Abstract
For all young people, the key to a successful transition to adulthood is independence. However, attaining a satisfying independent life is a particularly challenge for those with autism because of qualitative differences in restricted behaviors as well as social interaction. My dissertation examines the way social computing systems may play a role in supporting independence of young adults with autism. I focus on social networking services that facilitate the process of collective information or advice seeking. This work demonstrates some limitations of current architecture of social networking services and provides insight into how social computing systems might be better designed to support the everyday lives of these individuals.

Keywords
Social networking services; autism; independence; young adults

ACM Classification Keywords
H5.3.Group and Organization Interfaces.

Context and Motivation
The rise in the number of children diagnosed with autism began in the early 1990s, and children from that generation are beginning to transition from the protective school system to the much less protective adult world [6]. Like all young people, youth with autism face challenges in self-care, everyday life chores, and social communication that adversely impact the attainment of independent functioning in adulthood.

The field of assistive technology has made great advances in memory aiding and instructional applications that increase independence of individuals affected by cognitive disabilities. For example, technologies assist profoundly disabled individuals by providing timely reminders of daily tasks and instructing them on the completion of tasks with multiple steps [3]. Nevertheless, little research has been devoted to addressing the needs of socially-acquired information or advice tailored to the complex and subtle situations an adolescent or adult will face. Such situations vary in terms of the immediacy of the need for an answer and the nature of a topic.
How might technology support an individual’s need for advice in diverse situations?

Increasingly computer-mediated communication technologies, including social media and services (e.g., social network sites, online communities) provide an opportunity for an individual to seek a wider perspective on topics of interest. I consider social networking services (SNSs) a subset of computer-mediated communication technologies to the extent that they particularly facilitate communication and collaboration across networks of online contacts using a variety of different technical features and social architectures [1].

Utilizing SNSs to support the independence of individuals with autism provides three opportunities. First, an SNS can leverage existing physical care networks composed of family and close friends by mediating online and offline communication among the network members. Second, the SNS creates a virtual space where users seek information or request help beyond the physical care network, such as a network of crowd-sourced online volunteers. Harnessing this collective informal support online is an important value proposition for an SNS. Third, data produced through SNSs, particularly questions, reflect the most pressing issues for individuals with autism.

The use of existing SNSs originally designed for general use, however, pose challenges for individuals with autism, who struggle with understanding what and how to ask, how much to disclose, and whom to trust [2]. Thus, the challenge is to identify meaningful features and architectures of an SNS that are specialized for individuals with autism and help them achieve and maintain independence.

In my dissertation, I identify the underlying key components of a specialized SNS that is unique to individuals with autism. My initial work has been done to exploit special features of SNSs aimed at asking questions in everyday situations. Based on initial results, I am now designing a specialized Q&A system that will be used to determine the effectiveness of a proposed social network model that supports independence.

**Results to Date**

**Study 1:** To expand our knowledge of needs and concerns about independence (RQ1), I conducted interviews with 12 adolescents on the autism spectrum and their 16 caregivers, focusing on the challenges they face. The study result address that over-reliance on a small set of people, typically a primary caregiver, is a barrier to independence and a burden on the caregiver. This preliminary study offers an opportunity to utilize special characteristics of CMC technology, facilitating a creation of online communication circles to request help and harnessing the collective support from a variety of social networks, to manage everyday lives [4].

**Study 2:** I conducted an exploratory study to answer RQ2. In this study, three young adults with autism used an existing SNS, GroupMe to create various communication circles, to include existing social contacts in the circle, and to direct questions to each circle depending on the topic of questions. I used a mixed-method evaluation combining objective measures of system use—specifically, the activity of communication and the formation of networks from the server logs—with self-report surveys to accurately measure the subjective matters about the strength of their interpersonal relationships and the perceived benefits from the relationship. The findings indicated
that technology-supported communication particularly impacted the on-and offline-relationship between the individual and extended network members while mitigating concerns about over-reliance on primary caregivers [5]. On the other hand, the results of the study could either identify features that result in technical and social dilemmas or indicate a lack of features that could improve the user experience with these types of SNSs, which should provide help or advice through their social question and answer systems.

