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Factors that predict referrals for behavioral health consultation in children in a primary care setting

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George Fox University

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Factors that Predict Referrals for Behavioral Health Consultation in Children in a Primary Care Setting

by

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Presented to the Faculty of the Graduate Department of Clinical Psychology at George Fox University in partial fulfillment of the requirements for the degree of Doctor of Psychology in Clinical Psychology

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Factors That Predict Referrals for Behavioral Health

Consultation in Children Within a Primary Care Setting

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Has been approved

At the

Graduate Department of Clinical Psychology

George Fox University

As a Dissertation for the Psy.D. degree

Approval

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Date: 3/23/2012

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Research suggests that children who struggle with emotional and behavioral health issues are increasingly seen in primary care settings. In fact, children are so frequently seen by their PCP that numerous studies have labeled primary care as the “de facto” mental health system. As a result, integrated pediatric behavioral health services are continuing to grow. However, a paucity of literature addresses what factors prompt referrals from PCPs to behavioral health consultants. The current study examined the factors that predicted referrals from PCPs to behavioral health consultants (BHCs) for children in a primary care setting. Participants included 25 children who were previously been seen by a BHC and 24 children who had not been referred for BHC services. Behavior problems, the percentage of time PCPs spent “counseling” during medical appointments and medical conditions were explored as predictors, and comparisons between these factors were made.
Acknowledgments

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Table of Contents

Approval Page ............................................................................................................................ ii
Abstract ....................................................................................................................................... iii
Acknowledgments ....................................................................................................................... iv
List of Tables ............................................................................................................................... vii
Chapter 1: Introduction ................................................................................................................ 1
  Overview of Primary Care Psychology .................................................................................... 1
  Rationale for integrated care ..................................................................................................... 2
  Patient benefits .......................................................................................................................... 2
  Primary care provider benefits ................................................................................................. 3
  Benefits for health plan administrators .................................................................................... 3
  Children's Mental Health Problems in a Primary Care Setting ................................................. 4
    Prevalence ............................................................................................................................... 4
    Need for treatment .................................................................................................................. 4
  Aims of Current Study ............................................................................................................... 6
Chapter 2: Method ....................................................................................................................... 8
  Participants ................................................................................................................................. 8
  Procedure ................................................................................................................................. 8
  Data Analysis ............................................................................................................................ 9
Chapter 3: Results ....................................................................................................................... 10
  Demographic and Descriptive Statistics .................................................................................. 10
  Prevalence of Patients with Medical Conditions ................................................................... 12
Factors that Predict Referrals

Comparison of Patients’ Referral Status .......................................................... 12
Odds Ratio Analysis for Medical Conditions and Caregiver Status .................. 13
Discriminant Analysis ...................................................................................... 14
Chapter 4: Discussion .................................................................................... 17
Influence of Caregiver Status on Referrals ...................................................... 19
Limitations of this Study .............................................................................. 21
Suggestions for Future Research ................................................................. 21
Implications .................................................................................................. 21
References ................................................................................................... 23
Appendix A Curriculum Vita............................................................................ 27
Factors that Predict Referrals

List of Tables

Table 1  Participant Sample Descriptive Statistics .......................................................... 10
Table 2  Descriptive Statistics for the Referred and Non-Referred Groups ...................... 11
Table 3  Frequency Data for Referred and Non-Referred Groups for Predictor Variables .... 11
Table 4  Pearson Correlations ......................................................................................... 13
Table 5  Odds Ratio for Medical Conditions ................................................................... 14
Table 6  Odds Ratio for Caregiver Status ....................................................................... 15
Table 7  Standardized Canonical Discriminant Function Coefficients ......................... 16
Table 8  Classification Analysis for Referral Status ....................................................... 16
Chapter 1

Introduction

Overview of Primary Care Psychology

Primary Care Psychology continues to gain momentum in the field of professional psychology. Previous research highlighted some of the benefits of integrating behavioral health services in the primary care environment (Belar & Deardoff, 1995). However, an increasing awareness of behavioral health needs has led to special issue journals, multiple articles in professional journals and textbooks illustrating how and why behavioral health services should be integrated into the primary care environment (Gatchel & Oordt, 2003; Robinson & Reiter, 2007). Given this emerging area of practice, it follows that psychologists continue to learn how to best provide and promote their services within this setting.

Psychologists can interface with primary care medicine in multiple ways. The integrated care model allows primary care providers (PCPs) to work side by side, often sharing an exam room, in order to provide a patient with comprehensive care from a biopsychosocial perspective (Robinson & Reiter, 2007). This model challenges the psychologist to incorporate information from the biological, psychological, and environmental or social domain as he or she conceptualizes the presenting problem and appropriate treatment strategies. The PCP introduces the psychologist as an expert and colleague who can be vital in the treatment of the client. The strong endorsement from the primary care provider as well as the familiarity of the PCP office alleviates the patient’s hesitancy about a mental health referral. (Gatchel & Oordt, 2003).
Integrating psychology into the primary care setting is an efficient and effective way to bridge the gap between the biomedical and psychosocial realms and provide holistic patient care.

**Rationale for integrated care.** The benefits highlighted in multiple primary care texts provide an excellent rationale for the incorporation of integrated care (James & O’Donohue, 2009; Robinson & Reiter, 2007). Benefits are widespread and important for multiple stakeholders including patients; primary care providers and health plan administrators.

