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The association between emotional and behavioral problems and gastrointestinal symptoms among children with high-functioning autism

Carla A Mazefsky¹, Dana R Schreiber¹, Thomas M Olino¹, and Nancy J Minshew²

¹Department of Psychiatry, University of Pittsburgh, Pittsburgh PA, USA

²Departments of Psychiatry & Neurology, University of Pittsburgh, Pittsburgh, PA, USA

Abstract

This study investigated the association between gastrointestinal (GI) symptoms and a broad set of emotional and behavioral concerns in 95 children with high-functioning autism and IQ scores ≥ 80 . GI symptoms were assessed via the Autism Treatment Network's GI Symptom Inventory, and data were gathered on autism symptom severity, adaptive behavior, and multiple internalizing and externalizing problems. The majority (61%) of children had at least one reported GI symptom. Emotional and behavioral problems were also common, but with a high degree of variability. Children with and without GI problems did not differ in autism symptom severity, adaptive behavior, or total, internalizing, or externalizing problem scores. However, participants with GI problems had significantly higher levels of affective problems. This finding is consistent with a small body of research noting a relationship between GI problems, irritability, and mood problems in ASD. More research to identify the mechanisms underlying this relationship in ASD is warranted. Future research should include a medical assessment of GI concerns, longitudinal design, and participants with a range of ASD severity in order to clarify the directionality of this relationship and to identify factors that may impact heterogeneity in the behavioral manifestation of GI concerns.

Keywords

Autism spectrum disorder (ASD); gastrointestinal (GI); abdominal pain; behavior; Child Behavior Checklist (CBCL)

Introduction

Autism is increasingly being referred to as a 'systems disorder' reflecting the many co-occurring medical, emotional, and behavioral concerns. A high prevalence of both internalizing problems (e.g. anxiety, depression, etc.) and externalizing behaviors (e.g. aggression, hyperactivity, defiance, self-injury, and tantrums) have been reported in samples of children with autism spectrum disorders (ASD) of various ages and ability levels

(Brereton et al., 2006; LeCavalier, 2006; Hartley et al., 2008). While some degree of emotional and behavioral dysregulation may be present for a subgroup of children with ASD from infancy (e.g. Rogers, 2009), for others, emotional and behavioral problems may emerge or worsen at later stages of development. When the emotional or behavioral problem is new or there is an increase in severity or frequency, it is generally recommended to first rule out any potential underlying medical cause (e.g. Mazefsky, 2012), such as gastrointestinal (GI) conditions (Buie et al., 2010).

Gastrointestinal (GI) problems, such as abdominal pain, chronic constipation, chronic diarrhea, and gastroesophageal reflux disease, are thought to be common in ASD (Valicenti-McDermott et al., 2006; Adams et al., 2011; Wang et al., 2011). Previous research suggests that children with ASD may exhibit GI symptoms in an emotional or behavioral way (i.e., irritability, noncompliance to demands, self-injurious behavior, aggression, tics, and agitation) (McAtee et al., 2004; Carr et al., 2007). In a recent consensus medical report on best practice recommendations for diagnosing and treating GI symptoms in children with ASD, Buie et al. (2010) provided a list of problem behaviors that may signal an underlying GI problem and further concluded that GI conditions could increase risk for problem behaviors.

It seems logical that GI pain could increase problem behaviors; however, there are only five published studies that have examined the association between GI symptoms and emotional and behavioral outcomes in ASD (to our knowledge). These studies each highlight different problems associated with GI conditions. A study of eight-year-old children with ASD found that those with co-occurring GI conditions were more likely to exhibit externalizing behaviors such as oppositional defiant behaviors and tantrums compared to children without GI conditions, but failed to find a significant association with mood disturbance (Maenner et al., 2012). However, other studies have pointed to a relationship between GI concerns and internalizing problems in ASD. For example, studies suggest that children with ASD and co-occurring GI conditions tend to be more anxious (Nikolov et al., 2009; Mazurek et al., 2012) and irritable (Nikolov et al., 2009) than children without a comorbid GI condition. Another study highlighted a connection between ASD symptom severity and GI problems (Gorrindo et al., 2012). Finally, GI conditions in children with ASD have been associated with greater sensory sensitivity (Mazurek et al., 2012) and sleep problems (Maenner et al., 2012; Mannion, Leader, & Healy, 2013).

