least to have a history of antisocial behaviors, poor impulse control, impulsivity/irritability, maintain contacts with deviant peers, problems with Family/Marital relationship, and poor school adaptive experiences.

The Young Adult Offenders showed rapid increase in offense count that peaks at age 23-27 and rapidly falls to zero by age 28-32. Only 11% lived with romantic partner at the time of their index offense and only 17% had completed high school. Their average Static-99 total score they obtained is 2.87; they were more likely to be younger than 25 years old and have lived with an intimate partner for at least two years but less likely to have male victims. Regarding the Taiwan Dynamic Risk-2004—Static Dynamic items—



they scored significantly lower than Middle Age Offender and Sunset Offender groups on the item of Social Relationship Attachment Deficit. With respect to Dynamic risk, they scored significantly lower than Middle Age Offender and Sunset Offender groups on the item of Negative/Depressed Mood and scored significantly lower than Middle Age Offender group on the item of Deceased Social Support Network. Regarding R-N-R risk factors, compared to the rest of the four groups, they tend to maintain contacts with their deviant peers.

The Teen Offender group had their peak offense count at age 18 followed by steady drop that nearly reached zero by age 28-32. There was no conviction after age 32. Only 7.7 percent were living with a romantic partner at the time of their index offense and only 6.5 percent had completed high school. The average Static-99 total score they obtained is 3.22, which is the highest Static-99 average total score across the five groups. Regarding their risks associated with Static-99, compared to the rest of the four groups, Teen Offender group members are less likely to have prior sex offenses, more than four prior sentencing dates, non-contact sex offenses, unrelated victims, and stranger victims. Regarding dynamic risk, they scored significantly higher than Middle Age Offender and Sunset Offender groups on the item of Bad Social Influence, scored significantly lower than Middle Age Offender and Sunset Offender groups on the item of Social Relationship Attachment Deficit, and scored significantly lower than Sunset Offender group on the item of Attitude Toward Sexual Assault. Further, they scored significantly lower than Middle Age Offender and Sunset Offender groups on the item of Negative/Depressed Mood. Regarding their endorsed R-N-R risk factors they were more likely to have first

offense under age 18 but less likely to have low or no empathy toward victims, ongoing substance abuse, and no regular leisure habits.

### **Trajectories for Sexual Offending**

The current study found four trajectory groups for sexual offending. The Adult Offender group showed increase in offense count to approximately .8 at age 23-27 followed by a slow and steady drop to nearly zero until age 33-37. Approximately 14% lived with romantic partner at the time of their index offense and nearly 38% were high school graduates. The average Static-99 total score they obtained is 2.75. Regarding Static-99 items, compared to the rest of the three groups, Adult Offender group members are more likely to be younger than age 25 at time of release, to have lived with intimate partner for at least two years, to have a history of non-sexual violence, and to have convictions of non-sexual violence in their index offenses. In addition, they were more likely to be scored a one or zero with regard to prior sexual offenses. Further, they were more likely to have unrelated and stranger victims. With regard to dynamic risk, the Adult Offender group scored significantly higher than Lifetime Offender group on the item of Bad Social Influence. In addition, they scored significantly lower than Lifetime Offender group on the items of Social Relationship Attachment Deficit and Attitude Toward Sexual Assault. They also scored significantly lower than Lifetime Offender on the Acute Dynamic total score as well as the items of Negative/Depressed Mood and Decreased Social Support Network. With respect to R-N-R variables, compared to the rest of the three groups, they were more likely to have a history of violent crimes and reoffending after parole. In addition, they tend to have poor impulse control,

impulsivity/irritability, maintain contacts with deviant peers, poor family relationship, no ability to maintain intimate relationship, and poor school adaptive experiences.

The Middle Age Offender group had an offense count that remained at nearly zero until a rapid rise at age 28-32 that peaked at 1.2 at age 33-37 and dropped to zero by age 43-47. Approximately 28% lived with a romantic partner at the time of their index offense and just over 42% had graduated high school. Their average Static-99 total score was 2.23 and they were more likely to be younger than age 25 at the time of release and to have lived with intimate partner for at least two years. Regarding dynamic risk, they scored significantly lower than Young Offender on the item of Bad Social Influence and scored significantly lower than Lifetime Offender on the item of Social Relationship Attachment Deficit. Also, they scored significantly higher than Young Offender on the item of Negative/Depressed Mood. With regard to R-N-R factors, the Middle Age Offender group was less likely to have history of violent crimes and to have committed their first offense before age 18. In addition, they were less likely to maintain contacts with deviant peers, have poor family relationships, and have poor school adaptive experiences.