**Patient benefits.** Integrated care provides a unique access to services for patients with behavioral health needs. Patients benefit from services that are integrated into their routine medical care, that result in reduced stigma, and are affordable. As highlighted by O’Donohue et al. (2005), primary care is already the *de facto* location where most mental health services are currently being provided. Problems stemming from psychosocial issues are relevant in up to 70% of the medical appointments made with a primary care physician (Gatchel & Oordt, 2003), and 90% of the 10 most common complaints in primary care have no organic basis (James, 2006). Clearly, behavioral health services are an important component in comprehensive patient care. Integrated care also seems to lessen the stigma associated with behavioral services. James and O’Donohue (2009) suggested that stigma is a significant barrier that prevents many people from seeking services in a freestanding mental health office. Additionally, patient access is increased because integrated care is typically provided without charging the patient an additional fee. As the primary care models continue to explore innovative ways to provide care that is not based on a traditional fee-for-service model, integrated care is an example of a service that can occur within the medical home treatment model (McDaniel & Fogarty, 2009).
Primary care provider benefits. PCPs show increased satisfaction secondary to reduced time spent in behavioral health counseling during the medical appointment, improved communication with the behavioral health provider, increased access to “real time” consultation that can happen in hallways and exam rooms, easy patient referral, and improved patient outcome.

Providers routinely have 15-minute appointments to diagnose and treat a range of presenting problems. When a complex behavioral health problem is influencing a patients’ functioning, PCPs may not have the time or the training to explore the problem, let alone provide behavioral health interventions. However, when the PCP refers the patient to a traditional mental health provider, the provider often has significant concerns about the lack of communication (Gatchel & Oordt, 2003). In contrast, integrated care allows the PCP to have immediate access to notes, diagnostic impressions, and follow-up recommendations. Additionally, the availability of hallway consultation allows for a quick and efficient bi-directional communication (Robinson & Reiter, 2007). Communication leads to more effective collaboration between physicians and psychologists, which can optimize patient care. Effective collaboration and dialogue between physicians and psychologists is essential for a comprehensive approach to understanding the client’s problems and developing an effective treatment plan that will adequately direct the most effective treatment (Miller, Hall, & Hunley, 2004).

Benefits for health plan administrators. The most important benefit to health plan administrators is the potential for improved patient outcomes with a corresponding reduction in medical costs. Data show that the treatment of psychological problems not only improves
psychological functioning but also improves patients’ physical health (O’Donohue et al., 2005) and reduces overall use of services (Hunter, Goodies, Oordt, & Dobmeyer, 2009).

**Children’s Mental Health Problems in a Primary Care Setting**

**Prevalence.** Psychologists and pediatricians have collaborated when caring for children’s physical and mental health needs since the 20th century. However, most of the focus on these children’s problems has been limited to physical origins. An interest in expanding mental health services for children in primary care settings has grown more recently (Stancin, 2005). Pediatric primary care providers are increasingly expected to assess children and adolescents for emotional and behavioral disorders, as well as to manage their care (Pidan et al., 2011). Significant behavior problems are present in up to 20% of children and adolescents seen in the primary care environment (Wissow et al., 2008). Among children seen within the primary care setting, mental health problems are well documented, with as many as 40% of these children showing significant functional problems (Wissow et al., 2008). Furthermore, parents are sharing in this concern and up to 50% of parents have expressed concerns related to their children’s behavior during routine pediatric appointments (Stancin, 2005).

**Need for treatment.** Behavioral and emotional problems are increasingly predominant among children and adolescents, yet these problems are often under detected in pediatric practice (Borowsky, Mozayeny, & Ireland, 2003). While the need for adult behavioral health services in a primary care setting is well established, PCPs have been shown to identify only one fifth of those children who need mental health services. (Pidan et al., 2011). This accounts for over 14 million children in the United States who are in need of behavioral health treatment.
Various reviews of the literature have revealed vast amounts of children whose emotional and behavioral problems remain untreated. One study found that up to 70% of children that come to a pediatric office present with an emotional, behavioral or child rearing concern and 20-30% have symptoms sufficient for a diagnosis (Trude & Stoddard, 2003). However, only 11% to 18% of children and adolescents with diagnosed mental health problems were referred to mental health services (Jutte, Burgos, Mendoza, Ford, & Huffman, 2003). A number of studies have also documented children at a higher risk for emotional and behavioral problems including boys with externalizing behaviors, children not living with both biological parents, and those living with a family member who receives public assistance (Borowsky et al., 2003; Jellinek, Little, Murphy, & Pagano, 1995, Jellinek et al., 1999).

In 2001, the Surgeon General called for a need to improve and expand mental health services for children and adolescents to treat emotional and behavioral difficulties. Such difficulties are some of the leading concerns of U.S. parents related to their children’s health (U.S. Public Health Service, 2000). In 2005-2006, 11% of girls and approximately 18% of boys had parents who discussed their child’s emotional or behavioral difficulties with a school staff member or health care provider. However, accessing services largely depends on the availability of financial resources, which places families within a low socioeconomic status at a critical disadvantage.

Children with chronic emotional and behavioral problems also face additional health concerns. These children are more likely to experience diminished health, reduced quality of life, encounter problems accessing appropriate services, and are more likely to have health conditions that cause them to miss school and affect their daily activities (Bastiaansen, Koot, Ferdinand, &
Factors that Predict Referrals

Verhulst, 2004). Additionally, their multiple health-care needs are likely to negatively affect their families. When compared to children without emotional and behavioral health problems, the children who suffer from these problems require more frequent and intensive health-related services (Lavigne et al., 1993).