Most of the prior research on the emotional and behavioral correlates of GI symptoms in ASD has focused on specific problems related to the authors' hypotheses rather than considering a broad array of manifestations of emotional and behavioral concerns simultaneously. This is a logical approach, but does not provide an opportunity to discern which behaviors are most strongly associated with GI problems or to identify patterns of emotional and behavioral concerns that may be present in this subgroup. The two studies that did look at a variety of outcomes are difficult to compare to each other due to the use of a dichotomous measure of eight different possible behavioral manifestations in one study (Maenner et al., 2011), which might have reduced sensitivity, and use of a sample enriched for psychopathology from a psychopharmacology clinic for the other study (Nikolov et al., 2009).

The primary aim of the current study was to explore the association between GI symptoms and emotional and behavioral concerns in a community-based sample of children with high-functioning autism. Verbal children without significant cognitive disability were selected in order to avoid confounds that may arise from difficulty identifying certain emotional (e.g. depression, worrying) and GI concerns (e.g. abdominal pain) in less verbal children. A comprehensive assessment battery was utilized, including measures of autism symptom severity, adaptive behavior, and a screening measure of multiple internalizing and externalizing problems. It was hypothesized that children with GI symptoms would have poorer overall adjustment (more ASD symptoms, lower mean adaptive behavior, and more likely to have internalizing and externalizing problem scores in the range of clinical concern) than children without any GI symptoms. Further it was expected that the severity of concerns in these areas would correspond to the number of GI symptoms present, with functioning worsening as the number of GI symptoms increased.

Methods

Participants

Participants included 95 children with high-functioning autism who met at least autism spectrum cutoffs on the *Autism Diagnostic Observation Schedule* (ADOS-G; Lord et al., 2000) for Reciprocal Social Interaction, Communication, and Communication + Social Interaction totals as well as all cut-offs for autism on the *Autism Diagnostic Interview* (ADI-R; Lord et al., 1994). Their average total score on the *Social Responsiveness Scale* (Constantino & Gruber, 2005), a measure of autism symptom severity, was in the severe range ($M = 81.68$, $SD = 12.39$). Participant ages ranged from 7 to 19 years old with a mean of 12.75 ($SD = 3.12$). The majority of the sample (85.3%; $n = 81$) was male. All participants had a Full Scale IQ ($M = 110.72$, $SD = 13.79$), Verbal IQ ($M = 108.26$, $SD = 14.35$), and Performance IQ ($M = 110.96$, $SD = 13.89$) above 80 (i.e., did not have intellectual disability) as determined by the *Wechsler Abbreviated Scale of Intelligence* (WASI; Wechsler, 1999). However, their daily functioning was significantly impaired, particularly in the context of their higher IQs, with a mean total adaptive behavior score on the *Vineland Adaptive Behavior Scales* (VABS; Sparrow et al., 2005) in the Low Average range ($M = 79.81$, $SD = 12.86$).

The participants were part of a program of research studies focused on discerning the cognitive and brain bases of ASD. Participants were selected for this study if they had data on both of the primary study measures (*Child Behavior Checklist* and *GI Symptom Inventory*, see below). The final sample did not differ from those who had only one of these measures in mean IQ, age, or scores on the primary variables of interest. The participants were community volunteers recruited through advertisements in newsletters, postings on autism-related websites, and presentations for parents and professionals.

Measures

The primary dependent measures included The *Child Behavior Checklist/6–18* (CBCL/6–18; Achenbach and Rescorla, 2001) and the *Autism Treatment Network GI Symptom Inventory* (Autism Treatment Network, 2005) which were both completed by parents. The CBCL

measures degree of emotional and behavior problems. It provides t-scores for the internalizing problems, externalizing problems, total problems (i.e., internalizing and externalizing), a series of syndrome scores (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Rule-Breaking Behavior, and Aggressive Behaviors), and DSM-oriented problems scales (i.e., Affective Problems, Anxiety Problems, Somatic Problems, Attention Deficit/Hyperactivity Problems, Oppositional Defiant Problems and Conduct Problems). The *GI Symptom Inventory* (Autism Treatment Network, 2005) dichotomously assesses which GI conditions have occurred in the past 3 months including abdominal pain, bloating, “not feeling hungry after eating very little” and other symptoms not otherwise specified (i.e., nausea, constipation, diarrhea). Analyses focused on the type and number of GI symptoms. The GI Symptom Inventory has not been validated. It was developed based on previous questionnaires and on clinical assessments of children with ASD and identified GI disorders. It was initially created for use in the Autism Treatment Networks, a consortium of 17 medical centers serving children with autism across the United States and Canada, where it is now consistently administered. The GI Symptom Inventory is also a component of ISAAC (Internet System for Assessing Autistic Children), and has been used in published ASD research studies (Mannion et al., 2013; Mazurek et al., 2010).