The Young Offender group had their highest offense count at age 18 followed by drop in offending that reaches nearly zero by age 23-27. Nearly 8% were living with romantic partners at the time of their index offense nearly 6% were high school graduates. The average Static-99 total score they obtained is 3.23, which was the highest average Static-99 total score across the four groups. Despite this, the Young Offender group members were less likely to have a history of non-sexual violence or convictions of non-sexual violence in their index offenses. They were also less likely to have prior sex

offenses, to have more than four prior sentencing dates, to have non-contact sex offenses, to have unrelated victims, to have stranger victims, and to have male victims. Regarding dynamic risk, they scored significantly higher than Middle Age Offender and Lifetime Offender groups on the item of Bad Social Influence, scored significantly lower than Lifetime Offender group on the items of Social Relationship Attachment Deficit and Attitude Toward Sexual Assault. They also scored significantly lower than the Middle Age Offender and Lifetime Offender groups on Negative/Depressed Mood. Regarding R-N-R risk factors, they had their first offense under age 18 but were less likely to have history of reoffending after parole, poor impulse control, low or no empathy toward victims, impulsivity/irritability, ongoing substance abuse, no ability to maintain intimate relationship, and no regular leisure activities.

The Lifetime Offender group had two offending peaks—a peak of 1.0 at 23-27 followed by a rapid decrease to nearly zero and a second peak of approximately .3 at age 38-42 followed a slow drop throughout the remaining life span that begins at age 43-47. Over 47% lived with romantic partner at the time of their index offense and nearly 33% were high school graduates. Their average Static-99 total score was 1.74, which was the lowest across the four groups. The Lifetime Offenders were more likely to score two or three with respect to prior sexual offenses and were more likely to have four (or more) prior sentencing dates, non-contact sex offenses, and male victims. Regarding dynamic risk, they scored significantly higher than the Adult Offender, Middle Age Offender, and Young Offender groups on the item of Social Relationship Attachment Deficit, and they scored significantly higher than the Adult Offender and Young Offender groups on the item of Attitude Toward Sexual Assault. They also scored significantly higher than the

Adult Offender and Young Offender groups on the item of Negative/Depressed Mood and higher than Adult Offender group on the item of Decreased Social Support Network. Regarding R-N-R risk factors compared to the rest of the three groups, they tended to have low or no empathy toward victims, ongoing substance abuse, and no regular leisure habits.

### **Understanding the Trajectories and their Implications**

Consistent with the existing research on the U.S. sex offender's offending trajectories, the results of the current study showed that Taiwanese sexual offender's offending trajectories are not stable and linear, which also support the concept of the heterogeneity exists within sex offender population. Regarding the five any offending trajectories, there are some groups that showed similar patterns with the identified offending trajectories and taxonomy in the existing literature. For example, the Teen Offender group has an offending pattern that is very similar to the "adolescence-limited offender" described by Moffitt (1993). In Moffitt's model, adolescence-limited offenders are recognized as having their antisocial involvement restrictedly in their teenage years. Have the adolescence recently to be considered to be extended into the 20s (Jolliffe, Farrington, Piquero, MacLeod, & Weijer, 2017; Farrington, Loeber, & Howell, 2012), the Teen Offender group in this current study also has the period of offense limited to before age 28 to 32. In addition, according to Morfitt's theory, the offenses of these adolescence-limited offenders tend to be relatively minor (e.g., theft, vandalism, drug use). Similarly, when looking into the associations between Teen Offender group and risk factors, it is notable that these group of offenders are less likely to have prior non-sexual

violence or prior sex offense and have relatively lower attitude toward sexual assault, comparing to other trajectory group members.

For another example, Middle Age Offender group, the largest group among the five any offending trajectories, has an offending pattern, specifically the offending onset, that is similar to the late-boomer group in Lussier et al.'s (2010) study. These group members all had their offending counts increased in the mid-30s and they have a rather extensive criminal pattern in their lifetimes. Similar to the characteristics of the late-boomer group in Lussier et al.'s (2010) study, it appeared that Middle Age Offender group members do not limited their types of offending to only sexual offending. On Static-99, they not only had relatively higher endorsement on non-contact sex offenses and unrelated and stranger victims, they also had high endorsement on both prior and index non-sexual violence. In addition, the Middle Age Offender group has the largest endorsement on the male victim item of the Static-99 when compared to the other trajectory groups. This is similar to Lussier et al.'s (2010) late-boomer group, which had a large number of offenders who only victimized males. This highlights the possibility that same as the late-boomer group that gradually activated their criminal activity, the Middle Age Offender group might also follow the pattern of progressing from nonsexual nonviolent crimes to sexual crimes. That is, their level of sexual crime specialization might increase as the time progress. Further statistical analyses would be needed to clarify this hypothesis.