These numbers highlight the importance of integrating behavioral health services in a pediatric or family practice environment. Child behavior problems in primary care environments are commonly under identified and undertreated (Perrin & Stancin, 2002). Although the primary care setting provides a viable avenue for identifying and treating a child’s mental health problems, there is a paucity of literature that addresses what factors prompt referrals from PCPs to behavioral health consultants. In recent literature searches, no studies have explored the factors that trigger a referral to behavioral health services. This lack of data is surprising given the high prevalence of behavioral health problems presented to primary care providers and the increased availability of behavioral health services in the integrated care model. Increased understanding about what prompts referrals to behavioral health services will allow PCPs to better identify patients that are in need of mental health services and make appropriate referrals; thus allowing for more time to address physical concerns.

**Aims of Current Study**

As integrated care continues to grow, mental health problems in children are also increasing and momentum for primary care to be the medical home for behavioral health treatment is growing. As the field of integrated behavioral health treatment in the primary care setting grows, it is equally important to increase understanding regarding what prompts referrals to behavioral health consultants from PCPs. The objective of this study was to identify which
factors predicted a PCP referral to behavioral health consultation services for youth in a primary care setting. It was hypothesized that pediatric patients with behavior problems either at school or at home, a PCP chart note referencing the percentage of time spent discussing behavioral health problems, and/or co-occurring medical conditions would be referred to behavioral health consultation services more frequently than youth who did not meet these criteria.
Chapter 2

**Method**

**Participants**

Archival data from 25 children between the ages of 4 and 12 who were referred to Behavioral Health Consultants (BHC) within the past 24 months at a primary care medical practice in a suburban area were reviewed. In addition, 24 children between the ages of 4 and 12 who had not been referred to a BHC were reviewed. Participants’ demographic data included age, ethnicity, gender, grade, and relationship of caregiver to patient. Additional data reviewed included the date of referral, the number of co-occurring medical conditions, the date the physical or behavioral health problems were initially identified, the percentage of time primary care providers spent counseling patients during medical appointments, caregiver or patient report of school problems, caregiver report of behavioral problems at home and whether or not a teacher referred them for mental health treatment.

**Procedure**

Data were collected from the primary care clinic, which included 8 PCPs, of whom 3 were pediatricians and 5 were family practice providers. Behavioral Health Consultation services (BHC) were available as an embedded service within the primary care clinic and were free of charge to all physicians’ patients in the clinic. BHC services were provided by doctoral level clinical psychology externs, and the duration of each appointment was 20 minutes. Patients of the primary care clinic were each offered a maximum of six free BHC sessions. These data were
collected through the electronic medical records of patients ages 4 through 12 years who received an initial behavioral health consultation as well as a randomly selected sample of patients ages 4 through 12 who were not referred for behavioral health services. Approval from the Human Subjects Review Committee from George Fox University was obtained prior to using these data for research analyses.

Data Analysis

Data analysis included reporting of the descriptive data and a correlation that analyzed the relationship between predictors. An odds ratio was also used to assess the probability that a child between the ages of 4 and 12 with either a medical condition or particular type of caregiver status would be referred or not referred to a behavioral health consultant. A discriminant analysis was conducted to determine whether the variables of age, grade, behavior problems, medical conditions, caregiver status, and percentage of PCP time spent discussing mental health issues—could predict whether or not a patient between the ages of 4 to 12 was referred to a behavioral health consultant (BHC).
Chapter 3

Results

This study examined which factors predicted referrals from primary care physicians (PCPs) to behavioral health consultants (BHCs) for children between the ages of 4 and 12 in a primary care setting.

**Demographic and Descriptive Statistics.**

Table 1 describes the sample of participants in this study. Tables 2 and 3 provide the descriptive statistics, means, standard deviations, and percentages for the variables used to predict referral to behavioral health consultants (BHCs). The sample consisted of 49 patients between the ages of 4 and 12 years old, ($M$ of 8.02, $SD = 2.69$), of which 21 (42.9%) were male and 28 (57.1%) were female. There were 29 participants of European American descent (59.2%), 12 Hispanic Americans (24.5%) and 9 of another country’s descent (18.4%).

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>28</td>
<td>57.1</td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>42.9</td>
</tr>
<tr>
<td>European American</td>
<td>29</td>
<td>59.2</td>
</tr>
<tr>
<td>Hispanic American</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>18.4</td>
</tr>
</tbody>
</table>
The sample in this study included 49 pediatric patients between the ages of 4 and 12 years old seen by primary care physicians in a primary care medical practice. Among these 49 children, 25 were referred to a behavioral health consultant (BHC) and another 24 children were randomly selected as a matched sample from the electronic medical record of the medical group. The first predictor variable hypothesized to trigger a referral to BHC services was the report of a child behavior problem (internalizing or externalizing). Within the sample, 49% of children were found to have been referred to BHCs on the basis of having a behavior problem, but interestingly, there was not a significant difference between referred and not referred groups on the frequency of report of a behavior problem. Thus, other predictors were explored to determine which factors triggered the BHC referral. The second predictor variable was the percent of time
the PCP spent “counseling” during the medical appointment, and similar to behavior problems there was not a significant difference between those patients referred or not referred for BHC services (see Table 3). However, one explanation for the lack of predictive value could be the lack of specificity in provider reporting of the percentage of time spent “counseling” in the medical appointment. Providers tended to report “greater than 50% of appointment time spent in counseling” rather than a specific estimate of minutes or a more exact percentage of appointment time.

