Purpose: Most trajectory research related to crime focuses on males and studies the offending behaviors from childhood to adulthood. Only very few studies focus on developmental trajectories of female delinquency during adolescence. Given that increasing girls appear in the juvenile justice system, given that the offending behaviors of females and males are not identical, and given that insufficient empirical studies provides good foundation to design effective interventions for delinquent girls, it is important to understand girls' offending trajectories. In order to address the needs of different types of girls in the juvenile justice system and provide suggestions of informing practice, the current study aims to answer the questions concerning how girls' offending behaviors develop over time during adolescence.

Theoretic framework: Moffitt's development taxonomy theory is the main theory applied in this study. Moffitt categorized the trajectory of antisocial behaviors into two clusters, adolescent-limited (desist) and life-course-persistent (chronic). Contextual factors regarding mental health, family relation, child maltreatment, school performance and peer relation are important to understand how develop different offense trajectory. The research questions include: (1) Are there different clusters of delinquent trajectory in adolescent females? (2) Do contextual factors including demographic, child welfare contact, school history, peer relation, family history, and mental health history help to differentiate the various clusters of trajectory from each other?

Methods and results: I analyzed administrative data from the Washington State Department of Social and Health Services. The sample consists of a cohort of 571 females who had their initial arrest at ages 13 to 14 in 2004. In order to test the hypotheses concerning the change of girls' offending over time and cluster subgroups who follow distinctive developmental trajectories, the group-based trajectory model (GBTM) is executed. The GBTM uses a multinomial modeling instead of continuous multivariate density functions which are applied to hierarchical modeling and latent growth curve modeling, given that the assumption of the distinct groups existing in a population. The GBTM identifies two trajectory groups by modeling number of offenses, including chronic offending and desist offending. The female sample consists of 17% of chronic offenders and 83% desist offenders over the four-year observation period. The binary logistic regression analysis was conducted to test the effects of the historical contextual factors in relation to offense trajectory group membership. The adolescent females who are African Americans (OR=2.0, $p<.05$), have had child welfare contact (OR=1.8, $p<.05$), have had used drugs (OR=2.3, $p<.05$), had history of mental health problems (OR=2.1, $p<.01$), are not enrolled currently (OR=2.0, $p<.01$) are more likely to develop a chronic offending trajectory than a desist offending trajectory over adolescence.

Conclusions: Most intervention programs for juvenile delinquency have been tailored for boys since the majority of juvenile arrests involved male. Consequently, little is known about how well girls respond to these interventions. By modeling the offending trajectory and profiling the girls in the chronic and desist trajectory groups, the current study provides a good reference to develop gender specific intervention for girls in the juvenile justice system.