Lastly, the Adult Offender group, the second largest any offending trajectory group identified in this study, shared a pattern with the "low-rate desistors" in Lussier et al.'s (2010) study. Both of these groups slowly increased their offending in adolescence,

reach a peak in adulthood, and gradually decline afterward, following the age-crime curve. Most of the offenders in the Adult Offender group were charged with index non-sexual violence and had a non-sexual violence history, suggesting a frequent and versatile offending history. In addition, compared to the rest of four groups, Adult Offender group had more unrelated and stranger sexual offense victims and tended to reoffend after receiving parole. It is possible that this group of offenders are more likely to be the “generalist” in all crime offending that includes sexual offending, rather than the “specialist” in sexual offending only.

Besides the trajectory groups that share similar pattern with the identified existing offending trajectories, other any offending trajectory groups in this study merit discussion. For example, Sunset Offender group had their onset of offending started around late 30s to early 40s, which is similar to the concept of “adult onset offender” that has been recently described. (Eggleston & Laub, 2002). However, it the average age of onset of the Sunset Offender group was much later than the group offender that are usually referred as “late-bloomer” (i.e., adult-onset offender; see Lussier et al., 2010). The “adult onset offenders” are generally and widely considered a group that have their onset of offending in their mid-20s to early 30s (Eggleston & Laub, 2002; Jolliffe et al., 2017). In addition, this group is less often identified than other groups in the sex offender trajectory literature, as the current existing literature rarely includes the age period that exceeds age 35. Different from the Middle Age Offender group in this study, which also has the average age of onset past the mid-20s (i.e., the mid-30s), that has the largest proportion of group members graduated from high school across the five groups, members in Sunset Offender group had the second smallest proportion of group members

graduated from high school. They generally present as a low risk group—they tend to have the lowest Static-99 total score and less endorsement on the R-N-R related factors. However, in terms of dynamic risk factors, it is notable that the Sunset offender group members have bigger social relationship attachment deficit, higher attitude toward sexual assault, and more negative/depressed mood, when compared to other trajectory groups in the current study.

Lastly, Young Adult offender group represents a group of offenders that is slightly older than the Teen Offender group but younger than the Adult offender group. Compared to the other groups, the Young Adult offenders less often offended against a male. Their offending peak occurred in the mid-20s and had the highest offense count at their peak (i.e., nearly 2 counts) among the five trajectory groups. Regarding their associated risks, the Young Adult offender group had less social relationship attachment problems and were more likely to maintain contact with deviant peers compared to the other four groups.

Regarding the four sexual offending trajectories, it is notable that some of the trajectories show similar patterns as the five any offending trajectories. For example, the Young Offender group's trajectory pattern in sexual offending is similar to the Teen Offender group's in any offending that its period of offense is limited to before 23 to 27. Not only the trajectory patterns are similar, it is remarkable that these two groups also have similar characteristics. For example, these two groups had similar item and total scores on the Static-99. That is, both groups were less likely to have prior non-sexual violence and prior sexual offenses. They also tended to have higher bad social influence



and lower attitude toward sexual assault scores and tended to have a first offense before the age of 18.

The Adult Offender groups in both sets of analyses shared similar patterns. They both had peak offending in mid- to late- 20s. These groups also had similar Static-99 total scores and were likely to have prior nonsexual violence as well as a history of offending against unrelated and stranger victims. In addition, these two groups of offenders also had a history of violent crimes and reoffending after parole, poor family relationship, and poor school adaptive experiences. Although further analysis is needed to confirm the association between these two trajectories, the similarity between these trajectories in any offending and sexual offending suggests a potential strong association between “any offending” and “sexual offending” group membership (Francis et al., 2014). Besides having similarity with the Adult Offender group in any offending, the Adult Offender group in sexual offending also has an offending pattern, specifically the offense peak that is similar to the high-rate limited group in Francis et al.’s (2014) study. In Francis et al.’s (2014) study, they discovered that the offender classification in the high-rate limited group was mainly rapist. Correspondingly, it is noticeable that the Adult Offender group members have characteristics that similar to the rapist (see Simon, n.d.), such as being socially competent (e.g., high school graduates), having engaged in an intimate relationship, having history of antisocial behavior, having poor impulsivity control, experiencing negative peer influences, and having intimacy deficits.

Lifetime Offender group showed a persistent offending pattern throughout their lifetime, despite there was a short-term of decrease in their offending counts between the age of 28 to 37. Regarding their associated risks, this group obtained the lowest Static-99

total score among the all four sexual offending trajectories groups. At the same time, they tend to have history of sentencing dates and sex offenses, non-contact sex offenses, as well as male victims involved in their offenses. Regarding their dynamic risk, it appeared that they have social relationship attachment deficit, lack of social support network, as well as relatively higher attitude toward sexual assault and depressed mood. In addition, they tend to have ongoing substance abuse, low or no empathy toward victims, and lack of regular leisure habits. Further analysis is needed to clarify the level of sexual crime specialization of this group of offenders. However, it is possible that the profile is similar to the typical of what has been discovered regarding the criminal activity of convicted adult child molesters (Lussier et al., 2005), as compared to rapists, child molesters reported less deviant behaviors but have higher frequency of sexual crimes. In addition, their offense pattern could tend to be persistent (Lussier et al., 2010).