Additional parent-report measures were completed to determine the relationship of GI symptoms to overall functioning. These included the *Social Responsiveness Scale* (SRS; Constantino & Gruber, 2005) as a measure of ASD symptoms, and the *Vineland Adaptive Behavior Scale* (VABS; Sparrow, et al., 2005) as a measure of adaptive behavior. The SRS total score and VABS Adaptive Behavior Composite were used in analyses.

Analyses

All analyses were completed using IBM SPSS Statistics Version 19. Descriptive statistics and frequencies were utilized to describe the sample’s distribution on the primary variables. A one-sample t-test was utilized to compare the frequency of GI problems in our sample to the general population frequency using a value from the existing literature. Dichotomous variables were created to reflect whether or not participants exceeded the borderline clinical cut-off on the CBCL scales. Due to the potential for Type I error with a large number of variables, group differences (GI symptoms versus no GI symptoms) were only statistically tested for gender, age, Full Scale IQ, SRS total score, VABS adaptive behavior composite, and mean scores on the CBCL scales. ANOVA was utilized for continuous scales and fisher’s exact test was used for dichotomous ratings.

Next, poisson regressions were run to test the association between CBCL scales (independent variables) and the number of GI symptoms (dependent variable). Due to concerns regarding multicollinearity, the CBCL syndrome scales and DSM-oriented scales were evaluated in separate regressions. Further, before completing analyses, correlations between the CBCL scales were run to determine which scales were too highly correlated to be put into the same model. Among the DSM-oriented scales, the oppositional defiant problems and conduct problems scale scores were highly correlated ($r = .82, p = .000$). Among the syndrome scales, the rule-breaking and aggressive behavior scales were highly

correlated ($r = .80, p = .000$). Thus, we opted to omit the conduct problems and rule-breaking scales in these analyses, which were both less common at the borderline clinical level in this sample than the retained scales. The CBCL somatic complaints scale was also not included given the overlap with GI problems. Demographic variables that significantly differed between those with and without GI problems were included in each regression to account for their effects.

Post-hoc analyses were conducted for the CBCL scales that were significant predictors in the poisson regressions. Specifically, the impact of the specific types of GI problems on the relevant CBCL scales was explored, while controlling for the demographic variables that differ by GI group. Demographic variables were entered into the first step of the regression, followed by each type of GI symptom in descending order of prevalence. Results of all poisson and linear regression analyses include the coefficients and test statistics (e.g. B, β, R^2) for independent prediction. These statistics provide information on the influence of these predictors after controlling for other variables.

Results

GI symptoms were commonly reported (see Table 1). Overall, 61% of children had at least one GI symptom. This rate of GI problems in this sample was significantly higher than the rate of GI problems in the general population (47%; Alfven, 1993), $t(94) = -922.34, p = .000$. Abdominal pain (41.1%) and “not feeling hungry after eating very little” (40%) were most common. Participants with and without GI symptoms did not significantly differ in Full Scale IQ, total SRS score, or overall adaptive behavior (see Table 2). However, the GI symptoms group was significantly younger than the no GI symptoms group, $p < .01$. In addition, a significantly higher proportion of females had GI symptoms as compared to males, $p < .05$.

Patterns of scores on the CBCL are included in Table 3, broken down by the presence or absence of GI symptoms. The mean, standard deviation, and percent of the sample over the borderline clinical range (e.g. t-score ≥ 65 or 1.5 standard deviations above the mean) are presented. Although there was variability across scales and groups, there was a high degree of psychopathology present in the sample overall, with more internalizing than externalizing problems endorsed. Across all CBCL scales, the GI group had higher mean scores than the no GI symptoms group. Also, the GI group had a higher percent of participants exceeding the borderline clinical range for all CBCL scales except externalizing problems and conduct problems. The only CBCL scale means that significantly differed between the GI and no GI groups were Somatic Complaints, Affective Problems, and Somatic Problems, $p < .05$.