**Prevalence of Patients with Medical Conditions.**

The third predictor hypothesized to influence referral was the presence of a medical condition. Patients with medical conditions were divided into two groups, which included patients with chronic medical conditions vs. patients with episodic medical conditions. Chronic medical conditions and episodic medical conditions were defined based on the following criteria: those subjects who had an ongoing condition, such as asthma, allergies, diabetes, and overweight were included in the chronic medical condition group, where as those with problems such as toileting difficulties, vision problems, sleep difficulties, viral infections, and a history of brief surgeries were included in the episodic medical condition group. Among participants that were referred and including those that were not referred, 53.1% of the sample was identified as having a chronic medical condition and 46.9% of the sample was identified as having an episodic condition.

**Comparison of Patients’ Referral Status.**

A Pearson product correlation analysis explored the relationship between referral status, report of behavior problems, percentage of PCP’s time spent counseling, presence of medical
condition, and age and grade in school of the patient. Correlations between predictor variables and whether or not children were referred to BHCs are presented in Table 4.

Table 4

Pearson Correlations

<table>
<thead>
<tr>
<th></th>
<th>Referral Status</th>
<th>Age</th>
<th>Medical Conditions</th>
<th>% PCP Time</th>
<th>Behavior Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral Status</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.085</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Conditions</td>
<td>-.370*</td>
<td>-.120</td>
<td></td>
<td>-.12</td>
<td></td>
</tr>
<tr>
<td>% PCP Time</td>
<td>-.420*</td>
<td>.085</td>
<td>.029</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior Problems</td>
<td>.060</td>
<td>-.280*</td>
<td>.178</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>-.050</td>
<td>.90*</td>
<td>-.08</td>
<td>.01</td>
<td>-.37*</td>
</tr>
</tbody>
</table>

Note. % PCP Time = Percentage of PCP Time. *p < .05

Odds Ratio Analysis for Medical Conditions and Caregiver Status

An odds ratio was used to assess the probability that a child between the ages of 4 and 12 with either a medical condition would be referred or not referred to a behavioral health consultant. In addition to medical conditions, caregiver status (parent vs. non-parental caregiver) appeared to be related to probability of referral, so an odds ratio was also used to explore the relationship of caregiver status to referral to BHC. An odds ratio is used to compare the odds for two groups, in the same way that the relative risk is used to compare risks. An odds ratio was calculated by dividing the odds in Group 1 by the odds in Group 2. For the purpose of this analysis, medical conditions were re-coded into chronic and episodic medical conditions. Those with chronic medical conditions were described as having issues related to overweight, obesity, asthma, allergies, and diabetes in this study. Those with episodic medical conditions were
described as having issues such as toileting concerns, vision problems, viral infections, and sleep difficulties. The odds ratio (OR) showed that a referral to a behavioral health consultant (BHC) was 5.3 times more likely for those children with an episodic medical condition than for those with chronic medical conditions (see Table 5).

Table 5

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>Referral Status</th>
<th>Referral Status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referred</td>
<td>Not referred</td>
<td></td>
</tr>
<tr>
<td>Episodic</td>
<td>15</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Chronic</td>
<td>9</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>25</td>
<td>49</td>
</tr>
</tbody>
</table>

A second odds ratio analysis explored whether caregiver status differentially affected the probability of a referral to a BHC. Thus, children with a variety of caregivers were also re-coded into two distinct groups. Those with a parent as their primary caregiver were divided into one group and those with an aunt or grandparent functioning as their primary caregiver were divided into a second group. The odds ratio (OR) for a referral to a behavioral health consultant (BHC) in those who have a parent as their primary caregiver and those who have another family member functioning as primary caregiver showed that children with a parent as their caregiver were 4.6 times more likely to be referred than those with another caregiver (see Table 6).

**Discriminant Analysis**

A discriminant analysis was conducted to determine whether the variables of age, grade, behavior problems, medical conditions, caregiver status and percentage of PCP time spent
Factors that Predict Referrals

Table 6

<table>
<thead>
<tr>
<th>Caregiver</th>
<th>Referral Status</th>
<th>Referral Status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referred</td>
<td>Not referred</td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>15</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Other Family</td>
<td>4</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>20</td>
<td>39</td>
</tr>
</tbody>
</table>

discussing mental health issues—could predict whether or not a patient between the ages of 4 to 12 was referred to a behavioral health consultant (BHC). Significant mean differences were observed for the recoded medical conditions and caregiver predictors on the DV. While the log determinants were similar, Box’s M indicated that the assumption of equality of covariance matrices was insignificant. This indicates that the variance is equally distributed among groups. The discriminate function revealed a significant association between groups and medical condition and relationship of caregiver predictors. Closer analysis of the structure matrix revealed two significant predictors, namely recoded medical conditions (episodic versus chronic conditions) and relationship of caregiver, with percentage of PCP time and behavior problems being poor predictors.

The discriminant function coefficients $b$ or standardized form $beta$ both indicate the partial contribution of each variable to the discriminate function controlling for all other variables in the equation. They can be used to assess each IV’s unique contribution to the discriminant function and therefore provide information on the relative importance of each variable. This data is illustrated below in Table 7.