Lastly, Middle Age Offender group showed an offending pattern dissimilar to that what has been found in the literature. This group had a relatively late onset of offending (i.e., late-20s to early 30s) and one sharp peak in the offense count. In addition, this group does not particularly stand out among all four sexual offending trajectory groups in terms of the associated risks. It appears that they have lesser problems with their social environment (i.e., low on maintaining contacts with deviant peers, low on poor family relationship, low on poor school adaptive experience).

Among these four sexual offending trajectories, it is noticeable that 76% of the sample was in either the Adult Offender and Lifetime Offender groups. This highlights the importance of understanding the characteristics and associated risks with these two groups. With respect to static risk factors, the Adult Offender group had higher static-99

total score than Lifetime Offender group. With respect to dynamic risk factors, the offenders in the Lifetime Offender group had developmental deficits or deviancies, such as social relationship attachment deficits and deviant attitude toward sexual assault. In addition, compared to Adult Offender group, members in Lifetime Offender group also tend to have more negative or depressed mood and have less social support network.

Overall, the nine offending trajectories that were identified in the current study consistent with the heterogeneity of the sex offender population observed in other studies. Thus, this heterogeneity is present among Taiwanese offenders in a manner similar to Caucasian sex offenders. This finding contributes to the existing trajectory research by providing confirming results and adding to the generalizability of previous findings (e.g., Lussier & Davis et al., 2011). Specifically, there were similarities between the trajectories identified in the current study and trajectories found in prior research. During the current study, several static (i.e., Static-99) and dynamic (i.e., Taiwan Dynamic Risk-2004) risk factors, as well as R-N-R risk factors, were associated with group membership. These differences were not sufficient to distinguish an offender's group membership by themselves. This may due to the fact that not every single trajectory group has specific factors associated with it (e.g., Middle Age Offender group in sexual offending trajectories), further implying that other information regarding the group characteristics (e.g., offense specification) may be needed together with those risk factors to predict the group membership. Regarding the predictive value of demographic characteristics, it appears that age serves an important role in predicting group memberships and their associated risks. For example, consistent with previous studies, the offending trajectories that identified by the current study can all be distinguished by their age of onset. Groups

with different age of onset (e.g., adolescent onset, adult onset) are also associated with different characteristics (e.g., early onset vs. adult onset; Moffitt, 1993; Eggleston & Laub, 2002). In addition, in the current study, age has also been found having association with the Static-99 total score, as it is noticeable that the groups with earlier age of onset (e.g., Teen Offender group in any offending trajectories, Young Offender group in sexual offending trajectories) tend to associate with higher static-99 total score. It is possibly due to offenders with young age are more likely to endorse several Static-99 risk factors that are potentially age-related (e.g., younger than age 25, never lived with intimate partner for at least two years). According to the R-N-R principle, it is logical to assume that these groups of young offenders are supposed to received more intense intervention and supervision because of their scored high risk. However, at the same time, the results of this study suggest although some groups of offender receive relatively lower total scores from a risk assessment measure, this does not mean they don't need attention because they may actually have higher recidivism rate than the offender group that has earlier age of onset (e.g., Lifetime Offender group in sexual offending trajectories). This highlight the importance of continue to examine the heterogeneity of sex offender population as well as examine the risk factors and characteristics associate with, as merely relying on the total score of a risk assessment measurement might have its weakness in managing the population.

### **Limitations**

This study has some methodological limitations. First of all, it is based on retrospective longitudinal data, which determines an offender's recidivism pattern by examining their previous criminal records. The data for the current study was obtained

between 2012 and 2016. Although I was not limited by the length of the follow-up period (Frances et al., 2014), the varying lengths of offending period limited analyses. In addition, these data include first-time sex offenders who were young. This potentially lead to the problem with not being able to examine their offending pattern, if have any. The current study was also limited by missing data stemming from omissions in offenders' records. Consequently, not all of the participants who included in the trajectory analysis were included in the second phase of analyses. This potential limited the findings of study, as I was unable to get a full picture of how those characteristics and risk factors are associated with each trajectory groups. In addition, due to the dataset incompleteness, not all eight of "Central Eight" R-N-R factors could be included in the study (e.g., missing the factors that could present the concept of antisocial cognition).