Results of two poisson regressions to predict the number of GI symptoms from CBCL syndrome scales and DSM-oriented scales are presented in Table 4. To account for differences in gender and age between those with and without GI problems, these variables were included in the regression analyses. Social problems emerged as the only syndrome scale that was significantly associated with the number of GI symptoms, $p < .001$. Affective problems was the only significant predictor among the DSM-oriented scales, $p < .001$.

Hierarchical linear regression was utilized to determine which specific GI symptoms were most associated with social problems and affective problems, accounting for gender and age. Abdominal pain accounted for an additional 7% of the variance in social problems, above and beyond gender and age (see Table 5), $p < .01$. None of the other types of GI problems were significant. Overall, 17.8% of the variance in social problems was accounted for in this model. A different pattern emerged for affective problems (see Table 6). Gender and age were not significant predictors in this model, $p > .05$. Of the GI symptoms, 11.6% of the variance was accounted for by abdominal pain, and additional 4.9% of the variance was accounted for by not being hungry after eating very little. Overall, 20.1% of the variance in affective problems was accounted for.

Discussion

This study sought to clarify the relationship between GI symptoms and a broad range of potential problems, including ASD symptoms, limitations in adaptive behavior, and various internalizing and externalizing problems. Consistent with prior research, children in this sample had a high rate of GI problems. An epidemiological study of the general population found that 47% of school-aged children report at least one GI symptom (Alfven, 1993), which is significantly lower than the 61% of our sample with GI symptoms. High rates of emotional and behavioral concerns were present in our sample as well, though there was marked variability both within and between various internalizing and externalizing problem scales.

Contrary to expectations, children with and without GI problems did not differ significantly in level of ASD symptoms, adaptive behavior, or any of the externalizing problems scales. Our failure to support an association between GI problems and increased externalizing behaviors is inconsistent with some prior research (Maenner et al., 2011), as well as the frequently noted possibility of increases in problem behaviors indicating a potential GI concern (e.g. Buie et al., 2010). The participant characteristics may help explain this finding. This was a high-functioning sample in terms of intelligence. In addition, they were also participants in a neuroimaging study and thus had enough behavioral control to follow directions and stay still for the duration of the scan. Overall, only approximately 25% of the sample had elevated scores on the externalizing problems scales, resulting in a slightly restricted range of behavioral problems. In addition, all participants were verbally fluent. More verbal children may indicate their discomfort sooner and receive treatment before the concern reaches a point that affects behavioral control. Thus, in verbal children, GI distress may increase affective lability, but not externalizing problems. It is possible that a behavioral manifestation of pain is more likely among children who are not able to verbally communicate when they do not feel well. Further, disruptive and aggressive behaviors may be more noticeable, prominent, and concerning to caregivers, leading to their emphasis in the prior literature, even though it is likely that affect regulation is affected in nonverbal children as well.

Our results supported a relationship between GI problems and affective problems. Although a significant association was also found between the number of GI problems and social problems, caution is warranted when interpreting this finding. Specifically, those with and

without GI problems did not significantly differ in their mean social problems scores, and a similar number in each group exceeded the borderline clinical level of social problems. In addition, overall ASD symptom severity on the SRS, which is heavily weighted with social symptoms, did not differ between groups. It is possible that a stronger relationship between social problems and GI concerns would be supported in a sample with a wider range of social problem severity. On the other hand, the relationship between GI symptoms and the degree of affective problems was consistent across analyses. Participants with GI problems had significantly higher mean affective problems scores, with nearly twice as many participants in the GI problems group exceeding the borderline clinical range for affective problems compared to children without GI symptoms. Although gender and age differed by GI group, neither was significant when affective problems was in the same model. This suggests that affective problems are more strongly associated with GI problems than these demographic factors.

There are many potential mechanisms that could produce a relationship between affective problems and GI concerns in ASD. The specific GI concerns that were associated with affective problems in this sample included abdominal pain and, to a lesser degree, not being hungry after eating very little. The association between not being hungry after eating very little and affective problems may be partially explained by overlap with the depressive symptom of decreased appetite given that the affective problems scale of the CBCL corresponds highly with clinical diagnoses of depression (Ebesutani et al., 2010). GI problems may lead to symptoms associated with depression such as irritability, lethargy, and anhedonia, due to the experience of pain. It is also possible that affective problems may arise first, and changes in appetite, eating patterns, and activity level that are associated with feeling depressed increase the likelihood of GI concerns. However, because no longitudinal studies have been conducted, and our study was also cross-sectional, conclusions about causality cannot be drawn.