The classification results below (Table 8) reveal that 82.4% of patients were classified correctly into their respective groups. This overall predictive accuracy of the discriminant
### Table 7

**Standardized Canonical Discriminant Function Coefficients**

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Function 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recoded Medical Conditions</td>
<td>.726</td>
</tr>
<tr>
<td>Recoded Caregiver</td>
<td>.665</td>
</tr>
<tr>
<td>Recoded Behavior Problems</td>
<td>-.557</td>
</tr>
</tbody>
</table>

function is called the “hit ratio.” Those who were referred were classified with better accuracy (94.7%) than those who were not referred (70.0%).

### Table 8

**Classification Analysis for Referral Status**

<table>
<thead>
<tr>
<th>Referral Status</th>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referred</td>
<td>Not Referred</td>
</tr>
<tr>
<td>Count</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Not Referred</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Percent</td>
<td>94.7</td>
<td>5.3</td>
</tr>
<tr>
<td>Referred</td>
<td>30.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>
Chapter 4

Discussion

Research suggests that children who struggle with emotional and behavioral health issues are increasingly seen in primary care settings (Gatchel & Oordt, 2003; Robinson & Reiter, 2007). As previous research has highlighted (James & O’Donohue, 2009; O’Donohue et al., 2005; Robinson & Reiter, 2007), the benefits for incorporating behavioral health consultation into primary care are widespread. In fact, the primary care environment has been labeled the “de facto” mental health system (O’Donohue et al, 2005). As a result, there is an increasing need for integrated pediatric behavioral health services. However, a paucity of literature addresses what factors prompt referrals from PCPs to Behavioral Health Consultant (BHC) services; and a review of the literature did not show any research exploring the factors that triggered pediatric referrals into BHC services. The objective of this present study was to identify which factors predicted a PCP referral to behavioral health consultation services for youth in a primary care setting. It was hypothesized that pediatric patients with a caregiver report of behavior problems, a PCP chart note referencing the percentage of time spent counseling, and those with medical conditions would be referred to behavioral health consultation services more frequently than children who did not meet these criteria.

While behavioral and emotional problems are increasingly predominant among children in primary care settings, these problems are typically under detected in pediatric practice and
PCPs have been shown to identify only one fifth of those children who need mental health services (Pidano et al., 2011). This accounts for over 14 million children in the United States who are in need of behavioral health treatment. So, it was surprising that our research didn’t show a significant relationship between the report of behavior problems and referral to BHC services. One possibility for the lack of referral of children could be that medical issues were of higher acuity and concern and were detected and referred more readily. It is also possible that children in this study were already seeking outside mental health support and thus were not referred by their physicians for short-term behavioral health consultation.

Physicians in this study spent over 50% of their time counseling patients during medical appointments; however, percentage of time spent counseling did not predict a referral to BHC services. The lack of predictive relationship may have been an artifact of the lack of specificity beyond 50%. One explanation for the lack of predictive value could be the lack of specificity in providers’ reporting of the percentage of time spent “counseling” patients in medical appointments. Providers typically reported “greater than 50% of appointment time spent counseling” as opposed to a specific estimate of minutes during the appointments spent counseling. Further, the providers may not have referred some patients because they were not aware these issues may warrant additional behavioral health consultation to optimize patients’ functioning. Regardless, this finding supports the literature that addresses a lack of referrals from PCPs to behavioral health consultation. Olson et al. (2001) found that although pediatricians in their study felt more responsible for identifying depression than for treating it, 77% did provide some intervention. This suggests that PCPs employ multiple strategies for addressing behavioral health concerns and it may explain why PCPs may not have referred patients for behavioral
health consultation in this study despite spending a large portion of time providing counseling during medical appointments.

Data show that treating psychological problems not only improves psychological functioning but also can have positive implications for patients’ physical health (O’Donohue et al., 2005) and reduces overall use of services (Hunter et al., 2009). Thus, it is not surprising that medical conditions were a significant predictor for referral to behavioral health consultation services. It is likely that medical issues, especially those that are acute and episodic, get physicians’ attention more readily and are easily identified as problems that are likely to benefit from behavioral interventions to increase compliance.

**Influence of Caregiver Status on Referrals**

Although not previously hypothesized to have a significant impact on referral patterns, the effect that a primary caregiver has on the referral patterns of physicians to behavioral health consultation of children is equally relevant. Previous literature has identified that children who do not live with both biological parents or who live with a family member who receives public assistance are at a higher risk for emotional and behavioral concerns (Borowsky et al., 2003; Jellinek et al., 1999). This present study found that children who had a parent as their primary caregiver were more likely to be referred for behavioral health services than those who did not have a parent as their primary caregiver. This is not surprising since literature addresses the impact that parental concern has on referral to mental health services. Parental concern is a crucial variable related to the early identification of emotional and behavioral issues in young children (Hacker et al., 2006). Parents perceive pediatricians as experts in both mental and physical health. As a result, pediatricians often become the first resource parents turn to when
they have concerns about their children’s’ emotional and behavioral health problems (Sharp, Pantell, Murphy, & Lewis, 1992).