### **Conclusion**

This study contributes to the field in several ways. It expands the generalizability of the research findings on sex offender offending trajectory by examining offenders with non-Caucasian background. The results of the current study were promising, as distinguishable offending trajectories of any and sexual offending were identified in Taiwanese sex offender population. Specifically, there were some trajectories found to share similar patterns with the offending trajectories that were identified in the U.S. sex offender population. This highlight the potential cross-cultural universality among the heterogeneity of sex offender population. However, there were still trajectories that were not consistent with the identified trajectories in the existing U.S. literature. Future empirical studies should look into these non-previous-identified trajectories, examining the possible trajectories that might be cultural-specific. In addition, the results of the

current study revealed that these trajectories were distinguishable from one and another by examining risk factors and demographic characteristics that were associated with each of them. Considering these risk factors and demographic characteristics provide good assistance in distinguishing trajectories but not sufficient to determine a trajectory group membership by merely relying on them. Future research should focus on exploring and examining other factors (e.g., the changes in level of sexual crime specialization among each trajectory) that may provide further assistance on distinguishing trajectories. This will increase our ability in identifying the risk of a sex offender by identifying his potential trajectory and provide appropriate level of supervision, enhancing our effectiveness in managing the sex offender population.

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## VITA

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**Hsiao-Wen Wang**

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### EDUCATION

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- August 2019  
(Expected)      **Doctor of Philosophy in Clinical Psychology**  
 APA Accredited Internship at Saint Elizabeths Hospital  
 (Washington, DC)  
 Sam Houston State University  
 Huntsville, Texas  
Dissertation: *Offending Trajectories Among Sex Offenders in Taiwan*
- May 2011      **Master of Science in Criminology**  
 University of Pennsylvania  
 Philadelphia, Pennsylvania  
Master's Research Project: *Drug Treatment and Recidivism: A Look at Whether Methadone Maintenance Treatment is Effective*
- June 2010      **Bachelor of Science in Psychology**  
 Fu Jen Catholic University  
 New Taipei City, Taiwan

### CLINICAL/PRACTICE EXPERIENCE

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- July 2018-  
Present      **Saint Elizabeths Hospital**  
 Washington, DC
- Population*: Adult inpatients hospitalized for various reasons: Voluntary commitment, involuntary commitment, pre-trial competency restoration and post-adjudication NGRI
- Duties*:
- Forensic Consult Services
    - Conduct competency to stand trial evaluations with a licensed staff psychologist
    - Co-author reports for the court
  - Individual therapy
    - Hold caseload of three individual therapy cases
  - Assessment
    - Complete five integrated assessments

- Variety of referral questions: violent risk assessment, malingering, cognitive assessment, neuropsychological assessment, diagnostic clarification
- Unit responsibilities
  - Attend morning rounds, treatment team meetings for assigned caseload
  - July 2018 to December 2018: Unit 2A, all male post-trial unit
  - January 2019 to June 2019: Unit 1E, co-ed mixed (pre-trial/civil) unit
  - Review of assigned caseload's course of treatment and document the treatment progress every 60 days
  - Present the assigned caseload to the Forensic Review Board to update their status in treatment and/or request increase in privilege or release
  - Complete an Individual Behavior Plan to identify the assigned patient's problem behavior, apply ABC analysis of the problem behavior, and set up the prescribed behavior for the treatment team to follow in order to discontinue the problem behavior
  - Will conduct initial psychological assessments for new admissions, routine battery of WRAT and RBANS
- Four hours of group therapy weekly
  - Social Skills group, Interactive Behavioral Therapy model, twice weekly
  - Sex Offender Treatment group, process-oriented, twice weekly
  - Will facilitate a relaxation group on the unit, twice weekly
- Weekly didactic seminars
  - Individual therapy
  - Group therapy
  - Forensic
  - Assessment
  - Ethics
  - Psychopharmacology
  - Supervision
  - Cultural competency

*Supervisors:* Director of Psychology Training: Christine Kelley, Psy.D.  
 Unit: Holly Casazza, Psy.D.  
 Group Therapy: Richard Boesch, Ph.D. & Michelle Marsh, Psy.D.  
 Individual Therapy: Michelle Marsh, Psy.D.  
 Assessment: Travis Flower, J.D., Psy.D.  
 Forensic Consult Service: Travis Flower, J.D., Psy.D. & Shilpa Krishnan, Ph.D.

September 2015 – **Psychological Services Center**  
 June 2018 Department of Psychology and Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Population:* Culturally and economically diverse community-dwelling adults, adolescents, and children

- Duties:*
- Intervention Services
    - Provide both short-term and long-term psychotherapy using empirically-supported techniques (e.g., Cognitive Behavioral Therapy, Dialectical Behavior Therapy, Acceptance and Commitment Therapy, Interpersonal Therapy, Motivational Interviewing, etc.)
    - Develop case formulations
    - Author intake reports
    - Engage in treatment planning, discharge planning, and suicide risk management
    - Attend and participate in case conferences
  - Psychological Assessment Services
    - Conduct comprehensive psychological assessments (e.g., , psychodiagnostic, Attention-Deficit/Hyperactivity Disorder, & learning disorder)
    - Develop diagnostic formulation and intervention recommendations
    - Author integrated reports
      - Provide feedback and recommendations to the client

*Supervisors:* Jorge G. Varela, Ph.D., David Nelson, Ph.D., Darryl Johnson, Ph.D., Melissa Magyar, Ph.D., and Holly Miller, Ph.D.