There are several aspects of our study design that should be considered when interpreting the findings. First, all data were collected by parent report, and information was not available on whether or not the child had a diagnosed psychiatric disorder or GI condition. Parent report of GI problems is highly correlated with GI diagnoses made by physicians (Gorrindo et al., 2012), which lends credence to the validity to our findings. However, the GI Symptom Inventory, although widely used both in clinical and research settings, lacks psychometric research. Follow-up studies would benefit from the inclusion of medical/psychiatric evaluations, medical file data, and a standardized GI questionnaire. Future research should consider explicitly exploring the degree of pain and length of time that the problem has been present. It would also be useful to assess the parents' physical and mental health status in order to determine how their own status influences their ratings of their child. In addition, we were unable to directly test how verbal ability may moderate the relationship between GI concerns and emotional and behavioral manifestation of GI problems given our use of an all verbal sample.

Despite these limitations, our findings provide new insight into the factors associated with GI problems in ASD. Using a large, well-characterized sample of children with high-functioning autism, a variety of factors with potential relevance to GI problems in ASD were

considered, and affective problems emerged as the most pertinent. This finding fits with prior studies indicating irritability and mood problems may be more common among children with ASD who have GI concerns (Nikolov et al., 2009; Maenner et al., 2011). Thus, there is now a small body of research suggesting an association between affective problems and GI concerns in ASD. Identifying the mechanisms underlying the association between GI concerns and affective problems in ASD will be an important research goal moving forward, particularly given evidence for a greater degree of functional disability when both abdominal pain and depression co-occur in non-ASD samples (Saps et al., 2009).

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Table 1

Prevalence and Types of GI Problems in 95 Children with ASD

	% (<i>n</i>)
Presence of Any GI problem	61.1 (58)
Abdominal Pain	41.1 (39)
Not Hungry	40.0 (38)
Other Symptom (not otherwise specified)	17.9 (17)
Bloating	10.5 (10)
Number of GI Symptoms per child	
No symptoms	38.9 (37)
One symptom	28.4 (27)
Two symptoms	22.1 (21)
Three symptoms	7.4 (7)
Four symptoms	3.2 (3)

Table 2

Comparison of Children With and Without Gastrointestinal (GI) Problems on Demographic Characteristics and Overall Functioning

	GI Problem <i>n</i> = 55	No GI Problem <i>n</i> = 37	<i>F</i>	<i>p</i> -value
Percent Male	75.7%	91.4%	4.43 ^{<i>I</i>}	0.04
Age	11.98 (3.34)	13.95 (2.58)	9.56	0.00
Mean Full Scale IQ	112.38 (15.00)	108.24 (11.52)	2.01	0.16
Mean Total SRS Score	82.25 (12.33)	80.81 (12.60)	0.30	0.59
Mean Adaptive Behavior Composite	79.04 (13.83)	81.00 (11.27)	0.52	0.47

Note. IQ and adaptive behavior scores are standard scores with a mean of 100.

^{*I*} χ^2 value.

Table 3
Comparison of Children With (n = 55) and Without (n = 37) Gastrointestinal Problems on the Child Behavior Checklist (CBCL) Scales

	Mean (SD)		Range		% Borderline Clinical (t = 65)	
	GI Problem	No GI Problem	GI Problem	No GI Problem	GI Problem	No GI Problem
Total Problems Score	65.10 (8.5)	62.54 (8.1)	43–78	49–74	53.4	40.5
Internalizing Problems	65.38 (9.2)	63.22 (8.4)	48–88	40–78	58.6	48.6
Externalizing Problems	56.72 (10.1)	54.32 (11.6)	34–75	34–74	24.1	24.3
Syndrome Scale Scores						
Anxious/Depressed	64.67 (11.2)	63.86 (8.4)	50–93	50–84	44.8	48.6
Withdrawn/Depressed	66.98 (10.5)	64.92 (11.5)	50–96	51–88	62.1	43.2
Somatic Complaints	60.79 (7.9)	56.03 (6.1)	50–88	50–70	24.1	10.8
Social Problems	67.00 (9.2)	65.16 (8.4)	50–95	50–89	62.1	54.1
Thought Problems	68.17 (9.2)	67.00 (6.3)	50–83	51–80	69.0	64.9
Attention Problems	64.72 (9.0)	63.22 (10.7)	50–88	51–96	48.3	37.8
Rule-Breaking Behavior	56.05 (6.0)	54.97 (5.6)	50–71	50–67	12.1	5.4
Aggressive Behavior	59.88 (9.1)	58.43 (9.6)	50–86	50–79	27.6	27.0
DSM-Oriented Scales						
Affective Problems	66.47 (8.3)	62.19 (9.5)	50–83	50–78	60.3	37.8
Anxiety Problems	64.86 (9.7)	63.76 (8.1)	50–78	50–78	62.1	51.4
Somatic Problems	58.62 (8.2)	53.81 (5.9)	50–93	50–70	22.4	10.8
ADHD Problems	61.43 (7.9)	59.86 (7.1)	50–77	50–77	48.3	27.0
Oppositional Defiant Disorder	59.90 (8.2)	57.76 (8.6)	50–80	50–80	34.5	27.0
Conduct Problems	58.26 (7.2)	56.86 (8.4)	50–77	50–75	20.7	24.3