In summary, this study highlights the relevance of behavioral health consultation services and the opportunity PCPs have to increase referrals in children who have chronic medical conditions, behavior problems, and in those who come from homes where parents are not the primary caregivers. While physicians in this study commonly referred children with episodic medical conditions, our findings show there is room to increase referrals in other areas aforementioned. It is possible that PCPs refer patients with episodic medical conditions more frequently than those who have chronic conditions because the duration is likely to be acute, of higher concern to patients, and more likely to be outside of the scope of PCP’s training in medicine since such issues are likely to be related to compliance with regimens among other behavioral and emotional issues. In accordance with previous literature addressing the role that parental concern plays in predicting referrals to physicians (Blanchard, Gurka, & Blackman, 2006), it is likely that those with a parent as primary caregiver have a number of other protective factors aiding them in receiving the care they need, such as availability of parents to observe a child’s health, behavior, school performance, and possibly the economic advantage of having a parent present at home with the child. Those that do not have a parent as their primary caregiver may be less likely to be referred either due to cultural reasons, economic disadvantages, or a variety of other factors. Since the majority of children in this sample who did not have parents as their primary caregiver were from other cultural backgrounds, it is possible that some cultures have multiple generations care for their children and although many family members may care
Factors that Predict Referrals for children, each family member may know less detail than if one parent cares for the child on a full time basis.

Limitations of this Study

In terms of limitations of the current study, a primary limitation was lack of a large sample size. Due to the limited amount of children investigated, it may have limited generalizability. Better prediction of referral patterns could likely have been achieved with a larger sample size. Additionally, the majority of this sample included children from either rural or suburban backgrounds with diverse socioeconomic backgrounds. It is possible that different factors may have been found to predict or limit referrals within an urban or predominately low-income population. Future research should take into account the above limitations when examining what predicts referrals to behavioral health consultation services within a primary care setting.

Suggestions for future research

Future research would benefit from a larger, stratified sample of participants in rural and urban settings. Furthermore, the predictor variable of percentage of time spent in counseling would benefit from more specificity.

Implications

This study highlights the importance of the need for future research addressing what factors predict referrals from PCPs to Behavioral Health Consultation services. Psychologists and doctoral level trainees have the opportunity to collaborate with medical providers to enhance integrated and coordinated care for children. It is noteworthy that even when participants in this study had an array of behavior problems, they were not always referred for Behavioral Health
Consultation. This may have critical implications for children and those providing their care. Psychologists have a role to advocate for their services in medical settings to increase referral patterns for behavioral health consultation. Referrals from physicians to BHCs may also increase by incorporating a decision tree into screening practices. Such decision trees could be constructed around specific symptoms or medical concerns, and may have positive effects when educating physicians about specific services BHCs can provide. By educating medical professionals about the efficacy of evidence-based behavioral interventions and the ease of implementing such services within an integrated system, consultation and referral patterns of physicians caring for children are likely to increase over time.
Factors that Predict Referrals

References


Factors that Predict Referrals


Appendix A

Curriculum Vita
CURRICULUM VITA

EDUCATION

8. 2007 to present  George Fox University  
Graduate Department of Clinical Psychology, *APA Accredited*  
Newberg, OR  
*Cumulative GPA 3.95*  
Student in a Doctor of Psychology program

5. 2009  George Fox University  
Graduate Department of Clinical Psychology, *APA Accredited*  
Newberg, OR  
*Master of Arts, Psychology*

9. 2002 to 12. 2005  Portland State University  
Portland, Oregon  
*Bachelor of Science, Psychology*

9. 1999 to 12. 2001  Oregon State University  
Corvallis, Oregon  
Pursued Bachelor of Science Degree in Psychology

AWARDS, HONORS, GRANTS

12. 2005  *Graduated Summa Cum Laude*  
*Cumulative GPA 3.96 on a 4.0 scale*  
Portland State University  
Portland, OR

9. 2002 to 12. 2005  *President’s List*
Portland State University
Portland, OR
A list that represents students with a 4.0 GPA each term

5. 2008  Richter Scholar Foundation grant recipient
 Amount funded: $4,400
 George Fox University
 Newberg, OR

1. 2009  Richter Scholar Foundation grant recipient
 Amount funded: $3,320
 George Fox University
 Newberg, OR

8. 2009  Richter Scholar Foundation travel grant recipient
 Amount funded: $1,100
 George Fox University
 Newberg, OR

8. 2010  APA Division 18 Research Award
 Award for Outstanding Student Research
 APA Conference 2010
 San Diego, CA

SUPERVISED CLINICAL EXPERIENCE

9. 2010 to present  Child, Adolescent, and Adult Therapy and Assessment
 Providence Medical Group Primary Care Clinic
 Sherwood, OR
 Duties: Working in a multi-disciplinary environment providing consultation, therapy, and assessment services to Primary Care physicians’ patients in a short-term care model using evidence-based practice to treat patients from 3-100 years old with concurrent medical concerns; diagnose and provide assessments and screeners for memory, learning, personality, neuropsychological and cognitive functioning. Family and individual therapy services provided; long-term therapy with a select number of Providence patients as requested by referring physicians. Frequent contact with primary care physicians, nurse practitioners, medical assistants, and immediate care providers regarding patients’ treatment course and follow-up care. Feedback to parents and families is provided regarding adolescent/child therapy treatment.
 Supervisors: Mary Peterson, PhD and Marie Christine Goodworth, PhD
7. 2009 to 9. 2009  **Child and Adolescent Assessment**  
Sundstrom Clinical Services Summer Assessment Clinic  
Clackamas, OR  
Duties: Performed comprehensive psychological testing for patients aged 3-19; conducted intakes and feedback sessions with parents; wrote comprehensive reports for each case; consulted with psychologists in the practice regarding treatment for these clients, including the author of the SB-5.  
**Supervisors:** Gale Roid, PhD and Paul Sundstrom, EdD