**Next Steps**

**Study 3:** I have expanded the research agenda to address the design of a social Q&A system capable of generating a wide perspective of answers not only from the members of existing social networks but also from people not known personally (i.e., strangers). Since GroupMe study results provide few question samples that three young adults with autism asked to pre-defined social networks, I began to explore questions posted on an online autism forum for autism, AspiesCentral in which more than 4,000 individuals discuss their everyday lives with Asperger’s Syndrome. I have identified the issues that users with autism are really concerned about on a daily basis and how they address such concerns in the form of question-asking or requests for help in a naturalistic setting. This study will allow me to better understand the issues that users with autism are really concerned about on a daily basis and the types of online support they have sought.

**Study 4:** The AspiesCentral Q&A dataset will be analyzed to determine answer quality. Using a mixed method—quantitative analysis of logs and a qualitative analysis of contents—I will examine whether the online forum is effective for eliciting satisfying, relevant, and trustworthy answers. To identify the subjective aspects of answer quality, I will use a variety of online behavior data (e.g., number of likes and number of replies) as a proxy of a survey done by question askers. In addition, answer quality will be determined by autism experts (e.g., occupational therapists) or crowd-sourced volunteers based on their expertise. In this way, I will be able to define a metric of answer quality and link it to the measurement of impact. Once I have a database of judged answer quality, I will extract a number of features from questions, answers and the profiles of their posters as a way to identify factors that affect answer quality and characterize what effective answers are. I hope to be able to answer the question of what design approach could elicit the effective answers for supporting the everyday lives of individuals with autism.

**Study 5:** Based on the knowledge I gained through the preliminary studies (RQ1&2) and the ongoing study of the online autism forum (RQ3&4), I have been able to come up with a set of design approaches to creating the specialized SNS that supports independent living of individuals with autism. Two general approaches are desired; 1) facilitating the creation of themed social circles addressing everyday life questions that they often ask; and 2) providing a social question and answer (Q&A) feature capable of generating a wide perspective of trusted answers. I will build a social Q&A system and study the effects of design features, such as building thematic social circles classified by attributes of questions (e.g., topics, expected type of response), and inviting trusted strangers composed of volunteers from the general population. Through the evaluation of the social Q&A system that is specialized to individuals with autism, I will address questions about a broad design perspective: What are the
underlying components of a specialized social network service that is unique to support the individuals with autism? What changes to mechanisms of crowdsourcing, or design/technical features of social network services might better support the process of Q&A for individuals with autism?

**Expected Contributions**
My research will result in four primary contributions. First, this work will provide a rich description of existing practices surrounding independence of adolescents and adults living on the autism spectrum as well as their caregivers during the life-transition. Second, this work enables deeper understanding of the opportunities and limitations of current social networking architecture and technological configurations. Third, this work will contribute empirical evidence for the effects of the key proposed design principles for the specialization of widely used social media or services as a social question and answer system. Fourth, the empirically validated design principles, in general, will help designers think about what changes to mechanisms of crowdsourcing, or design/technical features of social network services might better support the process of social Q&A for increasing independence.

**At the CSCW Doctoral Colloquium**
The attendance at the CSCW Doctoral Colloquium will provide me with the opportunity to improve my thesis’ understanding through an enriching discussion with peers and faculties. Furthermore, I would greatly benefit from attending the consortium to receive feedback on my research direction, in particular to refine my questions for future direction. A further issue I would like to draw attention to is the applicability of this thesis' findings in context different to autism context. Finally, in the course of my participation I hope to gain further clarification on enriching the methodological interpretation of the data in order to better contribute to the CSCW community.

**References**