September 2014 – **Psychological Services Center—Forensic Evaluation**  
 June 2018 Department of Psychology and Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Population:* Justice-involved adults and juveniles, both incarcerated and residing in the community

- Duties:*
- Conduct court-ordered evaluations (e.g., competency to stand trial, mental state at the time of the offense, fitness to proceed for juveniles) under the supervision of a board-certified evaluator
  - Develop psychological and diagnostic case formulation
  - Provide treatment recommendations
  - Co-author reports presented in court proceedings

*Supervisors:* Mary Alice Conroy, Ph.D., ABPP, Darryl Johnson, Ph.D., Wendy Elliott, Ph.D.

September 2017 – **Harris County Community Supervision and Corrections**  
 November 2017 Houston, Texas

*Population:* Justice-involved English speaking adults that are detained or on probation residing in the community

- Duties:*
- Conduct court-ordered assessments as a member of the Centralized Assessment and Screening Team (CAST)
  - Conduct evidence-based, semi-structured interviews (i.e., Texas Risk Assessment System; TRAS) related to criminogenic needs and risk factors
  - Complete evaluation reports and provide intervention recommendations
  - Participate in weekly individual supervision sessions
  - Attend weekly didactic training

*Supervisors:* Michael L. Grove, Psy.D.

September 2016 – **Harris County Juvenile Probation Department**  
 May 2017 Houston, Texas

*Population:* Justice-involved English speaking juveniles housed at the Harris County Detention Center, and juveniles on probation residing in the community

- Duties:*
- Conducted semi-structured interviews with minors and their legal guardians
  - Reviewed collateral information (i.e., court report information summary, probation supervision reports, etc.)
  - Administered, scored, and interpreted cognitive abilities, academic achievement, psychopathology and personality measures
  - Provided diagnostic clarification and recommendations regarding treatment planning and placement to the court
  - Author integrated reports
  - Participated in individual supervision sessions
  - Attended weekly journal article seminar

*Supervisors:* Nicole Dorsey, Ph.D., and Uche Chibueze, Psy.D.

October 2015 – **Sex Offender Treatment**  
 September 2016 Huntsville, Texas

*Population:* Community-based adult males convicted of sex offenses

- Duties:*
- Co-facilitated sex offender treatment group with Licensed Sex Offender Treatment Provider

- Conducted individual therapy with sexual offenders
  - Developed treatment plan and case formulation
  - Modalities: Cognitive Behavioral Therapy (CBT), Dialectical Behavior Therapy (DBT), Acceptance and Commitment Therapy (ACT)
- Documented treatment progress

*Supervisors:* Holly Miller, Ph.D., LSOTP

October 2014 – **Montgomery County Juvenile Probation Department**  
August 2015 Conroe, Texas

*Population:* Justice-involved English speaking juveniles housed at the Montgomery County Detention Center, and juveniles on probation residing in the community

- Duties:*
- Conducted court-ordered and probation-requested psychological assessments for diagnostic clarification, treatment planning, and placement recommendations
  - Conducted semi-structured interviews with minors and their legal guardians.
  - Reviewed collateral information (e.g., court report information summary, probation supervision reports).
  - Administered, scored, and interpreted cognitive abilities, academic achievement, psychopathology and personality measures.
  - Authored integrated reports

*Supervisors:* Darryl Johnson, Ph.D.

September 2014 – **Montgomery County Juvenile Probation Department**  
November 2014 **(Family Assault Program)**  
Conroe, Texas

*Population:* Low-income, ethnically diverse families with adolescent perpetrated documented assaults within the home

- Duties:*
- Co-facilitated a CBT skills-based group
  - Implemented intervention techniques to assist in participants' development and enhancement of anger management skills, communication strategies, conflict resolution skills, and decision-making strategies
  - Documented treatment progress

*Supervisors:* Darryl Johnson, Ph.D.

August 2013 – **Psychological Services Center**  
 October 2014 Department of Psychology and Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Population:* Community-dwelling adults, adolescents, and children

- Duties:*
- Provided individual psychotherapy with an emphasis on empirically- supported treatments (e.g., CBT, DBT, IPT, MI, etc.)
  - Engaged in treatment planning, discharge planning, and suicide risk management
  - Attended monthly supervision seminars
  - Attended and participation in case conferences
  - Conducted comprehensive psychological assessments (e.g., diagnostic, ADHD, & learning disorder)
  - Discussion of case and case formulation with primary supervisor
  - Authored integrated reports
  - Provided feedbacks and recommendations

*Supervisors:* Lisa Kan, Ph.D., Adam Schmidt, Ph.D.