7. 2009 to 9. 2009  **Multidisciplinary Assessment- Child Development/Autism**  
7. 2010 to 7. 2011  
Child Development and Rehabilitation Center, Oregon Health & Science University  
Portland, OR  
Duties: Included working in a multi-disciplinary team within a hospital (psychologists, speech and language pathologists, occupational therapists, and developmental pediatricians) to diagnose children aged 2-17 referred for Autism evaluation. Psychological testing battery included play-based Autism-specific measure, cognitive, and developmental measures, and comprehensive reports also included behavioral and adaptive skill parent-report measures. Same day in-person feedback to families was provided.  
**Supervisor:** Darryn Sikora, PhD

9. 2008 to 5. 2009  **Adolescent Therapy and Assessment Practicum**  
Milwaukie High School  
Milwaukie, OR  
Duties: Provided individual and group therapy to adolescents aged 14-18; comprehensive assessment of children aged 5-18, structured interviews, engaged in report writing, presented assessment results to parents and teachers, and developed case conceptualization skills. Developed and conducted research programs across academic institutions in the district using grant funding, thus adding to the district’s curriculum for adolescents’ mental health treatment via delivering evidence-based group therapy services.  
**Supervisor:** Fiorella Kassab, PhD

1. 2008 to 5.2008  **University Counseling Center Practicum**  
George Fox University  
Newberg, OR  
Duties: Provided services to two undergraduates. Conducted intake interviews, individual psychotherapy, diagnosis, and treatment planning. Consulted with supervisor and clinical team, engaged in report writing and case presentations. Received weekly individual and group supervision.
Supervisors: Sally Hopkins, PsyD, Meg Boden Alvey, MA, and Anna Tabor, MA

9. 2007 to 12. 2007  **George Fox University, Clinical Training Lab**  
Newberg, OR  
Duties: Received psychotherapy skills training with graduate student supervisor. Videotaped simulated psychotherapy with graduate students, conducted intake interviews and practiced Rogerian therapy skills.  
Supervisors: Mary Peterson, PhD and Meg Boden Alvey, MA

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**RELEVANT WORK EXPERIENCE**

10. 2007 to 12. 2007  **Depression Group Facilitator/Leader**  
*Depression Recovery presented via DVD by Dr. Neil Nedley, M.D.*  
Newberg, OR  
Duties: Depression Recovery program discussion group leader in a community-based, nine-week evidence-based mental health education program affiliated with Providence Hospital. Attended meetings with supervisor, held social events with participants at the facility, and conducted group psycho-education and psychotherapy for hospital patients.  
Supervisor: Tami Rodgers, MD

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**LEADERSHIP ACTIVITIES**

9. 2011 to present  **Multicultural Committee, Co-Chair of Research**  
George Fox University Graduate Department of Clinical Psychology  
Newberg, OR  
Duties: Assisting with the development and promotion of this committee in our doctoral program; co-chair of Research Subcommittee that raises awareness of multicultural issues in our program and the general public through research endeavors. Tasks include co-leading bi-monthly meetings and putting together information from outreach, program development, and awareness subcommittees to generate meaningful research that informs the public and is presented at national conferences.

8. 2008 to 6. 2009  **Peer Mentor**  
George Fox University Graduate Department of Clinical Psychology  
Newberg, OR
Duties: Assisted a first-year graduate student in the program with planning goals for graduate training as well as answered questions pertinent to professional development, developing relationships with faculty, and obtaining supplemental research and clinical experiences in her doctoral training.

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**TEACHING EXPERIENCE**

8. 2009 to 12. 2010  **Lab Instructor and Guest Lecturer**  
*Cognitive and Intellectual Assessment*  
Graduate Department of Clinical Psychology  
George Fox University  
Newberg, OR  
Duties: Taught weekly labs on administering and interpreting various cognitive and intellectual assessments. Trained students in the use of the WAIS-IV, WISC-IV, WIAT-III, WRAT-4, WRAML2, SB5, WRIT, PPVT-4, & WRAVMA. Viewed and critiqued students’ videotaped assessments, graded and critiqued students’ assessment protocols and reports. Provided individual/group support and training as needed to ensure students’ competence in cognitive assessment and report writing; developed competency based training video for the WISC-IV. One-hour weekly supervision and consultation regarding lab lectures and students’ progress/achievement, development, and remediation. Established regular office hours and assisted with interpretation of assessment measures.  
** Supervisor:** Wayne Adams, PhD

1. 2004 to 12. 2005  **Lead Teaching Assistant for eight courses**, Undergraduate Psychology Department  
Portland State University  
Portland, OR  
Courses: Physiological Psychology, Behavioral Endocrinology, Medical Psychology, Cognitive Neuroscience, Clinical Neuroscience, Affective Neuroscience, Psychopharmacology, and Behavioral Genetics  
Duties: Led weekly hour-long group discussions and created accompanying handouts, trained future teaching assistants, held weekly office hours for students, graded papers and exams, held writing workshops for students to help them with research papers for the class; helped teach classes of 125-200 students as needed on small group discussion days.  
** Supervisor:** Jacob L. Driesen, PhD
SUPERVISION EXPERIENCE

8. 2011 to present  
**Clinical Peer Supervisor**  
Graduate Department of Clinical Psychology  
George Fox University, Newberg, OR  
Duties: Include developing a supervision model and completing weekly supervision with pre-master’s level student in the department. Supervision issues being covered include both skill development and professional development.

8. 2010 to 12. 2010  
**Clinical Peer Supervisor**  
Graduate Department of Clinical Psychology  
George Fox University, Newberg, OR  
Duties: Included supervising a master’s level student in the department. Supervision issues covered developing skills as a lab instructor, providing feedback to students, grading written documents and assessment protocols, and feedback regarding professional development for doctoral level assessment course.