Table 4

Poisson Regressions of CBCL Scales, Gender, and Age onto Number of Gastrointestinal Symptoms

Predictor	B	SE	Wald χ^2	<i>p</i>
Regression 1: CBCL Syndrome Scales				
Gender	.92	.39	5.47	.02
Age	−.11	.04	7.03	.01
Anxiety/Depression	.01	.01	0.55	.46
Withdrawn Depressed	.00	.01	0.00	.95
Thought Problems	.02	.03	0.37	.54
Attention Problems	−.05	.04	1.47	.23
Aggressive Behavior	−.00	.01	0.04	.85
Social Problems	.05	.01	13.22	.00
Regression 2: CBCL DSM-Oriented Scales				
Gender	.84	.59	2.04	.15
Age	−.03	.04	.72	.40
Affective Problems	.05	.01	27.61	.00
Anxiety Problems	−.01	.01	.59	.44
ADHD	−.01	.01	.36	.55
Oppositional Defiant Problems	.00	.02	.07	.80

Table 5
Linear Regression Predicting CBCL Social Problems Scale from Types of Gastrointestinal Problems, Controlling for Gender and Age

Predictor	β	t	p (β)	R^2 change	p (F change)
Step 1				.09	.01
Gender	-.21	-2.05	.04		
Age	.20	1.93	.06		
Step 2				.07	.01
Gender	-.25	-2.50	.01		
Age	.26	2.57	.01		
Abdominal Pain	.27	2.67	.01		
Step 3				.01	.33
Gender	-.26	-2.61	.01		
Age	.30	2.76	.01		
Abdominal Pain	.27	2.67	.01		
Not Hungry After Eating Very Little	.11	.98	.33		
Step 4				.00	.58
Gender	-.26	-2.60	.01		
Age	.28	2.57	.01		
Abdominal Pain	.24	2.18	.03		
Not Hungry After Eating Very Little	.10	.92	.36		
Other GI Symptoms	.06	.55	.58		
Step 5				.00	.50
Gender	-.26	-2.55	.01		
Age	.28	2.46	.02		
Abdominal Pain	.25	2.27	.03		
Not Hungry After Eating Very Little	.09	.81	.42		
Other GI Symptoms	.05	.47	.64		
Bloating	-.07	-.67	.50		

Table 6

Linear Regression Predicting the CBCL Affective Problems Scale from Types of Gastrointestinal Problems, Controlling for Gender and Age

Predictor	β	t	p (β)	R^2 change	p (F change)
Step 1				.03	.28
Gender	-.11	-1.08	.29		
Age	-.14	-1.33	.19		
Step 2				.12	.00
Gender	-.17	-1.65	.10		
Age	-.06	-.54	.59		
Abdominal Pain	.36	3.46	.00		
Step 3				.05	.02
Gender	-.20	-2.01	.05		
Age	.03	.29	.77		
Abdominal Pain	.31	3.00	.00		
Not Hungry After Eating Very Little	.25	2.30	.02		
Step 4				.00	.81
Gender	-.20	-2.00	.05		
Age	.03	.24	.81		
Abdominal Pain	.30	2.82	.00		
Not Hungry After Eating Very Little	.25	2.25	.03		
Other GI Symptoms	.02	.24	.81		
Step 5				.00	.40
Gender	-.20	-1.91	.05		
Age	.01	.16	.90		
Abdominal Pain	.32	2.94	.00		
Not Hungry After Eating Very Little	.24	2.11	.04		
Other GI Symptoms	.01	.14	.89		
Bloating	-.09	-.86	.40		