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## PREVIOUS PROFESSIONAL EXPERIENCES

July 2009 – **Shihlin District Prosecutors Office**  
 August 2009 *Administrative Assistant (Intern)*  
 Taipei City, Taiwan

*Population:* Taiwanese adult probationers and parolees

- Duties:*
- Assisted parole/probation officers in interviews and surveillance of parolees' and probationers' employment, housing, health care, education, drug screening and other services
  - Assisted with additional activities which included electronic monitoring, community correction, attending home visits, attending halfway home visits, and risk assessment

*Supervisor:* Tien-Cheng Zheng, Ph.D.

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## TEACHING AND SUPERVISION EXPERIENCES

August 2016 – **Teaching Assistant**  
 May 2017 *Doctoral Practicum—Capstone*  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Supervisees:* Second year doctoral student clinicians

- Duties:*
- Assisted faculty instructor, including conducting proficiency checks and providing feedback on Wechsler Adult Intelligence Scale-Fourth Edition and Woodcock-Johnson IV Test of Achievement administration
  - Demonstrated mock assessment intake and risk assessment interviews
  - Provided feedback on student clinical presentations

*Supervisor:* Craig Henderson, Ph.D.

January 2015 – **Peer Supervisor**  
 May 2016 *Doctoral Practicum*  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Supervisees:* Second year doctoral student clinicians

- Duties:*
- Co-supervised junior doctoral students providing psychotherapy and conducting psychodiagnostic assessments
  - Co-facilitated supervision sessions with licensed supervisor
  - Reviewed therapy and assessment videos
  - Verified testing protocols
  - Edited documentation
  - Provided written and verbal feedback

*Supervisors:* Craig Henderson, Ph.D., Darryl Johnson, Ph.D.

March 2015 **Invited Guest Lecturer**  
 Introduction to Psychology (PSYC 1301)  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Students:* Undergraduate students

- Duties:*
- Provided lecture material regarding basic tenets of personality psychology, including introduction of humanists, trait theories, heritability studies, cultural personality, and personality assessment

*Supervisor:* Christopher Wilson, Ph.D. (Department Chairperson)

## RESEARCH EXPERIENCE

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August 2016 – Present      **Principal Investigator (Dissertation Project)**  
*Diversity and Forensic Psychology Laboratory*  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Project: Offending Trajectories Among Sex Offenders in Taiwan*

- Project Aims:*
- Examine the heterogeneity of offending trajectories among sex offenders and how personal characteristics and risk factors are associated with sex offenders' offending trajectory group memberships.
  - Examine the heterogeneity among sex offending trajectories among Taiwanese sexual offenders and compare to trajectories among sexual offenders in North America
  - Final defense anticipated Spring 2019

*Chair:* Jorge G. Varela, Ph.D.

October 2014 – Present      **Principal Investigator (Major Area Paper Project)**  
*Diversity and Forensic Psychology Laboratory*  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Project: A Cross-Cultural Examination of Sex Offender Management*

- Project Aims:*
- Cross-national (U.S. & Taiwan) comparison:
    - Sex offense rates and prevalence of paraphilic disorders
    - Sex offender legislation and management strategies (preventive detention, offender registration, treatment mandates)
    - Risk assessment instruments, including static and dynamic risk assessment instruments
  - Identify and discuss potential cultural-specific risk factors and offender management issues
  - Authored poster presentation at national conference

*Chair:* Jorge G. Varela, Ph.D.

August 2011 – Present      **Research Assistant/Associate**  
*Sexual Offense Research Laboratory*



Department of Crime Prevention and Correction  
 Central Police University  
 Taoyuan County, Taiwan

- Duties:*
- Aid in the development of studies regarding sex offender's risk and protective factors and developmental trajectories in Taiwanese sex offender population
  - Aided in the development of studies regarding the attention, focus, and visual scanning of sexual offenders

*Supervisor:* Sheng-Ang Shen, Ph.D.

January 2016 –  
 November 2016

**Co-Investigator**

*Rowland S. Miller, Ph.D.—Laboratory*  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Project: An In-Depth Analysis of Pornography Use and Sexual Aggression Perpetration*

- Investigated associations between numerous facets of pornography use, both consumption patterns and the *content* of the pornography that was of interest, and self-reported sexual aggressive behaviors
- Authored poster presentation at national conference

*Investigators:* Tess Gemberling, M.A. & Jason Lawrence, M.A.

*Supervisor:* Rowland S. Miller, Ph.D.

January 2015 –  
 December 2015

**Co-Investigator**

*Multicultural Issues in Forensic Psychology Laboratory*  
 Department of Psychology & Philosophy  
 Sam Houston State University  
 Huntsville, Texas

*Project: Proxies for Acculturation to American Society with Foreign-Born Adults*

- Examined the impact of acculturation status on response style measures of Competency Stand Trial related abilities in foreign-birth individuals.
- Administered and scored measures of executive functions, acculturation, academic achievement and legal knowledge
- Co-Authored poster presentation

*Investigator:* Jennifer L. McLaughlin, M.A.