RESEARCH EXPERIENCE

Research Positions

1. 2010 to 6. 2010  
**Principal Investigator, Project Manager & Liaison**  
*Research curriculum director for rural school district consortium*  
Duties: Assisted with starting a research curriculum across schools in a rural school district consortium in Oregon for evidence-based group therapy treatment of adolescents with externalizing disorders in the schools. Led training labs and provided support for three doctoral students who led treatment groups as part of a research study. A control group and a placebo group were included in this project, with individual therapy booster sessions for randomly selected students. Prizes and comprehensive assessment measures were given both pre-and post-group therapy treatment.  
**Supervisor:** Mary Peterson, PhD

2. 2009 to 11. 2010  
**Independent Research, Pediatric Psychology**  
*Oregon Health & Science University*  
Portland, OR  
Duties: Reviewed literature, developed and proposed research questions that sought to investigate the scores of preschool children on the Pediatric Symptom Checklist (PSC) from the years of 2007-2009 at an annual
Factors that Predict Referrals

pediatric health fair and these scores’ relationship to Body Mass Index (BMI), socioeconomic status, gender, and ethnicity.

Supervisor: Kurt A. Freeman, PhD

9. 2008 to 9. 2009  **Research Assistant, Pediatric Sleep and Chronic Pain**  
**Oregon Health & Science University**  
Department of Anesthesiology and Peri-Operative Medicine  
Portland, OR  
Duties: Investigated the role of sleep in pediatric pain.  
Weekly responsibilities included data analysis, data management, reviewed literature, and assisted in the preparation of a manuscript for publication in the field of pediatric psychology.  
Supervisors: Tonya Palermo, PhD & Anna Wilson, PhD

1. 2004 to 12. 2005  **Neuropsychological Research Assistant** (80 hours direct)  
**Portland State University**  
Portland, OR  
Duties: Researched the validity of the Delis-Kaplan Executive Function System (D-KEFS) when testing Obsessive Compulsive Disorder in children. Conducted literature reviews, data collection and entry, administered D-KEFS to various populations; participated in grant writing campaign.  
Supervisor: Jacob L. Driesen, PhD

**Poster Presentations and Symposiums**

Poster session accepted at the annual convention of the American Psychological Association, Washington D.C.

Poster session accepted at the annual convention of the American Psychological Association, Washington D.C.

Symposium presentation accepted at the annual convention of the American Psychological Association, San Diego, CA.

Interventions with High-Risk Adolescents: Targeting What Matters Most.
Poster session accepted at the annual convention of the American Psychological Association, San Diego, CA.


**Contributions to Publications**

Portland, Oregon
Duties: Examined the utility, validity and reliability of various sleep measures as they relate to pediatric populations. Assisted with data entry/consolidation, article gathering/review, and wrote small portions of the manuscript; received thank you within journal article for my assistance.

**Supervisors:** Tonya Palermo, PhD & Anna Wilson, PhD

**Manuscripts in Preparation for Publication**

1. 2011  **Evaluating school-based CAST intervention with high-risk youth: Implications for health behaviors**
George Fox University
Newberg, OR
Duties: Principal investigator and project coordinator; used Richter Scholar Grant funds to examine the roles that physical health, sleep, and pain play in youth with mood disorders and looked at the maladaptive coping strategies of high-risk adolescents.

**Supervisors:** Mary Peterson, PhD & Elizabeth Hamilton, PhD

4. 2011  **Delivering school-based mental health interventions to high-Risk Adolescents**
George Fox University
Newberg, OR
Duties: Principal investigator and project coordinator; used Richter Scholar Grant funds and coordinated delivery of services and assessments to three high schools in the North Clackamas School District, recruited
group leaders; examine the role that an evidence-based practice, CAST, plays in alleviating depression in adolescents using pretest and posttest measures to measure mood; presentation accepted at APA 2009 conference. 

**Supervisor:** Mary Peterson, PhD

### PROFESSIONAL AFFILIATIONS

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<th>Year</th>
<th>Professional Affiliation</th>
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<tr>
<td>2009 to present</td>
<td><strong>APA Division 54, Society of Pediatric Psychology</strong>, Student Member</td>
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<tr>
<td>2008 to present</td>
<td><strong>Oregon Psychological Association</strong>, Student Affiliate</td>
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<tr>
<td>2008 to present</td>
<td><strong>APA Division 53, Society of Clinical Child and Adolescent Psychology</strong>, Student Member</td>
</tr>
<tr>
<td>2007 to present</td>
<td><strong>American Psychological Association</strong>, Student Affiliate</td>
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### REFERENCES

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<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Contact Information</th>
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<tbody>
<tr>
<td>Professor and Clinical Supervisor</td>
<td>Mary Peterson, PhD</td>
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</tr>
<tr>
<td>8. 2007 to present</td>
<td></td>
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<tr>
<td>Professor of Clinical Psychology</td>
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<td>503.554.2372, <a href="mailto:wadams@georgefox.edu">wadams@georgefox.edu</a></td>
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<tr>
<td>8. 2007 to present</td>
<td></td>
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<tr>
<td>Professor and Clinical Supervisor</td>
<td>Marie Christine Goodworth, PhD</td>
<td>503.554.2382, <a href="mailto:mrutter@georgefox.edu">mrutter@georgefox.edu</a></td>
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