*Supervisors:* Lisa Y. Kan, Ph.D. & Jorge G. Varela, Ph.D.

August 2012 – **Graduate Research Assistant**  
August 2015  
*Multicultural Issues in Forensic Psychology Laboratory*  
Department of Psychology & Philosophy  
Sam Houston State University  
Huntsville, Texas

- Duties:*
- Assisted in developing multiple studies as member of research team
    - Multicultural issues in competency to stand trial
    - Effects regarding use of translators
    - Secondary gain in clinical ADHD evaluations
    - Factors related to plea bargains
    - Forensic Practice in Asian-Pacific countries
    - Use of the Inventory of Legal Knowledge (ILK) with foreign-born adults in the United States
  - Co-authored conference presentations

*Supervisor:* Lisa Y. Kan, Ph.D.

September 2014 – **Co-Investigator**  
February 2015  
*Multicultural Issues in Forensic Psychology Laboratory*  
Department of Psychology & Philosophy  
Sam Houston State University  
Huntsville, Texas

*Project: Study Space Analysis of Response Style Among Hispanics in Competency to Stand Trial Research*

- Assisted with a study examining the extent of current literature on competency to stand trial with Hispanic individuals.
- Co-authored with poster presentation.

*Investigator:* John M. Manning, M.A.

*Supervisor:* Lisa Y. Kan, Ph.D.

August 2012 – **Graduate Research Assistant**  
October 2014  
*Exercise and Mental Health Laboratory*  
Department of Psychology & Philosophy  
Sam Houston State University  
Huntsville, Texas

- Duties:*
- Aided in the development of an alcohol use intervention study

- Collected data for a study regarding mental health, physical health, and alcohol consumption

*Supervisor:* Craig E. Henderson, Ph.D.

## CONDERENCE PAPER AND POSTER PRESENTATIONS

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- Wang, H. W.**, Varela, J. G., & Johnson, D. (2017, March). *Comparison of sex offender risk assessment instruments used in the United States and Taiwan*. Poster presented at the annual meeting of the American Psychology-Law Society conference in Seattle, Washington.
- Wang, H. W.**, Gemberling, T. M., Lawrence, J. M., & Miller, R. S. (2016, November). *An in-depth analysis of pornography use and sexual aggression perpetration*. Poster presented at the annual meeting of the Association for the Treatment of Sexual Abusers, Orlando, FL.
- McLaughlin, J. L., Munoz, C. G., **Wang, H. W.**, Jeon, H., Varela, J. G., Kan, L. Y., & Boccaccini, M. T. (2016, March). *Proxies for acculturation to American society with foreign-born adults*. Poster presented at the annual meeting of the American Psychology-Law Society, Atlanta, Georgia.
- Manning, J. M., McKenzie, S., Munoz, C. G., **Wang, H. W.**, McLaughlin, J. L., & Kan, L. Y. (2015, March). *A study space analysis of response style among Hispanics in competency to stand trial research*. Poster presented at the annual meeting of the American Psychology-Law Society, San Diego, CA.
- Manning, J. M., Henderson, C., Munoz, C., Lawrence, J., **Wang, H. W.**, Dakof, G., & Liddle, H. (2014, March). *Hispanic subgroup differences as a moderator of treatment effects in multidimensional family therapy*. Paper presented at the annual meeting of the American Psychology-Law Society, New Orleans, LA.
- Fraser, T., Henderson, C., Greenbaum, P., Wang, W., Lawrence, G., **Wang, H. W.**, Gharagozloo, L., Burks, A., Mena, C., Warren, C., Munoz, C., & Liddle, H. (2014, March). *Changes in family functioning may differentially affect outcomes for male and female adolescents in substance use and delinquency treatment*. Paper presented at the annual meeting of the American Psychology-Law Society, New Orleans, LA.
- Kan, L., Simpler, A., Lawrence, J. M., **Wang, H. W.**, Hamilton, A. A., & Sauvagnat, C. (2013, March). *Characteristics of non-English speaking defendants referred for evaluation of competency to stand trial*. Poster presented at the annual meeting of the American Psychology-Law Society, Portland, OR.

## LANGUAGE

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- Chinese**
- Fluent in speaking, reading, and writing Chinese.
  - Trained in assisting parole/probation officers in interviews and surveillance of Chinese speaking parolees' and probationers' employment, housing, health care, education, drug screening and other services

## PROFESSIONAL SERVICE & LEADERSHIP ACTIVITIES

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- 2017                      **Peer Reviewer**  
American Psychological Association
- 2015                      **Peer Reviewer**  
American Psychology-Law Society Conference, San Diego, CA.
- September 2013 –    **Treasurer**  
August 2014           Graduate Student Psychology Organization

## PROFESSIONAL MEMBERSHIPS

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- 2012 –                      American Psychology-Law Society (APA Division 41)  
Present